BHLO-5107 (033)

SCH# 2014121041
7-LA-SMCA

Replacement of the existing Santa Monica Pier Bridge with a seismically resistant and structurally sound bridge. Santa Monica Pier Bridge, extending west from the intersection of Colorado Avenue and Ocean Avenue to Santa Monica Pier.

VOLUME 2
RECIRCULATED FINAL ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL ASSESSMENT WITH FINDING OF NO SIGNIFICANT IMPACTS
APPENDICES

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

THE STATE OF CALIFORNIA
Department of Transportation
and
City of Santa Monica

Responsible Agencies: California Transportation Commission

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Appendix A

Section 4(f) Analysis

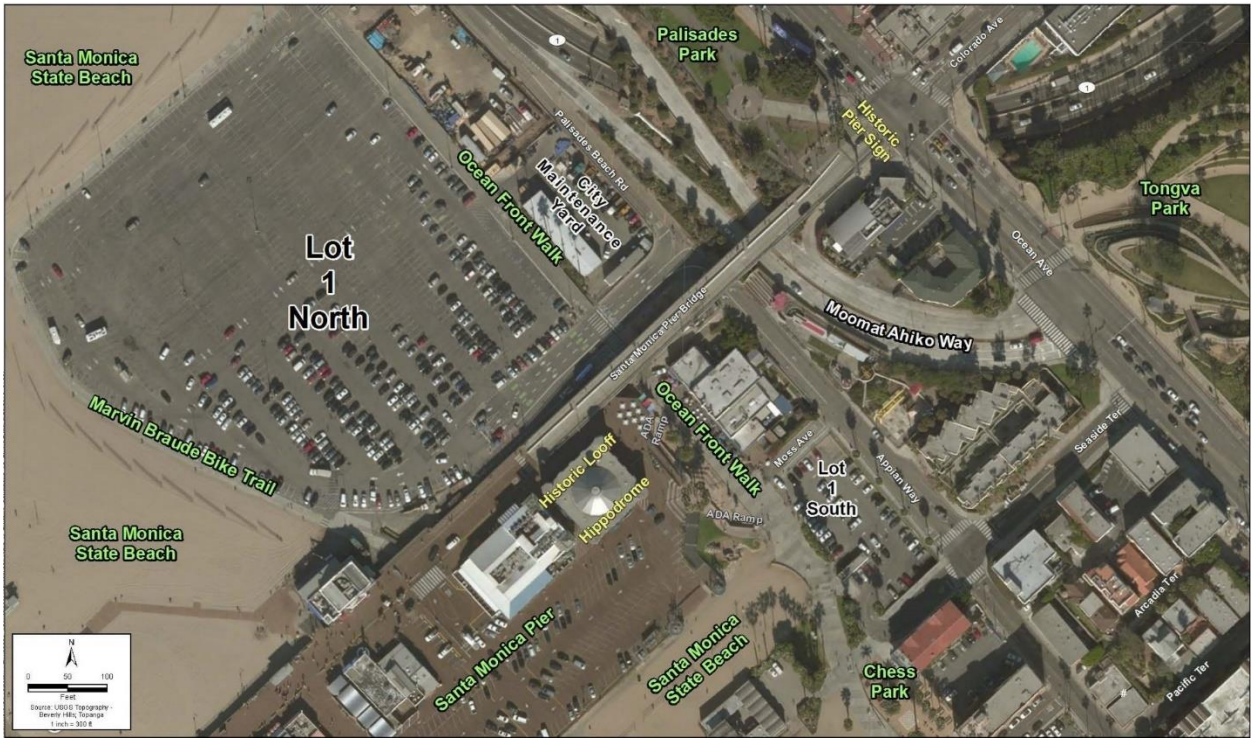
Appendix A Section 4(f) Analysis

This section of the document discusses *de minimis* impact determinations under Section 4(f). Section 6009(a) of SAFETEA-LU amended Section 4(f) legislation at 23 United States Code (USC) 138 and 49 USC 303 to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This amendment provides that once the U.S. Department of Transportation (USDOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete. FHWA's final rule on Section 4(f) *de minimis* findings is codified in 23 Code of Federal Regulations (CFR) 774.3 and CFR 774.17.

Responsibility for compliance with Section 4(f) has been assigned to the Department pursuant to 23 USC 326 and 327, including *de minimis* impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

Introduction

The City of Santa Monica (City) and the California Department of Transportation (Caltrans) are proposing replacement of the Santa Monica Pier Bridge. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Santa Monica is the lead agency under CEQA, and Caltrans is the lead agency under NEPA.



Source: ICF, 2016.

Figure A-1. Map of 4(f) Resources

The proposed project would include replacement of the existing, structurally deficient Pier Bridge with a safer multi-modal bridge that would meet current seismic standards. Bridge replacement would include improvements at the west and east approaches and on the pier.

Two build alternatives, in addition to the No-Build Alternative, are being considered:

Alternatives 1 and 2 (LPA) would provide an in-kind replacement bridge with approximately the same alignment and profile as the existing bridge. The replacement bridge would be approximately 448 feet in length and approximately 38 feet wide, 4 feet wider than the existing bridge. The downward slope of the replacement bridge would be approximately 10 percent, the same as existing bridge. Two build variations for the Bridge configuration are being considered, as described below.

- Under Alternative 1: Vehicles and bicycles would use a 20-foot-wide roadway on the south side of the bridge. A 15-foot-wide sidewalk would be provided on the north side of the bridge. The roadway from Ocean Avenue would require a northeast-to-southwest taper from the existing curbs. The existing historic pier sign would be temporarily removed and reinstalled after construction in the same location. This alternative would also require an approximately 4-foot-wide extension of the existing pier deck, running approximately 157 feet, on the north side of the bridge.

- Under Alternative 2 (Locally Preferred Alternative [LPA]): Under the proposed project, the path locations would be mirrored to that of Alternative 1; vehicles and bicycles would use a 20-foot-wide roadway on the north side of the bridge and a 15-foot-wide sidewalk

on the south side of the bridge. The length of the bridge would be essentially the same as under Alternative 1. The historic Pier Sign would be required to be relocated approximately 10 feet north of its existing location and remain aligned over the vehicular lanes, similar to the existing configuration. The curbs from Ocean Avenue would not require a taper under this alternative. The same pier deck extension on the north side would also be required under this alternative.

Under both build alternatives, the Pier Sign would be removed and protected off-site during construction related activities to preserve its historic integrity. However, once bridge construction has been completed, the Pier Sign supports would be modified to a taller height to provide additional vertical clearance to vehicular impacts and reinstalled over the vehicular lanes.

The primary purposes and objectives of the proposed project (detailed in Chapter 1 of this Recirculated EIR/EA) are to provide a bridge that would be structurally sound and seismically resistant, and to provide adequate and safe access to the pier by all users, including pedestrians, bicyclists, motorists, and emergency vehicles. The proposed project seeks to achieve those objectives while preserving the historic character of the pier and adjacent historic structures, including the pier entrance sign, as well as maintaining continuous access to the pier for all users, including maintaining City and pier business operations during construction.

Section 4(f) Regulations

Section 4(f) of the Department of Transportation Act of 1966 (49 United States Code [U.S.C.] 303) (Section 4(f)) applies to a project when a federal action involves the use of a publicly owned park, recreation area, wildlife or waterfowl refuge, or land from a historic site. Such land may be used for Federal-aid highway projects only if there is no feasible and prudent alternative and all possible planning has been taken to avoid the use of a 4(f) property or to minimize harm to any 4(f) property affected by the project. Only those resources within 0.25 mile of the proposed project could be affected by the project; thus, those resources were considered in determining any potential use of Section 4(f) resources by the project build alternatives. These resources are shown in Figure A-1 above. The following table (A-1) summarizes Section 4(f) resources which are located within 0.25 miles of the prosed project:

Table A-1: Summary of Section 4(f) Resources and Potential Use Status

Name of Section 4(f) Resource	Type of Section 4(f) Resource	Alternative 1 Use Status	Alternative 2 Use Status
Parks and Recreational Facilities			
Santa Monica Pier	Public Recreation Area	*Use (no adverse effect)*	*Use (no adverse effect)*
Marvin Braude Bike Trail	Public Recreational Trail/Path	*Use (no adverse effect)*	*Use (no adverse effect)*
Ocean Front Walk	Public Recreation Path/Promenade	*Use (no adverse effect)*	*Use (no adverse effect)*
Tongva Park	Public Park	No Use	No Use
Carousel Park	Public Recreation	*Use (no adverse effect)*	*Use (no adverse effect)*
Chess Park	Public Park	No Use	No Use
Palisades Park	Public Park/Historic Property	*Use (no adverse effect)*	*Use (no adverse effect)*
Santa Monica State Beach	Public Recreation Area	No Use	No Use
Historic Resources			
Historic Looff's Hippodrome	Historic Property	*Use (no adverse effect)*	*Use (no adverse effect)*
Historic Santa Monica Pier Sign	Historic Property	*Use (no adverse effect)*	*Use (no adverse effect)*
Palisades Park	Public Park/Historic Property	*Use (no adverse effect)*	*Use (no adverse effect)*

Since the resources listed above are publicly owned and are recreational areas/historic resources, they are considered Section 4(f) resources. Therefore, special considerations must be taken to ensure that any "use" of the listed resources does not adversely affect the activities, features, and attributes that qualify these resources for protection under Section 4(f). The following discussion will analyze each of the referenced Section 4(f) resources by detailing the following: 1) Activities, features, and attributes of the 4(f) property, 2) Description of the use, 3) as well the potential impacts.

Public Parks and Recreation Facilities

Santa Monica Pier

Santa Monica Pier qualifies for Section 4(f) protection as a public recreation area. The pier is owned and managed by the City of Santa Monica and open to the public. The primary activities, features, or attributes enjoyed by most visitors are free and open to the public, including strolling along the pier, fishing, and enjoying views of the Pacific Ocean and surrounding coastline. The pier also includes a parking lot on the deck; the historic Hippodrome building, which houses a carousel; amusement games and rides in the Pacific Park area, which is operating under a lease with the City; several restaurants; shops; vendor carts; the Heal the Bay Aquarium; an arcade; a trapeze school; the Carousel Park area, which features ornamental play structures; restrooms; and offices for the Harbor Unit of the Santa Monica Police Department. Santa Monica Pier and the surrounding Santa Monica State Beach also serve as public gathering spaces for events such as concerts and festivals.

Though previously reviewed as a potential federal historic resource, the pier was subsequently determined not eligible for the National Register. It is however a City Landmark. Santa Monica Pier presents several activities, features, or attributes that qualify it for protection under Section 4(f). As described in the City's Parks and Recreation Master Plan, Santa Monica Pier is described as a public gathering place that serves as a popular beach-oriented amusement center. The pier has a tradition of providing seaside recreation and entertainment that dates back to the turn of the century. It differs from other piers in the region in that it provides low-cost entertainment, including a carousel (25-cent rides), arcades, and off-pier fishing. It is a regional recreational draw and also serves the local community through a variety of City-sponsored cultural programs, including art shows and concerts.

The Parks and Recreation Master Plan also states the Pier, the Third Street Promenade, and the beach are the most used open space areas in the city, with nine out of 10 Santa Monicans visiting these venues regularly.

Alternatives 1 and 2

Under both Alternatives 1 and 2 (LPA) the potential impacts to the pier would be the same. A new replacement bridge would be constructed, to enhance ADA access and provide a bridge that is structurally sound and seismically resistant. Under either alternatives, Construction activities would be confined to the east and north sides of the Pier and would be temporary in nature. The removal of pier decking and possibly the piles below is expected within approximately five feet of where the bridge engages the Pier in order to accommodate a drilling rig and associated machinery. These construction activities would have the potential to physically damage the Pier structure through unanticipated falling debris or collision with construction equipment.

Pedestrian access and visibility would be maintained via the south side. Car access would be maintained by a temporary car ramp from the adjacent North Lot 1 parking area and a temporary pedestrian bridge parallel to the existing Pier Bridge. Although both structures

would engage the Pier structure, both would be designed to be reversible and are not expected to result in adverse change to the Pier. Impacts from vibration resulting from excavation, demolition, and pile installation would be temporary and would not be expected to exceed those vibrations the structure is already designed to resist from ocean waves below and car traffic on the deck. In addition, measures described in mitigation measure CR-3 in Section 2.7.2.3 of the Recirculated EIR/EA, as well as described in further detail below, would be incorporated to minimize and avoid any impacts associated with construction.

Although some temporary occupancy is required to construct portions of the Pier Bridge, for both of the build alternatives, the temporary occupancy would be minor and short in duration. Furthermore, pedestrian, bicycle, and automobile traffic would be redirected around construction activities. The primary protected activities, features, or attributes of the Pier, including strolling, fishing, and enjoying low-cost entertainment at the Hippodrome and Pacific Park, would not be affected and would remain accessible during construction. Mitigation measure CR-5 would mitigate any impacts to the Pier to less than significant.

During construction, access to the Heal the Bay Aquarium (aquarium) would be affected because of the proximity of construction activities. The aquarium is a component of the Santa Monica Pier's recreational activities that are available to public. Construction activities would create dust, noise, and that could affect aquarium exhibits, offices, and life support spaces. Demolition and reconstruction of the bridge would require construction workers and equipment that would temporarily affect approximately 1,400 square feet of aquarium space. This may require reconstruction of some walls and the roof of the aquarium. In addition, approximately 1,200 square feet of the newly leased patio space would be affected (and thus temporarily reduced) by the project. The City will continue to work with aquarium personnel and provide temporary office space during construction. However, the aquarium would experience temporary closures to the public during the following construction activities: bridge demolition, foundation construction, installation and removal of falsework over Ocean Front Walk, and potentially other activities.

The impacts to the Santa Monica Pier would be temporary and would not be required for the entire construction period. Though no permanent changes will be made to the Santa Monica Pier as a result of the project, the constructions activities will temporarily limit the access to the Aquarium, which is a publicly available recreational activity and part of the Santa Monica Pier. The overall access and use of Santa Monica Pier as a recreational resource will not be adversely impacted. Should any physical effects occur, the Santa Monica Pier will be fully restored to the condition that will be at least as good as the condition that existed prior to the proposed project. ***Provided concurrence is obtained from the official with jurisdiction over this resource as a recreational facility, the impacts to this Section 4(f) resource are expected to be potentially de minimis.***

Palisades Park

Palisades Park qualifies for Section 4(f) protection as a public park. The park consists of a greenway on the Palisades bluffs between Pacific Coast Highway and Ocean Avenue and its northern and southern boundaries. The park features green lawns, specimen trees, pathways, picnic areas, benches, a rose garden, various art installations, and a Visitors Center kiosk. Perhaps most notably, Palisades Park provides a sweeping view that overlooks the beach and

Pacific Ocean as well as several pedestrian access points to the beach. Recreational uses that occur at the park include walking, jogging, picnicking, and general sightseeing.

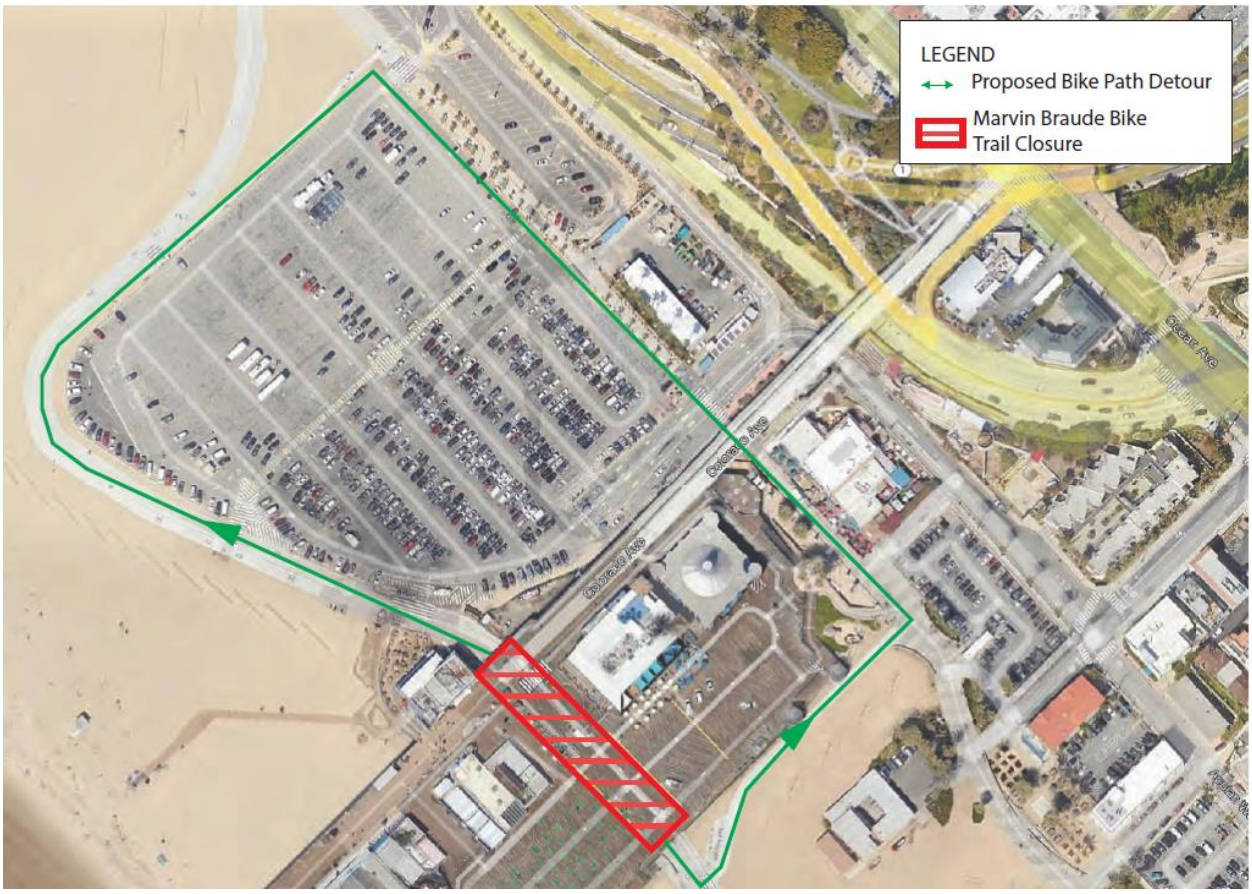
Under both build alternatives potential impacts to the park would be the same, a small area (approximately 0.1 acre) adjacent to the park would be used for construction staging and equipment access. Temporary fencing or other screening would be installed as part of this work. The occupied would not be accessible to the public during this time. This area consists mostly of the sidewalk areas and vegetation adjacent to the pier bridge; it does not include the grassy areas or paths that are located throughout most of the park. Ample access to the park exists and the utilization of the area adjacent to the park for construction staging and storage would not result in restricted access to Palisades Park.

Under both build alternatives no change in ownership to Palisades Park would be required as a result of the project. There will be temporary disruptions which interfere with the use of a small portion Palisades Park as a result of the adjacency of construction activities. Construction activities would result in visual disruptions to the general setting, specifically the portion of Palisades Park adjacent to the bridge. The disruptions are not permanent and are minor. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the impacts to this Section 4(f) resource are expected to be potentially de minimis.***

Marvin Braude Bike Trail

The Marvin Braude Bike Trail is a paved bike path that runs along the beach. South of Santa Monica Pier, the bike path runs 2.75 miles south to the Venice Pier and approximately 3 miles north of the Pier to Will Rogers State Beach. The Marvin Braude Bike Trail is a public recreational bike path and highly used by bicyclists. No land from the bike path would be incorporated into the project. Although some temporary occupancy may be required to install and remove the temporary vehicle ramp connecting Lot 1 North and the Pier Deck Parking Lot during construction, the temporary occupancy would be minor, short in duration, and bicycle circulation would be redirected around construction activities and access would be maintained; therefore, the temporary occupancy would not pose the potential for use. Please refer to Figure A-2 for the proposed bike path detour.

Under both build alternatives for the project the potential impacts to the bike path would be the same. The duration of the closures will be temporary (i.e. shorter than the period of construction) and does not involve a change in ownership of the property. With the implementation of the provided detour, overall impacts will be minor and temporary in nature. Stating this, the project will not have any temporary or permanent adverse impacts to the Marvin Braude Bike Trail. Should any physical effects occur, the Marvin Braude Bike Trail will be fully restored to the condition that will be at least as good as the condition that existed prior to the proposed project. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the use is considered temporary occupancy therefore, the provision of Section 4(f) are not triggered.***



Source: ICF, 2022.

Figure A-2. Map of Proposed Bike Path Detour

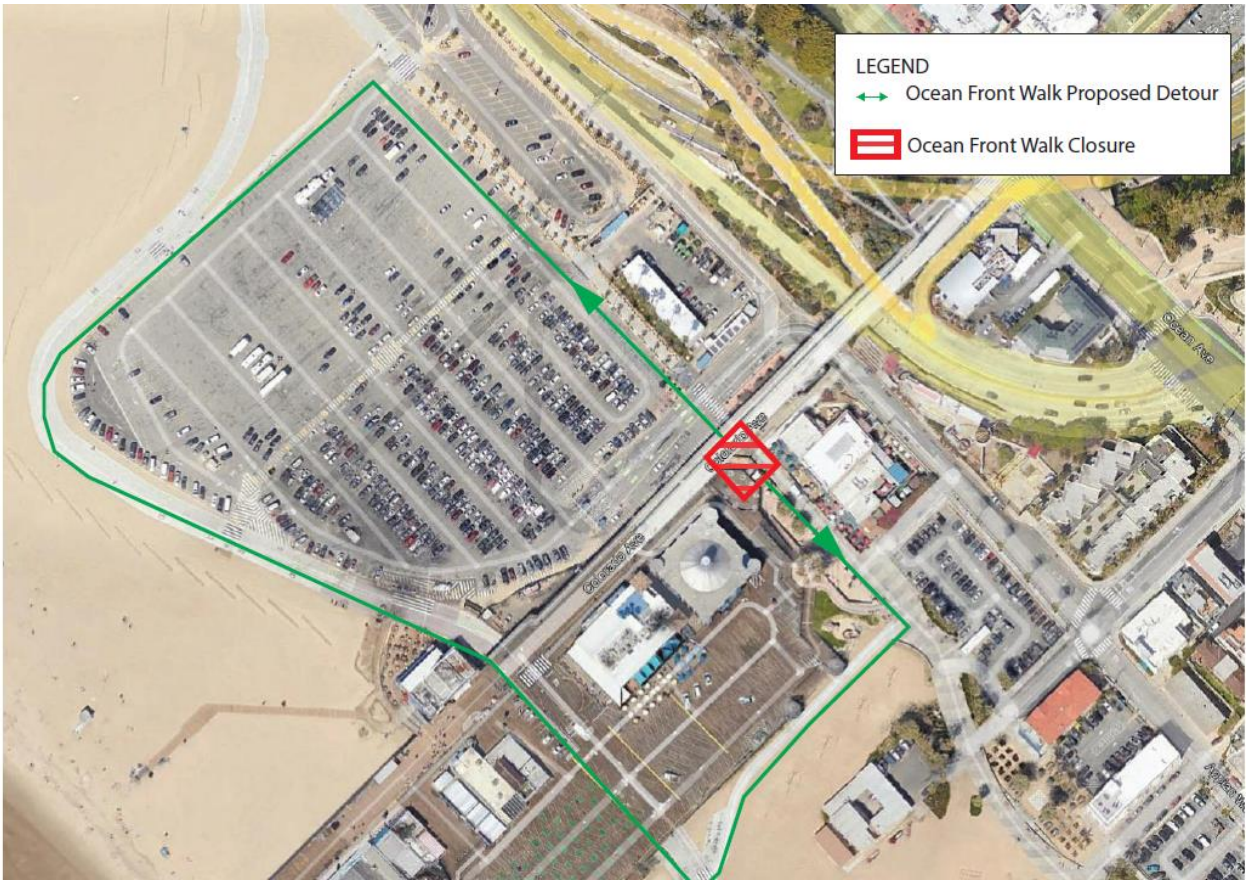
Ocean Front Walk

The beach promenade, also known as Ocean Front Walk, is a 20-foot-wide walkway that runs along the beach. South of Santa Monica Pier, Ocean Front Walk runs 2.75 miles south to the Venice Pier and approximately 3 miles north of the Pier to Will Rogers State Beach. Ocean Front Walk is a public recreational path highly used by pedestrians and in-line skaters. Additionally, 1601–1619 Ocean Front Walk buildings are designated as local landmarks.

Potential impacts to Ocean Front Walk would be the same under both build alternatives. No land from Ocean Front Walk would be incorporated into the project under either Alternative 1 or Alternative 2 (LPA). However, some temporary occupancy may be required to construct portions of the Pier Bridge. Temporary closures in the vicinity would remain during construction activities, such as bridge demolition, foundation construction, falsework erection and falsework removal, and potentially other activities. However, construction of a temporary pedestrian bridge structure, which would be fixed to the pier deck, would maintain southward access to Ocean Front Walk. Access from the north would be maintained along a detour provided by the existing bike path, with additional access proposed through the parking lot to the south. Please refer to figure A-3 below for further details. Vehicular access would be maintained by a temporary car ramp from the adjacent North Lot 1 parking area, and

pedestrian access would be maintained by construction of a temporary pedestrian bridge parallel to the existing Pier Bridge.

For both proposed project alternatives, the duration of the closures will be temporary (i.e., shorter than the period of construction) and does not involve a change in ownership of the property. With the implementation of the provided detour, overall impacts will be minor. Stating this, the project will not have any temporary or permanent adverse impacts to Ocean Front Walk. Should any physical effects occur, Ocean Front Walk will be fully restored to the condition that will be at least as good as the condition that existed prior to the proposed project. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the use is considered temporary occupancy therefore, the provision of Section 4(f) are not triggered.***



Source: ICF, 2022.

Figure A-3. Map of Proposed Ocean Front Walk Detour

Tongva Park

Tongva Park is a 6.2-acre public park located just southeast of the intersection of Ocean Avenue and Colorado Avenue. Tongva Park includes an amphitheater, playground, garden, fountains, picnic areas, restrooms, as well as a scenic overlook with views of the Pacific Ocean and Santa

Monica Pier. The park name celebrates the rich culture and traditions of the indigenous Tongva people who lived in this region for thousands of years.

The project will not impede the access of Tongva Park nor will it cause temporary and or permanent impacts to Tongva Park. Additionally, it will not impact the use of Tongva Park as a recreational resource. ***Therefore, the provisions of Section 4(f) are not triggered.***

Carousel Park

Carousel Park is a public park at the east edge of Newcomb Pier that serves as an entrance to the elevated Pier deck from Ocean Front Walk; when completed in 1986, it replaced a heavily deteriorated section of the Pier deck that originally sloped down from Looff's Hippodrome to Ocean Front Walk. The Park contains a number of public amenities including a children's play area, amphitheater seating, benches, stairs and ramps, and decorative open-air metal frame viewing pavilions. Some temporary occupancy may be required to construct portions of the Pier Bridge, under both build alternatives, potential impacts to the park would be the same under Alternative 1 and Alternative 2 (LPA).

The distance between where piles for the new bridge would be drilled and the park's character defining features is sufficient to limit vibration effects. Therefore, vibrations from heavy machinery, excavation, and pile driving are not anticipated to reach a level that could result in damage or other substantial adverse change to the Park.

Construction activities would result in visual disruptions to the general setting, specifically that portion of the Park adjacent to the bridge. However, construction would be temporary and the extent of the visual nuisance from the construction equipment and vehicles would be limited to the areas adjacent to the north side of the Pier. Construction activities would not substantially affect the aesthetic appeal of the Park's design features. In addition, access to Carousel Park would be maintained throughout project construction, given the feature's distance from construction activities.

Under both build alternatives, the temporary pedestrian bridge structure would be fixed to the pier deck within the general vicinity of the aquarium's arcade walls and public seating area on the deck above. This structure would be temporary and designed to be reversible. It would be modest in size and would replicate the slope of the existing bridge. Therefore, it is not expected to have adverse impacts on the Park. Additionally, the south side of the temporary bridge will be open, maintaining southward views to the Park for its users.

For both build alternatives the impacts to the park would be temporary and would not be required for the entire construction period. No change in ownership would be required, and no physical changes to Carousel Park would occur. However, there will be temporary disruptions which interfere with the use of Carousel Park. The disruptions are not permanent and are minor. Should any physical effects occur, Carousel Park will be fully restored to the condition that will be at least as good as the condition that existed prior to the proposed project. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the impacts to this Section 4(f) resource are expected to be potentially de minimis.***

Chess Park

Chess Park is a 0.29-acre public park located south of the pier at Ocean Front Walk and Seaside Terrace. It features a collection of chess tables, including a human-scale board with large pieces. The park is open from sunrise to sunset, with the tables available on a first-come, first-serve basis. The park is owned and managed by the City of Santa Monica. Under both build alternatives, the project will not impede the access of Chess Park nor will it cause temporary and or permanent impacts to Chess Park. Additionally, it will not impact the use of Chess Park as a recreational resource. ***Therefore, the provisions of Section 4(f) are not triggered..***

Santa Monica State Beach

Santa Monica State Beach is one of the most, if not the most, important recreational destinations in the city. Within the city, the beach is 3 miles long, encompassing approximately 245 acres of sand along Santa Monica Bay. The beach is owned by the State of California and managed by the City of Santa Monica. Under both build alternatives the project will not impede the access of Santa Monica State Beach nor will it cause temporary and or permanent impacts to the State Beach. Additionally, it will not impact the use of Santa Monica State Beach as a recreational resource. ***Therefore, the provisions of Section 4(f) are not triggered***.

Historic Resources

Santa Monica Pier Sign

Constructed in 1940, the Santa Monica Pier Sign marks the highly visible, well-known intersection of Ocean Avenue and Colorado Avenue. It is a freestanding structure that spans the Pier Bridge, with the pier's attractions and the Pacific Ocean visible behind it. The sign serves as an iconic landmark in the city and the region. The sign was installed to mark the entrance to the Santa Monica Pier Bridge and Santa Monica Pier. The Pier Sign was determined eligible for listing in the National Register on October 13, 1998. The Pier Sign is eligible at the local level under Criterion A "for its strong association with the Santa Monica Pier" and at the state level under Criterion C as "one of the finest existing examples of signage from the neon era." Its period of significance is 1920 to 1944. The sign is also listed in the California Register (2005) and as a California Point of Interest. It was designated a City of Santa Monica Landmark in 2012.

Under both build alternatives, the Pier Sign would be removed for its protection during construction, altered to increase its overhead clearance, refurbished and reinstalled over the new Bridge once construction is complete. This process involves multiple steps, each with its own unique circumstances due to the Pier Sign's size, function, and historical significance. Considerations for the physical and historical integrity of the Pier Sign follow. These may be expanded and/or refined by the Historic Preservation Architect.

Under both alternatives, the Pier Sign would be removed for its protection during construction, altered to increase its overhead clearance, and reinstalled over the new Bridge once construction

is complete. This process involves multiple steps, each with its own unique circumstances due to the Pier Sign's size, function, and historical significance.

Alternative 1

The Pier Sign is a 4(f) resource because of its federal, state and local historic significance. Under Alternative 1, the Pier Sign would be temporarily removed and stored during bridge construction and reinstalled in its current location. The process to disassemble, remove, transport, store, and reinstall the sign could result in significant adverse change due to physical damage. Under Alternative 1, the sign would be raised in height slightly. However, the proposed project would not alter, directly or indirectly, any of the characteristics of the Pier Sign that qualify it for inclusion as a historical resource or historic property in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. In addition, City would implement avoidance measure CR-4 to ensure protection of the Pier Sign during construction and adhere to the guidance laid out in the Santa Monica Pier Sign Preservation Plan. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the impacts to this Section 4(f) resource are expected to be potentially de minimis***.

Alternative 2

Under Alternative 2, the Pier Sign would be removed and stored during bridge construction and reinstalled approximately 10 feet northeast of its present location and raised slightly in height upon project completion. The process to disassemble, remove, transport, store, and reinstall the sign could result in significant adverse change due to physical damage. Measures would be required to minimized adverse alterations. Implementation of a Protection Plan as described under mitigation measure CR-4 would mitigate potential impacts to less than significant. No permanent direct impacts nor any permanent indirect impacts are expected. Movement of the sign 10 feet northeast would not alter, directly or indirectly, any of the characteristics of the Pier Sign that qualify it for inclusion as a historical resource or historic property, the sign would remain centered over the roadway as it is in its present condition, with minor relocation. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the impacts to this Section 4(f) resource are expected to be potentially de minimis***.

Looff's Hippodrome

Looff's Hippodrome is a large, eclectic style building at the east end of Newcomb Pier specifically constructed to house a carousel (also known as a merry-go-round), a type of amusement ride consisting of a rotating circular platform with rows of seats in the form of wooden horses or other animals mounted on posts, which move up and down to simulate galloping, often accompanied by carnival or circus music. The tall arcade-like windows along the building's ground floor offer generous views of the activity and allow the carnival music to flow beyond its walls in contrast to the dense urban setting of the downtown area directly above the bluffs. The pier and beachfront area where Looff's Hippodrome is located are primarily part of a pedestrian-scale open-air seashore setting.

Looff's Hippodrome, located at 276 Santa Monica Pier in Santa Monica, was designated a National Historic Landmark (NHL) on February 27, 1987 under the theme of recreation. Its period of significance is 1900-1924, and it is significant at the National level of significance. Looff's Hippodrome is a protected resource under Section 106 of the National Historic Preservation Act. The property was designated a City of Santa Monica Landmark in 1976 and it is listed on the California Register of Historical Resources (California Register; CRHR).

Under both Alternatives 1 and 2 (LPA) have the potential to result in impacts due to the proximity of construction and potential impacts under both alternatives would be the same. However, under both alternatives the proposed project will not result in the destruction, alteration, relocation, change (directly or indirectly) in a manner that would diminish the integrity of Loof's Hippodrome's location, design, setting, materials, workmanship, felling, or association. In order to ensure that the property does not experience potential physical damage from demolition or the use of machinery mitigation measure CR-3 will be implemented. With the implementation of CR-3, temporary changes to the property's setting will occur (i.e. the installation of construction fencing for screening and security etc.). However, protective measures will be designed and installed in such a manner that is completely reversible, with no impacts on the historic resources. ***Provided concurrence is obtained from the official with jurisdiction over this resource, the impacts to this Section 4(f) resource are expected to be potentially de minimis.***

Palisades Park

Palisades Park also qualifies for Section 4(f) protection as a Historic Site. Palisades Park was determined to be eligible for listing in the National Register in 1994. Located at 1415 Ocean Avenue, the Park was determined eligible for listing in the National Register under Criterion A on May 15, 1998. The period of significance is identified as 1892 to 1944, within the theme of Parks and Recreation, at the local level of significance. Palisades Park is listed in the CRHR and is a designated landmark under the City of Santa Monica's Historic Preservation Ordinance. Palisades Park is significant in the history of parks and recreation in the city of Santa Monica. Established in 1892, Palisades Park is the largest and oldest urban park in Santa Monica and has figured prominently in the history of the city.

Under both build alternatives, a small portion of land (approximately 0.1 acre) adjacent to the park would be used for construction staging and equipment access. Temporary fencing or other screening would be installed as part of this work. The occupied portion adjacent to the park would not be accessible to the public during this time. This portion area to be utilized consists mostly of the sidewalk areas and vegetation adjacent to the pier bridge; it does not include the grassy areas or paths that are located throughout most of the park.

The impacts to the park would be temporary and would not be required for the entire construction period. Though no permanent changes will be made to the park as a result of the project, the constructions activities will temporarily limit the access to a small segment of the park. The overall access and use of the park as a historic resource will not be adversely impacted. Nor will the historic setting. Should any physical effects occur (e.g., loss of grass), Palisades Park will be fully restored to the condition that will be at least as good as the condition

that existed prior to the proposed project. ***Provided concurrence is obtained from the official with jurisdiction over this resource as a historic site, the impacts to this Section 4(f) resource are expected to be potentially de minimis.***

Public Notice

The Recirculated Draft Environmental Impact Report/Environmental Assessment (EIR/EA) was distributed to a large number of agencies and members of the general public for review and comment. In addition, notices regarding completion of the Recirculated EIR/EA in compliance with both CEQA and NEPA were published. A large number of notices of availability of the Recirculated Draft EIR/EA were distributed to interested parties. Distribution of the Recirculated Draft EIR/EA, including this appendix, provides agencies and members of the general public with opportunities to provide comments on the Santa Monica Pier Bridge Replacement Project, including the analysis in this appendix, which states the preliminary 4(f) findings for the permanent and temporary uses of 4(f) designated resources.

After the close of the public review period for the draft EIR/EA, Caltrans and the City prepared a final EIR/EA for the Santa Monica Pier Bridge Replacement Project. Comments received by Caltrans and the City on the draft EIR/EA from agencies and members of the general public, including comments regarding the Section 4(f) Analysis, and responses to those comments are included in the final EIR/EA.

Avoidance, Minimization, and Mitigation Measures

Mitigation measures CR-3, CR-4 and CR-5, as described below have been incorporated into the Finding of No Adverse Effect with Non-Standard Conditions (FNAE-NSC) and EIR/EA for the project, as follows:

CR-3

Prior to the start of construction, the City will prepare an Adjacent Structure Monitoring Plan (Monitoring Plan) to safeguard adjacent historic resources, including Looff's Hippodrome and the locally designated buildings at 1601–1619 Ocean Front Walk, as well as the Heal the Bay Aquarium, during construction from damage due to vibration, demolition, excavation, and general construction activities and mitigate the possibility of settlement due to the removal of soil.

The Monitoring Plan will define protective measures specific to individual historic resources, assign monitoring responsibilities, install and maintain construction fencing for screening and security, and ensure safe public circulation and access during construction. Any protective measures will be designed and installed so as to be completely reversible, with no impacts on historic resources. As part of the Monitoring Plan, prior to construction, the project site and adjacent historic resources will be photographed to record their pre-construction condition and character-defining features. The photographs will be kept on file with the publicly accessible property records at the City of Santa Monica.

The Monitoring Plan will be prepared by a qualified and California-licensed professional engineer who is approved by the City of Santa Monica. The Monitoring Plan will be developed in conjunction with a qualified architectural historian, historic architect, or historic preservation professional who satisfies the Secretary of the Interior's Professional Qualification Standards in their respective field(s), pursuant to 36 CFR 61.

The Monitoring Plan will include performance standards that specify:

- All new construction work will be performed so that adjacent buildings and resources, including Looff's Hippodrome and 1601–1619 Ocean Front Walk buildings, will not be adversely affected.
- A qualified and California-licensed professional engineer will develop monitoring recommendations, based on preconstruction surveys and photo documentation of the existing condition of adjacent historic resources. Monitoring may include the use of vibration monitors, elevation and lateral monitoring points, crack monitors, or other instrumentation determined necessary to protect adjacent buildings and structures from construction-related damage.
- Vertical and horizontal movement will be determined by a California-licensed land surveyor or qualified professional engineer, and vibration thresholds will be maintained to levels below which damage could occur at adjacent buildings.
- If thresholds are met, or if noticeable structural damage becomes evident to the project contractor, work will stop until feasible steps to reduce vibratory levels have been undertaken and minimization measures have been implemented to stabilize adjacent building and prevent construction-related damage. Any damage to historic finish materials at nearby buildings will be repaired in consultation with the affected property owner and a qualified preservation consultant and, if warranted, in a manner that meets the Secretary of the Interior's Standards.
- If necessary, as determined by a California-licensed professional engineer, a shoring plan will be developed to protect adjacent historic resources from excavation or general construction procedures. The shoring plan will be developed by the contractor and submitted to the City of Santa Monica for review.

CR-4

Prior to any construction starting, the Pier Sign Preservation Plan shall be prepared and implemented to ensure protection of the Pier Sign throughout the construction phase.

The Santa Monica Pier Sign Preservation Plan

The following list describes recommended best practices and treatments for the Historic Preservation Architect to take into consideration in preparation of their Specifications.

Disassembly and Preparation for Transport

The Historic Preservation Architect's Specifications should consider the treatments needed to preserve the integrity of the Sign components including the raceway, cage, and truss support structure during disassembly.

Prior to disassembly, the Historic Preservation Architect should examine the northerly column base, and if the base plate can be salvaged and reused or if it will have to be replaced. The Historic Preservation Architect's Specifications should prioritize retaining as much of the existing column material as possible.

If the Historic Preservation Architect elects to remove the glass neon tubing and associated components prior to the Sign being detached from its columns, this should be reflected in the Specifications.

All disassembled components should be securely labeled with identifying location and contact information. The Historic Preservation Architect shall document in the Report the original location of each component to be removed and proposed work.

Prior to disassembly, the Historic Preservation Architect should work with the Contractor to identify and secure the appropriate equipment needed to hoist the Sign cage, arched box truss, and the channel columns during disassembly and place onto and off of a transporter.

Transport

The type of transportation should be determined in advance based on the size, weight, and special protective requirements of the Pier Sign. The Historic Preservation Architect can provide the Contractor with recommendations on methods to secure the Sign without damaging it. Transport plans should also include the safe transport of the neon glass tubing and any components removed during disassembly.

Any transportation plans should take into consideration whether the Sign will have to be subsequently transported between the storage location and a neon workshop facility.

Storage

Prior to disassembly, the Contractor with input from the Historic Preservation Architect should select an appropriate storage facility where the Sign and its components can be safely stored without the risk of damage.

Selection of storage site should take into consideration whether the Sign will have to be transported between storage and neon workshop facilities.

Maintenance and Repair

The Historic Preservation Architect's evaluation of the Pier Sign's existing conditions and proposed work should examine the following components:

- Cabinet and Raceway
  - Inspection
  - Repairs
  - Cleaning + Paint
- Structural supports
  - Inspection
  - Repairs
- Cleaning and Paint Electrical
  - Wire/transformers
  - Connections/rubber boots
  - Confirm that the original wiring configuration will be the same and/or what if any changes are required
- Neon tubing
  - Glass tubes
  - Glass housings/holes
  - Tube supports

Reinstallation

Reinstallation involves the transport of the Sign and its components out of storage and the use of the appropriate equipment to hoist the Sign parts into place and reassemble.

In addition to securing the appropriate equipment, the Contractor with input from the Historic Preservation Architect should consider reinstalling the modified channel columns in their final position on either side of the new Bridge before reattaching the arched Sign cage.

CR-5

All modifications to the pier deck that are visible will be reconstructed and replaced in kind so as to maintain the historic character of the pier, with new materials matching the original/old design, color, texture, and other visual qualities. All such work will be accurately reproduced, based on historical, pictorial, and physical documentation and evidence. A Certificate of Appropriateness, approved by the City of Santa Monica Landmarks Commission, is also required.

NOTICES TO OFFICIAL WITH JURISDICITON OVER 4(F) RESOURCES

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DISTRICT 7, DIVISION OF ENVIRONMENTAL PLANNING
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April 15, 2022

David Price
Section 106 Coordination Branch Chief
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, MS 27
Sacramento, California 95814

Subject: REVIEW OF SUPPLEMENTAL HISTORIC PROPERTY SURVEY REPORT AND FINDING OF NO ADVERSE EFFECT WITHOUT STANDARD CONDITIONS FOR SANTA MONICA PIER BRIDGE REPLACEMENT PROJECT, BHLO-5107(033), CITY OF SANTA MONICA, LOS ANGELES COUNTY (FHWA_2017_0629_002)

Dear Mr. Price:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), is continuing consultation with the State Historic Preservation Officer (SHPO) regarding the Santa Monica Pier Bridge Replacement, City of Santa Monica, in Los Angeles County. This consultation is undertaken in accordance with the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* hereafter, the Section 106 PA).

Due to a change in the proposed project, enclosed with this letter are the Supplemental Historic Property Survey Report (HPSR), and the Finding of No Adverse Effect (FNAE) without Standard Conditions. Caltrans is responsible for ensuring the appropriateness of the Area of Potential Effects (APE) (Stipulation VIII.A), the adequacy of historic property identification efforts (Stipulation VIII.B), and evaluation of properties for eligibility for listing in the National Register of Historic Places (NRHP). The final APE signed in May 2020 is the same as that previously established in consultation with the Principal Architectural Historian Professionally Qualified Staff (PQS) and Project Manager/Local Assistance Engineer in October 2014 for the 2017 studies, i.e., there are no changes to the APE boundaries (Stipulation VIII.A). The FNAE

without Standard Conditions assesses the potential for the project to affect sites that are eligible for or listed in the NRHP (Stipulation X.B.2). Caltrans previously prepared an HPSR, a Historical Resources Evaluation Report (HRER) and an Archaeological Survey Report (ASR) in 2017 for the project's original scope of work. Those technical reports received concurrence on July 26, 2017. The HRER and ASR are still valid.

We are consulting under Stipulation X.B.2 of the 106 PA, which requires we apply the Criteria of Adverse Effect set forth in 36 Code of Federal Regulations (CFR) § 800.5(a)(1) to findings made pursuant to Stipulation IX. B. and is submitting our findings to SHPO for comment.

The City of Santa Monica, in coordination with Caltrans, District 7, proposes to replace the existing, structurally deficient Pier Bridge with a safer multi-modal bridge that would meet current seismic standards, and to improve the east and west bridge approaches and on the pier. Following comments received on the Draft Environmental Impact Report (EIR)/Environmental Assessment (EA) for the proposed Project originally circulated from December 11, 2017, to March 15, 2018, and a public meeting that took place on January 10, 2018, the City and Caltrans re-examined the alternatives and along with a standard No-Build alternative , developed eight new build alternatives for consideration in the Draft EIR/EA/ Taking into consideration comments from the public and consulting parties, the City and Caltrans are reducing the eight build alternatives to two build alternatives and a no build alternative. Alternatives 1 and 2 (Locally Preferred Alternative [LPA]) would provide an in-kind replacement bridge with the same alignment and profile as the existing Pier Bridge. The replacement bridge would be approximately 448 feet in length and approximately 38 feet wide, 4 feet wider than the existing Pier Bridge. The downward slope of the replacement bridge would be approximately 10 percent, the same as existing Pier Bridge. A full project description and the description of the APE can be found on pages 1 to 3 of the Supplemental HPSR, and on pages 2-1 to 2-7 of the FNAE without Standard Conditions in Attachment D of this Supplemental HPSR.

The Section 106 historic properties identified in the 2017 HPSR are included in this 2022 Supplemental HPSR. They are:

NAME/ADDRESS	COMMUNITY	DATE(S) OF DETERMINATION	OHP STATUS CODE	Map Ref. #
Looff's Hippodrome, 276 Santa Monica Pier	Santa Monica, CA	2/27/1987 (National Historic Landmark)	1S	10
Santa Monica Pier Sign	Santa Monica, CA	10/13/1998, October 2011	2S2	2
Palisades Park, 1415 Ocean Avenue	Santa Monica, CA	1998, March 2007	2S2	1

Mr. David Price
April 15, 2022
Page 3

No archaeological sites were identified within the APE. No additional cultural resources are present within the APE. Previous identification efforts included in the original HPSR submittal remain adequate.

Caltrans, pursuant to Section 106 PA Stipulation X.B.2, has determined a **Finding of No Adverse Effect (without Standard Conditions)** is appropriate for this undertaking, and requests SHPO's concurrence in this determination.

Additionally, Caltrans is notifying you at this time because Caltrans, as assigned by FHWA, intends to make a *de minimis* finding for a Section 4(f) use of these historic properties based on your concurrence in the Section 106 effect finding, pursuant to Section 6009(a) of SAFETEA-LU as described in our August 11, 2006 letter agreement. Please note that if no response is received from the SHPO within 30 days of receipt of this letter, Caltrans will assume the SHPO has no comments and a non-response for the purposes of a "no adverse effect" determination will be treated as the written concurrence with a *de minimis* finding.

We look forward to receiving SHPO's response within 30 days of the receipt of this submittal, in accordance with Stipulation VIII.C.6.a of the PA.

If you have any questions or need any additional information, please contact Caprice "Kip" Harper at (213) 332-0316 or caprice.harper@dot.ca.gov. Thank you for your assistance with this undertaking.

Sincerely,

Caprice Harper for

Claudia Harbert
District 7 Environmental Branch Chief—Cultural Resources

Enclosures:

1. Supplemental HPSR, for Santa Monica Pier Bridge Replacement Project, City of Santa Monica, Los Angeles County
    a. Attachment A: 2017 HPSR, HRER and ASR and supporting documents
    b. Attachment B: Final APE
    c. Attachment C: Caltrans Historic Bridge Inventory
    d. Attachment D: FNAE without Standard Conditions
        i. Pier Sign Preservation Plan (Attachment A of the FNAE without Standard Conditions)

cc: Caprice Harper – D7

"Provide a safe and reliable transportation network that serves all people and respects the environment"

References

California Department of Parks and Recreation. 2016. *California State Parks Announces Recommendations for $8.8M in Local Projects.* News release. May 26. Available: www.parks.ca.gov/pages/1008/files/2016_lwcf_recommendations_press_release_5.26.2016.pdf.

California Department of Parks and Recreation. 2016. *Land and Water Conservation Fund*. Available: www.parks.ca.gov/?page_id=21360.

Appendix B

CEQA Checklist

CEQA Environmental Checklist

DIST-CO-RTE: 7 – LA-SMCA **PM/PM:** BHLO-5107 (033) **EA/Project No.:** BHLO-5107(033)

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 indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. 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.

AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

Question	CEQA Determination
a) Have a substantial adverse effect on a scenic vista?	Choose an item.
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Less Than Significant Impact
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?	No Impact

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 the California Air Resources Board. Would the 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

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 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 with Mitigation Incorporated

BIOLOGICAL RESOURCES

Would the 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?	Less Than Significant 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?	Less Than Significant 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

CULTURAL RESOURCES

Would the project:

Question	CEQA Determination
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in §15064.5?	Less Than Significant with Mitigation Incorporated
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less Than Significant Impact
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	Less Than Significant Impact

ENERGY

Would the 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?	Less Than Significant Impact
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	Less Than Significant Impact

GEOLOGY AND SOILS

Would the 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?	Less Than Significant 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

GREENHOUSE GAS EMISSIONS

Would the 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

HAZARDS AND HAZARDOUS MATERIALS

Would the 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?	Less Than Significant 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?	Less Than Significant 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?	No 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?	Less Than Significant with Mitigation Incorporated
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No Impact

HYDROLOGY AND WATER QUALITY

Would the 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 with Mitigation Incorporated
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	Less Than Significant 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;	No 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 with Mitigation Incorporated
(iv) impede or redirect flood flows?	Less Than Significant 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

LAND USE AND PLANNING

Would the 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

MINERAL RESOURCES

Would the 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

NOISE

Would the 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

POPULATION AND HOUSING

Would the 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

PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the 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?	No Impact

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?	Less Than Significant 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

TRANSPORTATION

Would the project:

Question	CEQA Determination
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	Less Than Significant with Mitigation Incorporated
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	No 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)?	No Impact
d) Result in inadequate emergency access?	No Impact

TRIBAL CULTURAL RESOURCES

Would the 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	Less Than Significant 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.	Less Than Significant Impact

UTILITIES AND SERVICE SYSTEMS

Would the project:

Question	CEQA Determination
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	Less Than Significant with Mitigation Incorporated
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	Less Than Significant 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?	Less Than Significant with Mitigation Incorporated
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No Impact

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?	Less Than Significant 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

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?	No 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 with Mitigation Incorporated

Appendix C

Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
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Making Conservation a California Way of Life.

August 2020

NON-DISCRIMINATION POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures *"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."*

Caltrans will make every effort to ensure nondiscrimination in all of its services, programs and activities, whether they are federally funded or not, and that services and benefits are fairly distributed to all people, regardless of race, color, or national origin. In addition, Caltrans will facilitate meaningful participation in the transportation planning process in a nondiscriminatory manner.

Related federal statutes, remedies, and state law further those protections to include sex, disability, religion, sexual orientation, and age.

For information or guidance on how to file a complaint, or obtain more information regarding Title VI, please contact the Title VI Branch Manager at (916) 324-8379 or visit the following web page: https://dot.ca.gov/programs/civil-rights/title-vi.

To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Civil Rights, at 1823 14th Street, MS-79, Sacramento, CA 95811; (916) 324-8379 (TTY 711); or at <Title.VI@dot.ca.gov>.

Original signed by
Toks Omishakin
Director

Appendix D

Summary of Relocation Benefits

Relocation Assistance Program

RELOCATION ASSISTANCE ADVISORY SERVICES

This appendix is general in nature and is not intended to be a complete statement of federal and state relocation laws and regulations. Any questions about relocation should be addressed to the City of Santa Monica (City). This section provides some general descriptive information on Public Law (PL) 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. This is often referred to simply as the "Uniform Act." The information in this appendix is provided only as background and is not intended as a complete statement of all the state or federal laws and regulations; for specific details the environmental planner should contact the City. After presenting an outline of the basic legal foundation for relocation policy, the appendix looks at important relocation assistance information, including advisory services and the financial benefit program. The City of Santa Monica will follow the guidelines set forth by the California Department of Transportation as they pertain to relocation. Please refer to the Caltrans Right of Way Manual Chapter 10, for more detailed and specific information on relocation and housing programs.

DECLARATION OF POLICY

"The purpose of this title is to establish a ***uniform policy for fair and equitable treatment*** of persons displaced as a result of federal and federally assisted programs in order that such persons ***shall not suffer disproportionate injuries*** as a result of programs designed for the benefit of the public as a whole."

The Fifth Amendment to the U.S. Constitution states, "No Person shall…be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use without just compensation." The Uniform Act sets forth in statute the due process that must be followed in Real Property acquisitions involving federal funds. Supplementing the Uniform Act is the government-wide single rule for all agencies to follow, set forth in 49 Code of Federal Regulations (CFR) Part 24. Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and financial benefits, as discussed below.

FAIR HOUSING

The Fair Housing Law (Title VIII of the Civil Rights Act of 1968) sets forth the policy of the United States to provide, within constitutional limitations, for fair housing. This act, and as amended, makes discriminatory practices in the purchase and rental of most residential units illegal. Whenever possible, minority persons shall be given reasonable opportunities to relocate to any available housing regardless of neighborhood, as long as the replacement dwellings are decent, safe, and sanitary and are within their financial means. This policy, however, does not require the City to provide a person a larger payment than is necessary to enable a person to relocate to a comparable replacement dwelling.

Any persons to be displaced will be assigned to a relocation advisor, who will work closely with each displacee in order to see that all payments and benefits are fully utilized and that all regulations are observed, thereby avoiding the possibility of displacees jeopardizing or forfeiting any of their benefits or payments. At the time of the initiation of negotiations (usually the first written offer to purchase), owner-occupants are given a detailed explanation of the state's relocation services. Tenant occupants of properties to be acquired are contacted soon after the initiation of negotiations and also are given a detailed explanation of the Relocation Assistance Program. To avoid loss of possible benefits, no individual, family, business, farm, or nonprofit organization should commit to purchase or rent a replacement property without first contacting the City.

RELOCATION ASSISTANCE ADVISORY SERVICES

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, the City will provide relocation advisory assistance to any person, business, farm, or nonprofit organization displaced as a result of the acquisition of real property for public use, so long as they are legally present in the United States. The City will assist eligible displacees in obtaining comparable replacement housing by providing current and continuing information on the availability and prices of both houses for sale and rental units that are "decent, safe, and sanitary." Nonresidential displacees will receive information on comparable properties for lease or purchase (for business, farm, and nonprofit organization relocation services, see below).

Residential replacement dwellings will be in a location generally not less desirable than the displacement neighborhood at prices or rents within the financial ability of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings will be offered to displacees that are open to all persons regardless of race, color, religion, sex, national origin, and consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance will also include the supplying of information concerning federal and state assisted housing programs and any other known services being offered by public and private agencies in the area.

Persons who are eligible for relocation payments and who are legally occupying the property required for the project will not be asked to move without first being given at least 90 days written notice. Residential occupants eligible for relocation payment(s) will not be required to move unless at least one comparable "decent, safe, and sanitary" replacement dwelling, available on the market, is offered to them by the City.

RESIDENTIAL RELOCATION FINANCIAL BENEFITS

The Relocation Assistance Program will help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of a replacement dwelling and actual reasonable moving expenses to a new location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Assistance Program can be summarized as follows:

Moving Costs

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles, or a fixed payment based on a fixed moving cost schedule. Lawful occupants who move into the displacement property after the initiation of negotiations must wait until the City obtains control of the property in order to be eligible for relocation payments.

Purchase Differential

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 90 days or more prior to the date of the initiation of negotiations (usually the first written offer to purchase the property), may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate.

Rent Differential

Tenants and certain owner-occupants (based on length of ownership) who have occupied the property to be

acquired by the City prior to the date of the initiation of negotiations may qualify to receive a rent differential payment. This payment is made when the City determines that the cost to rent a comparable "decent, safe, and sanitary" replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property and the payment of certain costs incidental to the purchase, subject to certain limitations noted under the *Down Payment* section below.

To receive any relocation benefits, the displaced person must buy or rent and occupy a "decent, safe and sanitary" replacement dwelling within one year from the date the City takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

Down Payment
The down payment option has been designed to aid owner-occupants of less than 90 days and tenants in legal occupancy prior to the City's initiation of negotiations. The one-year eligibility period in which to purchase and occupy a "decent, safe and sanitary" replacement dwelling will apply.

Last Resort Housing
Federal regulations (49 CFR 24) contain the policy and procedure for implementing the Last Resort Housing Program on Federal-aid projects. Last Resort Housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocation as explained above. Last Resort Housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing, or when the anticipated replacement housing payments exceed the limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid circumstances.

After the initiation of negotiations, the City will within a reasonable length of time, personally contact the displacees to gather important information, including the following:

- Number of people to be displaced.
- Specific arrangements needed to accommodate any family member(s) with special needs.
- Financial ability to relocate into comparable replacement dwelling which will adequately house all members of the family.
- Preferences in area of relocation.
- Location of employment or school.

NONRESIDENTIAL RELOCATION ASSISTANCE
The Nonresidential Relocation Assistance Program provides assistance to businesses, farms and nonprofit organizations in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program will provide current lists of properties offered for sale or rent, suitable for a particular business's specific relocation needs. The types of payments available to eligible businesses, farms, and nonprofit organizations are: searching and moving expenses, and possibly reestablishment expenses; or a fixed in lieu payment instead of any moving, searching and reestablishment expenses. The payment types can be summarized as follows:

Moving Expenses
Moving expenses may include the following actual, reasonable costs:

- The moving of inventory, machinery, equipment and similar business-related property, including: dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property. Items identified as real property may not be moved under the Relocation Assistance Program. If the displacee buys an Item Pertaining to the Realty back at salvage

value, the cost to move that item is borne by the displacee.

- Loss of tangible personal property provides payment for actual, direct loss of personal property that the owner is permitted not to move.
- Expenses related to searching for a new business site, up to $2,500, for reasonable expenses actually incurred.

Reestablishment Expenses
Reestablishment expenses related to the operation of the business at the new location, up to $25,000 for reasonable expenses actually incurred.

Fixed In Lieu Payment
A fixed payment in lieu of moving, searching, and reestablishment payments may be available to businesses that meet certain eligibility requirements. This payment is an amount equal to half the average annual net earnings for the last two taxable years prior to the relocation and may not be less than $1,000 nor more than $40,000.

ADDITIONAL INFORMATION
Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, or any other law, *except* for any federal law providing local "Section 8" Housing Programs.

Any person, business, farm or nonprofit organization that has been refused a relocation payment by the City or believes that the payment(s) offered by the agency are inadequate may appeal for a special hearing of the complaint. No legal assistance is required. Information about the appeal procedure is available from the relocation advisor.

California law allows for the payment for lost goodwill that arises from the displacement for a public project. A list of ineligible expenses can be obtained from the City and Land Surveys. California's law and the federal regulations covering relocation assistance provide that no payment shall be duplicated by other payments being made by the displacing agency.

Appendix E

List of Acronyms

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AB	Assembly Bill
ACBMs	asbestos-containing building materials
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
ADT	average daily traffic
Advisory Council	Advisory Council on Historic Preservation
APE	area of potential effect
AQMP	Air Quality Management Plan
ATCMs	Airborne Toxic Control Measures
Basin	South Coast Air Basin
bgs	below the ground surface
BMPs	best management practices
BSA	Biological Study Area
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal/EPA	California Environmental Protection Agency
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CDS	continuous deflective separator
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CH_4	methane
City	City of Santa Monica
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
CO-CAT	Coastal Ocean Climate Action Team
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CRHR	California Register of Historical Resources
CTP	California Transportation Plan
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibels

DPM	diesel particulate matter
DSA	Disturbed Soil Area
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EIR	Environmental Impact Report
EIR/EA	Environmental Impact Report/Environmental Assessment
EO	Executive Order
EPA	U.S. Environmental Protection Agency
Expo LRT	Exposition light-rail transit
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FPPA	Farmland Protection Policy Act
FR	Federal Register
FSTIP	Federal Statewide Transportation Improvement Program
FTIP	Federal Transportation Improvement Program
GHG	greenhouse gas
GJ	gigajoules
gpd	gallons per day
GPS	Global Positioning System
H_2S	hydrogen sulfide
HBP	Highway Bridge Program
HCM	Highway Capacity Manual
HFC-134a	s, s, s, 2-tetrafluoroethane
HFC-152a	difluoroethane
HFC-23	fluoroform
HU	Hydrologic Unit
I	Interstate
IPaC	Information, Planning, and Conservation System
IPCC	Intergovernmental Panel on Climate Change
ISA	Initial Site Assessment
LACM	Natural History Museum of Los Angeles County
LBP	lead-based paint
LCP	Local Coastal Program
L_{eq}	equivalent sound level
$L_{eq}(h)$	hourly equivalent sound level
L_{max}	maximum noise level
LOS	level of service
LSTs	localized significance thresholds
LUCE	Land Use and Circulation Element
LUPCZ	Land Use Plan for the Coastal Zone
LUST	leaking underground storage tank
MAW	Moomat Ahiko Way
MBTA	Migratory Bird Treaty Act
Minimal Impacts	Natural Environment Study

MMBTU	million British thermal unit
mph	miles per hour
MPO	metropolitan planning organization
MS4s	municipal separate storm sewer systems
MSAT	mobile-source air toxics
MWD	Metropolitan Water District
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOAA Fisheries Service	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O_3	ozone
OPR	Office of Planning and Research
OSTP	Office of Science and Technology Policy
PA	Programmatic Agreement
Pb	lead
PCBs	polychlorinated biphenyls
PCH	Pacific Coast Highway
PCI	per capita income
Pier Bridge	Santa Monica Pier Bridge
PM10	particles 10 micrometers or smaller
PM2.5	particles 2.5 micrometers or smaller
POAQCs	projects of air quality concern
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppm	parts per million
PRC	Public Resources Code
PVC	polyvinyl chloride
RAP	Relocation Assistance Program
RCRA	Resource Conservation and Recovery Act of 1976
RECs	recognized environmental concerns
Resources Agency	California Natural Resources Agency
RMS	root mean square
ROG	reactive organic gases
RSA	Resource Study Area

RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
sf	square feet
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SI	site investigation
SIP	State Implementation Plan
SLM	sound level meter
SMFD	Santa Monica Fire Department
SMMUSD	Santa Monica-Malibu Unified School District
SMURRF	Santa Monica Urban Runoff Recycling Facility
SO_2	sulfur dioxide
SR	State Route
SRA	Source Receptor Area
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TDFM	Travel Demand Forecasting Model
TMDLs	total maximum daily loads
TMP	Traffic Management Plan
TPZ	Timber Production Zones
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	volume to capacity
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
WDRs	Waste Discharge Requirements
WMP	Waste Management Plan
$\mu g/m^3$	micrograms per cubic meter

Appendix F

Seismic Analysis of the Pier Bridge

Earth Mechanics, Inc.
Geotechnical & Earthquake Engineering

TECHNICAL MEMORANDUM

DATE: August 15, 2008 **EMI PROJECT NO:** 02-112

PREPARED FOR: Kathy Garcia / Wallace, Roberts & Todd (WRT)

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SUBJECT: **Foundation Capacity and Stiffness for Seismic Analysis and Retrofit Colorado Avenue Viaduct (Pier Bridge) - Bridge No. 53C-1900**
City of Santa Monica, California

1.0 Introduction

This memorandum has been prepared to provide the necessary geotechnical information to assist the structural designers in the seismic retrofit analysis for the Colorado Avenue Viaduct (Pier Bridge) Bridge No. 53C-1900 located in Santa Monica, California. This memorandum includes the results of our preliminary geotechnical seismic analysis and summarizes the foundation capacity and stiffness for the existing structure.

2.0 Project Location

The project site is located in Los Angeles County California, in the City of Santa Monica. Through the project area, Colorado Avenue runs in a northeast-southwest direction through western Santa Monica and leads to the Santa Monica Pier. In the immediate project area, Ocean Avenue runs in a northwest-southeast direction parallel to the Santa Monica Beach shoreline. The Pacific Coast Highway (PCH) crosses underneath the intersection of Colorado Avenue and Ocean Avenue via the McClure Tunnel. Moomat Ahiko Way is a divided road providing connector roads from Ocean Avenue to the PCH. Apian Way is a surface street providing access to the beach and beachside businesses on the south side of the Santa Monica Pier.

The Colorado Avenue Viaduct is a 16 span bridge that crosses over the top of Moomat Ahiko Way and Apian Way and terminates Colorado Avenue at the Santa Monica Pier. The project site is shown in Figure 1.

3.0 Existing Structure

The Colorado Avenue Viaduct constructed in the 1939 and is approximately 502 ft in length. The structure is supported on one abutment and sixteen, two-column bents. Each bent column is supported on a 2x2 pile group with a pile cap. The abutment, located at the eastern end of the bridge, and the abutment retaining walls are supported on spread footings. The bridge deck is about 35 ft wide with two vehicle lanes and sidewalks on either side.

4.0 Subsurface Conditions

A Log-of-Test-Borings (LOTB) sheet is not included as part of the as-built drawings for the existing structure.

Between December 3 and December 4, 1997, EMI performed a field investigation for the proposed replacement structure, where a total of five hollow-stem auger borings and five Cone Penetration Test (CPT) soundings were performed adjacent to the existing Colorado Avenue Underpass. Figure 3 shows the location of the borings and CPT soundings with respect to the bridge support locations. The borings varied in depth between 60 and 80 feet below grade with the deepest boring penetrating to about elevation -70 feet. The CPT soundings varied in depth from about 20 to 60 ft below grade with a deepest penetration to about elevation -50 ft. Log-of-Test Borings sheets are currently being prepared.

Based on the soils information obtained during the investigation, the site is underlain by alluvial deposits consisting of sand, sand with silt, silty sand, sandy silt, silty clay and gravel. Between road grade at Abutment 1 (approx. El. +60 ft) and about elevation +15 feet, the foundation soils are predominately moist, loose to medium dense silty sand and sandy silt with occasional clay and gravel lenses. This material is underlain by predominately medium dense to dense silty sand, sandy silt and occasional sandy gravel layers to the deepest elevations penetrated.

On the western portion of the structure (from Bent 6 to Bent 16), between the ground surface and about elevation +0 to -4 ft lies a surficial layer of loose to medium dense sand and sand with silt. This material generally has blowcounts less than 15 blows per foot. This layer of soil was not continuous and was not encountered in the borings or CPT soundings performed east of Bent 6.

Due to the varying ground line and the varying subsurface conditions beneath the existing structure, three different idealized soil profiles were developed for analysis: the first profile was generated near Bent 3 and was used to analyze Bent 1 to Bent 5, the second profile was generated near Bent 7 and was used to analyze Bent 6 to Bent 8 and a third profile was developed near Bent 12 to analyze Bent 9 to Bent 16. The idealized soil profiles are provided in Table 1 on the following page.

Groundwater. Groundwater was encountered in all five borings between about elevation +1.5 and +6 feet. For the analysis presented in this memorandum, the design groundwater table elevation was taken at the highest groundwater elevation encountered in the investigation at elevation +6 ft.

5.0 Seismic Evaluation

The City of Santa Monica does not have any faults that have been designated as active Earthquake Fault Zones (formerly known as Alquist-Priolo Special Studies Zones) by the California Geological Survey. However, the Santa Monica fault which extends through the city is believed to be potentially active and has been designated as a fault Hazard Management Zone in the Santa Monica Safety Element (1995). The Santa Monica fault is part of a system of faults along the southern boundary of the Transverse Ranges.

The largest historical earthquake within the Los Angeles Basin was the 1933 Long Beach

earthquake of MW = 6.4 (ML = 6.3). The 1971 San Fernando (ML = 6.4, MW = 6.7) earthquake occurred outside of the basin along the northern margin of the San Fernando Valley within a zone of mapped surface faults of the Sierra Madre fault zone. The more-recent 1987 Whittier earthquake (ML = 5.9, MW = 5.9) and the 1994 Northridge (ML = 6.4, MW = 6.7) earthquakes occurred under the San Gabriel Valley and the San Fernando Valley, respectively, but were not associated with surface fault rupture. In the offshore region, there have been no major earthquakes (M~7.0+) in historical times.

Table 1. Idealized Soil Profiles and Parameters

Approx. Elev. (ft)	Predominant Soil Type	Total Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degree)	Residual Shear Strength following Liquefaction (psf)
Profile 1 - Abutment 1 and Bent 1 to Bent 5					
+60 to +44	Sand and Silty Sand	110	0	30	-
+44 to +12	Silty Sand and Sandy Silt	120	200	32	-
Below +12	Silty Sand and Sandy Silt	125	200	36	-
Profile 2 - Bent 6 to Bent 8					
+25 to +6	Sand and Silty Sand	110	0	30	-
+6 to +0	Sand and Sand with Silt	110	0	30	400
Below +0	Silty Sand and Sandy Silt	125	200	36	-
Profile 3 - Bent 9 to Bent 16					
+12 to +6	Sand and Sand with Silt	110	0	30	-
+6 to -4	Sand and Sand with Silt	110	0	30	400
Below -4	Silty Sand and Sandy Silt	125	200	36	-

The fault controlling seismic design is the Malibu Coast-Santa Monica-Hollywood-Raymond (MMR) fault with a peak bedrock acceleration (PBA) of 0.7g. The results, based on Caltrans Seismic Hazard Map (Mualchin, 1996a), were checked using the attenuation relationship by Sadigh et al. (1997), as required by Caltrans (2006a). The Caltrans Standard ARS curve is the one shown in Figure B.8 (Soil Profile D) for PBA of 0.7g. Since the controlling fault is located less than 15 km from the project site, per Caltrans Seismic Design Criteria (Caltrans, 2006b), the design ARS curve needs to be corrected for near-fault effects as follows;

- 20% increase of spectral accelerations for periods greater than 1 sec.
- No increase for periods less than 0.5 sec.
- Linear interpolation between 0.5 and 1 sec.

The Caltrans Standard ARS curve and the design ARS curve are provided in Figure 2.

Maximum Horizontal Bedrock Acceleration[1]:	0.7g
Causative Fault (Style of Fault):	Malibu Coast-Santa Monica-Hollywood-Raymond (Reverse-Oblique)
Distance to Causative Fault:	3.2 km
MCE Magnitude[2]:	7.5
ARS Curve Recommendation (Caltrans, 2006b)	See Figure 2

Notes:

1. Maximum horizontal bedrock acceleration recommendations are based on the Caltrans California Seismic Hazard Map (dated July 1996) and Sadigh et al. (1997).
2. MCE = Maximum Credible Earthquake generated by causative fault.
3. The design ARS curve is affected by the proximity of the subject structure to the causative fault. Figure 2 shows two curves: (1) the Caltrans SDC curve for peak bedrock acceleration (PBA) of 0.7g, MCE magnitude (M) of 7.50 and Soil Profile Type D, and (2) the design ARS curve which includes adjustments for near-fault effects. The adjustments consist of a 20 percent increase of spectral accelerations for periods greater than 1 sec., no change for periods less than 0.5 sec., and linear interpolation between 0.5 and 1 sec. The coordinates of the design curve are also included in Figure 2.

6.0 Liquefaction Evaluation

The liquefaction potential of the saturated, granular materials below the water table was evaluated using the procedures outlined by Seed et al. (1983) and updated by NCEER (1997), Martin et al. (1999) and Youd et al. (2001).

East of Bent 6 (Profile 1, Table 1), groundwater was encountered in coarse grained material with SPT blowcounts greater than 45 blows per foot and in material considered non-liquefiable due to the abundance of fine-grained particles; therefore the liquefaction potential of the foundation materials between Abutment 1 and Bent 5 is considered to be low.

West of Bent 5 (Profile 2 and Profile 3, Table 1) the loose to medium dense surficial material between the design groundwater elevation and about elevation +0 ft to -4 ft was found to have a high potential for liquefaction during the design seismic event. The potentially liquefiable material was found to vary in thickness from less than 3 ft up to about 10 ft.

7.0 Seismic Settlement

Seismically-induced settlement results from liquefied soils reconsolidating following excess pore pressure dissipation which occurs after earthquake shaking ceases. The extent of ground surface settlement depends on several factors such as characteristics of the soil, level and duration of shaking and extent of the liquefaction zone. The seismically-induced settlements were estimated using the procedures outlined by Tokimatsu and Seed (1987). Based on our preliminary evaluations, seismically induced settlement is expected to be on the order of 2 to 4 inches at Bents 6 through 16.

8.0 Slope Stability

The “global” stability of the existing bluff slopes beneath the existing structure under both the static and the pseudo-static condition was evaluated using the computer program PCSTABL (Achilleos, 1988). Based upon strength parameters determined from field penetration and

laboratory testing, the static stability of the existing slope is considered to be adequate with factor of safety exceeding 1.5.

According to the Caltrans Foundation Guidelines (Caltrans, 2006b), earthquake-induced inertial forces due to a seismic factor equal to one third of the horizontal peak acceleration and not exceeding 0.2g should be applied. Sites with a pseudo-static factor of safety equal to or greater than 1.1 are considered to have adequate stability and require no further stability analyses. Sites with a pseudo-static factor of safety less than 1.1 will require dynamic displacement analyses.

The factor of safety under the pseudo-static condition (with seismic coefficient of 0.2g) was less than 1.1 with a yield acceleration of the slope being approximately 0.2g. The Newmark displacement under this yield acceleration with a peak ground acceleration of 0.7g will be on the order of 10 to 15 inches. Surficial failure of slopes may also occur depending on the soil condition and slope protection present at the site.

9.0 Corrosion Evaluation

Samples representative of soils throughout the project area were tested to determine corrosivity including minimum resistivity, pH, soluble sulfate content, and soluble chloride content. A total of four soil samples were tested for corrosivity using the procedures described in California Test methods 417, 422, 532, and 643.

According to Caltrans criteria (Corrosion Guidelines, 2003), soils are corrosive if the pH is 5.5 or less, or the chloride concentration is 500 parts per million (ppm) or greater, or the sulfate concentration is 2,000 ppm or greater. Based on the test results, the on-site soils are considered to be corrosive to bare metals and concrete.

While as-built drawings do not indicate if corrosion mitigation measures were incorporated in the concrete mix for the structure foundations, based upon the generally good condition of the superstructure, foundation capacities provided in the following section are based upon an intact cross section for the 16-inch diameter cast-in-drilled-hole (CIDH) piles.

10.0 Existing Structure Foundation

As discussed above, the existing structure consists of a single abutment (Abutment 1) and sixteen (Bent 1 to Bent 16), two-column bents. Abutment 1 is supported on spread footings and each bent column is supported on a pile cap with a 2x2 pile group of 16-in diameter CIDH piles. As-built plans do not indicate a design bearing pressure for the abutment footings and they also do not indicate a design load for the bent piles. One note on the “Bent Details” sheet indicates that for estimating purposes a pile length of 20 ft should be used but no information on as-built pile lengths is included.

Axial Pile Capacity. Estimated axial compressive pile capacities for the different idealized soil profiles are provided in Table 2 for an assumed pile length of 20 ft. The reduction in ultimate compressive capacity during the seismic event for Bent 6 to Bent 8 is due to liquefaction at the assumed pile tip elevation resulting in a loss of end bearing resistance for those piles. The reduction in ultimate axial capacity during the seismic event for Bent 9 to Bent 16 is due to an

estimated negative skin friction placed on the piles due to liquefaction of the material near the pile cap and pile top.

Table 2. Estimated Axial Pile Capacity for 16-in Dia CIDH Piles

Condition	Ultimate Bearing Capacity (kips)		
	Bent 1 to Bent 5 (Soil Profile 1)	Bent 6 to Bent 8 (Soil Profile 2)	Bent 9 to Bent 16 (Soil Profile 3)
Static	125	125	125
Seismic	125	95 (1),	75 (2)

Notes:

(1) Loss of compressive capacity due to loss of tip resistance due to liquefaction. Piles are expected to settle up to 2 inches.

(2) Loss of compressive capacity due to negative skin friction at pile top due to liquefaction.

Lateral Pile Capacity. Lateral pile analyses were performed for a single pile for a free-head connection with the pilecap. Based upon a pile spacing of 3 diameters, a p-reduction factor for pile group efficiency equal to 0.75 was used. The resulting pile-head shear capacity and maximum bending moment caused by lateral pile-head deflections are provided in Table 3. These capacities are provided for the evaluation of the effects of inertial structure loading.

In addition to the inertial loading, piles at Bents 6 through 16 are expected to be subjected to kinematic loading due to the ground movement from laterally-spreading soil.

Spread Footing Bearing Capacity. For the spread footings supporting Abutment 1 and the Abutment 1 retaining walls, the estimated allowable bearing capacity is 2.5 tons per square foot. Ultimate bearing capacity (for seismic design) is three times the allowable bearing capacity.

Abutment Wall Passive Resistance. Under seismic loading, an ultimate passive earth pressure of 5 ksf may be used for the abutment wall with a height equal to or greater than 5.5 feet. For abutment walls with heights less than 5.5 feet, the maximum passive pressure may be calculated proportionally (e.g., for a 4 feet high wall, the maximum passive pressure is [4/5.5]x5 ksf = 3.6 ksf). The horizontal movement at which the maximum passive pressure is expected to be fully mobilized can be determined following the procedure outlined in Section 7.8.1 of the Caltrans SDC (2006b).

11.0 Conclusions

Our evaluation of the existing bridge foundation indicates that the survivability of the substructure during the design seismic event is expected to be low. Due to the relatively short length of the bridge piles, potentially liquefiable soils beneath the western portion of the structure are expected to result in permanent vertical and lateral foundation displacements that could be on the order of several inches. Due to some of the piles having (estimated) tip

elevations bearing in potentially liquefiable material, traditional liquefaction mitigation measures are not guaranteed to resolve the problem for the existing foundations at these locations. Substructures at these locations can be retrofitted using large-diameter CIDH or cast-is-steel-shell (CISS) piles by designing the new piles to provide the necessary axial capacity (including liquefaction-induced downdrag) as well as lateral capacity (to account for the inertial loading from the structure and loading from lateral soil deformation).

Table 3. Estimated Lateral Pile Capacity for 16-in Dia CIDH Piles

Pile Head Deflection (in)	Pile Head Shear (kip)	Max Moment (in-kip)
Bent 1 to Bent 2 and Bent 6 to Bent 8		
0.25	12.3	377
0.50	20.2	714
1.0	30.3	1,294
2.0	43.7	2,250
Bent 3 to Bent 5		
0.25	15.5	450
0.50	24.1	833
1.0	35.1	1,473
2.0	49.6	2,508
Bent 9 to Bent 16		
0.25	5.9	299
0.50	9.8	578
1.0	16.1	1,078
2.0	26.8	1,902

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Earth Mechanics, Inc.
Geotechnical & Earthquake Engineering

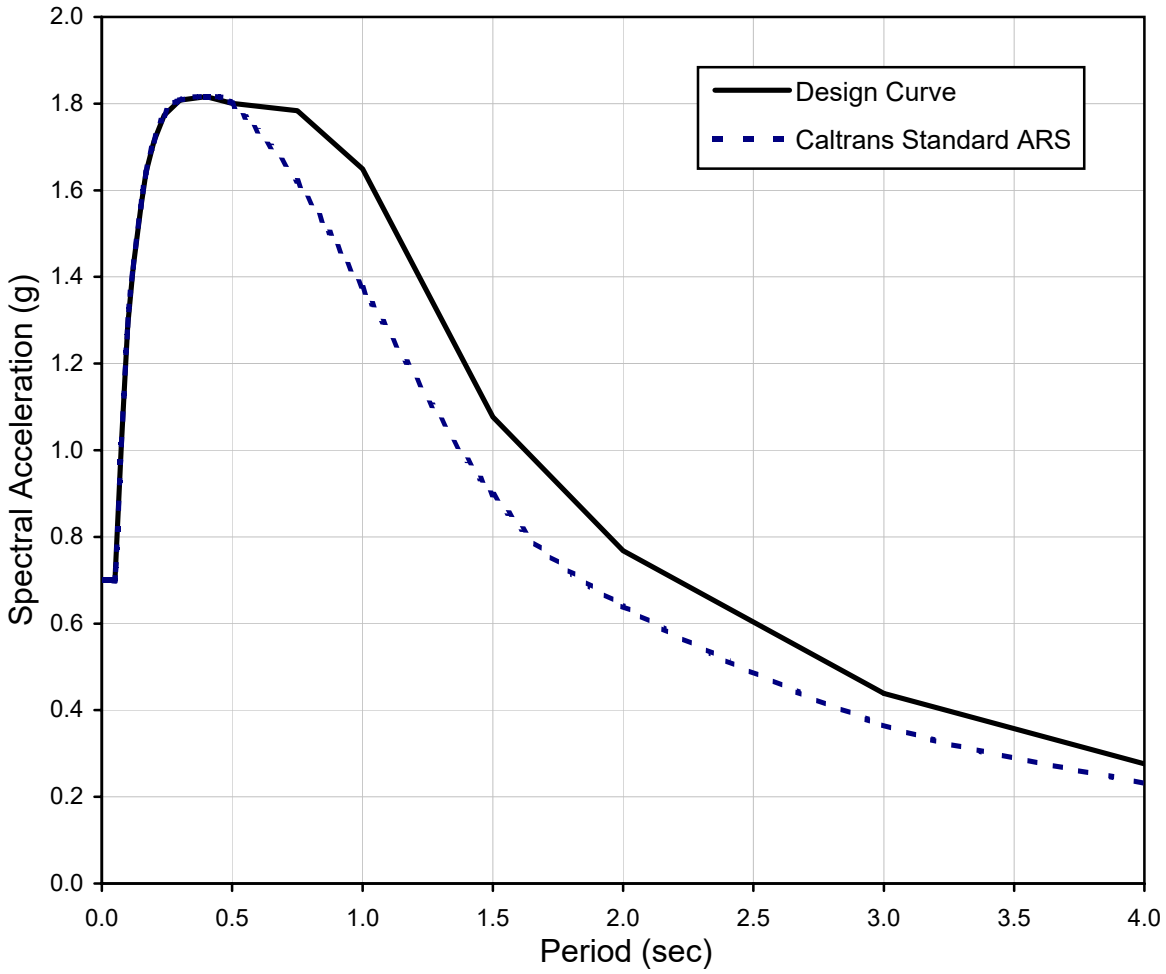
SITE LOCATION MAP

Figure 1

COLORADO AVENUE UNDERPASS

Project No.: 02-112

Date: 08/04/08

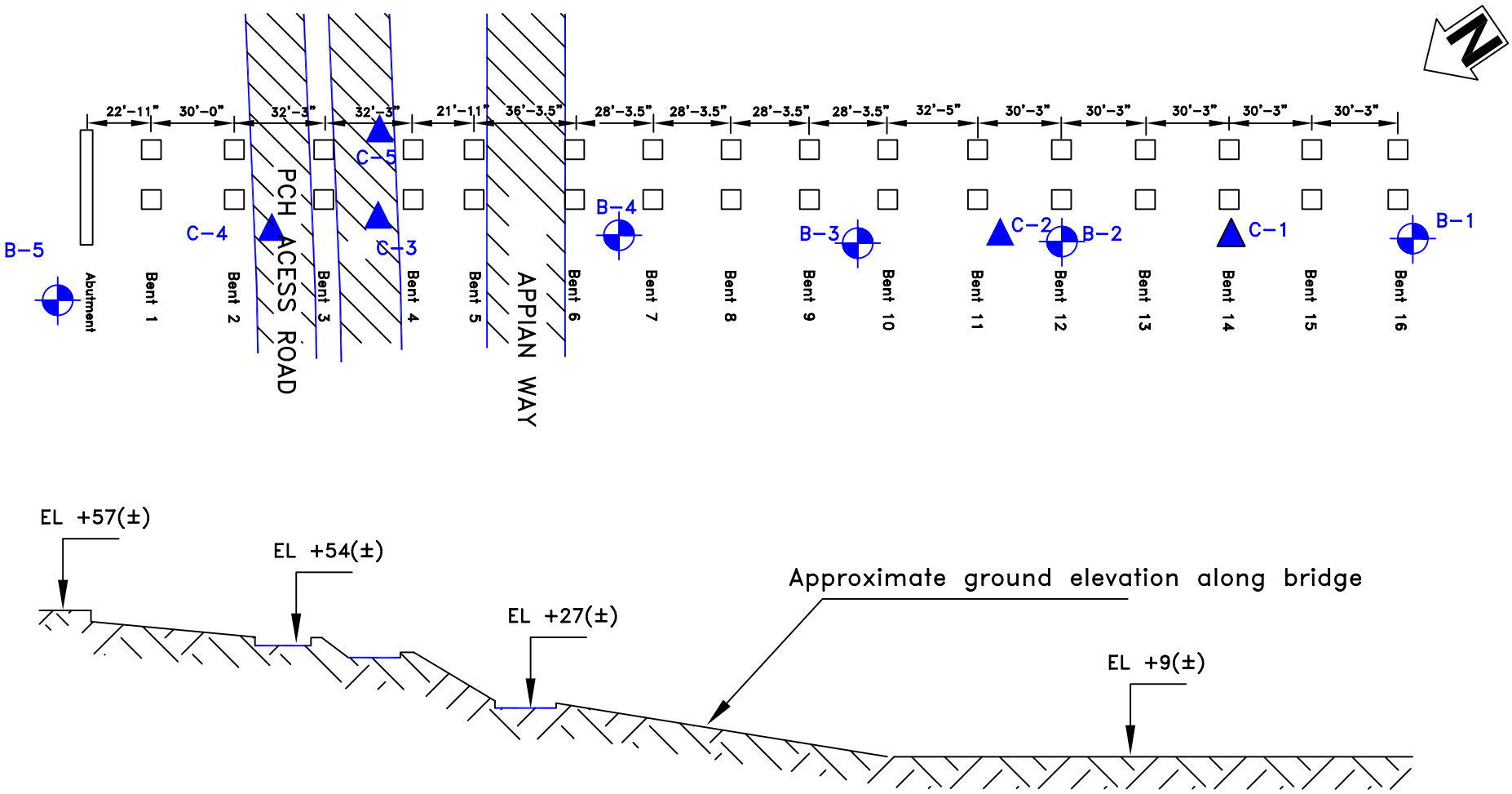


MMR Fault (M 7.5)
Peak Bedrock Acceleration (PBA)=0.7g
Soil Type D

Spectral Coordinates

Period (sec)	Acc. (g)
0.010	0.700
0.020	0.700
0.030	0.700
0.050	0.700
0.075	1.012
0.100	1.289
0.120	1.422
0.150	1.561
0.170	1.641
0.200	1.713

Period (sec)	Acc. (g)
0.240	1.773
0.300	1.808
0.400	1.816
0.500	1.800
0.750	1.783
1.000	1.649
1.500	1.077
2.000	0.768
3.000	0.439
4.000	0.276



Boring Location

CPT Location

SCALE : 1" = 60'

Note: The dimensions shown in the drawing are approximate.

Earth Mechanics, Inc. Geotechnical and Earthquake Engineering	COLORADO AVENUE UNDERPASS	BOREHOLE AND CPT LOCATIONS LOCATIONS
	Project No. 02-112 / Date: 8/04/08	FIGURE 3

Appendix G

Bridge Inspection Report

BRIDGE INSPECTION REPORT
Routine Inspection



BRIDGE NO.: **53C1900 (2639)**
STRUCTURE NAME: **APPIAN WAY / PROMENADE**
INSPECTION DATE: **March 17, 2021**

BRIDGE LOCATION INFORMATION

(9) LOCATION	0.6MI W/O LINCOLN BLVD	(7) FACILITY CARRIED	COLORADO AVE
(11) POSTMILE	0	(6) FEATURE INTERSECTED	APPIAN WAY / PROMENADE
(16) LATITUDE	34°00'36.63"	(5) INVENTORY RTE(ON/UNDER)	ON 150000000
(17) LONGITUDE	118°29'46.97"	(104) ON NATIONAL HIGHWAY SYSTEM	NOT ON NHS

STRUCTURAL HEALTH CONDITION SUMMARY INFORMATION

(58) DECK	4 POOR	DECK AREA (SF)	1,553
(59) SUPERSTRUCTURE	4 POOR	SUFFICIENCY RATING	8.2
(60) SUBSTRUCTURE	7 GOOD	PAINT CONDITION SUPER N/A	SUBSTR N/A
(62) CULVERT	N N/A (NBI)	STRUCTURALLY DEFICIENT (SD) STATUS	SD
(67) STRUCTURE EVALUATION	4 MINIMUM TOLERABLE	(113) SCOUR	N NOT OVER WATERWAY

PHOTOGRAPH IDENTIFICATION



Routine-Roadway View (03/04/2021)



Routine-Elevation View (03/04/2021)



Routine-Underside View (12/07/2016)



Routine-Map View (06/22/2021)

TEAM LEADER: Wein N. Chu

REPORT AUTHOR: Wein N. Chu

INSPECTED BY: WN.Chu/MY.Chow

Wein N. Chu (Registered Civil Engineer) — 8/23/2021 Date



STRUCTURE OVERVIEW

AGENCY INFORMATION

(1) STATE NAME	CALIFORNIA	069
(2) HIGHWAY DISTRICT		07
(3) COUNTY CODE		(53)LOS ANGELES
(4) PLACE CODE		(70000) SANTA MONICA
(21) MAINTAIN		04 CITY OR MUNICIPAL HI
(22) OWNER		04 CITY OR MUNICIPAL HI
(98) BORDER BRIDGE STATE CODE	N/A	% SHARE N/A
(99) BORDER BRIDGE STRUCTURE NUMBER		N/A

INSPECTION INFORMATION

(90) INSPECTION DATE	03/21	(91) FREQUENCY	12 MO
(92) CRITICAL FEATURE INSPECTION		(93)	CFI DATE
A) FRACTURE CRITICAL INSP	N-NO	MO A)	N/A
B) UNDERWATER INSP	N-NO	MO B)	N/A
C) OTHER SPECIAL INSP	N-NO	MO C)	02/08

% Ownership	Owner/Agency
100%	City of Santa Monica

CONSTRUCTION INFORMATION

(27) YEAR BUILT	1939	(45) MAIN SPANS	17	(43a) STRUCTURE TYPE MAIN	1: CONCRETE
(106) YEAR MODIFIED	N/A	(46) APPR SPANS	0	(43b) DESIGN TYPE MAIN	01: SLAB
(34) SKEW	0	(48) MAX SPAN (M)	11	(44a) STRUCTURE TYPE APPR	0: OTHER/ NOT APPLICABLE
(49) LENGTH (M)	148.5	(35) STR FLARE	0-NO	(44b) DESIGN TYPE APPR	00: OTHER/NOT APPLICABLE
(112) NBIS BR LENGTH	Y	JOINTS	4	NO. OF HINGES	

STRUCTURE DESCRIPTION

SPAN CONFIGURATION

OPERATIONAL INFORMATION

LOAD CAPACITY

(31) DESIGN LOAD	2 M 13.5 (H 15)	(65) CALC METHOD	1 LF LOAD FACTOR
(66) INVENTORY RATING	RF=0.46 =>14.9 metric tons	(63) CALC METHOD	1 LF LOAD FACTOR
(64) OPERATING RATING	RF=0.76 =>24.6 metric tons	(70) BRIDGE POSTING	1 30.0-39.9% BELOW LEGAL
(41) STRUCTURE STATUS	P-POSTED FOR LOAD	PERMIT RATING	XXXXX
OVERLAY THICKNESS	inches		

POSTING LOADS

	Safe Loads	Existing Ordinance/Order	Posting Signs	
Type 3	24	10	10	U.S. Tons
Type 3S2	32	10	10	U.S. Tons
Type 3-3	Legal	10	10	U.S. Tons
Speed	5	5	5	MPH
Agency Lowered		Yes	Yes	

Posting Order Date 05/08/2018
Load Rating Summary Date 07/14/20
Load Rating Type Calculated
Load Rating Tool - Date BrR 6.7.0 AASHTO - 07/01/20

Additional Ordinance/Order Requirements

NONE

Additional Signs

NONE

MINIMUM VERTICAL CLEARANCE

(53) MIN VERT CLEAR OVER BRIDGE RDWY		Unimpaired
(54) MIN VERT UNDERCLEAR REF	H-HIGHWAY	4.60 M

MINIMUM LATERAL UNDERCLEARANCE

(55) MIN LAT UNDERCLEAR RT REF	H-HIGHWAY	1.0 M
(56) MIN LAT UNDERCLEAR LT		0.9 M

CONDITION INFORMATION

INSPECTION COMMENTARY

SCOPE AND ACCESS
The bridge was accessible by foot.
The bridge is inspected from east to west per as-built plans.
The underside of span 14 was inaccessible as it contains a Womens restroom.

CONDITION INFORMATION

INSPECTION COMMENTARY

NUMBERING CONVENTION
The numbering convention for this structure matches that of the as-built plans which is opposite of standard convention.

REVISIONS
Item #115, Year of Future ADT, has been updated from 2040 to 2041.

MISCELLANEOUS
Structure includes a stairway near the center of the bridge which was damaged during the 1994 earthquake and closed to all foot traffic indefinitely by the city.

SAFE LOAD CAPACITY
A Load Rating Summary Sheet dated 10/15/2018 is on file for this structure. While this report does not include a check of that analysis, it does verify that the structural conditions observed during this inspection are consistent with those assumed in that analysis.

The current 10/15/2018 rating calculations indicate the Safe Load Capacity of this structure to be;
22 TONS PER VEHICLE
22 TONS PER SEMI-TRAILER COMBINATION
30 TONS PER TRUCK AND FULL TRAILER

EXISTING POSTING
Regulatory signs that indicate the following restrictions are present at both approaches to the structure. (04/14/12)

WEIGHT LIMIT 10 TONS
The controlling member for the posted load is the deck slab section.

RECOMMENDATIONS
Repair all spalls and areas of delamination in the concrete deck.
Remove 3/4" of the deck and apply polyester overlay.
Perform concrete repairs.
Provide drainage at the west end of the bridge.

SPECIAL INSPECTION INFORMATION

STEEL INVESTIGATION DETAILS - NOT APPLICABLE FOR THIS BRIDGE.

UNDERWATER INVESTIGATION DETAILS - NOT APPLICABLE FOR THIS BRIDGE.

DECK AND ROADWAY

DECK CROSS SECTION

DECK GEOMETRY

(49)	LENGTH	148.5 M
(51)	NET WIDTH	6.2 M
(52)	TOTAL WIDTH	10.5 M
(50)	CURB OR SIDEWALK	LEFT 0.0 M RIGHT 0.0 M
(32)	APPROACH RDWY WIDTH	7.3 M
(33)	BRIDGE MEDIAN	0 NO MEDIAN

DECK STRUCTURE INFORMATION

(107)	DECK STRUCTURE TYPE	1-CIP CONCRETE
(108)	WEARING SURFACE / PROTECTIVE SYSTEM	
A)	TYPE OF WEARING SURFACE	0-NONE
B)	TYPE OF MEMBRANE	0-NONE
C)	TYPE OF DECK PROTECTION	0-NONE
	OVERLAY THICKNESS (inches)	inches
(29)	AVERAGE DAILY TRAFFIC	727
(30)	YEAR OF ADT 2014	(109) TRUCK ADT % 1 %
(19)	BYPASS, DETOUR LENGTH	199 KM
(114)	FUTURE ADT	800
(115)	YEAR OF FUTURE ADT	2041
(37)	HISTORICAL SIGNIFICANCE	5: NOT ELIGIBLE FOR NRHP

DECK ROADWAY/OPERATIONAL INFORMATION

(42a)	TYPE OF SERVICE	5-HIGHWAY-PEDESTRIAN
(12)	BASE HIGHWAY NETWORK	0-NOT ON NET
(13)	LRS INVENTORY RTE & SUBRTE	
(104)	NATIONAL HIGHWAY SYSTEM	0-NOT ON NHS
(26)	FUNCTIONAL CLASS	19-LOCAL URBAN
(100)	DEFENSE HIGHWAY	0-NOT STRAHNET
(101)	PARALLEL STRUCTURE	N-NONE EXISTS
(102)	DIRECTION OF TRAFFIC	2-2 WAY
(10)	INVENTORY ROUTE MIN VERT CLEAR	30.47 M
(47)	INVENTORY ROUTE TOTAL HORIZ CLEAR	7.3 M
(68)	DECK GEOMETRY	3 INTOLERABLE - CORRECT
(72)	APPR ROADWAY ALIGN	7 ABOVE MIN CRITERIA
(105)	FEDERAL LANDS HWY	0-NOT APPLICABLE
(110)	DESIGNATED NATIONAL NETWORK	0-NOT ON NET
(20)	TOLL	3-ON FREE ROAD
(28a)	LANES	2
	SPEED	5
(103)	TEMPORARY STRUCTURE	N/A

DECK ELEMENT INSPECTION RATINGS AND NOTES

(58) DECK RATING = 4

Elem No.	Defect/ Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State CS 1	CS 2	CS 3	CS 4
38			**Slab-RC**	2	1553	sq.m	22	1031	500	0
	1080		**Delamination/Spall/Patched Area**	2	58		0	8	50	0
	1120		**Efflorescence/Rust Staining**	2	17		0	17	0	0
	1130		**Cracking (RC and Other)**	2	1456		0	1006	450	0

(38-1080) Delamination/Spall/Patched Area

There are areas of spalling and delamination in the concrete deck up to 1 foot in diameter and up to 1 inch deep. Some temporary patching has been performed. The combined distressed area (spalling, delamination, and patches) is 506 square feet or 3.02% of the total deck area. (03/05/14) (Verified 3/17/2021)

There is a 12-inch diameter spall at the north and south ends of the hinge joint of span 5. (04/08/02) (Verified 3/17/2021)

(38-1120) Efflorescence/Rust Staining

There are hairline cracks with minor efflorescence along the deck soffit of span 1 (19 feet), span 7 (6 feet), span 8 (13 feet), span 9 (13 feet) and span 11 (3 feet). (03/07/16) (Verified 03/17/2021)

(38-1130) Cracking (RC and Other)

There are longitudinal and random cracks in the concrete deck. The cracks are up to 6 feet long and 0.03 inches wide. (03/22/10) (Verified 3/17/2021)

DECK ELEMENT INSPECTION RATINGS AND NOTES

(58) DECK RATING = 4

DECK PHOTOGRAPHS



Photo 3
Spalls and Delamination



Photo 4
Spalls and Delaminations

JOINT - APPROACH - RAIL

RAIL INFORMATION

(36a) Rail Code 0 (36b) Transition 0 (36c) Appr Guardrail 0 (36d) Appr Guardrail End 0 Roadway Speed 5 MPH

JOINT/APPROACH/RAIL ELEMENT INSPECTION RATINGS AND NOTES

Elem No.	Defect/ Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State CS 1	CS 2	CS 3	CS 4
301			**Joint-Pourable Seal**	2	8	m	0	0	8	0
	2350		**Debris Impaction (Joints)**	2	8		0	0	8	0

(301-2350) Debris Impaction (Joints)

Debris impaction appears to hinder joint movement. (03/14/2018) (Verified 3/17/2021)

308			**Joint-Steel Sliding Plates**	2	27	m	21	6	0	0
	2370		**Metal Deter./Damage (Joints)**	2	6		0	6	0	0

(308-2370) Metal Deter./Damage (Joints)

Freckled rust could be seen on approximately 18 feet of the steel sliding expansion plate. (03/14/2018) (Verified 3/17/2021)

330			**Railing-Metal**	1	209	m	105	104	0	0
	1000		**Corrosion**	1	104		0	104	0	0
	515		**Steel Coating-Paint**	1	31	sq.m	0	0	0	31
		3420	**Peel/Bub/Crack (Steel PC)**	1	31		0	0	0	31

(330) Railing-Metal

See notes for Defect 1000

(330-1000) Corrosion

Surface rust was found in various locations along the steel bridge rail. (03/14/2018) (Verified 3/17/2021)

(330-515-3420) Peel/Bub/Crack (Steel PC)

The exposure of bare metal was found in random locations along the steel bridge rail. (03/14/2018) (Verified 3/17/2021)

JOINT - APPROACH - RAIL

JOINT/RAIL PHOTOGRAPHS



Photo 5
Freckled Rust along Metal Rail

SUPERSTRUCTURE

SUPERSTRUCTURE ELEMENT INSPECTION RATINGS AND NOTES

(59) SUPERSTRUCTURE RATING = 4

Elem No.	Defect/ Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State CS 1	CS 2	CS 3	CS 4
312			**Bearing-Enclosed**	2	3	each	3	0	0	0

(312) Bearing-Enclosed

No significant issues were observed.

SUPERSTRUCTURE PHOTOGRAPHS



Photo 9
Efflorescence in Deck Soffit

SUBSTRUCTURE

DESCRIPTION UNDER STRUCTURE

(42b) TYPE OF SERVICE UNDER	1-HIGHWAY W/WO PEDESTRIAN	(38) NAVIGATION CONTROL	N: NOT APPLICABLE
(69) UNDERCLEARANCES V - H	2 INTOLERABLE - REPLACE	(111) PIER PROTECTION	**N/A**
(71) WATER ADEQUACY	N NOT APPLICABLE	(39) NAVIGATION VERTICAL CLEARANCE	0.0 M
(61) CHANNEL PROTECTION	N N/A (NBI)	(116) VERT-LIFT BRIDGE NAV MIN VERTICAL CLEAR	M
(113) SCOUR	N NOT OVER WATERWAY	(40) NAVIGATION HORIZONTAL CLEARANCE	0.0 M
SCOUR POA DATE	N/A		

SUBSTRUCTURE

CHANNEL DESCRIPTION - Not Applicable

ROADWAY DESCRIPTION UNDER STRUCTURE

(5a) POSITION:	A 1ST ROUTE UNDER	NBI UNDER RECORD			
ROADWAY NAME:	APPIAN WAY				
(5d) ROUTE	00000-1	(104) NATIONAL HIGHWAY SYSTEM	0 NOT NHS		
(11) POST MILE	0	(26) FUNCTIONAL CLASS	16 URBAN MINOR ARTERIAL		
(5b) KIND HIGHWAY	5 CITY STREET	(100) DEFENSE HWY	0 NOT DEF HWY		
(5c) LEVEL SERVICE	0 NONE OF THE BELOW	(110) NATIONAL TRUCK NETWORK	0 NOT PART OF NATL NETWO		
(10) VERTICAL CLEAR (m)	4.60	(20) TOLL FACILITY	3 ON FREE ROAD		
(47) HORIZONTAL CLEAR (m)	9.60	(28b) LANES	2		
(19) DETOUR LENGTH	198.99	(29) RECENT ADT	500	(30) ADT YEAR	2012
(102) DIRECTION TRAFFIC	2 2-WAY TRAFFIC	(109) TRUCK % ADT	1		

(5a) POSITION:	B 2ND ROUTE UNDER	NOT AN NBI UNDER RECORD			
ROADWAY NAME:	PACIFIC COAST HWY TRANS				
(5d) ROUTE	00000-1	(104) NATIONAL HIGHWAY SYSTEM	0 NOT NHS		
(11) POST MILE	0	(26) FUNCTIONAL CLASS	19 URBAN LOCAL		
(5b) KIND HIGHWAY	5 CITY STREET	(100) DEFENSE HWY	0 NOT DEF HWY		
(5c) LEVEL SERVICE	0 NONE OF THE BELOW	(110) NATIONAL TRUCK NETWORK	0 NOT PART OF NATL NETWO		
(10) VERTICAL CLEAR (m)	4.60	(20) TOLL FACILITY	3 ON FREE ROAD		
(47) HORIZONTAL CLEAR (m)	7.30	(28b) LANES	4		
(19) DETOUR LENGTH	0	(29) RECENT ADT	5800	(30) ADT YEAR	2012
(102) DIRECTION TRAFFIC	2 2-WAY TRAFFIC	(109) TRUCK % ADT	1		

SUBSTRUCTURE ELEMENT INSPECTION RATINGS AND NOTES

(60) SUBSTRUCTURE RATING = 7

Elem No.	Defect/ Prot	Defect	Element Description	Env	Total Qty	Units	Qty in each Condition State CS 1	CS 2	CS 3	CS 4
205			**Column-RC**	2	32	each	31	1	0	0
	1130		**Cracking (RC and Other)**	2	1		0	1	0	0
(205-1130) Cracking (RC and Other)										
The top of the south column of bents 11 and 12 were not visible due to growth of vegetation. Element will remian in Condition State 2 until condition can be verified. (3/17/2021)										
215			**Abutment-RC**	2	11	m	10	1	0	0
	1130		**Cracking (RC and Other)**	2	1		0	1	0	0
(215-1130) Cracking (RC and Other)										
There is a vertical crack up to 0.03 inches wide in the breast wall of abutment 1. (03/07/16) (Verified 3/17/2021)										
234			**Pier Cap-RC**	2	165	m	165	0	0	0
(234) Pier Cap-RC										
No significant issues were observed.										

SUBSTRUCTURE PHOTOGRAPHS

SUBSTRUCTURE

SUBSTRUCTURE PHOTOGRAPHS



Photo 7
Underside (Looking North Abutment)

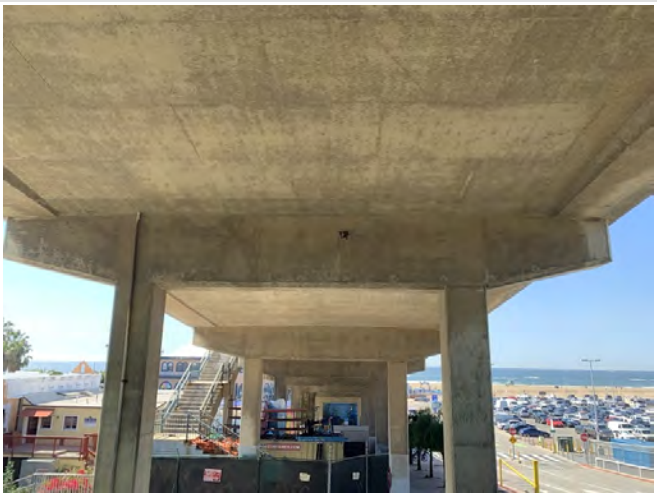


Photo 8
Underside (Looking South Abutment)

OTHER PHOTOGRAPHS



Photo 1
Location Map



Photo 2
Roadway Photo



Photo 6
Elevation Photo

WORK RECOMMENDATIONS

DECK WORK RECOMMENDATIONS

Rec Date	03/17/2021	Work By	LOCAL AGENCY	Est Cost		Dist Target	
Status	PROPOSED	Action	Deck-Place Overlay	Str Target	2 YEARS	EA	

WORK RECOMMENDATIONS

DECK WORK RECOMMENDATIONS

Remove 3/4" of the deck and apply polyester overlay.

Rec Date	03/17/2021	Work By	LOCAL AGENCY	Est Cost		Dist Target
Status	PROPOSED	Action	Deck-Patch spalls	Str Target	2 YEARS	EA

Repair all spalls and areas of delamination in the concrete deck.

JOINT/APPR/RAIL WORK RECOMMENDATIONS - NONE

SUPERSTRUCTURE WORK RECOMMENDATIONS - NONE

SUBSTRUCTURE WORK RECOMMENDATIONS - NONE

OTHER WORK RECOMMENDATIONS

Rec Date	03/17/2021	Work By	LOCAL AGENCY	Est Cost		Dist Target
Status	PROPOSED	Action	Drainage Issue	Str Target	2 YEARS	EA

Provide drainage at the west end of the bridge.

Appendix H

Caltrans Structure Maintenance and Investigations Historic Bridge Inventory



PREFACE TO:

2015 CALTRANS STATEWIDE HISTORIC BRIDGE INVENTORY UPDATE

Caltrans completed its Statewide Historic Bridge Inventory Update to include bridges constructed between 1965 and 1974, and submitted its findings to SHPO in 2015. SHPO concurred with Caltrans findings except in the case of four bridges, where determinations of eligibility were deferred pending further studies. Three of those bridges (53 2639, 53C0556, 53C1560) were pedestrian overcrossings, where SHPO suggested that context specific to that bridge type could be further developed in conjunction with future projects. The fourth bridge (32 0018) was part of a potential historic district being evaluated at the time, with findings to be forwarded to SHPO upon completion.

The following document is the original document submitted by Caltrans to SHPO, with notes added afterward to reflect the status of the four bridges where determinations of eligibility remain deferred, and are not concurred by SHPO at this time. Those four bridges are considered Category 4, Historic significance not determined.

HISTORICAL RESOURCES EVALUATION REPORT
CALTRANS STATEWIDE HISTORIC BRIDGE INVENTORY: 2015 UPDATE

1965-1974



PREPARED BY: Helen Blackmore, Lauren Clementino, Andy Hope and Noah M. Stewart, Caltrans District 4, and Janice Calpo, Caltrans HQ Cultural Studies Office

PREPARED FOR: Jody Brown, Chief, Caltrans HQ Cultural Studies Office

OCTOBER 2015

HISTORICAL RESOURCES EVALUATION REPORT
CALTRANS STATEWIDE HISTORIC BRIDGE INVENTORY: 2015 UPDATE

1965-1974

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Attachments

DPR 523 Forms

Cover photograph: photo 8651 Old Miramar Road Bridge No. 57-762 (8 December 1971). Source: Caltrans Library and History Center.

Acknowledgements

This document is the result of a unique cooperation between the California Department of Transportation (Caltrans) Division of Environmental Analysis, Cultural Studies Office (CSO) in Sacramento and the Division of Environmental Planning and Engineering, Office of Cultural Resource Studies (OCRS) in District 4. In 2013, former Chief of CSO Anmarie Medin recognized the need to update the existing the Statewide Historic Bridge Inventory as a new batch of structures were on the cusp of reaching 50 years of age since the completion of the last iteration of the survey. Through an agreement between Ms. Medin and Elizabeth (Lissa) McKee, Chief of OCRS (retired), District 4 architectural historians completed the research, analysis and drafting the report, with field survey and other support from CSO architectural historians.

The body of this document was written by Noah M. Stewart, Senior Environmental Planner, with early help from Andy Hope, Associate Environmental Planner (Architectural History). Helen Blackmore, Associate Environmental Planner (Architectural History), and Lauren Clementino, Associate Environmental Planner (Architectural History), along with Mr. Stewart completed the associated DPR523 forms. Helen also read early drafts and served as a second set of eyes making sure the numbers added up and the details were correct.

Much of the fieldwork was completed by Janice Calpo, Associate Environmental Planner (Architectural History), of CSO. Helen Blackmore, Lindsay Hartman, Associate Environmental Planner (Archaeology), Trevor Platt, Associate Environmental Planner (Archaeology) and Noah Stewart supplemented the fieldwork. Ms. Calpo edited the documents. Kelly Hobbs, Janice Calpo and Gloria Scott provided peer review comments that improved the clarity and accuracy of this document.

To all those who assisted in the production of this document - thank you! Anmarie and Lissa deserve special gratitude for allowing the freedom to complete such work and also putting up with stretched deadlines. Rudy Calpo must also be called out for recognition in going above and beyond the call of duty, supporting the field work and photography. Finally, many thanks to the Caltrans Transportation Library and History Center, particularly Deborah Cismowski, History Librarian, and Shubhangi Kelekar, Technical Reference Librarian, who were especially helpful in tracking down vintage engineering documents and helping answer obscure technical questions.

This work is dedicated to our friend and colleague Andy Hope who recently retired from civil service after a long career with the State of California. Andy was instrumental in completing earlier versions of the Statewide Historic Bridge Inventory. He was also responsible for the pioneering context statement on tract housing in California, 1945-1973, among his many other good works. His intellect, professionalism and sense of humor will continue to serve as an example to Caltrans architectural historians for years to come.

I. Summary of Findings

There are over 26,000 bridges on Californias highways and local roadways. These structures play a critical role in moving goods and people around the state. The California Department of Transportation (Caltrans) is responsible for bridge inspection on both the state and locally owned bridges as well as maintenance of the bridges owned by the state. In order to streamline various environmental regulations protecting historic resources, including Section 106 of the National Historic Preservation Act of 1966, National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA) and California Public Resources Code 5024, Caltrans periodically conducts statewide surveys in order to identify historic bridges. This study considers bridges erected between 1965 and 1974. It builds upon, and adds to, the previously completed Statewide Historic Bridge Inventory.

Driven by suburban development, increased interstate commerce and national security requirements, Californias highway system exploded in size after W orld War II. More than 7,000 highway bridges were built in California from 1965 to 1974. As with the previous Statewide Historic Bridge Inventories, the current update took a programmatic approach to the inventory in order to manage the sheer number of structures built from 1965 to 1974. Between August 2013 and May 2014, Caltrans conducted a screening process in order to identify those bridges constructed during the period of study that had the potential to be historic.

Of the more than 7,000 bridges built between 1965 and 1974, 47 were individually surveyed and analyzed to determine if they were eligible for inclusion on the National Register of Historic Places (National Register) or if they appeared eligible for inclusion on the California Register of Historical Resources (California Register). Eleven bridges were found eligible for inclusion on the National Register and appear eligible for inclusion on the California Register. Thirty-four bridges were found not eligible for inclusion on the National Register and do not appear eligible for inclusion on the California Register.

II. Project Description and Scope of Survey

Caltrans conducted the first comprehensive Statewide Historic Bridge Inventory in 1986-1988, and included all bridges that were at least 50 years old at that time. The first update to that inventory was carried out in 2003-2006, and included the original survey bridges as well as the additional bridges that had been constructed through 1959. A small update was conducted in 2010, and included all bridges constructed from 1960 through 1964. Because Caltrans guidance calls for evaluation of properties that are at least 45 years old to account for the time between environmental studies and start of construction, bridges constructed from 1965 to 1969 are now nearing the threshold for National Register evaluation. Extending the inventory to include bridges built between 1970 and 1974 resulted in an additional efficiency in preparing for the likelihood of potential historic bridges in the coming decade.

The purpose of this task was to streamline project compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, by focusing staff energy on only those bridges that had the potential to be significant under the National Register criteria and to determine whether they should be considered historical resources for the purposes of compliance with the California Environmental Quality Act (CEQA). Eligibility determinations for state-owned structures will also support compliance with California Public Resources Code (PRC) Section 5024.

As with the previous inventories, which this project builds on, the current update took a programmatic approach to the inventory in order to manage the sheer number of bridges built between 1965 and 1974. Caltrans initially conducted a screening process for structures completed during the 1965-1969 period, which identified 28 bridges to be individually surveyed and evaluated. The State Historic Preservation Officer (SHPO) agreed with the proposed scope on August 20, 2013. In 2014, to achieve efficiency and prepare for the likelihood of potential historic bridges in the next decade, Caltrans applied the same screening process to bridges constructed from 1970-1974, resulting in an additional 22 bridges to be individually surveyed and evaluated. On May 27, 2014, the SHPO agreed with extending the inventory update to bridges built between 1965 and 1974.

During the course of producing this document two bridges slated for evaluation were removed from consideration. The Gerald Desmond Bridge (53C0065) is slated for replacement with the project in active construction. The San Mateo-Hayward Bridge (35 0054) was evaluated separately and found eligible for inclusion on the National Register. As a result, both bridges were removed from consideration herein, leaving 48 structures to be individually evaluated. Based on research and ground truthing in the field a small number of i naccuracies in the data caused this number to be slightly altered during the course of this study. In the end, a total of 47 bridges were identified as having potential to be significant under National Register and California Register criteria.

III. Research Methods and Screening Process

Research focused on established bridge and tunnel contexts and evaluation guidelines previously prepared by Caltrans. Additional research sources included reports from Caltrans Bridge Inspection Records Information System (BIRIS); as-built drawings; correspondence, building and contract information; and articles found in California Highways and Public Works, Engineering News Record, and other engineering journals. Additional contextual research was conducted for three new bridge types Orth otropic Steel Deck, Steel Box Girder, and Segmental Concrete Box Girder the first of their type constructed during the late 1960s and early 1970s.

Caltrans completed a screening of more than 7,000 structures built between 1965 and 1974, to identify those that appeared to possess possible significance. Screening identified structures that had the potential to meet the National Register Criteria for evaluation based on their age, size, innovations, or aesthetics. Caltrans screening identif ied a small number of structures that

appeared to possess possible significance, while Caltrans found that the majority of bridges during this period are ineligible for listing in the National or California Register Criteria. Bridge designs were highly standardized by this period. Just six different bridge types make up more than 98 percent of the more than 7,000 bridges erected between 1965 and 1974.

Caltrans maintains the California Historical Bridge Inventory with its own historic bridge status codes for each bridge, which are called Categories. Following screening and evaluation, each bridge is assigned to Categories 1-5. Category 1 bridges are listed in the National Register; Category 2 bridges are eligible for listing; Category 3 bridges may be eligible for listing; Category 4 bridges are unevaluated; and Category 5 bridges are not eligible for listing.

As this was the era of major interstate freeway construction, about one-third of these bridges were built as part of the interstate system. Structures constructed as part of the interstate system, including entrance and exit ramps, with the exception of six historic bridges, which are exempt from Section 106 consideration nationwide (bridges constructed to carry roads or railroads over an interstate highway are not treated as part of the interstate exemption). After excluding the interstate freeway bridges, approximately 5,300 bridges remained to be considered for National Register eligibility.

Because interstate structures are exempted from Section 106, as well as this study, there is the possibility that some bridges that have the potential to be eligible for the National Register, and thus subject to PRC 5024, may have been excluded from individual review. Several such bridges were identified during the current study including the two early orthotropic deck bridges, Ulatis Creek Bridge (23 0052R) and I-680 interchange bridge (33 0371G); Pine Valley Creek Bridge (57 0692R/L), the first cast-in-place segmental concrete box girder built in the country; as well as the aesthetically interesting San Mateo Creek Bridge/Eugene A. Doran Memorial Bridge (35 0199). These bridges, and other structures like them, which are located on the interstate system and were identified as having the potential to be eligible for the National Register during the course of the completion of this study, were given a Category 4 (unevaluated) status in this update of the Statewide Historic Bridge Inventory. These structures will need to be evaluated for the National Register on a project-by-project basis.

Also excluded from evaluation in this survey are 36 bridges owned by state agencies other than Caltrans or by other federal agencies. About half of these are in state parks, with the remainder in National Parks Service, on U.S. Forest Service lands, University of California campuses, or other state or federal lands. These bridges are excluded from evaluation because their managing agencies have their own responsibilities for compliance with the state and federal historic preservation laws. These 36 bridges were given a Category 4 (unevaluated) status in this update of the Statewide Historic Bridge Inventory.

Much of the Bay Area Rapid Transit (BART) system was constructed in the late 1960s and early 1970s; Caltrans bri dge database includes 88 bridges and two tunnels constructed in the 1965-1974 period that carry BART tracks. These structures are excluded from evaluation because the

BART system should be evaluated for National Register eligibility as a whole. These structures were given a Category 4 status.

Twenty-four additional properties with Caltrans bridge numbers were given a Category 4 status. These include 18 potential contributors to the California Aqueduct, two pedestrian bridges within a governmental complex in downtown Los Angeles (one connecting two buildings), one pedestrian bridge that is a potential contributor to a historic district and one pedestrian bridge connecting two buildings within an industrial complex. Additionally, one ferry boat in Solano County and one building (spanning a roadway tunnel) were given a Category 4 status.

Excluding the bridges described above resulted in a total of 5,110 bridges constructed during the 1965-1974 period. All of these were included in an initial screening to identify those bridges that appear to have some potential for National Register eligibility. Screening identified 48 structures to be individually evaluated for the National Register, and for CEQA purposes, the California Register. Because of inaccuracies in the data, this number was slightly altered during the course of this study based on research and ground truthing in the field. In the end, a total of 47 bridges were identified as having potential to be significant under National Register and California Register criteria (see Table 3).

These represent distinctive examples of their types, the first examples of new bridge types, and bridges types for which all, or nearly all, of the extant examples were individually evaluated in the previous statewide surveys (such as truss bridges, suspension bridges, and tunnels). The remaining bridges are typical, undistinguished examples of common types or bridges that lack integrity due to post-1969 alterations. These were given a Category 5 (ineligible) status without individual evaluation. This screening methodology is consistent with the methodology used in the three earlier statewide bridge surveys, undertaken in 1986-88, 2003-2006, and 2010.

Bridge Types

Bridge designs were highly standardized by the 1965-1974 period. Just six different bridge types make up more than 98 percent of the 5,110 bridges considered for National Register and California Register eligibility. The table below gives the numbers and percentages of the different bridge types seen in this period. Each type is discussed in more detail in Table 1.

Table 1: Bridges considered for National Register eligibility

Bridge type	Number of bridges	Percent of total	Selected for evaluation
A. Concrete box girder	2,062	40.35%	10
B. Concrete slab	887	17.36%	0
C. Culvert (concrete or steel)	833	16.30%	0
D. Concrete T-beam	541	10.59%	0
E. Steel stringer, beam, or girder	362	7.08%	11
F. Conc. stringer, beam, or girder	355	6.95%	1
G. Uncommon bridge types	70	1.37%	25
Total	**5,110**	**100.0%**	**47**

A. Concrete box girder bridges are the most common bridge type constructed in the 1965-1974 period, making up more than two-fifths of the 5,110 bridges examined. These bridges exhibit a high degree of similarity. There is some variety in column designs, including wall piers, single-column bents, and columns with splayed arms. A variety of concrete textures and finishes are also seen on bridge columns. Most of the box girder superstructures are square, with vertical side walls, but a few examples have inward-sloping side walls and rounded bottom corners, giving the girders a lighter and more streamlined appearance. Most of these variations were not considered to be significant. Ten bridges of this type were selected for individual evaluation: four for their unusual column design, one for its distinctive form and five because their span lengths.

   Presently, there are 22 concrete box girder bridges in California that are listed or eligible for inclusion in the National Register. Of these, 13 are contributors to larger properties (such as the Arroyo Seco Parkway) and nine are individually significant. The nine individually significant bridges date from 1934 to 1961, with five being early examples of the type, built before World War II.

B. Concrete slab bridges are widely used where the required spans are so short that the box girder type is not necessary. Their design and construction was routine by the late 1960s and early 1970s, and no concrete slab bridges from this period were identified as potentially significant. At present, there are 20 concrete slab bridges in the state that are either listed in or determined eligible for inclusion in the National Register and are either included in or meet the criteria for inclusion in the California Register. Only four of these are individually significant, with the other 16 being contributors to larger properties. Of the four individually eligible slab bridges, the most recent dates to 1940.

C. Culverts are treated as inherently not significant, as was the case in the earlier statewide bridge inventories. As with concrete slabs, the design of culverts was routine by the late 1960s and no examples from this period have any potential to possess technical or aesthetic

significance. Currently, there are only three culverts in California that are listed in or have been determined eligible for the National Register and the California Register. Two are contributors to larger properties, and one is a masonry-faced steel culvert constructed in 1938.

D. Concrete T-beam bridges, like concrete slabs, were built where only short to medium span lengths were required. Long-span concrete bridges constructed in the late 1960s generally are box girders. None of the concrete T-beam bridges examined appear to have any potential for meeting National or California Register eligibility criteria.

   There currently are 60 concrete T-beam bridges in California that are either listed in or eligible for inclusion in the National Register or that meet California Register eligibility criteria. More than half of these are contributors to historic roads or other larger properties. Of the 23 individually listed or eligible T-beam bridges, only one was constructed after World War II an early example of prestressed concrete construction, built in 1953. Most of the other individually listed or eligible T-beam bridges are significant as early examples of the type, built before 1918, or are highly ornamental bridges, constructed from the late 1920s to the early 1940s.

E. Steel stringer, beam, or girder bridges were constructed throughout California in the late 1960s, but make up a higher proportion of all new bridges in the northern one-third of the state. Long-span steel bridges may be significant under National Register criterion C and California Register Criterion 3, as engineering accomplishments and as distinctive examples of modern bridge aesthetics. Eleven long-span steel girder bridges were selected for individual evaluation. Nine of these are located between Sacramento and the Oregon border, with one in Kern County and one in San Joaquin County. A relatively large number of examples of this bridge type were chosen for individual evaluation because of the difficulty of making distinctions among these bridges without more detailed survey and analysis.

   There currently are 29 bridges of this type in California that have been listed or determined eligible for inclusion in the National Register or have been listed in or determined to meet the eligibility criteria for listing in the California Register. Of these, 20 are contributors to larger properties, including historic roads and railroads. Seven of the nine individually eligible examples date to 1936 or earlier. The other two examples are long-span steel girder structures built in the early 1960s.

F. Concrete stringer, beam, or girder bridges, including precast concrete beams and girders as well as cast-in-place concrete structures, are generally similar in size to concrete T-beam bridges. Only one bridge of this type was selected for individual evaluation for its unusual column design. Only four bridges of this type previously have been determined eligible for National Register listing and that meet the California Register eligibility criteria. All four are early examples of the type, built from 1913 to 1915.

G. Uncommon bridge types, as shown in Table 1, a total of 70 bridges are included in this category. The group includes the 14 different bridge types shown below in Table 2. Each type is briefly discussed following the table. Additionally, while the bridges in this survey are classified as a single type, during the era under study, bridges became increasingly complex. As a result, often times a single bridge may be constructed of multiple bridge types used together to form a cohesive unit. For the purposes of the survey, those multi-part bridges are listed by their most important type. However within the individual evaluation the entire structure is considered and each component described. Twenty-five bridges were selected for evaluation.

Table 2: Uncommon bridge types

Bridge type	Number of bridges	Selected for evaluation
1. Timber stringer, beam, or girder	38	0
2. Tunnel	7	7
3. Steel box girder	3	3
4. Steel truss	6	6
5. Concrete arch	3	0
6. Metal arch	3	2
7. Orthotropic	1	1
8. Steel suspension	2	2
9. Concrete channel beam	1	0
10. Concrete other	1	0
11. Timber truss	1	1
12. Bascule	1	1
13. Wood arch	1	1
14. Concrete Segmental Box girder	1	1
Total	**70**	**25**

1. The 38 timber bridges are all stringer or laminated wood beam structures. None of these were considered potentially significant. There are currently no listed or eligible timber stringer or beam bridges in California (the only listed or eligible timber bridges in the state are trusses).
2. Seven of the tunnels were selected for individual evaluation, since tunnels are an uncommon property type in California. The two tunnels not selected for individual evaluation is part of the Bay Area Rapid Transit (BART) system should be evaluated for National and California Register eligibility as a whole, as described above.
3. The steel box girder is a new bridge type, with the first example in California built in 1966. All three of the steel box girder bridges were selected for individual evaluation. In addition to these three bridges, there are also two steel box girder BART bridges constructed in this period, which were excluded from evaluation as explained above.

4. All five of the steel trusses were selected for individual evaluation. Previous surveys included every extant example of this bridge type, since a high proportion of Californias steel truss bridges have been determined eligible for National Register listing and meet the California Register eligibility criteria and that meet California Register eligibility criteria.
5. None of the three concrete arch bridges were selected for individual evaluation. The concrete arch was a largely obsolete bridge type by the 1960s. Of the nearly 300 extant concrete arch bridges in California, only 14 were constructed in 1960 or later. Of the concrete arches determined eligible for National Register listing, the most recent dates to 1947. Of the three concrete arch bridges constructed in the 1965-1974 period, two are small structures that are not significant as compared to earlier and larger examples of the type, and the other was substantially altered in the 1990s and lacks integrity.
6. Two of the three metal arch bridges were selected for individual evaluation, as this is an uncommon and significant bridge type in California. The one bridge not selected for evaluation is currently being replaced.
7. The only steel orthotropic deck bridge was selected for individual evaluation. This was a new bridge type in the late 1960s, with the states first example constructed in 1967.
8. Both of the suspension bridges were selected for individual evaluation, as this is an uncommon and significant bridge type in California.
9. The concrete channel beam was not selected for individual evaluation. Although this is an uncommon bridge type in California, all of the extant examples are small bridges that lack technical or aesthetic significance.
10. The bridge listed as other in Caltrans bridge database is a pedestrian overcrossing that has no potential to meet National Register criterion C or California Register criterion 3. It was not selected for individual evaluation.
11. The timber truss bridge was selected for individual evaluation, as this is a rare and significant bridge type in California. However, the timber truss is also an obsolete bridge type by the 1960s. Of the listed and eligible timber trusses in California, the most recent dates to 1922.
12. The one bascule bridge was selected for individual evaluation as it is an uncommon and significant bridge type in California.
13. The one wooden arch bridge was selected for individual evaluation as it is an uncommon bridge type.
14. Concrete segmental box girder was a new bridge type that was developed during the early 1970s. The evaluated bridge is the first example constructed in California. Only five other examples of this bridge type exist in the state: three built in the 1990s and the two skyway viaducts sections of the newly-opened East Span of the Oakland Bay Bridge.

Table 3: Bridges chosen for individual evaluation

Bridge No.	County	District	Type	Reason for inclusion
02C0147	Siskiyou	2	steel box girder	new bridge type
02 0156	Siskiyou	2	steel girder	long span
02 0157	Siskiyou	2	concrete girder	long span

Bridge No.	County	District	Type	Reason for inclusion
04 0014	Humboldt	1	steel girder	long span; aesthetics
04 0016L	Humboldt	1	concrete box girder	long span
04 0069	Humboldt	1	steel suspension	rare & significant type
04 0155	Humboldt	1	concrete box girder	long span
04 0225	Humboldt	1	metal arch	rare & significant type
04C0124	Humboldt	1	timber truss	rare type
04C0236	Humboldt	1	steel girder	long span; aesthetics
09C0148	Plumas	2	steel truss	significant type
10C0005	Mendocino	1	steel girder	long span; aesthetics
12 0184	Butte	3	steel girder	long span; aesthetics
12 0188	Butte	3	steel suspension	rare & significant type
12C0199	Butte	3	steel truss	significant type
17 0077	Nevada	3	concrete box girder	design/aesthetics
19 0077	Placer	3	concrete box girder	long span
19C0060	Placer	3	steel truss	long span; aesthetics
24 0004L	Sacramento	3	steel girder	long span; aesthetics
24 0004R	Sacramento	3	steel girder	long span; aesthetics
25C0065	El Dorado	3	conc. seg. box girder	new bridge type
28 0015L	Contra Costa	4	tunnel	significant type
29 0203	San Joaquin	10	steel girder	long span
32 0018	Tuolumne	10	steel girder	long span
33C0147	Alameda	4	steel bascule	significant type
33C0202	Alameda	4	concrete girder	design/aesthetics
35 0173L	San Mateo	4	tunnel	significant type
35 0246F	San Mateo	4	tunnel	significant type
36C0102	Santa Cruz	5	concrete box girder	long span; aesthetics
38C0170	Stanislaus	10	steel truss	significant type
40 0048	Mariposa	10	concrete box girder	long span
44C0064	Monterey	5	tunnel	significant type
50 0279	Kern	6	steel girder	long span; aesthetics
53C0551L	Los Angeles	7	steel box girder	new bridge type
53C0551R	Los Angeles	7	steel box girder	new bridge type
53C0556	Los Angeles	7	metal arch	rare & significant type
53C0899R	Los Angeles	7	tunnel	significant type
53C0900R	Los Angeles	7	tunnel	significant type
53C0901R	Los Angeles	7	tunnel	significant type
53C1560	Los Angeles	7	wooden arch	rare type
53 2639	Los Angeles	7	steel truss	significant type
54C0192	San Bernardino	8	steel truss	significant type

Bridge No.	County	District	Type	Reason for inclusion
57 0619	San Diego	11	concrete box girder	design/aesthetics
57 0676	San Diego	11	concrete box girder	design/aesthetics
57 0678	San Diego	11	concrete box girder	design/aesthetics
57 0762	San Diego	11	concrete box girder	design/aesthetics
57 0857	San Diego	11	orthotropic deck	new bridge type

Following screening Caltrans staff completed field surveys of the 47 bridges. Field survey found that these structures generally retained good integrity, however historical research clarified that many did not possess sufficient engineering, aesthetic, or historical significance based on comparative analysis using the established historic contexts. Based on the Caltrans screening process, Caltrans staff did not formally evaluate the remaining structures from this period because they lacked significance and are not eligible for inclusion in the National Register and do not meet California Register eligibility criteria.

IV. Public Participation

In mid-November and early December 2014, Caltrans sent letters to the various public agencies and the historical societies of each region in which a bridge to be individually evaluated is located, informing them of the statewide bridge inventory update and inviting their comments. A total of 47 letters were sent, including those to one state agency, eight cities, 13 counties and 25 historical societies and preservation groups. The following organizations were contacted:

Agencies

- Alameda County Public Works Agency
- Butte County Public Works
- California Department of Water Resources Division of Engineering
- City of Long Beach Department of Public Works
- City of Los Angeles Department of Public Works
- City of Placerville City Engineer
- City of Pomona Public Works Department
- City of Redlands Municipal Utilities / Public Works Commission
- City of Santa Cruz Transportation and Public Works Commission
- City of Whittier Department of Public Works
- El Dorado County Transportation Division
- Humboldt County Department of Public Works
- Mendocino County Department of Transportation
- Monterey City Public Works
- Monterey County Public Works
- Los Angeles County Department of Public Works

- Placer County Public Works
- Plumas County Department of Public Works
- Santa Barbara County Public Works Department
- Santa Cruz County Department of Public Works
- Siskiyou County Department of Public Works
- Stanislaus County Public Works

Interest Groups

- Alameda County Historical Society
- Associated Historical Societies of Los Angeles County
- Butte County Historical Society
- Bridgehunter.com
- California Historical Society
- California Preservation Foundation
- El Dorado County Historical Society/Fountain & Tallman Museum
- Historic Bridge Foundation
- HistoricBridges.org
- Humboldt County Historical Society
- Los Angeles City Historical Society
- Los Angeles Conservancy
- Mendocino County Historical Society
- Monterey County Historical Society
- National Society for the Preservation of Covered Bridges
- National Trust Regional Office - Los Angeles Field Office
- National Trust Regional Office - San Francisco Field Office
- Placer County Historical Society
- Plumas County Historical Society
- Plumas County Museum
- San Bernardino County Historical Society
- San Pedro Bay Historical Society
- Santa Barbara Historical Museum
- Save Our Heritage Organisation
- Siskiyou County Historical Society

Caltrans received responses from two groups: the El Dorado County Historical Society/Fountain & Tallman Museum and HistoricBridges.org. On November 29, 2014, the El Dorado County Historical Society/Fountain & Tallman Museum responded by letter noting that the museum was unable to locate Bridge 25C0065, the one bridge in its area that was to be evaluated individually. Caltrans responded on December 23, 2014, by providing additional information regarding the

bridge as well as a photograph. The webmaster for HistoricBridges.org responded on November 19, 2014, that the list in general seems to cover the structure types that are rare and dwindling in population (from this or any time period) including trusses, arches, suspension, and movable types. No other responses were received.

V. Registration Guidelines[1]

Driven by suburban development, increased interstate commerce and national security requirements, Californias freeway system exploded in size after World War II. With the signing of the Federal-Aid Highway Act of 1956, the Division of Highways had the funding necessary to upgrade various highways to full freeway status. A significant portion of states freeways were completed during the 1965-1974 time period. This required the construction of thousands of grade separations across the state. As a result, the number of new bridges grew in direct relation to the miles paved. Because of the tremendous need for bridges, designers relied heavily on standardized bridge plans. By far the favored bridge type in post-war California was the concrete box girder, accounting for nearly half the bridges built. A significant portion of states freeway s were completed during the 1965-1974 time period. As the decades passed, right-of-way issues and aesthetic considerations pushed designers to incorporate innovative approaches to solving engineering problems. In order to meet the challenges, three new bridge technologies, the orthotropic steel deck, steel box girder and segmental concrete box girder, were added to the bridge engineers repertoire during the mid 1960s to early 1970s.

Bridges in California typically are evaluated as significant under two National Register criteria: Criterion A (and Criterion 1), for their role in local or regional history, especially their contribution as links within the transportation system, and Criterion C (and Criterion 3), relating to significance in the field of engineering. Bridges are infrequently, if ever, evaluated as significant under Criteria B or D. Important historic persons associated with bridges usually are involved with bridge design, thus making the bridges significant under the work of a master clause of Criterion C (and Criterion 3). Historic structures, such as bridges, occasionally can be recognized for the important information they yield, or might yield, regarding historic construction materials or technologies, thus making them significant under Criterion D. Bridges in California built during this period, however, are extremely well documented, so they are not themselves principal sources of important information in this regard.

Under National Register Criterion A and California Register Criterion 1, California highway bridges constructed between 1965 and 1974 have the potential to be significant if they are associated with important trends and/or events in transportation development, regional or local economic development or community planning. Establishing this fact is done with certain principles in mind. Bridges, like other infrastructure, are inherently vital to communities as they are critical elements of city or regional planning, and they considerably impact communication

[1] Much of this section was excerpted from JRP Historical Consulting Services, *Roadway Bridges of California, 1936 to 1959: Historic Context Statement* (Sacramento, CA: California Department of Transportation, 2003).

and the distribution of people, goods, and services that facilitate development on both the local and regional levels. These common effects of bridge construction do not typically provide sufficient evidence to demonstrate how a structure may be deemed significant for its association with an important historic context; otherwise virtually any bridge would be shown to be important in this way. To be eligible for inclusion in the National Register or to meet the eligibility criteria for the California Register, resource types such as bridges and other infrastructure must have demonstrable importance directly related to important historic events and trends, with emphasis given to specific demand for such facilities and the effects the structure had on social, economic, commercial, and industrial developments locally, regionally, or nationally. In this way, bridges may be significant as physical manifestations of important transportation and community planning developments on the local, regional, state, or national level. In this analysis, for example, a bridge that is the first in its location would be inherently more significant than one that is the second or third constructed at that location.

Under National Register Criterion C (and California Register Criterion 3), California highway bridges constructed between 1965 and 1974 have the potential to be significant for their importance within the field of bridge engineering and design. This significance derives from a bridge embodying distinctive characteristics of its type, period, or method of construction, or representing the work of a master engineer, designer, or builder. The historic significance of bridges within the field of bridge engineering and design has been studied in great detail in California and other states as a result of dozens of historic bridge inventories sponsored by the Federal Highway Administration during the 1970s, 1980s, and 1990s. While bridge types and inventory methods varied from state to state, the many historic bridge inventories generally have established salient attributes that help define significance of structures within the field of bridge engineering and design. These attributes are as follows:

- Rarity − the number of remaining examples of a bridge construction type;
  Innovative design techniques or use of construction methods that advanced the art and science of bridge engineering;
- Boldness of the engineering achievement − representing the measures taken to overcome imposing design and construction challenges related to load, stress, and other engineering and environmental complexities;
- Aesthetics − the visual quality achieved in a bridge's individual design or with its appropriateness within the natural or man-made setting.

These attributes are weighed in conjunction with evaluation of a bridges type, period, or method of construction and its association with potentially significant engineers and/or builders. In order to meet National or California eligibility criteria, a bridge must have both historical or engineering significance as well as historic integrity. Loss of integrity, if sufficiently great, will overwhelm the historical significance a bridge may possess and render it ineligible. Integrity is

determined through applying seven factors defined by National Register guidelines.[2] Those factors are location, design, setting, workmanship, materials, feeling, and association. The following section provides guidelines for identifying and evaluating bridge types and construction methods that were either new or innovative during the period 1965 to 1974: orthotropic steel deck, steel box girder and segmental concrete box girder. As these are issues of bridge engineering and design, this guidance will be useful in addressing significance under National Register Criterion C and California Register Criterion 3.

VI. Historic Overview of New Bridge Types

Typically new bridge types and construction methods have specific time periods in which they were developed, initially implemented, and used in wider application. They all represent a bridge engineering innovation that permitted longer spans, greater loads, quicker construction, and/or cost savings. Many also resulted in bridges with new aesthetic qualities. As is true with any resource type, many bridges are associated with the new or innovative bridge types and construction techniques of the period, but not all are or will meet National or California Register eligibility criteria.

Orthotropic Steel Deck

An orthotropic steel deck consists of a thin steel deck plate stiffened by the addition of ribs, or channels, running longitudinally (in the direction of the decks span) on the decks underside. Rather than a full structural system, orthotropic steel deck bridges incorporate an orthotropic deck in conjunction within another superstructure arrangement. The orthotropic steel deck works to improve certain aspects of the chosen superstructure. They are most often used in combination with plate girder or box girder bridges, but also have been incorporated into truss, suspension and cable-stayed bridges.[3] The orthotropic steel deck bridge is a rare bridge type in California. Of the nearly 25,000 bridges in the state, only eight bridges are classified as orthotropic steel deck. There are a few other bridges that utilize orthotropic steel decks; however, they are classified as different types. Four of the eight examples were erected in the late 1960s; the other examples were built in the 1990s. Two of the four orthotropic deck bridges dating to the 1965-1974 period are evaluated as part of the current effort.

The major advantage of the orthotropic deck is that it acts as an integral part of the overall structural system, rather than simply being dead load (the weight of the structure itself) that needs to be transferred to the floor beams, girders, and ultimately to the piers and foundations. The orthotropic deck acts as the top flange of a steel beam or box girder. As the deck is much larger than the top flange of a typical beam or girder, it contributes significantly to the strength of the bridge superstructure and therefore its ability to span longer distances. A bridge

[2] As policy, Caltrans uses the National Register integrity guidelines when assessing integrity for meeting California Register eligibility criteria as well.

[3] Federal Highway Administration, *Steel Bridge Design Handbook: Bridge Deck Design*, by Brandon Chavel, Publication No. FHWA-IF-12-052 Vol. 17 (Washington, D.C., 2012), 28.

superstructure of monolithic reinforced concrete acts in a similar way, but achieving the same effect with steel results in a much lighter structure. The substantial reduction in dead load allows for longer spans and in turn reduces the required size and strength of the piers and foundations, resulting in the use of less material overall and therefore lower cost. The cost savings, however, are partially offset by the cost of fabrication of the orthotropic deck, due to the extensive welding required. The additional strength provided by the orthotropic deck also allows for a shallower superstructure depth and therefore long spans with very slender profiles.[4] This slender profile, with the roadway seemingly carried on a thin ribbon of steel, was (and remains) a much admired quality in modern bridge design.

There are two basic rib systems used with orthotropic steel decks; one uses a series of evenly spaced, three-sided steel channels welded to the decks underside, and the other uses one of many forms of I-beam on the underside. In both cases the top flanges of the beams/channels are integrated with the steel deck, increasing the decks stiffness, and effectively tying the beams/channels into one unit. A thin layer of asphalt or concrete is applied on the top of the deck to provide a smooth driving surface (see Figure 1.)[5]

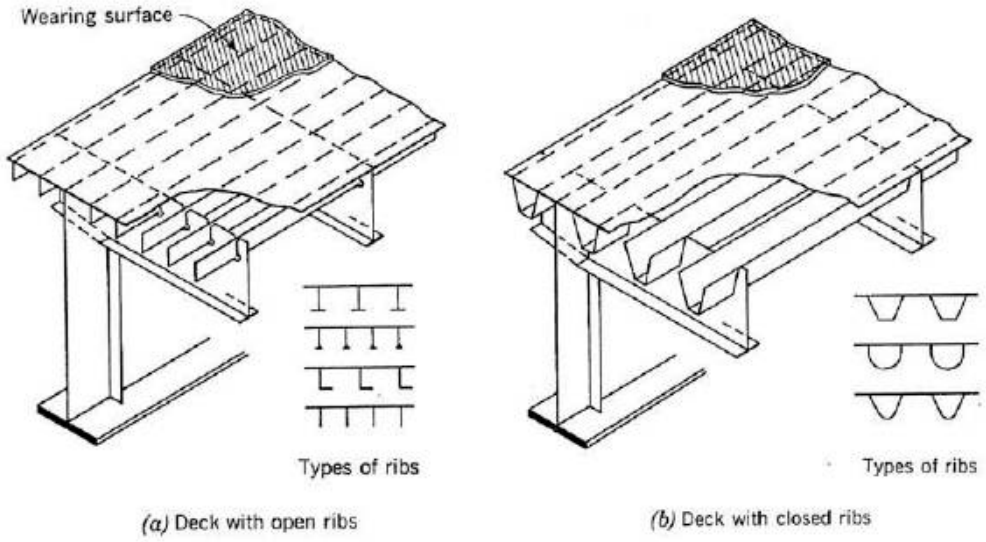


Figure 1. Typical orthotropic deck types. Source: Steel Bridge Design Handbook: Bridge Deck Design (taken from AISC 16).

The modern orthotropic steel deck bridge has its origin in experiments undertaken in the 1930s by engineers working with the American Institute of Steel Construction who attempted to reduce dead weight on highway bridges. They called the system battle -deck flooring because it was

[4] M.S. Troitsky, *Orthotropic Bridges: Theory and Design,* (Cleveland, OH: James F. Lincoln Arc Welding Foundation, 1967) 21-26 and *Design Manual for Orthotropic Steel Plate Deck Bridges*, New York: American Institute of Steel Construction, 1963, 1-2.

[5] Federal Highway Administration, *Steel Bridge Design Handbook*, and *Design Manual for Orthotropic Steel Plate Deck Bridges*, 1-2.

hoped to be as strong as a battleship. Several scale models were built and tested under various loads; ultimately it was found that, while somewhat successful, the new system did not function as hoped. It was, however, found to be an effective deck system for moveable bridges as well as replacement decks for existing bridges.[6]

At the same time the Americans were testing the battle-deck system, German engineers were working on similar experiments with steel plate decks stiffened in both directions with shallow ribbed grid-work. Because of the significant labor costs in welding ribs to the deck, it was realized that steel decks were best used on long-span bridges. The first steel plate deck bridge, the Kurpfalz Bridge over the Neckar River in Mannheim, Germany, was built in 1950. German engineers continued to modify the steel deck scheme throughout the 1950s, altering the design to one that more closely resembles those of current day. By 1960, at least 40 steel deck bridges had been built around Germany. It was not until 1964 that the first such bridge was completed in North America: the Port Mann Bridge in Vancouver, Canada.[7]

When preparing their designs for their first orthotropic steel deck bridge, California bridge engineers looked to Germany for their engineering experience with the technology. E. R. Foley, Chief of the Division of Bay Toll Crossings, traveled to West Germany in the spring of 1964 to consult with that countrys leading experts on the design of orthotropic deck bridges, and to have those German experts review the design for the San Mateo-Hayward Bridge (35 0054).[8] The first orthotropic steel deck bridge built in California is a rather simple bridge, located within the I-580 and I-680 interchange, in Alameda County, near the City of Dublin, California . The four span bridge (33 0371G), which was completed in 1965, has two spans of 75 feet and two of 85 feet. It was designed with two completely different rib and deck systems as well as two different wearing surfaces. The Division of Highways (the precursor agency of the Department of Transportation) constructed the bridge as an experiment to check the accuracy of the design software as well as deck wearing surfaces.[9] A second experimental bridge, in actuality just the two outside lanes of a wider bridge, Ulatis Creek Bridge (23 0052R), was constructed by the Division of Bay Toll Crossings in 1966, again, to test as a deck wearing surfaces. This bridge was a five span bridge, each span measuring 26 feet. What was learned at these two bridges was used in the design and construction of much larger structures: the 1967 San Mateo-Hayward and the 1969 San Diego-Coronado (57 0857) Bridges.

When it opened in 1967, the 750-foot main span of the San Mateo-Hayward Bridge was the longest bridge span in California that was not a suspension or cantilever truss structure, and it retains that distinction to the present. It was also the longest steel girder span in the United States

[6] Alfred R. Mangus, *The California Orthotropic Steel Bridges 1964-2004* (manuscript on file at the California Department of Transportation Library and History center, 2004), 1.
[7] Troitsky, *Design Manual for Orthotropic Steel Plate Deck Bridges*, 3-5.
[8] San Mateo -Hayward Bridge, *California Highways and Public Works*, September-October 1964, 65 and San Mateo-Hayward Bridge, *San Francisco Chronicle*, 6 May 1964, 22.
[9] Mangus, Alfred R. and California Department of Public Works, *Surfacing California's First Orthotropic Deck Plate Bridge*, ed. B. Gunderson, (Sacramento, CA: Division of Highways, Bridge Department 1967), 2.

in the mid-1960s.[10] The bridges orthotropic deck was one of the earliest uses of this new technology in the country, and the 5,500-foot length of the orthotropic deck made it one of the worlds largest applications of this technology at the time. In 1968, the new bridge received the Outstanding Civil Engineering Achievement Award from the American Society of Civil Engineers.[11] More recently, the original concrete deck of the Golden Gate Bridge was replaced by a steel orthotropic deck, which significantly reduced the dead load of the superstructure supported by the suspension cables. The new East Span of the San Francisco Oakland Bay Bridge also incorporated orthotropic steel deck technology. Today California is home to nearly half of all the orthotropic deck bridges in the country, more than any other state.[12]

Steel Box Girder

Steel box girder bridges are configured with hollow box-shaped beams, either in U or trapezoidal-shaped section(s), as the superstructure. Bridges can be as simple as a single girder span, but often incorporate multiple boxes tied together. The fabricated girders are composed of a bottom flange, two webs and two top flanges, creating a box or open cell configuration (see Figure 2). Typically, the steel box is matched with a concrete deck closing the cell section to form a continuous unit. For longer spans orthotropic decks are often used. The ends of individual box girders are closed with a solid-plate diaphragm. As needed, internal arrangements may include struts and diagonals, acting as a type of truss work, as well as solid plate diaphragms as vertical stiffeners. [13]

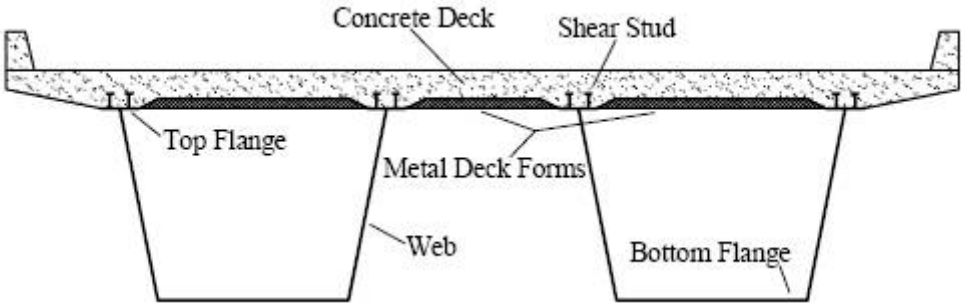


Figure 2. Typical Cross Section of Trapezoidal Box Girder System. Source: Design Guidelines for Steel Trapezoidal Box girder Systems.

Steel box girder bridges have several advantages to other structure types. The smooth girder shape provides a sleek appearance much admired in modern bridge design. Because the superstructure is enclosed, there are few places for debris to collect, lowering maintenance

[10] Building the Bays New Bridge, *San Francisco Chronicle*, 27 October 1965, 4.
[11] San Mateo Bridge Gets an Award, *San Francisco Chronicle*, 17 July 1968, 6.
[12] There are approximately 50 orthotropic deck bridges in the US, of those California maintains 17, see Alfred R. Mangus, *Orthotropic Bridges in the U.S.A. Built from 1960 to 2003* (2004), http://orthotropic-bridge.org/2004BridgePages/Pages/USA.htm (accessed October 2014).
[13] Texas Department of Transportation, *Design Guidelines for Steel Trapezoidal Box Girder Systems*, by Todd Helwig, Joseph Yura, Reagan Herman, Eric Williamson, and Dawei Li, 2007, 2-3.

requirements. Most importantly, particularly in areas of constrained right of way, steel box girders are ideal for use in curved structures because of their strong torsional stiffness. They generally range 100 to 1000 times torsionally superior than an equivalent I-shaped section. The downside of steel box girder bridges is the high expense of steel.[14]

The cellular, box-shaped superstructure design has its roots in the work of the French engineer Eugène Freyssinet, who pioneered the concrete box girder during the 1920s. The earliest examples of concrete box girder structures in the United States date to the 1930s. Advances in higher strength steels and welding technologies developed during the 1940s allowed engineers to experiment with similar designs in steel in the 1950s. Because of the need to rebuild quickly following World War II, many of the earliest steel box girder bridges are found in Europe, England in particular. The first example erected in the United States was in 1951, across the Snoqualmie River about twenty miles east of Seattle, Washington. While steel box girder bridges have several advantages over concrete, be that aesthetically or as more efficient use of structural steel, they are also expensive. Early on some transportation departments had concerns about the ability to inspect the girders as well as potential problems with deck replacement. Because of this, steel box girder bridges were not universally accepted across the United States.[15]

There are relatively few steel box girder bridges in California. Of the 25,000 bridges across the state there are only 16 with a steel box girder superstructure. The earliest example is a medium span over Indian Creek, within the community of Happy Camp, in Siskiyou County. Indian Creek Bridge (2C0147) was completed in 1966; the superstructure is composed of six fairly small steel box girders, rather than a smaller number of larger boxes, which became the more common steel box girder design in California. That same year the Klamath River Bridge (04 0069) also was completed using a combination of steel box girder superstructure and a suspended span. Other early bridges of this type include a pair (28C0315 and 28C0316) erected in 1968, over MacDonald Avenue, in Richmond, as part of the Bay Area Rapid Transit system (BART).[16] Three other steel box girder bridges were built in the late 1960s and early 1970s. Two of these were evaluated as part of this effort. Of the remaining six, three were constructed in the 1980s, two in the 1990s and the most recent, the Self Anchored Suspension span of the San Francisco-Oakland Bay Bridge (33 0025), which opened in 2013. The 1981 Dumbarton Bridge (35 0038), crossing the San Francisco Bay and connecting Fremont with Menlo Park, was the first long span steel box girder bridge built by the California Department of Transportation.

[14] *Design Guidelines for Steel Trapezoidal Box Girder Systems*, 1.

[15] *Design Guidelines for Steel Trapezoidal Box Girder System;* Jessica B. Feldman, Myra L. Frank & Associates, Inc., *Caltrans Historic Bridges Inventory Update: Concrete Box Girder Bridges* , with revisions by Andy Hope, Sacramento, CA: California Department of Transportation 2004, 5-6; and AASHTO/NBSA Steel Bridge Collaboration, *G 13.1 Guidelines for Steel Girder Bridge Analysis*. (Washington, D.C.: AASHTO/NSBA Steel Bridge Collaboration, 2011), .2-1.

[16] The BART bridges were not evaluated as part of this effort because the BART system as a whole should be evaluated for its eligibility for inclusion in the National and California Registers.

Segmental Concrete Box Girder

Segmental concrete box girder bridges are structures composed of a number of short box units attached together, end on end, and post-tensioned to complete the superstructure (see Figure 3). In cross-section they are similar to the standard concrete box girder. It is in their construction methodology that they most differ. Rather than being composed of a complete box for the length of the span, the distance crossed is made up of multiple transverse segments strung together with cables, the joints bonded with concrete or high-strength epoxy.[17]

Such bridges can be precast or cast-in-place. Precasting industrializes the process allowing for easy quality control as well as reuse of the formwork. Surface finishing can be performed at ground level rather than on scaffolding on site. Segments are cast in short sections easing transportation over distances. The units also permit rapid assembly and with limited disruption of the traffic below. Segmental concrete box girder bridges can be erected via cantilevering and do not require falsework or centering, which is particularly helpful when environmental factors under the span complicate accessibility.

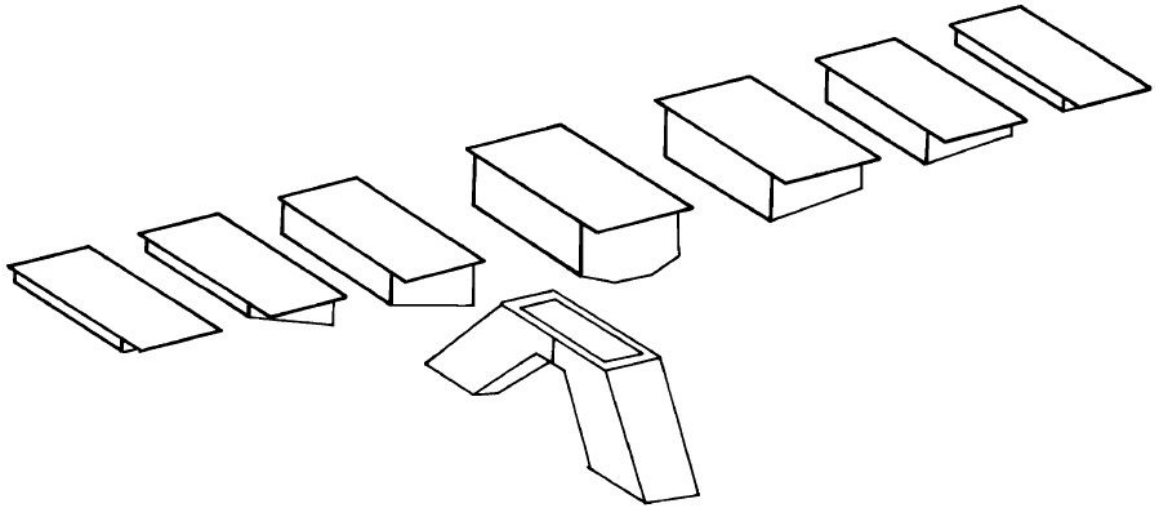


Figure 3. Typical Pattern for a Segmental Box Girder Superstructure. Source: Long Span Prestressed Concrete Bridges of Segmental Construction: State of the Art.

The cast-in-place construction method removes the need for transportation required with precasting complete beams, but necessitates the erection of formwork onsite. Forms are connected to the previously installed segment followed by the installation of reinforcing steel and concrete. Unlike precast segments, cast-in-place construction allows for continuous

[17] Charles Redfield, Chuck Seim and T.Y. Lin, Segmental Construction for Concrete and Steel Bridges that Incorporate Posttensioning, in *Segmental and System Bridge Construction; Concrete Box Girder Design* (Washington D.C.: Transportation Research Board, 1982), 18.

reinforcement in the superstructure. Like precast components, cast-in-place segments can be constructed rapidly using cantilever methods and without falsework.

The earliest segmental concrete box girder bridges were constructed in the 1950s. However, because they are most economical when used for longer spans, they found limited early success in freeway applications. Most of the early interstate bridges in California were short or medium span structures, and as a result, segmental concrete box girder bridges could not compete with the more economical standardized concrete box girder designs. In 1967, however, a special American Association of State Highway Officials (AASHO) Traffic Safety Committee called for the elimination of bridge piers placed adjacent to the outside shoulders of highways. As a result of this policy, during the 1960s there was increasing demand for longer bridges, and segmental concrete box girders were the primary choice of many state transportation departments.[18]

As with concrete box girder construction, Eugène Freyssinet also pioneered the modern use of precast segmental design. The Luzancy Bridge over the Marne River, France, was the first bridge constructed using precast segmental construction techniques, built between 1941 and 1946 (completed following World War II). Although not a segmental box girder bridge, the techniques established there led the way for their development. Completed in 1962, Jean Muller, a protégé of Freyssinet, designed the first true segmental concrete box girder bridge for the Choisy-le-Roi Bridge, north of Paris, over the River Seine. The John F. Kennedy Memorial Causeway in Corpus Christi, Texas, finished in 1973, was the first such bridge erected in the United States.[19]

California designers were quick to employ segmental concrete box girder construction, particularly the cast-in-place variety. As early as 1969, the Division of Highways was planning the Pine Valley Creek Bridge (57 0692R/L), 40 miles east of San Diego. When completed in 1974, it was the first cast-in-place cantilevered segmental concrete box girder bridge in the U.S. The structure, which consisted of two parallel trapezoidal box girders, was also likely the longest box girder span in the country with a main span of 450 feet and a total length of 1716 feet. Site restrictions, economics and ecological considerations influenced the design. Building the bridge segment by segment, and cantilevering construction of the superstructure from the piers, allowed contractors to erect the structure with limited work from the canyon floor some 300 feet below the deck. The result was protection of sensitive habitat and cost savings. [20]

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[18] G. C. Lacey and J. E. Breen, *Long Span Prestressed Concrete Bridges of Segmental Construction: State of the Art*, (Austin, TX: Center for Highway Research, 1969), 1.

[19] The JFK Memorial Causeway utilized precast segmental concrete box girder construction. K. Koseki and J. E. Breen, *Exploratory Study of Shear Strength of Joints for Precast Segmental Bridges* (Austin, TX: Center for Highway Research, 1983), 1; Jean M. Muller, "Aesthetics and Concrete Segmental Bridges," in *Bridge Aesthetics Around the World* (Washington, D.C: Transportation Research Board, National Research Council, 1991) 18-19; and Post-Tensioning Institute, Post-Tensioning Manual (Phoenix, AZ: Post-Tensioning Institute, 1987), 30-33.

[20] Juan A. Murillo, "Modern Bridge Construction and Engineering Services," from *Managing Innovation: Cases from the Services Industries*, eds. Bruce R. Guile, James Brian Quinn (Washington, D.C.: National Academies, 1988), 170; Walter Podolny Jr. and Jean M. Muller, *Construction and Design of Prestressed Concrete Segmental Bridges* (New York: John Wiley & Sons, 1982), 27; and Post-Tensioning Institute, 34.

There is one other bridge classified as a precast segmental concrete box girder structure: the Schnell School Road Underpass (25C0065), erected by the City of Placerville in 1970 to support a rail line, supposedly the oldest in California. However, rather than the transverse unit type that defines the bridge type, the span was composed of four individual longitudinal precast segments ganged together to form a single box girder. This design is most similar to the early designs of Freyssinet, rather than those of Muller. While it was constructed in segments at an offsite facility, it was not completed in the way that defined the bridge type. It is more closely associated with earlier concrete prestressed and box girder designs.

Segmental construction has steadily increased since the completion of the John F. Kennedy Memorial Causeway and the Pine Valley Creek Bridge. The cast-in-place variety is the most common type in the state. While the benefits of precast segmental construction are many, there has been trepidation utilizing them in seismic zones such as California. No precast segmental concrete box girder bridges were identified as having been constructed within 1965-1974 period. Several such bridges recently have been erected in California including the 2009 South Fork Eel River Bridge (10 0299), the 2009 Folsom Dam Bridge (no number), and the skyway of the San Francisco-Oakland Bay Bridge (33 0025) and Devils Slide Bridges (35 0331R/L) , both opened in 2013.

VII. Conclusion

Of the 47 structures identified for individual evaluation, Caltrans has concluded that 11 are eligible for inclusion in the National Register and appear eligible for inclusion on the California Register. Appendix A contains the DPR 523 forms for these bridges. Caltrans has assigned the 11 bridges listed below a Caltrans National Register status designation of Category 2 (determined eligible for the National Register) in the Statewide Historic Bridge Inventory.

Table 4: Bridges determined eligible for the National Register and meet California Register eligibility criteria

Bridge Number	County	District	Bridge Type	Criterion; Reason	Period/Level of Significance
02C0147	Siskiyou	2	Steel box girder	C/3; New bridge type	1966/State
04 0069	Humboldt	1	Steel suspension	C/3; rare & significant type	1966/State
04 0155	Humboldt	1	Concrete box girder	C/3; long span	1969/State
19C0060	Placer	3	Steel Truss	C/3; significant type	1972/State
33C0147	Alameda	4	Steel bascule	C/3; significant type	1974/State

33C0202	Alameda	4	Concrete girder	C/3; design/ aesthetics	1966/State
Bridge Number	County	District	Bridge Type	Criterion; Reason	Period/Level of Significance
53C0551L	Los Angeles	7	Steel box girder	C/3; new bridge type	1969/State
53C0551R	Los Angeles	7	Steel box girder	C/3; new bridge type	1969/State
57 0619	San Diego	11	Concrete box girder	C/3; design/ aesthetics	1970/State
57 0762	San Diego	11	Concrete box girder	C/3; design/ aesthetics	1971/State
57 0857	San Diego	11	Orthotropic deck	C/3; new bridge type	1969/State

Two structures, bridges 12 0188 and 12C0199, were identified as part of a larger property that has the potential to be eligible for inclusion on the National Register as well as the California Register. Caltrans concluded that both of these bridges are not individually significant under any of the National Register or California Register criteria; however they may contribute the Oroville Dam Project, a larger resource that appears to have the potential significance under both National Register Criteria A and C of the National Register and California Register Criteria 1 and 3. A determination of eligibility for the larger resource is outside the scope of this survey. Appendix B contains the DPR 523 forms for these structures. Caltrans has assigned these bridges a Caltrans National Register status designation of Category 4 (status undetermined, requires further research) in the Statewide Historic Bridge Inventory. They are listed below:

Table 5: Individually ineligible bridges that are part of the potentially significant Oroville Dam

Bridge No.	County	District	Bridge Type
12 0188	Butte	3	steel suspension
12C0199	Butte	3	steel truss

Caltrans has determined that the 34 bridges listed in Table 6 below are not eligible for inclusion in the National Register and do not appear eligible for inclusion in the California Register under any criteria. Appendix C contains the DPR 523 forms for these structures. Caltrans has assigned these bridges a Caltrans National Register status designation of Category 5 (determined not eligible for the National Register) in the Statewide Historic Bridge Inventory.

Table 6: Bridges determined ineligible for the National Register and do not meet California Register eligibility criteria

Bridge No.	County	District	Bridge Type
02 0156	Siskiyou	2	steel girder
02 0157	Siskiyou	2	concrete girder
04 0014	Humboldt	1	steel girder
04 0016L	Humboldt	1	concrete box girder
04 0225	Humboldt	1	metal arch
04C0124	Humboldt	1	timber truss
04C0236	Humboldt	1	steel girder
09C0148	Plumas	2	steel truss
10C0005	Mendocino	1	steel girder
12 0184	Butte	3	steel girder
17 0077	Nevada	3	concrete box girder
19 0077	Placer	3	concrete box girder
24 0004L	Sacramento	3	steel girder
24 0004R	Sacramento	3	steel girder
25C0065	El Dorado	3	conc. seg. box girder
28 0015L	Contra Costa	4	tunnel
29 0203	San Joaquin	10	steel girder
32 0018	Tuolumne	10	steel girder
35 0173L	San Mateo	4	tunnel
35 0246F	San Mateo	4	tunnel
36C0102	Santa Cruz	5	concrete box girder
38C0170	Stanislaus	10	steel truss
40 0048	Mariposa	10	concrete box girder
44C0064	Monterey	5	tunnel
50 0279	Kern	6	steel girder
53C0556	Los Angeles	7	metal arch

53C0899R	Los Angeles	7	tunnel
53C0900R	Los Angeles	7	tunnel
Bridge No.	County	District	Bridge Type
53C0901R	Los Angeles	7	tunnel
53C1560	Los Angeles	7	wooden arch
53 2639	Los Angeles	7	steel truss
54C0192	San Bernardino	8	steel truss
57 0676	San Diego	11	concrete box girder
57 0678	San Diego	11	concrete box girder

VIII. Preparers Qualif ications

Qualifications of all Caltrans Professionally Qualified Staff (PQS) are on file with the Cultural Studies Office, Division of Environmental Analysis, Caltrans.

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Attachments:

DPR 523 Forms

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 02 0156

P1. Other Identifier: Klamath River Bridge (Lyle H. Davis Memorial Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Siskiyou
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Bark Shanty Gulch **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
The Klamath River Bridge is located in Siskiyou County on State Route 96 at post mile 5.08.

***P3a. Description:**
The Klamath River Bridge (a.k.a. Lyle H. Davis Memorial Bridge) is located in Siskiyou County on US 96, a route that runs through both the Klamath and Six Rivers National Forests, in the Pacific Coast Ranges. The bridge carries one lane of traffic in each direction. Bridge 02 0156 is a long span steel girder structure, 904 feet in length that crosses the Klamath River at a skew of 99 degrees. The bridge has four spans with the main span measuring 225 feet in length. (See Continuation Sheet, page 3)

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north,
June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1970, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 02 0156

B1. Historic Name:

B2. Common Name: Klamath River Bridge (Lyle H. Davis Memorial Bridge)

B3. Original Use: Bridge

B4. Present Use: Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The bridge was built in 1970, and in 1990 new guard railing was installed at all four corners of the bridge at its approaches. The old Type 9-11 curved end sections were replaced with a concrete end post.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: E. G. Klein, Bridge Department, California Division of Highways

b. Builder: Dillingham Construction Corp.

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Klamath River Bridge was constructed by Dillingham Construction Corp. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 02-0156 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant at the national, state, or local level under National Register Criterion A or California Register Criterion 1. The bridge was dedicated to Lyle H. Davis in 1974, who died March 13, 1974, operating heavy equipment while pioneering a new road on Route 96 near Windy Point between Orleans and Somes Bar. Lyle H. Davis did not make a significant contribution to history at the local, state, or national level. Klamath River Bridge it is not associated with the lives of persons significant in the past and is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Klamath River Bridge was constructed in 1970. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

October 1, 2014

(This space reserved for official comments.)



*Required information

***P3a. Description (continued):**

By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete.

The two continuous four-span curved welded steel plate girders have a composite cast in place reinforced concrete deck on seat abutments and reinforced concrete single column piers. Abutment 1 is founded on driven steel H-piles, bents 2 and 4 are on a reinforced concrete pile shaft, bent 3 and abutment 5 are on cast- in-drilled-hole reinforced concrete piles. The superstructure has a hinge on each side of the cap of bent 3 with a single steel finger deck joint centered over the bent cap. The girders are on rocker bearings at the abutments, while the bent caps are on elastomeric bearing pads at the piers. The two lane bridge has Type 9-11 railing.

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in the Klamath River Bridge, were not considered a significant technological achievement. Bridge 02-0156 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Klamath River Bridge with a total length of 904 feet and main span of 225 feet in length is not significant as a work of civil engineering. The Klamath River Bridge is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 02-0156 was erected as a typical transportation improvement project of the period and is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local level and, therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history at the national, state, or local level and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 02-0156 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Klamath River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 02-0156 is not eligible for inclusion on the National Register or the California Register.

***B12. References:**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (April 1958): 86-87.California Division of Highways. "As Built Plans – Bridge 02 0156." 1967.

Caltrans Bridge Inspection Report: September 20, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

*Recorded by: Janice Calpo *Date: October 1, 2014 ☒ Continuation ☐ Update

P5b. Photographs (continued):



View looking south, June 4, 2014



Oblique view of the east side of the bridge from the deck at Pier 2, June 4, 2014



View looking west, downstream of the bridge, June 4, 2014



View of the superstructure in Span 4 from the terrain adjacent to Abutment 5, June 4, 2014

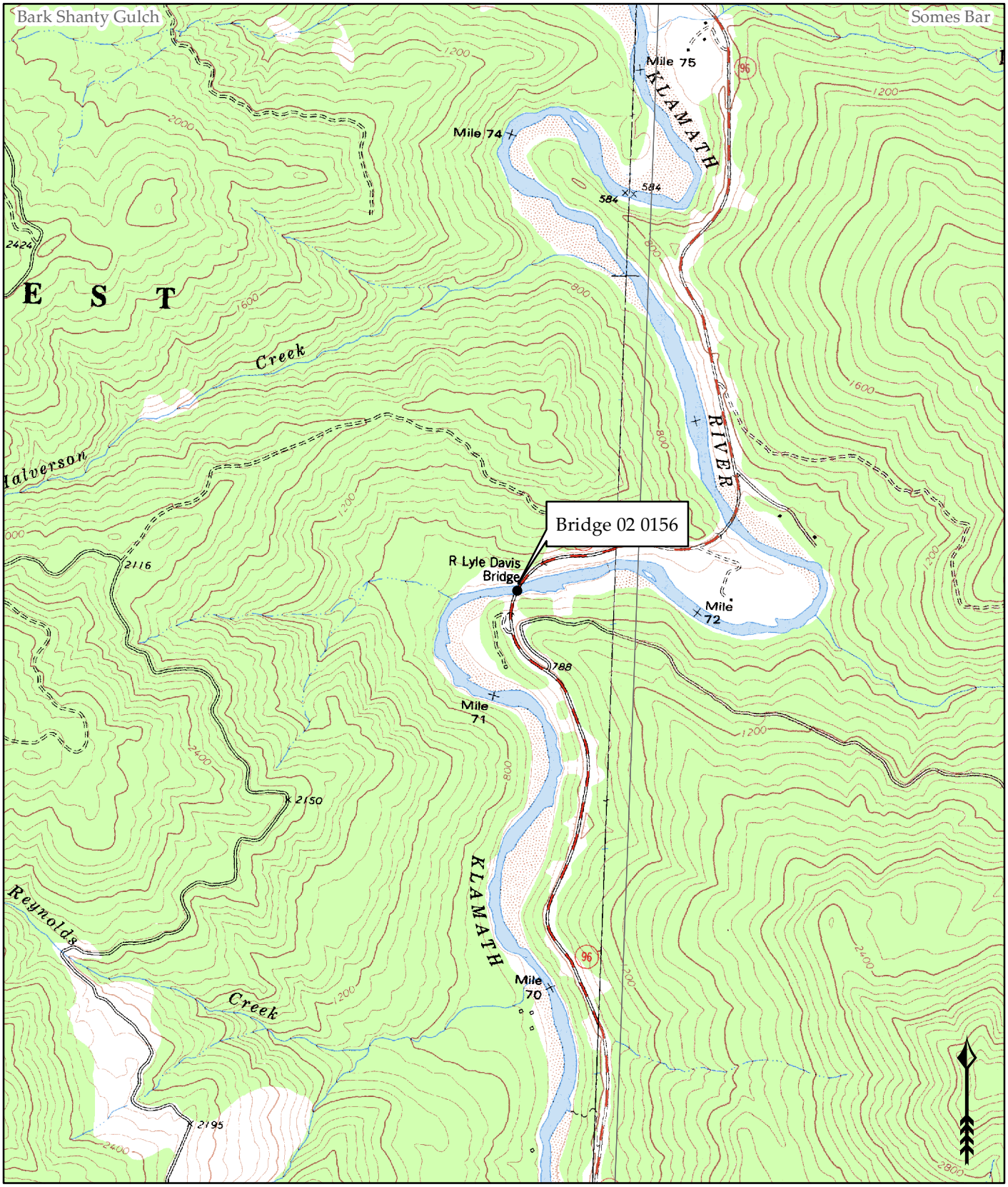
State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 02 0156

*Map Name: Bark Shanty Gulch *Scale: 1:24,000 *Date of Map: 1974



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #** Bridge 02 0157

P1. Other Identifier: Klamath River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Siskiyou
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Somes Bar **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Klamath River Bridge is located in Siskiyou County on State Route 96 at post mile 5.57, 5 miles north of Somes Bar.

***P3a. Description:**
The Klamath River Bridge carries two lanes of State Route 96 over the Klamath River. Bridge 02 0157 is a long span steel girder structure, 906 feet in length, that crosses the Klamath River at a skew of 21 degrees. The continuous 5-span curved welded steel plate girders have a composite concrete deck, covered with thin asphalt concrete overlay, on seat abutments and concrete single column piers. The columns are spherical and with an indentation on the north side approximately half way up, which thins the columns and makes them more visually interesting. The center of Span 3 is suspended. The girders are on rocker bearings at the abutments, while the bent caps are on elastorneric bearing pads at the piers. The two lane bridge has type 9-11 railing on both sides of the roadway.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1970, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
June 4, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 02 0157

B1. Historic Name:

B2. Common Name: Klamath River Bridge

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The Klamath River Bridge was built in 1970. Since its construction the bridge has undergone minor maintenance, including: seal replacement on the north abutment (1973); and, chip seal applied to the deck surface (1987, 1989). In 1990, new approach guard railing was installed; the Type 9-11 end sections were replaced with concrete railing end posts.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The bridge is located on State Route 96.

B9a. Architect: E. G. Klein, Bridge Department, California Division of Highways b. Builder:

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Klamath River Bridge was constructed by California Division of Highways. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 02 0157 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events at the national, state, or local level that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, therefore it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Klamath River Bridge was constructed in 1970. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in the Klamath River Bridge were not considered a significant technological achievement. Bridge 02 0157 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Klamath River Bridge with a total length of 904 feet and main span of 225 feet in length is not significant as a work of civil engineering. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering. The Klamath River Bridge is not significant at the national, state, or local level under National Register Criterion C or California Register Criterion 3.

Bridge 02-0157 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local level and, therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in our history at the national, state, or local level and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 02 0157 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Klamath River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 02 0157 is not eligible for inclusion on the National Register or the California Register.

***B12. References (continued):**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 02 0157." 1967.

Caltrans Bridge Inspection Report: September 20, 2012

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking south, June 4, 2014.



View looking southwest, June 4, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

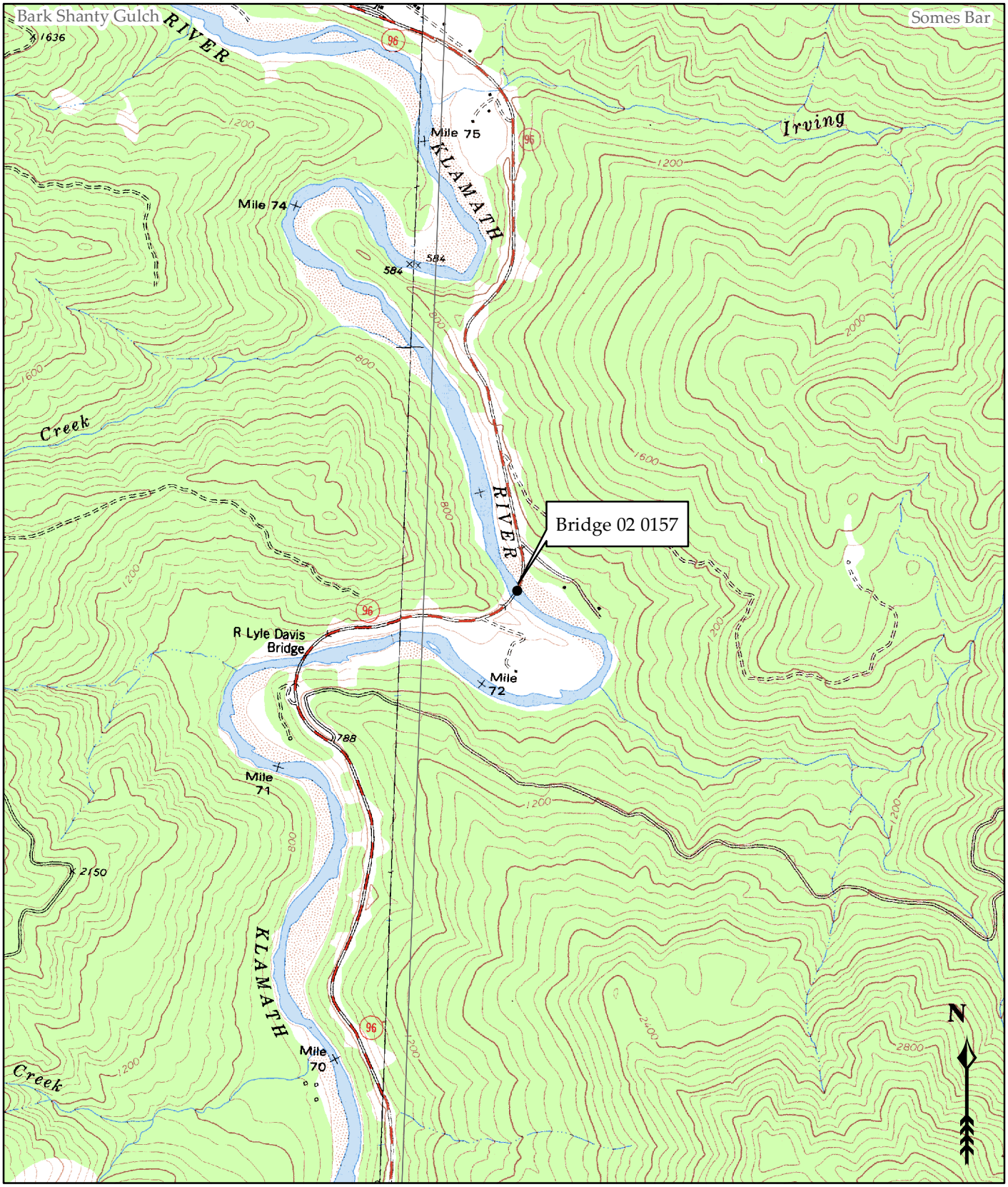
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 02 0157

*Map Name: Somes Bar

*Scale: 1:24,000

*Date of Map: 1979



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 02C0147

P1. Other Identifier: Indian Creek Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Siskiyou
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Happy Camp **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
Second Avenue at Indian Creek Road

***P3a. Description:**
Bridge 02C0147 is a steel box girder structure that carries Second Avenue, within the community of Happy Camp, over Indian Creek. It supports two lanes of traffic and a pedestrian walkway on the southern side. The bridge is 203 feet long with three spans. The central span is 78 feet in length. The superstructure is composed of six continuous composite welded steel box girders. These box girders are unique in their design. Rather than a single larger box, six smaller boxes were used, with a top and bottom flange, to achieve a very narrow profile. The substructure is two solid pier walls within the creek bed and cantilever seat abutments at the approaches. The piers and abutment 4 (east) are on spread footings, while abutment 1 (west) is on steel piles. Bridge railings are Type 1, a combination of concrete stemwall and horizontal metal tube. A chain link fence and railing protect pedestrians along the south elevation.

***P3b. Resource Attributes:** HP19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking south,
June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1966, Caltrans Bridge Files
***P7. Owner and Address:**
Siskiyou County
311 4th Street, #204
Yreka, CA 96097
***P8. Recorded by:**
Janice Calpo,
Dept. of Transportation
1120 N Street
Sacramento, CA 95818
***P9. Date Recorded:**
October 1, 201
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 02C0147

B1. Historic Name: Indian Creek Bridge
B2. Common Name: Indian Creek Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The Indian Creek Bridge was built in 1966 and relinquished to Siskiyou County later that year. The bridge has undergone minor maintenance since its construction, including spall repair (1992).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The Indian Creek Bridge is located on Second Avenue over the Indian Creek.

B9a. Architect: California Division of Highways, Bridge Dept., Design Section **b. Builder**: Hughes & Ladd, Inc.
***B10. Significance: Theme:** Engineering **Area:** State
Period of Significance: 1966 **Property Type:** Structure **Applicable Criteria:** C
The Indian Creek Bridge was constructed in 1966 by the California Division of Highways as part of State Route 96. Soon after the bridge was finished, having completed a bypass around Happy Camp, the section of Highway 96 passing through town was relinquished, including the bridge, to Siskiyou County. Bridge 02C0147 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. Additionally, the bridge is not associated with other events at the national, state, and local level that would make it significant under National Register Criterion A or California Register Criterion 1. Indian Creek Bridge is not associated with the lives of persons significant in our past at the national, state, or local level, and therefore is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of only 16 bridges of its type in the state and is the first of its kind to be erected. The earliest examples of box girder structures in the United States date to the 1930s and were composed of concrete rather than steel. Advances in higher strength steels and welding technologies developed during the 1940s allowed engineers to experiment with similar designs in steel in the 1950s. The first steel box girder bridge erected in the United States was in 1951, in Washington state. Indian Creek Bridge was completed in 1966; the superstructure is composed of six fairly shallow steel box girders, rather than a smaller number of larger boxes, which became the more common steel box girder design in California. Only five other steel box girder bridges were built in the (see Continuation Sheet, page 3)

B11. Additional Resource Attributes:
***B12. References:** (see Continuation Sheet, page 3)
B13. Remarks:
***B14. Evaluator:**
Noah Stewart
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(Sketch Map with north arrow required.)



(This space reserved for official comments.)

B10. Significance (continued):

late 1960s and early 1970s. Indian Creek Bridge (02C0147) is significant under National Register Criterion C and California Register Criterion 3 as it embodies the distinctive characteristics of early steel box girder bridge design in California and was the first steel box girder bridge erected in the state. Additionally, its superstructure design is unique being composed of six fairly shallow steel box girders, which allowed the designers to achieve the slender profile appreciated by engineers of the era. It is a sleek design that was both economical to construct and attractive to the observer. The bridge is a significant example of a steel box girder structure exhibiting mid-twentieth-century aesthetics applied to a bridge design and significant under National Register Criterion C and California Register Criterion 3.

Bridge 02C0147was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local levels, and therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history at the national, state, or local levels and therefore is not significant under National Register Criterion B or California Register Criterion 2. Bridge 02C0147 does embody the distinctive characteristics of steel box girder construction. Indian Creek Bridge is significant under National Register Criterion C and California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is not significant under National Register Criterion D or California Register Criterion 4.

Bridge 02C0147 is eligible for inclusion in the National Register under Criterion C and the California Register under Criterion 3 and maintains a high degree of integrity. It is located in the place where it was constructed and retains its integrity of location. The design has not been altered in any significant way since its completion; Indian Creek Bridge posses its integrity of design. The setting has changed little since the bridge's construction and, as such, bridge 02C0147 retains its integrity of setting. Like its integrity of design, because there have been no significant alterations to bridge 02C0147, it maintains its integrity of materials as well as workmanship, appearing to be the work of modern engineers. Integrity of feeling, the expression of the aesthetic or historic sense of a particular period of time, is also retained. Indian Creek Bridge is not associated with an important historic event or person at the national, state, or local level, therefore integrity of association is not applicable to this historic property.

***B12. References:**

California Division of Highways. "As Built Plans – Bridge 02C0147," 1972.

Caltrans Bridge Inspection Report: August 21, 2013.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. Historic Resource Evaluation Report – *Caltrans Statewide Historic Bridge Inventory: 2010 Update.* California Department of Transportation, 2010.

P5b. Photographs (continued):



Underside of Bridge 02C0147, looking west, June 4, 2014



Roadway view of Bridge 02C0147, looking west, June 4, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

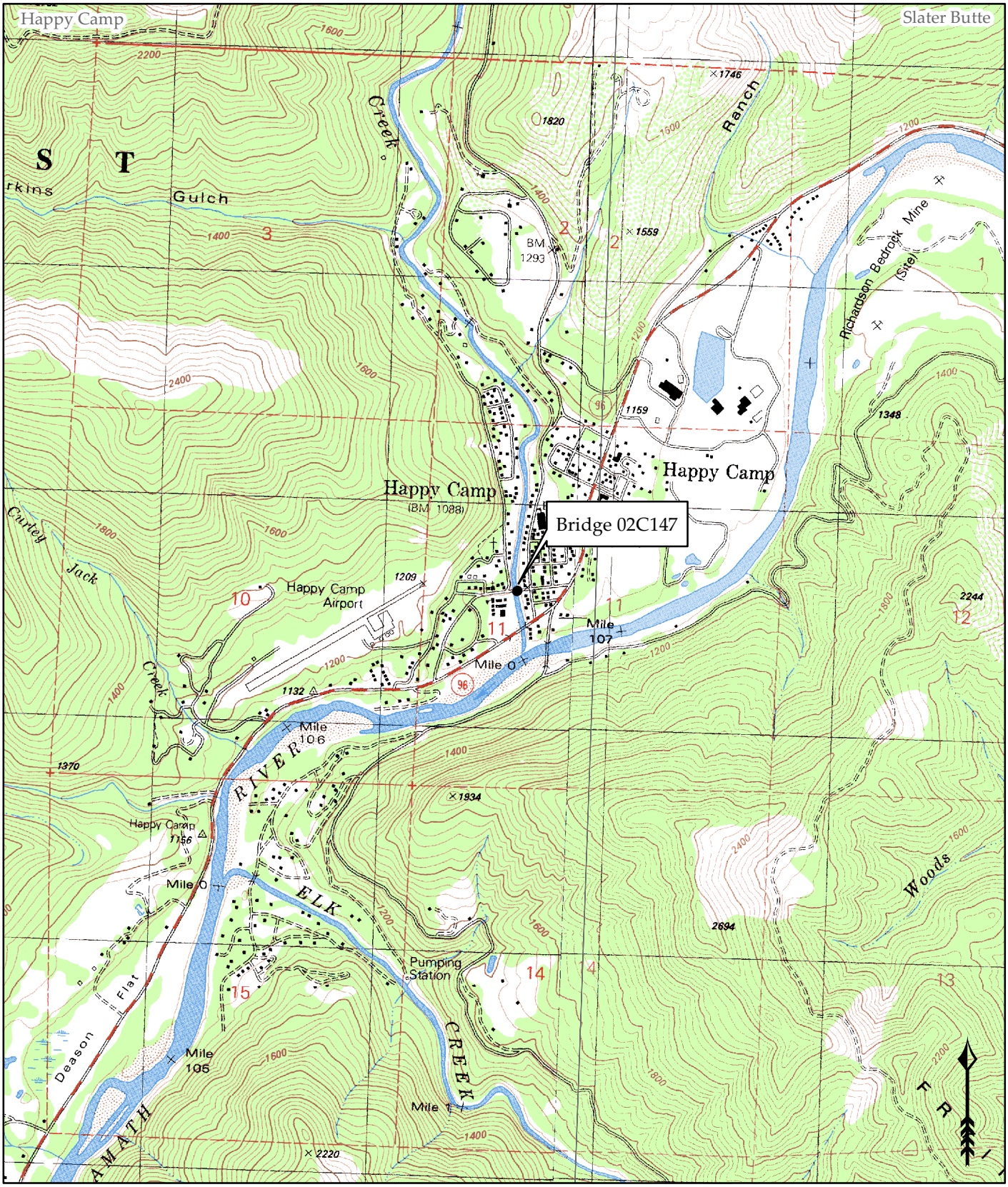
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 02C0147

*Map Name: Happy Camp

*Scale: 1:24,000

*Date of Map: 1980



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 04 0014

P1. Other Identifier: Eel River Bridge and Overhead (Richard Fleischer Memorial Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Humboldt
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Scotia **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
The Eel River Bridge and Overhead is located in Humboldt County on State Route 101 at post mile 48.69.

***P3a. Description:**
The Eel River Bridge carries State Route 101 over the Eel River. It is a long span steel girder structure, 1020 feet in length. The bridge has 5 spans with the main span measuring 280 feet. It has simple spans (Spans 1 and 5) and four continuous composite welded steel plate girders (in Spans 2, 3, 4) with a reinforced concrete deck. The steel girders widen to hunches where connected to the columns which are on reinforced seat abutments and reinforced hollow piers. All piers are on steel piles except Pier 5, which is on a spread footing. The four lane bridge has Type 1 railing.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking southwest
June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1965, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2104
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04 0014

B1. Historic Name:
B2. Common Name: Eel River Bridge and Overhead (Richard Fleischer Memorial Bridge)
B3. Original Use: Bridge **B4.** Present Use: Bridge
***B5.** Architectural Style:
***B6.** Construction History:

Bridge 04 0014 was built in 1965 and replaced the original 1916 steel truss bridge and 1960 Bridge 14 0014L, the latter of which was damaged by flooding in 1964. Bridge 04 0014 is in the location of 14 0014L, which was parallel to the 1916 truss and removed entirely in 1966. Since its construction in 1965 the bridge has undergone minor maintenance, including: installation of new support brackets to support the ends of the pipe railing (1967); and repairing the deck spall (1971). Further, a new bridge approach guard railing was placed on the north end of the structure (1979). In 1992, work was completed to repair damage caused by an earthquake, the repairs included: cross frames and lateral bracing and the restrainer cables were retensioned.

***B7.** Moved? ☒No ☐Yes ☐Unknown Date: Original Location:
***B8.** Related Features:

B9a. Architect: P.N. Olson, Bridge Department, California Division of Highways **b. Builder:** Fruin-Colnon
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Eel River Bridge and Overhead was constructed by Fruin-Colnon to replace the existing damaged bridge (04 0014L) at the same location. Bridge 04 0014 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events on the national, state, and local level that would make it significant under National Register Criterion A or California Register 1. The original Bridge 04 0014L was named by the Senate after Richard Fleisher who died in 1962. Fleischer was a realtor and civic leader who was the organizer of the Humboldt County Crab Feed head annually in Sacramento for the California Highway Commission and the State Department of Public works, and his name was passed on to Bridge 04 0014. While Fleischer was important in Humboldt County, he was not directly involved with the construction of Bridge 04 0014. The bridge is not directly associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Eel River Bridge and Overhead was constructed in 1965. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete.

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in 1965, were not considered a significant technological achievement. Bridge 04 0014 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, after which a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Eel River Bridge, with a total length of 1020 feet and main span of 280 feet in length, is not significant as a work of civil engineering, and was typical for the 1960s and 1970. The Eel River Bridge and Overhead was awarded the "Most Beautiful Bridge" Award in the category of medium span, low clearance bridges by the American Institute of Steel Construction for the year 1967. While the bridge was deemed notable for its aesthetics when compared to other bridges erected that year, it does not stand out when compared to bridges of this type. Therefore, Bridge 04 0014 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 04 0014 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, and local level, and therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history at the national, state, or local level and is therefore not significant under National Register Criterion B or California Register Criterion 2. Bridge 04 0014 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. Therefore, the Eel River Bridge and Overhead is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is therefore not significant under National Register Criterion D or California Register Criterion 4. Bridge 04 0014 is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 02 0157." 1967.

Caltrans Bridge Inspection Report: December 19, 2013

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking south, June 4, 2014.



View looking southeast, June 4 2014.



View looking southwest, July 29, 2009.



View looking north, ca. 1965.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

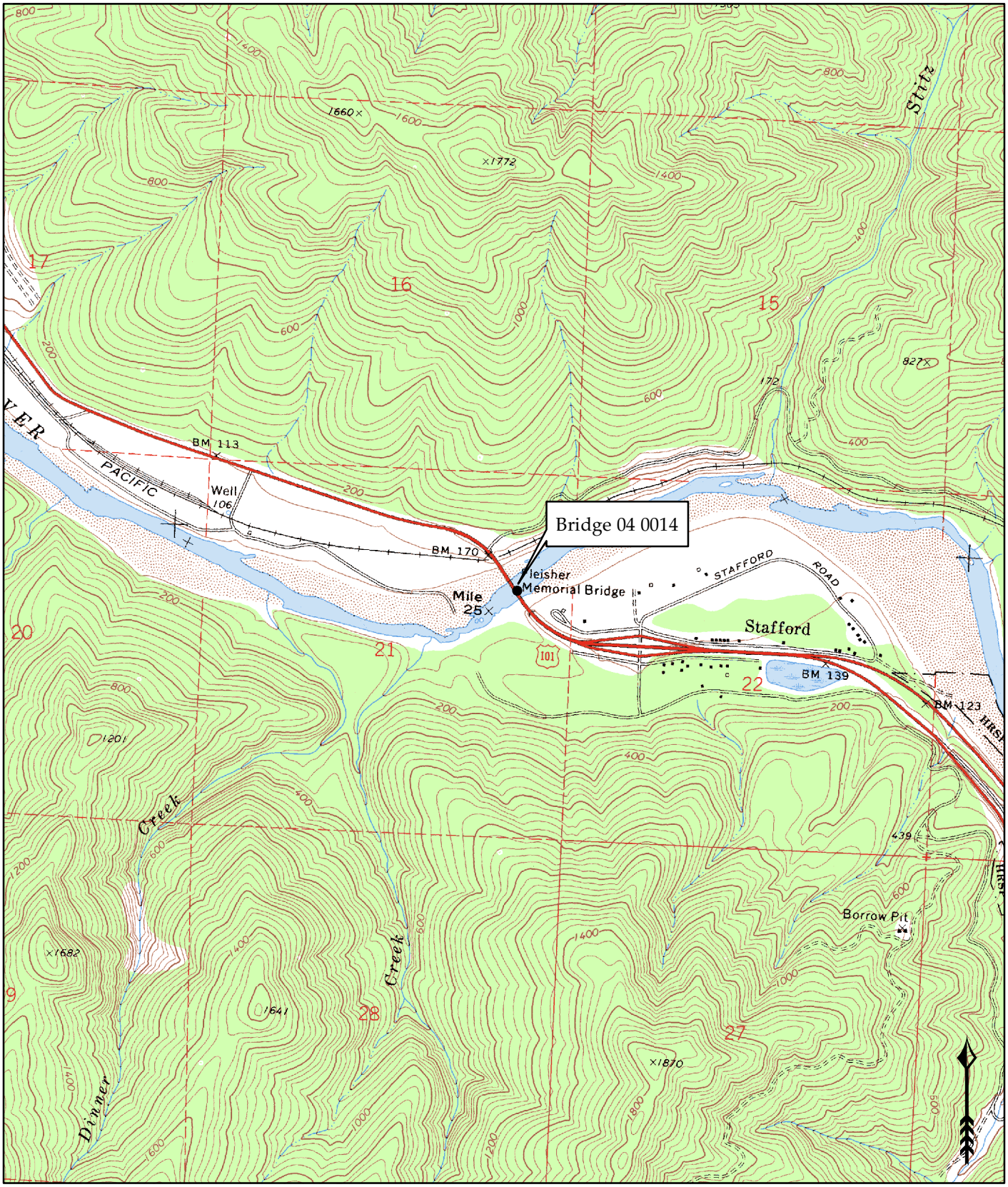
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04 0014

*Map Name: Scotia

*Scale: 1:24,000

*Date of Map: 1970



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 04 0016L

P1. Other Identifier: Eel River Bridge (Nello J Barsanti Memorial Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County:** Humboldt

***b. USGS 7.5' Quad:** Hydesville **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Rio Dell Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: Elevation:

The Eel River Bridge is located in Humboldt County on State Route 101 at post mile 53.97.

***P3a. Description:**

The bridge is part of U.S. Route 101 and crosses the Eel River just north of the town Rio Dell, and south of Eureka. Bridge 04 0016L is a long span concrete box-girder structure, 1730 feet in length and carries two lanes in the southbound direction. The bridge has seven spans with the main span measuring 300 feet in length. It has a continuous CIP PS box girder on single 10 foot octagonal, hollow core reinforced concrete columns and reinforced concrete "L" abutments. Columns are on 11 foot diameter reinforced concrete shafts; abutments are on steel piles. The two lane bridge has type 9-11 railing.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking southwest
June 6, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1974, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04 0016L

B1. Historic Name:
B2. Common Name: Eel River Bridge
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was built in 1974. Cracked shear blocks and hinges were replaced in 1993, at this time the AC ramps at the approaches were also rebuilt.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The bridge is along U.S. Route 101, which also carries the historic segment of the Redwood Highway through Humboldt County.

B9a. Architect: P. N. Olorn, Bridge Department, California Division of Highways
b. Builder:
***B10. Significance: Theme:** N/A
Area: N/A
Period of Significance: N/A
Property Type: N/A
Applicable Criteria: N/A

The Eel River Bridge was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events at the national, state, or local level that would make it significant under National Register Criterion A or California Register Criterion 1. The bridge was named after Nello J. Barsanti (1916-1976) who was a lifetime resident of the Scotia-Rio Dell area, community leader, education advocate and member of the Fortuna Unified High School Board of Trustees. The bridge was dedicated in 1977. While Barsanti was an influential community leader and advocate, the bridge itself is not directly associated with his life or community work. Therefore, it is concluded that the Eel River Bridge is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. (See Continuation Sheet, page 3)



B11. Additional Resource Attributes:
***B12. References:** (See Continuation Sheet, page 3).
B13. Remarks:
***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:** October 27, 2014

(This space reserved for official comments.)

*Required information

B10. Significance (continued):

Because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type were built between 1965 and 1974.

Bridge 04 0016L is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges were not a significant achievement in the state by the time the Eel River Bridge was constructed in 1974. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The Eel River Bridge, with a total length of 1,730 feet and main span of 300 feet in length, is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering and it does not stand out with regard to modern bridge aesthetics. Bridge 04-0016L is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 04 0016L was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, or local level, and therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history at the national, state, or local level and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 04 0016L does not embody the distinctive characteristics of concrete box bridge construction, does not represent the work of a master and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Eel River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 04 0016L is not eligible for inclusion on the National Register or the California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 04 0016L." 1971.

Caltrans Bridge Inspection Report: September 26, 2013

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

*Recorded by: Janice Calpo *Date: October 1, 2014 ☒ Continuation ☐ Update

P5b. Photographs (continued):



Detail looking southwest, June 6, 2014



Roadway looking southeast, June 6, 2014



Roadway looking northwest, June 6, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

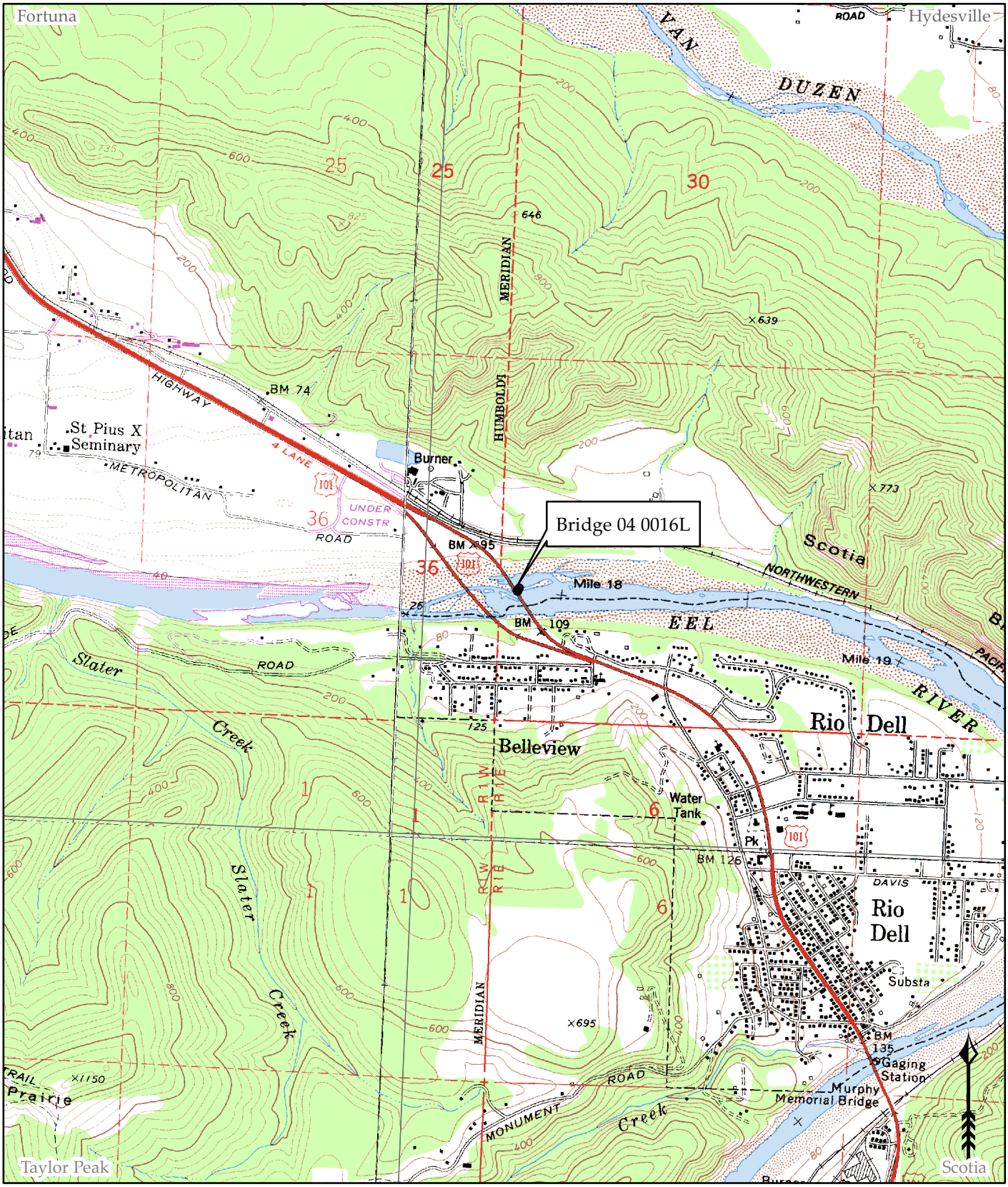
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04 0016L

*Map Name: Hydesville

*Scale: 1:24,000

*Date of Map: 1979



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 *Resource Name or #: Bridge 04 0069

P1. Other Identifier: Klamath River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Humboldt
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Orleans **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Klamath River Bridge is located in Humboldt County on State Route 96 at post mile 38.57.

***P3a. Description:**
Bridge 04 0069 is a steel suspension structure, 768 feet in length, that carries two lanes of traffic over the Klamath River. It has a reinforced concrete deck on a continuous, composite, welded steel box girder with steel floor trusses. It was designed with an aerodynamic wing cross-section shape to be more stable than previous bridges located and destroyed by floods at this site. The floor trusses are supported by steel suspenders from the main steel suspension cables on reinforced concrete towers. The tapered towers are laterally connected by elegant Gothic aches which rise from midway from the deck to the top of the top. These arches are tied to the top of the tower by a downward slopping beam. The towers are connected beneath the roadway by concrete bents. The bents are slimmer than the towers and unobtrusive to the overall Gothic Revival style of the bridge. (See Continuation Sheet, page 3).

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View, looking northwest
June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1966, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04 0069

B1. Historic Name:

B2. Common Name: Klamath River Bridge

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The bridge was built in 1966, to replace the seventh structure located at the site. All previous bridges were washed away during major floods. Since its construction it has undergone minor maintenance work, including: steel access doors placed at each abutment (1977); seal coat added to deck (1985); and methacrylate applied to deck (1991).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Ostap Bender, Division of Highways **b. Builder:** Murphy Pacific Corp.

***B10. Significance: Theme:** Architecture & Engineering **Area:** Humbodt

Period of Significance: 1966 **Property Type:** Structure **Applicable Criteria:** C

The Klamath River Bridge was constructed by Murphy Pacific Corp. to replace the bridge previously located at the site. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events at the national, state, or local level that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and therefore is not significant under National Register Criterion B or California Register Criterion 2.

Suspension bridges are relatively rare in California. The technology dates to the gold rush period, during which it was often used to bridge mountainous canyon terrain leading to the goldfields, where suspended bridges could hang above swiftly moving rivers. Following the innovative period during the early twentieth century bridge building technology transitioned to a reliance on a new building material: concrete. Increasingly, material, construction costs, as well as site suitability and local preferences dictated bridge design. Suspension bridges were among the well-established designs available to counties for construction in remote areas where light traffic did not require a more substantial structure. (See Continuation Sheet, page 3).

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** (See Continuation Sheet, page 3).

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

January 6, 2015

(This space reserved for official comments.)



*Required information

***P3a. Description (continued):**

The towers are atop spread footings and anchored into steel grillage anchorages embedded in reinforced concrete. Reinforced concrete seat abutments are on reinforced concrete shafts. The two lane bridge has type 16 railing.

B10. Significance (continued):

While California has no major suspension bridges from the earliest period, the lessons learned from that era helped guide construction of two of the world's most successful suspension bridge, the Golden Gate Bridge, completed in 1936, and the west span of the San Francisco-Oakland Bay Bridge (SFOBB), also finished in 1936. These two structures represent California's largest suspension bridges and were constructed during an era of major public works in the 1930s. Both bridges were previously determined eligible for listing in the National Register. Few such structures were built though, as they were relatively expensive, especially as other bridge types became increasingly affordable during the mid-twentieth century. There are currently 13 suspension bridges in California; five of which are eligible or in the National Register. Two suspension bridges constructed between 1965 and 1974, and two more prior to 2003.

The fabrication and erection of suspension bridges are almost always a significant achievement due to the nature of the construction method. Suspension spans require high amounts of engineering to construct, given that they often cross large spans. The six of the seven longest bridges in California are all suspension spans; the longest being the Golden Gate Bridge (27 0052), with a main span of 4,200 feet. The Klamath River Bridge is the 27th longest spanning bridge in the state, which does not make it significant as a feat of civil engineering. However, the steel box girder structure of the bridge was a new bridge type at the time of its construction. Bridge 04 0069 was designed using an aerodynamic wing cross-section shape. The superstructure was influenced by the British Severn Orthotropic Box girder design. Steel box girder bridges were only first utilized in California in 1966 for the Indian Creek Bridge (2C0147) in Siskiyou County, the same year the Klamath River Bridge was built, making it the second constructed in the state of only 16 erected.

The earliest examples of box girder structures in the United States date to the 1930s and were composed of concrete rather than steel. Advances in higher strength steels and welding technologies developed during the 1940s allowed engineers to experiment with similar designs in steel in the 1950s. The first steel box girder bridge erected in the United States was in 1951, in Washington state. Indian Creek Bridge was completed in 1966; the superstructure is composed of six fairly shallow steel box girders, rather than a smaller number of larger boxes, which became the more common steel box girder design in California. Only five other steel box girder bridges were built in the late 1960s and early 1970s. Indian Creek Bridge (02C0147) is significant under National Register Criterion C and California Register Criterion 3 as it embodies the distinctive characteristics of early steel box girder bridge design in California and was the first steel box girder bridge erected in the state. Additionally, its superstructure design is unique, being composed of six fairly shallow steel box girders, which allowed the designers to achieve the slender profile appreciated by engineers of the era. It is a sleek design that was both economical to construct and attractive to the observer – a significant example of a steel box girder structure exhibiting mid-twentieth-century aesthetics applied to a bridge design. The Klamath River Bridge a rare combination of two structural forms in California; the suspension bridge and a steel box girder. Further, effort was made to construct the bridge in an aesthetically pleasing way, utilizing the Gothic arches to connect the towers. The steel box girder substructure also allowed for a thin deck profile. The Klamath River Bridge is significant under National Register Criterion C and California Register Criterion 3.

Bridge 04 0069 retains integrity in all seven aspects. The bridge has not been moved and retains integrity of location. The setting and feeling have been unaltered, retaining those two aspects. The association of the bridge has been unchanged. The design, materials and workmanship of the bridge has been retained through only minor maintenance to the bridge. The Klamath River Bridge retains high integrity.

Bridge 04 0069 was erected as a typical transportation improvement project of the period and it is not associated with events that have made a significant contribution to the broad patterns of history at the national, state, and local level,

and therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history at the national, state, or local level and therefore is not significant under National Register Criterion B or California Register Criterion 2. Bridge 04 0069 does embody the distinctive characteristics of suspension bridge construction, and does possess high Modern aesthetic value. Further, it does represent a significant and distinguishable entity whose components retain individual distinction. The Klamath River Bridge is significant under National Register Criterion C and California Register 3. The bridge has not yielded and is not likely to yield information important in history at the national, state, or local level and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 04 0069 is eligible for inclusion on the National Register and California Register.

***B12. References (continued):**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 04 0069." 1965.

Caltrans Bridge Inspection Report: September 11, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

Huang, Carl, Copelan, Craig, Maggenti, Ric and Magnus, Alfred R. "Award Winning Bridges in California Owned and Designed by Caltrans." *Structures Congress 2011.* New York, N. Y.: American Society of Civil Engineers, 2011. 2971-2982.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for

State of California Department of Transportation, n.p., January 2003.

Scott, Richard. *In the Wake of Tacoma: Suspension Bridges and the Quest for Aerodynamic Stability.* New York, N.Y: American Society of Civil Engineers, 2001.

P5b. Photographs (continued):



View looking east, June 4, 2014



View looking north, June 4, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

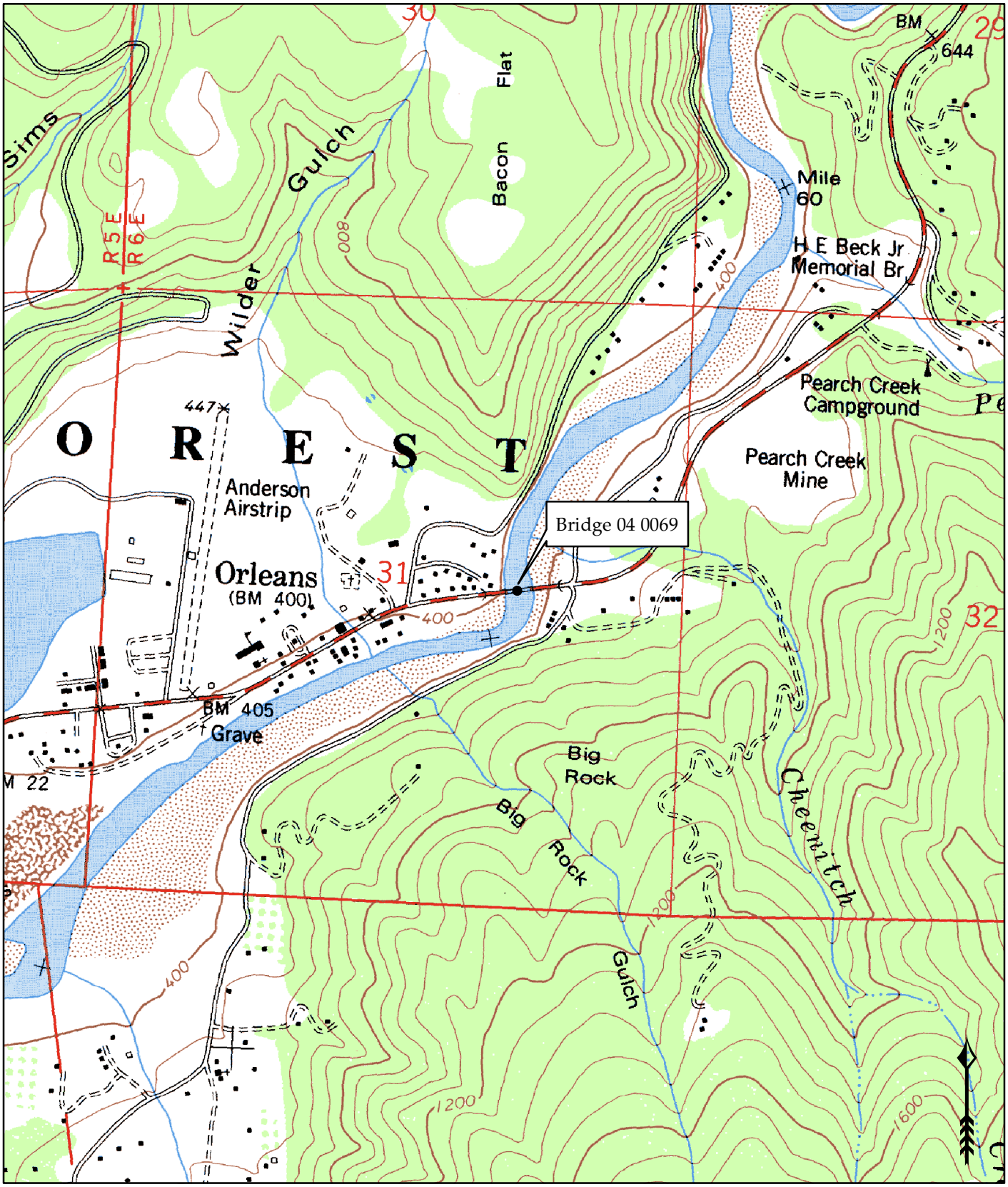
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04 0069

*Map Name: Orleans

*Scale: 1:24,000

*Date of Map: 1978



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 04 0155

P1. Other Identifier: South Fork Eel River Bridge (Mal Coombs Memorial Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Humboldt
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Gaberville **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
The South Folk Eel River Bridge is located on State Route 101, at post mile 7.87.

***P3a. Description:**
Bridge 04 0155 is a long span concrete box girder structure, 713 feet in length, that crosses the South Fork Eel River at a skew of 30 degrees. The bridge has three spans with the main span measuring 270 feet in length. The three span continuous prestressed box girder has sloping sides and cellular abutments. The sides meet the columns with angular hunches, giving the bridge a rustic aesthetic. The columns are also angular and have a vertically rusticated concrete finish on the long sides. Abutment 1 is on steel piles and Abutment 4 is on spread footings as are the solid wall piers. The four lane bridge has type 9 railing, with no pedestrian sidewalks. There is also a rusticated concrete barrier on the abutments of the bridge.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: (View, date, accession #)
View, looking west
June 6, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1969, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04 0155

B1. Historic Name:
B2. Common Name: South Fork Eel River Bridge (Mal Coombs Memorial Bridge)
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was built in 1969. The bridge has only undergone minor maintenance since its construction, including; sealing of joints and the patching of the median slab in Abutment 1 (1970).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: P. N. Olson, Bridge Department, California Division of Highways **b. Builder:**
***B10. Significance: Theme:** Engineering **Area:** Humboldt County
Period of Significance: 1969 **Property Type:** Bridge **Applicable Criteria:** C
The South Folk Eel River Bridge was constructed by Gibbons & Reed Co. and Hughes & Ladd as part of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1.

The bridge became associated with Mal Coombs when it was posthumously dedicated to him in 1984, for his contributions to the local community. Coombs started the Coombs Lumber Company, in 1948. Coombs continued expanding the family business and by the mid-1950s the company was diversified and split amongst his children to include: East Branch Logging Company, Coombs Lumber Company and Piery Manufacturing Company, providing large numbers of jobs for the local community and county. Coombs was not only significant for his continually growing business which again diversified to include tree farms in the 1980s, but he also served as Board Chairman and trustee for the Southern Humboldt Unified School District, and spearheaded many fundraising campaigns for the high school and community sports. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

Further, Coombs served on a variety of boards, including but not limited to, the West Coast Lumber Inspection Bureau, Richmond Forest Products Lab and Humboldt State University. While Mal Coombs is a significant person to the local area, he does not have a direct association with the bridge and therefore Bridge 04 0155 is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974.

Bridge 04 0155 is not a typical example of concrete box construction for the period. While the fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the South Fork Eel River Bridge was constructed in 1968. The bridge was the longest continuous prestressed bridge in the United States at the time of its opening, therefore making it a significant work of civil engineering. Previously, the Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959, until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The South Fork Eel River Bridge, with a total length of 713 feet and a main span of 270 feet in length, is a significant work of civil engineering for the time. The bridge also stands out aesthetically, with its rustic style incorporating rusticated concrete with angular hunches, mimicking its rocky setting above the river. Bridge 04 0155 is significant under National Register Criterion C and California Register Criterion 3.

Bridge 04 0155 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 04 0155 does embody the distinctive characteristics of a concrete box bridge construction and possess high Modern aesthetic value. The South Fork Eel River Bridge is significant under National Register Criterion C and California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Mal Coombs Memorial Bridge retains all aspects of integrity: material, design, feeling, location, association, workmanship and setting. Bridge 04 0155 is eligible for inclusion on the National Register and California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 04 0155." 1967.

Caltrans Bridge Inspection Report: August 30, 2012

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for

State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

Wade, Jack. "Logging on the East Branch – The Story of the Coombs Lumber Company." *Roots of Motive Power, Inc. Newsletter* 26, no. 2 August 2008.

P5b. Photographs (continued):



Detail looking south, June 6, 2014



Memorial Plaque on bridge, June 6, 2014


Rusticated concrete northeast abutment, June 6, 2014



View looking west, June 6, 2014



View of northern column with vertically rusticated concrete, June 6, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

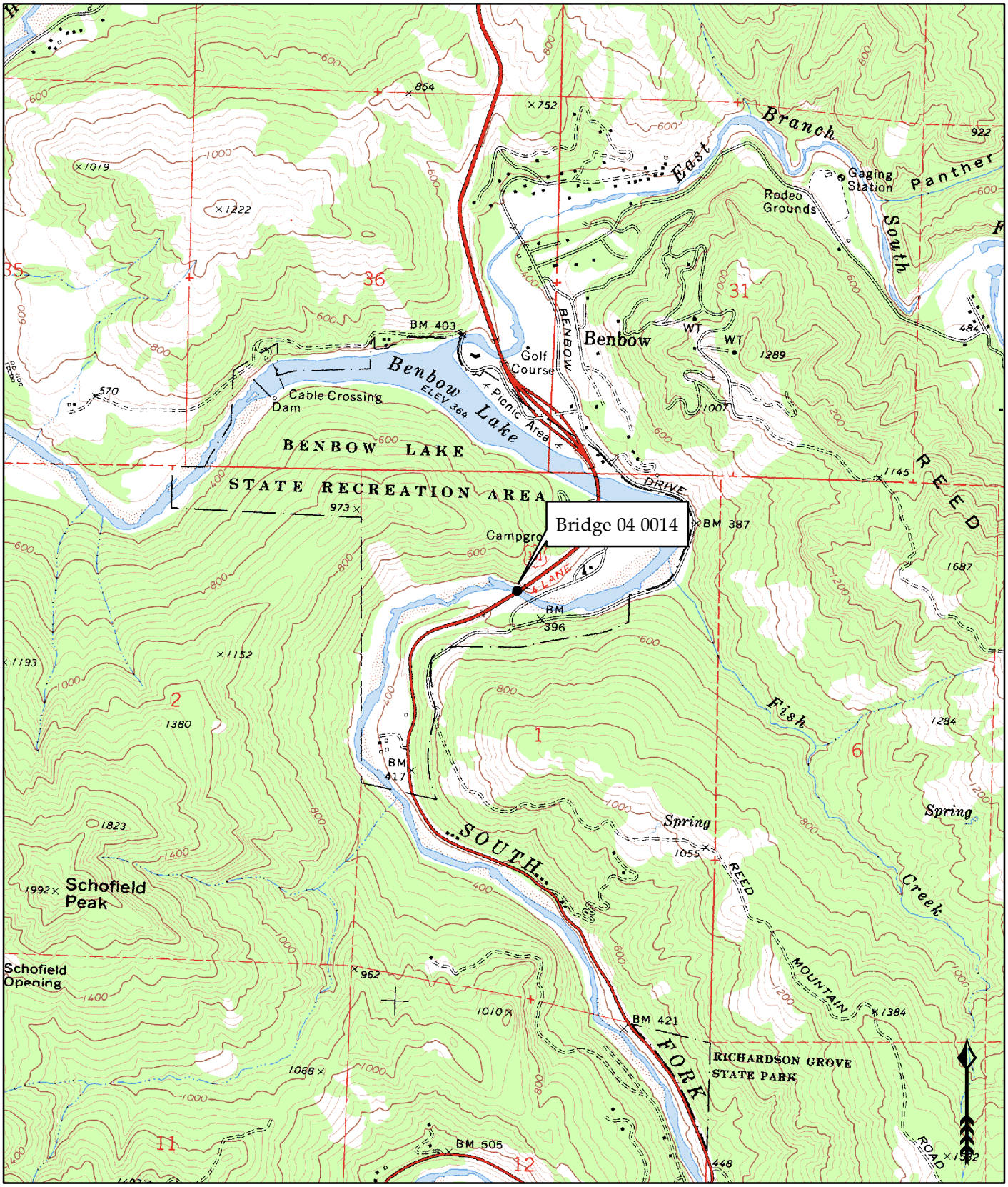
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04 0155

*Map Name: Gaberville

*Scale: 1:24,000

*Date of Map: 1970



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 04 0225

P1. Other Identifier: Bluff Creek Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Humboldt
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Weitchpec **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Bluff Creek Bridge is located in Humboldt County on State Route 96 at post mile 28.91.

***P3a. Description:**
The bridge is part of the State Route 96; the highway segment on which the bridge is located is known as the Bigfoot Highway. It is a steel arch structure, 400 feet in length with a main span of 270 feet, that crosses the Bluff Creek. It has a steel, two hinged, open spandrel arch with single span steel girders (4) at the approach span and at each end. Reinforced concrete open end seat abutments are on steel piles at Abutment 1 and spread footings for the arch and Abutment 4. The two lane bridge has steel tubular railing.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking east
June 5, 2014
***P6. ate Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04 0225

B1. Historic Name:
B2. Common Name: Bluff Creek Bridge
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:**
***B6. Construction History:**
The bridge was built in 1967. Since then it has undergone minor maintenance work including: damage to the 5th rail post corrected (1970); expansion joint repair (1979); and deck surface treated with chip seal (1987).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: D. M. G. Bureau of Public Roads
b. Builder: Thomas Construction Co.
***B10. Significance: Theme:** N/A
Area: N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
The Bluff Creek Bridge was constructed by Thomas Construction Co. for the Bureau of Public Roads. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

Steel arch bridges are rare in California. Generally, metal arches were more difficult and expensive to fabricate and construct than metal truss bridges, and as the twentieth century progressed bridge designers and builders found other bridge types to be more economical and easier to build. During the early period of motor vehicle traffic in the state, steel arches were among the various metal bridges used to effectively and economically provide safe crossing. In some circumstances the arch form was chosen for aesthetic reasons, invoking the Classical architecture popular during the early twentieth century. Environmental circumstances also made the form the best design solution for a setting where reinforced concrete was not economically feasible. Steel arches are built with parallel arches and support members, constructed both as in-deck and through forms. (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



B10. Significance (continued):

There are two distinct steel arch designs found in California: Spandrel-braced arch and solid-ribbed arch. Spandrel-braced arches have webbed triangular members like trusses, but with a rounded bottom chord that forms an arch. They are built in deck form with spandrel columns and lateral braces. There are four historic spandrel-braced metal arches in operation in California. Solid-ribbed arches have plate girder beams cast in a curved form. The deck is supported by metal posts or suspenders attached to the arch form. There are only three solid ribbed arches in operation in California. The Division of Highways, and later Caltrans, continued to sparingly use this bridge type, yet sometimes to great effect, for example, Cold Spring Canyon Bridge on State Route 154 in Santa Barbara County (51 0037) built in 1963.

Bridge 04 0225 is a fairly typical example of steel arch construction. The fabrication, transportation, and erection of steel arch bridges was not a significant achievement in the state by the time the Bluff Creek Bridge was constructed in 1967. The largest steel arch span bridge is the Cold Springs Canyon Bridge (51 0037), built in 1963, has a main span of 700 feet and a full span of 1218 feet. Previous to this, the North Folk of Feather River Bridge (12 0038) held the record for longest main span at 350 feet spanning a total distance of 684 feet, which was built in 1932. Since the construction of these two bridges the Gerald Desmond Bridge (53C0065), built in 1968, achieved a main span of 527 feet and spanned a total distance of 5143 feet with 48 spans of various types. Bridge 04 0225 is typical of a steel arch bridge erected in the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bluff Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 04 0225 was erected as a typical transportation improvement project of the period and it is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 04 0225 does not embody the distinctive characteristics of a steel arch bridge construction, and does not represent the work of a master, and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Bluff Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Criterion 4. Bridge 04 0225 is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 04 0225." 1966.

Caltrans Bridge Inspection Report: September 11, 2012

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for

State of California Department of Transportation, n.p., September 2004.

P5b. Photographs (continued):



Detail, looking east, June 5, 2014.



View looking southwest, June 5, 2014.



Roadway view looking southwest, June 5, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

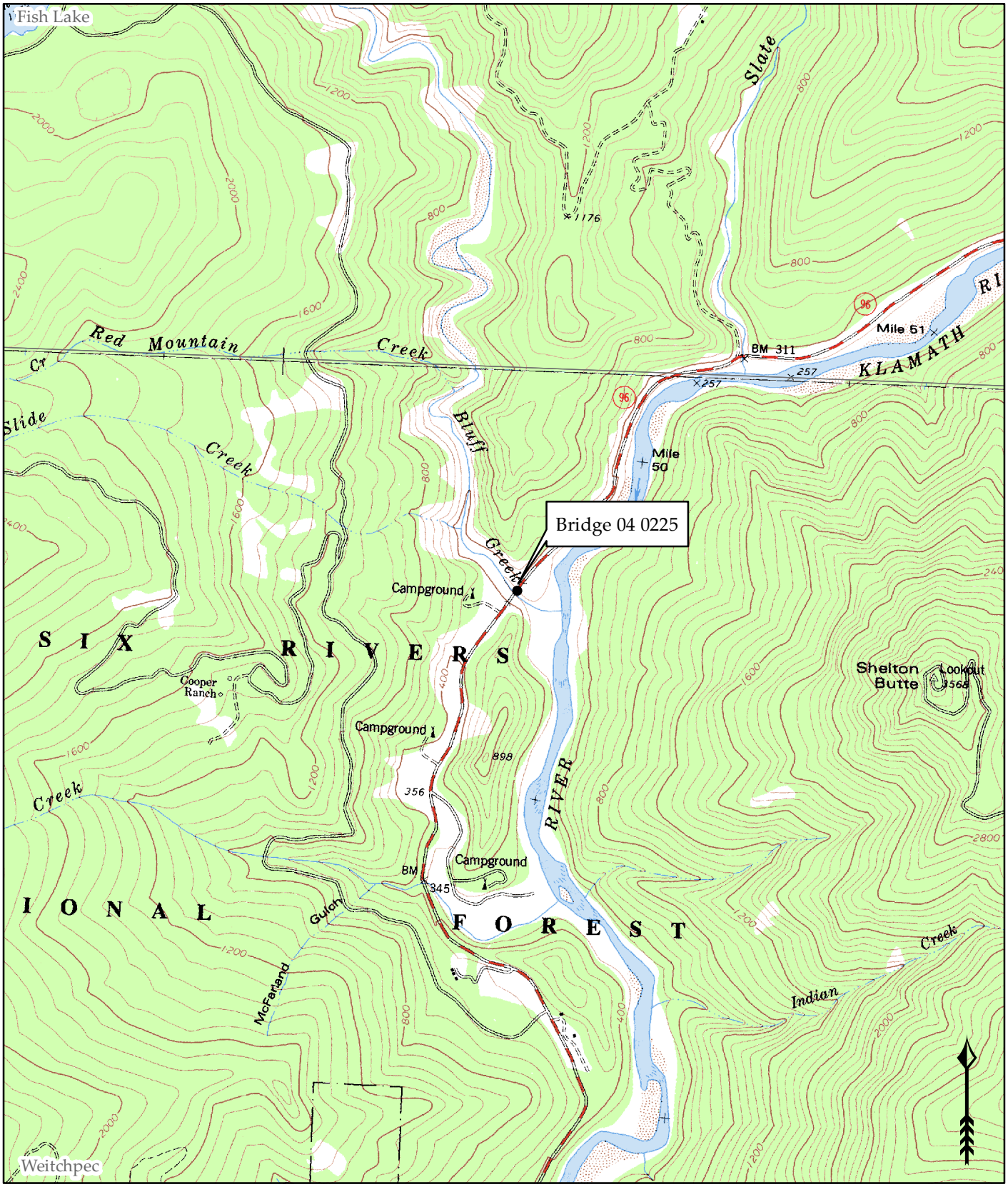
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04 0225

*Map Name: Weitchpec

*Scale: 1:24,000

*Date of Map: 1979



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 04C0124

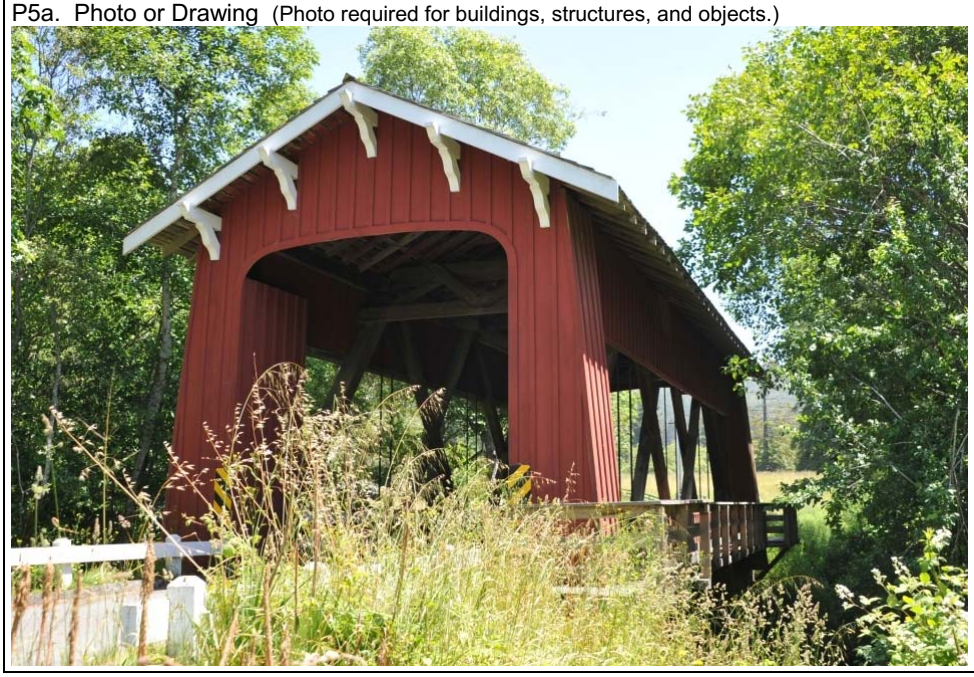
P1. Other Identifier: Brookwood Bridge or Jacoby Creek Bridge

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Humboldt
And (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Arcata South **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
On Brookwood Drive 0.1 mile south of Jacoby Creek Road in Humboldt County

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Brookwood Bridge (04C0124) is located on Brookwood Drive over Jacoby Creek. The bridge is a single-span covered Howe timber through truss built on reinforced concrete abutments supported by spread footings. It is 68 feet in length and 20.8 feet in width. The bridge has one 13.7 foot wide traffic lane on a wood plank deck with timber guard railings on either side. A three foot wide pedestrian walkway with wood posts and railings runs along the exterior of the south side of the bridge. The truss is covered by a gabled wood shake roof which is supported by four corner posts and board and batten walls. The side walls (on the north and south) have large openings which expose the truss within.

***P3b. Resource Attributes:** HP19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
View, looking east
June 5, 2014
***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
Humboldt County
825 5th St.
Eureka, CA 95501
***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo,
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status** 6Z

***Resource Name or #** (Assigned by recorder) Bridge 04C0124

B1. Historic Name:

B2. Common Name: Brookwood Bridge or Jacoby Creek Bridge

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Covered Howe timber through truss

***B6. Construction History:**

The Brookwood Bridge was constructed with private finances by Brookwood Subdividers in 1967. Humboldt County accepted jurisdiction of the Brookwood Bridge and Brookwood Drive in 1969.

***B7. Moved?** ■No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

None.

B9a. Architect: Charles Roscoe **b. Builder:** Brookwood Subdividers

***B10. Significance: Theme:** Engineering **Area:** Humboldt County

Period of Significance: 1967 **Property Type:** Structure **Applicable Criteria:** N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The Brookwood Bridge was constructed by Brookwood Subdividers as part of the Brookwood Subdivision. The Brookwood Bridge and the road it carries, Brookwood Drive, were turned over to Humboldt County to be added to the public road system in 1969. The Brookwood Bridge is not associated with the development of the highway network through the region and is not associated with other events that would make it significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

Patented in 1840, the Howe truss become one of the most commonly used truss types in nineteenth century bridge construction. William Howe, a Massachusetts carpenter, added substantial strength to the timber truss by employing an iron rod that connected the opposing vertices of the A-frames of the wooden diagonals to maintain the rigidity of the truss. Covered bridges were constructed with walls and a roof to protect the truss timbers from the elements. Most were built in rural areas which had an abundance of wood. While the majority of these bridges were constructed prior to World War II, communities have infrequently continued to build them to recapture the romance of times gone by. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**

See Continuation Sheet.

B13. Remarks:

***B14. Evaluator:**

Lauren Clementino

***Date of Evaluation:**

November 24, 2014



(This space reserved for official comments.)

B10. Significance (continued):

Although covered bridges throughout the country were typically built using the Burr, Howe, and Warren trusses, California's existing covered bridges all have Howe trusses. There are a total of seven covered bridges on public roads in California; the Brookwood Bridge is the only one within the current survey population.

Although the Brookwood Bridge is a rare covered timber truss, it is a late example and at the time of its construction timber trusses had been an obsolete bridge type for several decades. Its span length of 68 feet is comparable to other timber truss bridges. The Brookwood Bridge does not represent a significant innovation in bridge engineering or display a significant variation within an established bridge type. Although covered timber truss bridges are an intrinsically aesthetic bridge type, the Brookwood Bridge does not possess significant or distinctive detailing. The Brookwood Bridge is not significant as a work of civil engineering or for aesthetic value.

The houses in the Brookwood Subdivision were constructed in a mix of architectural styles, with the majority being Ranch style houses, over the course of several decades. These modern houses contrast with the antiquated design of the Brookwood Bridge. While evaluation of the Brookwood Subdivision as a historic district is outside the scope of the current survey, it does not appear that there is enough unification or cohesion within the subdivision to form a district. The Brookwood Bridge is not significant as a part of a district associated with the Brookwood Subdivision and is not significant under National Register Criterion C or California Register Criterion 3.

The Brookwood Bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The Brookwood Bridge does not embody distinctive characteristics of covered timber truss construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Brookwood Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Brookwood Bridge is not eligible for inclusion on the National Register or California Register.

B12. References:

Harrison, Carol. "The Covered Bridges of Humboldt County: Builders reminisce on 40th anniversary of completion of Brookwood Bridge." *Eureka Times-Standard.* November 24, 2009.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Timber Truss, Concrete Truss, and Suspension Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., April 2004.

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

Lee, Ali. "Meet You At Brookwood Covered Bridge." *The Arcata Eye*. May 1, 2013. http://www.arcataeye.com/2013/05/ali-lee-meet-you-at-brookwood-covered-bridge/.

Scott-Goforth, Grant. "Bridging the Divide: Bayside residents are concerned the county will replace a quaint Jacoby Creek bridge."*The North Coast Journal.* May 9, 2013. http://www.northcoastjournal.com/humboldt/bridging-the-divide/Content?oid=2247899.

Scott-Goforth, Grant. "Brookwood Covered Bridge Saved, For Now." *The North Coast Journal.* December 3, 2013. http://www.northcoastjournal.com/Blogthing/archives/2013/12/03/brookwood-covered-bridge-saved-for-now.

P5b. Photographs (continued):



Detail, looking south (June 5, 2014)



Detail, looking northeast (June 5, 2014)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

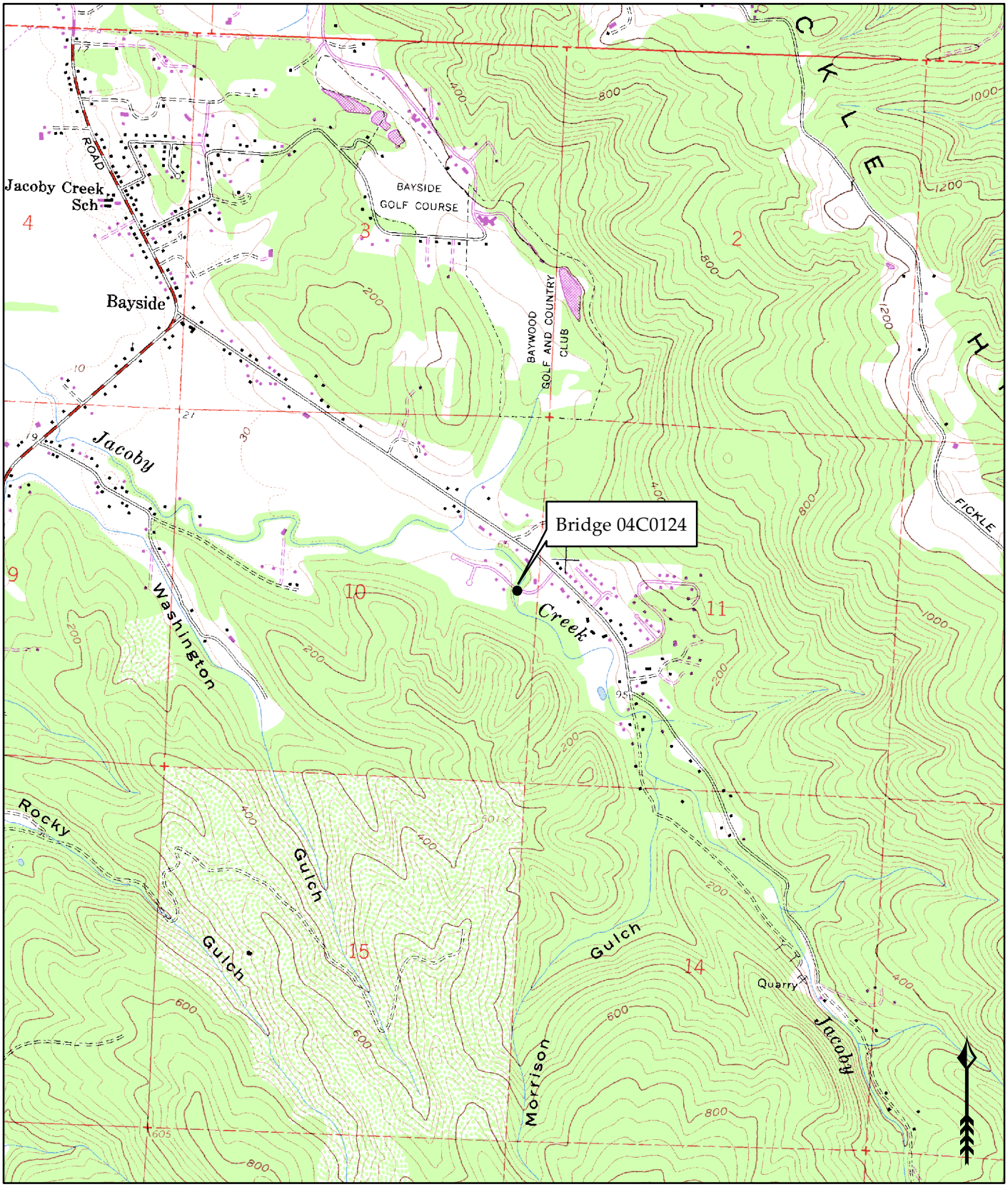
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04C0124

*Map Name: Arcata South

*Scale: 1:24,000

*Date of Map: 1959



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #** Bridge 04C0236

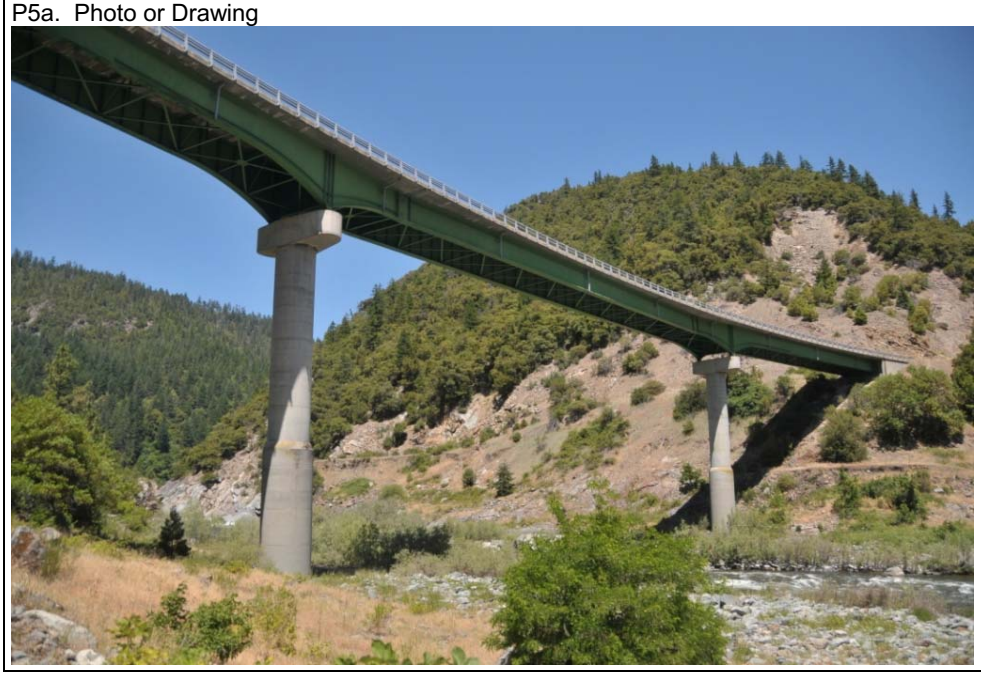
P1. Other Identifier: Klamath River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Humboldt
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Somes Bar **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Klamath River Bridge is located on Ishi Pishi Road 0.5 miles southwest of State Route 96.

***P3a. Description:**
The Klamath River Bridge is located on Ishi Pishi Road, at the confluence of the Klamath River and the Salmon River, west of Somes Bar in Humboldt County. Bridge 04C0236 is a long span steel girder structure, 664 feet in length that crosses the Klamath River. The bridge has three spans with the main span measuring 258 feet. Simple and continuous composite welded steel plate girders have a cast in place reinforced concrete deck on reinforced concrete seat abutments with circular reinforced concrete single column bents, all on spread footings. Span 3 has a drop-in portion. The two lane bridge has metal beam guard railing with pipe railing on steel "T" sections.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View looking northwest, June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
Humboldt County
825 5th St.
Eureka, CA 95501
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 04C0236

B1. Historic Name:
B2. Common Name: Klamath River Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was construction in 1967 to replace the suspension bridge that was destroyed in the Dec. 1964 flood.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Neil P. Richards and Assoc. for Humboldt County **b. Builder:** Hughes & Ladd
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Klamath River Bridge was constructed by Hughes & Ladd of Redding, CA to replace the bridge that was at the same site, which was destroyed in December 1964 by a flood. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 04C0236 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Klamath River Bridge was constructed in 1967. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014



(This space reserved for official comments.)

*Required information

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams. Those used in the Klamath River Bridge were not considered a significant technological achievement. Bridge 04C0236 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Klamath River Bridge with a total length of 664 feet and main span of 240 feet in length is not significant as a work of civil engineering. The Klamath River Bridge is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 02C0236 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 02C0236 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Klamath River Bridge is not significant under National Register Criterion C or National Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 02C0236 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 04C0236, 1965.

Caltrans Bridge Inspection Report: April 22, 2014.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



Detail of southern bent connector looking northwest, June 4, 2014



Detail of southern bent looking west, June 4, 2014



Two steel girders with welded gussel plates looking south, June 4, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

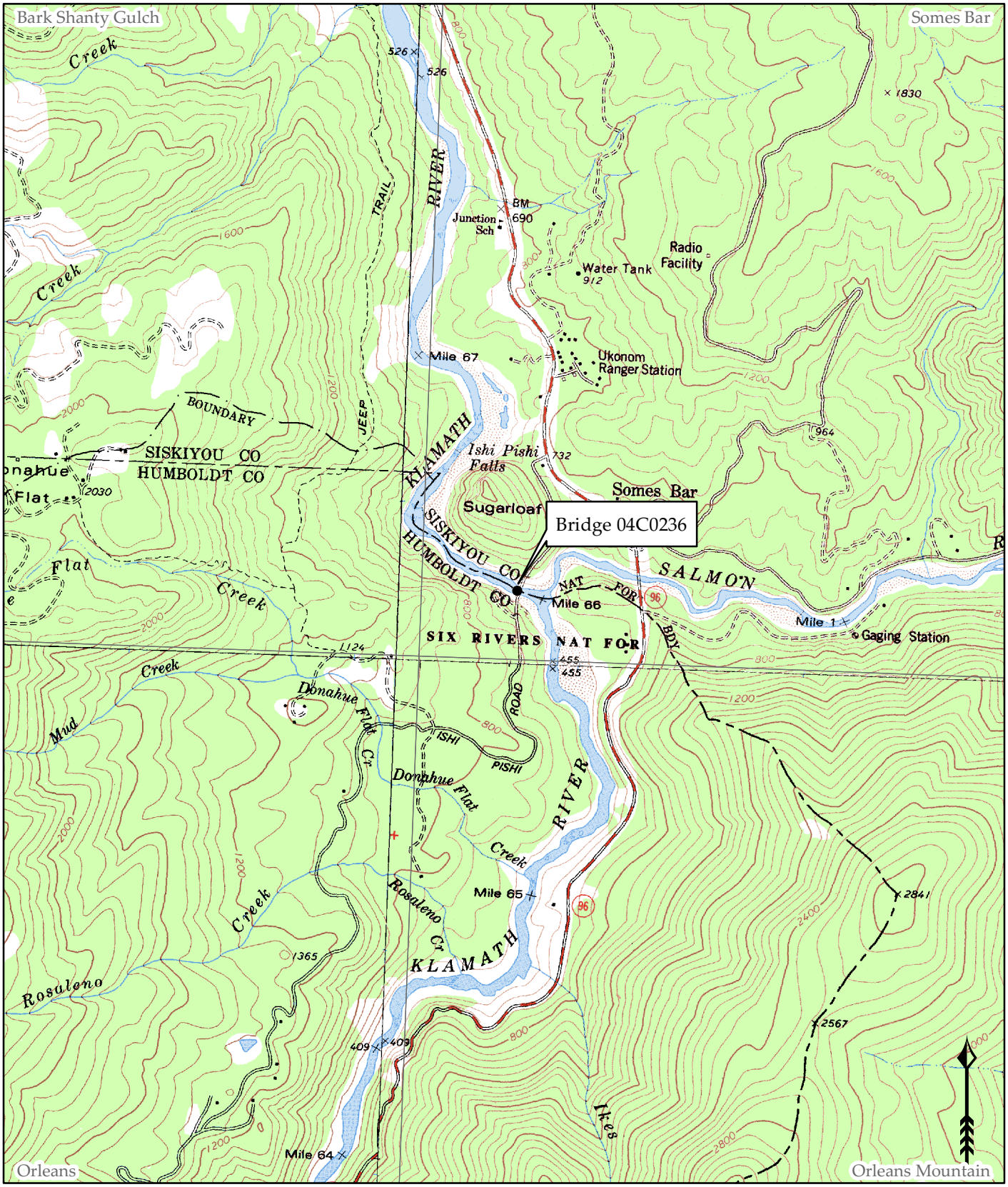
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 04C0236

*Map Name: Somes Bar

*Scale: 1:24,000

*Date of Map: 1979



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** Bridge 09C0148

P1. Other Identifier: Spanish Creek Bridge

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Plumas
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Meadow Valley **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
On Gopher Hill Landfill Road approximately 200 feet north of Bucks Lake Road, Plumas County.

***P3a. Description:**

The Spanish Creek Bridge (09C0148) is a single span steel pony truss structure 81 feet in length that crosses Spanish Creek. The riveted steel pony truss is 80 feet in length and has seven rolled steel stringers on rolled steel floor beams. It has a corrugated steel deck with an asphaltic concrete overlay. The bridge is founded on steel pile and cap bent type abutments. The approach fills are retained by vertical precast concrete slabs that are tied back by cable stays to the ground. The one lane bridge has metal guard railing on steel posts. The guard railing separates the roadway from narrow pedestrian walkways on steel grates on either side of the truss.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo:
View looking west
June 3, 2014

***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
1969, Caltrans Bridge Files

***P7. Owner and Address:**
Plumas County
1834 E. Main St.
Quincy, CA 95971

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status** 6Z

***Resource Name or #** Bridge 09C0148

B1. Historic Name:
B2. Common Name: Spanish Creek Bridge
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:** Steel Warren pony truss
***B6. Construction History:**
The truss was salvaged from an earlier bridge (9C0021) and was moved to the current location and founded on new abutments in 1969. It is estimated in Caltrans records that the truss was constructed for the earlier bridge in the 1930s. The bridge was once two lanes but was limited to one lane for safety reasons in 1986. The original floor structure and deck of the bridge were timber and were replaced with a steel floor structure and corrugated steel decking in 1988.

***B7. Moved?** ☐No ■Yes ☐Unknown **Date:** 1969 **Original Location:** Bridge 09C0021
***B8. Related Features:**
None.

B9a. Architect: Unknown **b. Builder:** Unknown
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
The Spanish Creek Bridge (09C0148) was constructed in 1969 by Plumas County as a local transportation improvement project. The Spanish Creek Bridge is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. (See Continuation Sheet 3)



B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** (See Continuation Sheet 3)
B13. Remarks:

***B14. Evaluator:**
Lauren Clementino
California Department of Transportation

***Date of Evaluation:**
November 17, 2014

B10. Significance (continued):

The fabrication, transportation, and erection of metal truss bridges were not significant achievements in the state by the time the Spanish Creek Bridge was constructed in 1969.

The Spanish Creek Bridge is a Warren pony truss structure. The Warren truss was one of the most common truss types built in the state. California and many other states had developed standard designs for truss bridges by the 1920s and the Warren truss was commonly used along California highways in the 1920s and 1930s. Due to limited access to concrete plants and equipment in rural areas, it was often economical to relocate dismantled trusses rather than erect new bridges, which was likely the case for the Spanish Creek Bridge. Although the truss of the Spanish Creek Bridge dates from the 1930s it was salvaged from an earlier bridge and moved to the current location in 1969, thus suffering a loss of integrity of location and setting. The majority of Warren trusses constructed in California were pony trusses; later design variations with vertical supports and polygonal top chords were utilized in the 1940s through the 1950s. The typical range of highway Warren truss bridge span lengths is between 40 and 500 feet. The overall length of 81 feet and single span of 80 feet in length for the Spanish Creek Bridge are not notable when compared to other Warren truss bridges in California. The Spanish Creek Bridge was constructed after the Warren was already an established truss type in California and does not represent a significant innovation in bridge engineering or display a significant variation within an established bridge type. The Spanish Creek Bridge does not display any decorative features or significant architectural details. The Spanish Creek Bridge is not significant as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3.

The Spanish Creek Bridge was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The Spanish Creek Bridge is not a distinctive example of metal truss bridge construction. It does not represent the work of a master and does not possess high artistic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Spanish Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Spanish Creek Bridge is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

Department of Transportation. Bridge Inspection Reports for Bridge Number 09C0148. August 23, 1979 to September 9, 2014.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

(This space reserved for official comments.)

P5b. Photographs (continued):



View, looking north (June 2, 2014)

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DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

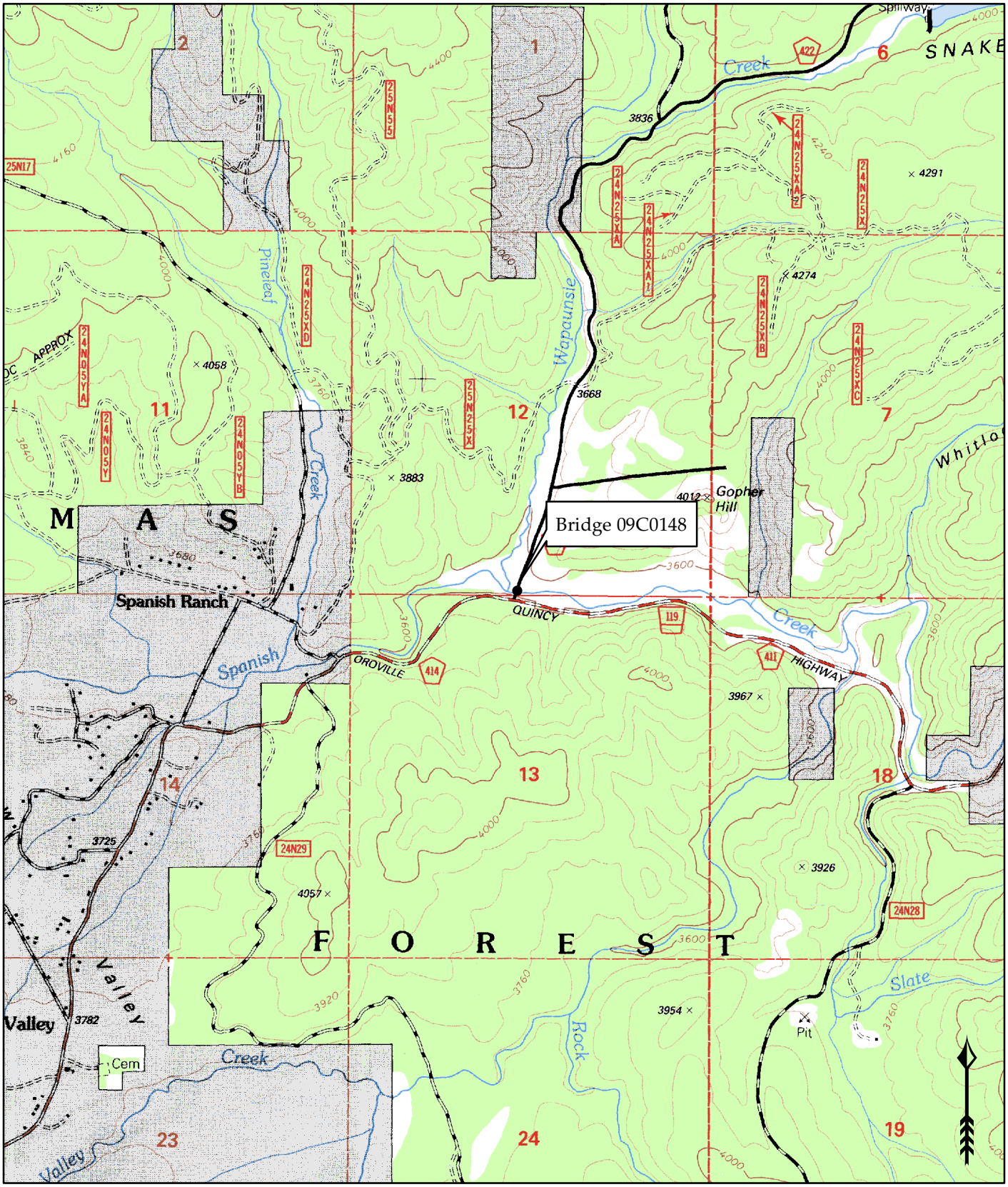
Primary #
HRI#
Trinomial

*Resource Name or #: Bridge 09C0148

*Map Name: Meadow Valley

*Scale: 1:24,000

*Date of Map: 1980



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #** Bridge 10C0005

P1. Other Identifier: Eel River Bridge and Overhead

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Mendocino
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Dos Rios **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

The Eel River Bridge and Overhead is located on Dos Rios Road 0.5 miles northwest of State Route 162.

***P3a. Description:**

The Eel River Bridge is located on the outskirts of Dos Rios, a small town on the Middle Fork of the Eel River. Bridge 10C0005 is a long span steel girder structure, 624 feet in length that crosses the Eel River. The bridge has three spans with the main span measuring 240 feet in length. It has a reinforced concrete slab in Spans 1 and 2 and non-composite reinforced concrete deck on two continuous welded steel plate girders in Spans 3 to 5, the middle span is suspended. Spans 6 and 7 is non-composite reinforced concrete deck on simply-supported rolled steel beams. Span 8 has a composite reinforced concrete deck on four simply-supported welded steel plate girders. (See Continuation Sheet, page 3)

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View looking north, June 4, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1966, Caltrans Bridge Files
***P7. Owner and Address:**
Mendocino County
501 Low Gap Road
Ukiah, CA 95482
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 10C0005

B1. Historic Name:
B2. Common Name: Eel River Bridge & Overhead
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was built in 1966 to replace the original truss structure that was destroyed in Dec. 1964 by a flood.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Donald T. Morton, Consulting Bridge Engineer **b. Builder:**
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Eel River Bridge & Overhead was constructed by Mendocino County to replace the original bridge that was destroyed by a flood two years before, in December 1964. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 10C0005 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, therefore it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Eel River Bridge & Overhead was constructed in 1966. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

***P3a. Description:**

The substructures are reinforced concrete abutments, bents and piers on steel piles, except that Abutment 1, Bent 2 and Abutment 9 are on spread footings. The two lane bridge has metal beam guardrail on W6 Type railing with 50 x 50 angle top rails.

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in Eel River Bridge & Overhead, were not considered a significant technological achievement. Bridge 10C0005 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Eel River Bridge & Overhead, with a total length of 624 feet and main span of 240 feet in length, is not significant as a work of civil engineering. Bridge 10C0005 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 10C0005 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of our history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in our history and is not significant under National Register Criterion B or California Register Criterion 2. Eel River Bridge & Overhead does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Eel River Bridge & Overhead is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 10C0005 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 10C0005, 1965.

Caltrans Bridge Inspection Report: April 27, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



Detail looking north, June 4, 2014



Soffit of Span 4 looking at Pier 5, facing northwest, June 4, 2014

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DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

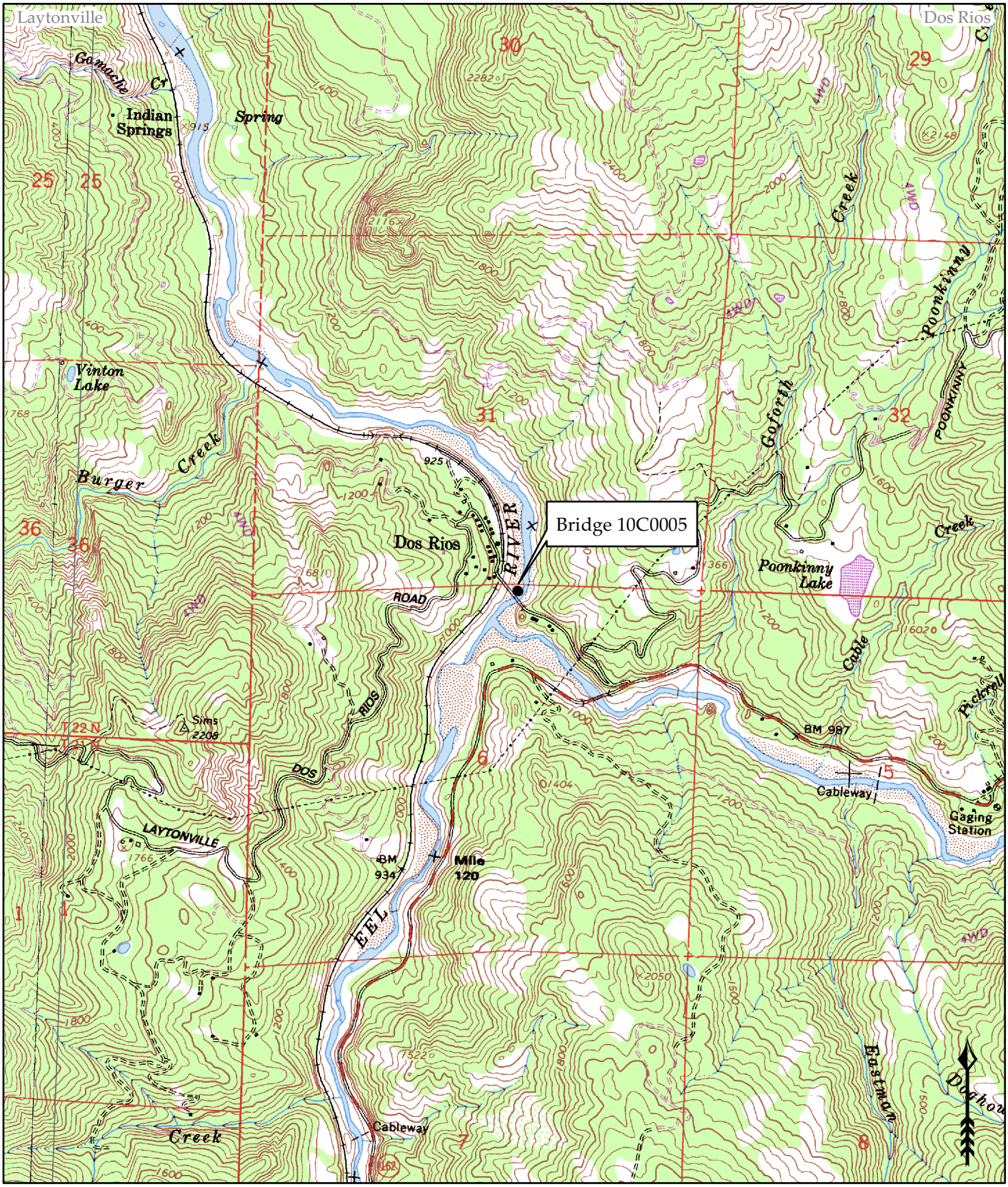
Primary #
HRI#
Trinomial

*Resource Name or #: 10C0005

*Map Name: Dos Rios

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 12 0184

P1. Other Identifier: Canyon Creek Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Butte
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Oroville Dam **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

Canyon Creek Bridge is located in Butte County on State Route 162 at postmile 29.96.

***P3a. Description:**

The bridge crosses Canyon Creek within the Forman Creek Recreation Area on the Olive/Oroville Quincy Highway, U.S. Route 162. Bridge 12 0184 is a long span steel girder structure, 780 feet in length. The bridge has four spans with the main span measuring 250 feet in length. Spans 1 – 3 have two continuous welded steel girders, while Span 4 has two simple welded steel girders. The deck for all spans is reinforced concrete. Reinforced concrete piers are anchored to rock and reinforced concrete closed end cantilever abutments are on spread footings. The two lane bridge has Type 2 railing.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates,

P5a. Photo or Drawing



***P5b. Description of Photo:**
View looking north,
June 3, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:** Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 12 0184

B1. Historic Name:
B2. Common Name: Canyon Creek Bridge
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:**
***B6. Construction History:**
The bridge was built in 1967.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: C. H. Darby of Porter, OBrien & Armstrong **b. Builder:** Piombo Construction Co.
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Canyon Creek Bridge was constructed by Piombo Construction Co. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 12 0184 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Canyon Creek Bridge was constructed in 1967. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in the Canyon Creek Bridge, were not considered a significant technological achievement. Bridge 12 0184 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Canyon Creek Bridge with a total length of 780 feet and main span of 250 feet in length is not significant as a work of civil engineering. The Canyon Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 12 0184 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 12 0184 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Canyon Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 12 0184 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 12 0184, 1965.

Caltrans Bridge Inspection Report: August 18, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking southeast, June 3, 2014



View looking south, June 3, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

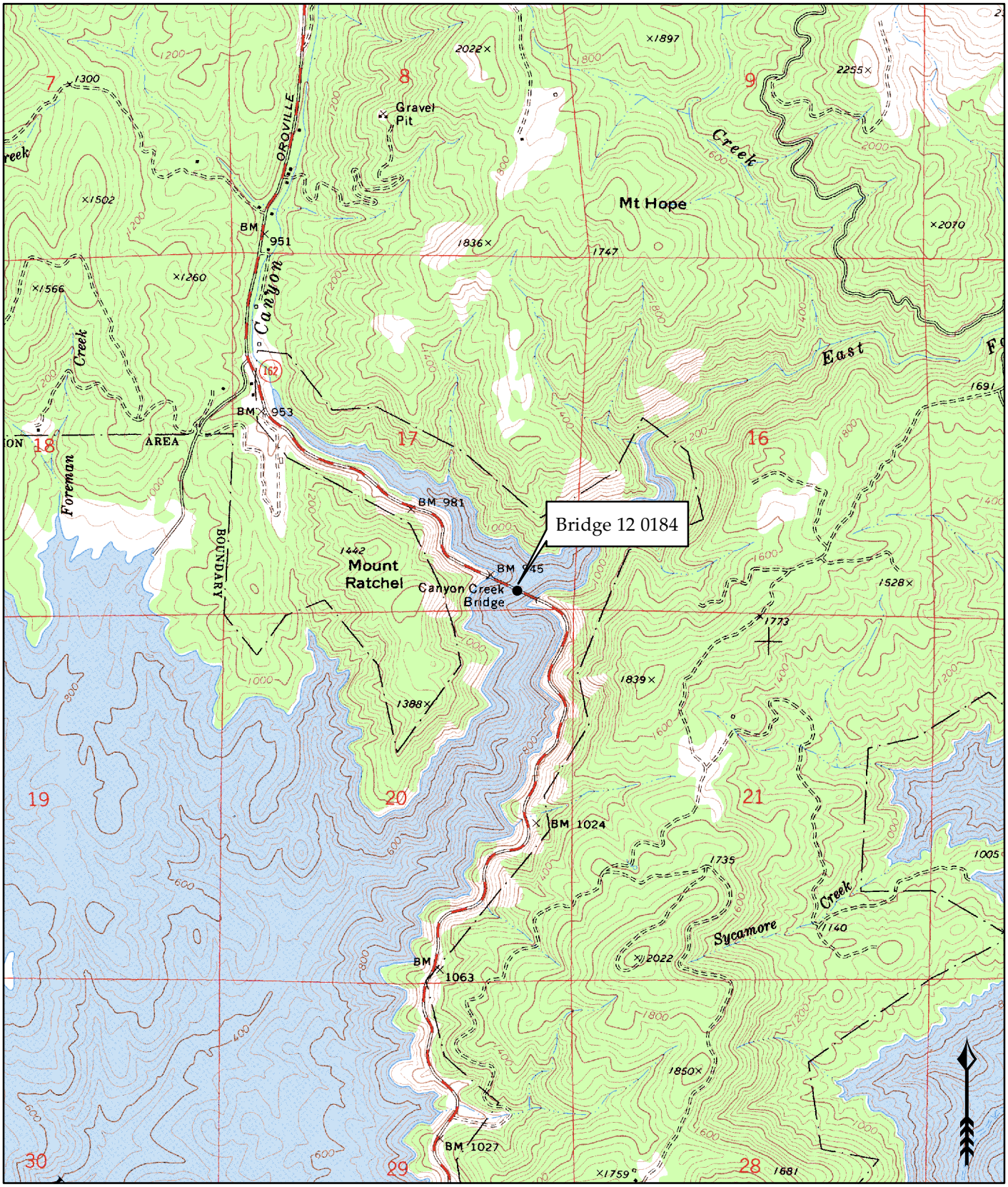
Primary #
HRI#
Trinomial

*Resource Name or #: 12 0184

*Map Name: Oroville Dam

*Scale: 1:24,000

*Date of Map: 1970



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 12 0188

P1. Other Identifier: Lake Oroville (Middle Fork Feather River) Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Butte
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Oroville Dam **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
Bridge 12 0188 is located in Butte County on State Route 162 at postmile 26.87.

***P3a. Description:**

Bridge 12 0188 is a steel suspension structure, 1791 feet in length, that crosses the Middle Fork Feather River at Lake Oroville. It has a steel stiffening truss suspension cable in Span 5 with steel towers at Piers 5 and 6 measuring 1,107 feet in length. Girder approach spans (4) are steel welded composite in Spans 1 through 4 and 6 through 8. Reinforced concrete deck and piers and reinforced concrete abutments have reinforced concrete wingwalls, all on spread footings. The slender steel towers are connected transversely by two steel beam sections; their shape references Art Deco style with diagonal beam rising up to be bracketed by transverse beams at the top and bottom reminiscent of the chevrons of Art Deco. Chevrons are also shown in the truss work of the bridge deck. Further, there are oval cutouts in the top transverse, making the structure appear less imposing. (See Continuation Sheet, page 3).

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
June 2, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1965, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

 *Resource Name or # (Assigned by recorder)

*Resource Name or # Bridge 12 0188

B1. Historic Name:

B2. Common Name Lake Oroville (Middle Fork Feather River) Bridge

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The bridge was built in 1965. While the bridge was constructed by the Department of Water Resources, its inspection was agreed to be carried out by the Division of Highways, in 1966 and reaffirmed in 1971, with the County fulfilling any maintenance requirements. In June 1971, the Division of Highways acquired the easement across the bridge, thus assuming all responsibility for the bridge. Since its construction the bridge has undergone minor maintenance, including: the installation of additional wire rope hand rails along the top of top strut on each tower (1970); replacement of damaged barrier rail posts (1972); approach to the metal beam guardrail at four ends was upgraded and attached to end posts (1983); and resealed deck expansion joints (1987).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The bridge is located on State Route 162 over Lake Oroville and the Middle Fork of the Feather River.

B9a. Architect: Dept. of Water Resources **b. Builder:** Dept. of Water Resources

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Lake Oroville Bridge was constructed by the Department of Water Resources as part of the Oroville Dam project. Construction on the dam started in 1961, with completion in 1968. The dam is an earth fill embankment structure on the Feather River, east of the city of Oroville, California. It is the tallest dam of its type in the U.S., measuring 770 feet high. It is also the nation's largest state-built water and power development. The dam was installed to help supply water to farmers and residents of the San Joaquin Valley and Southern California. It also generates hydroelectricity and provides flood control. Generation of electricity began in 1968, following the completion of the Edward Hyatt Pump-Generating Plant, which at the time was the country's largest underground power station. The dam required the relocation of both Highway 70 and the Union Pacific Railroad, which earlier ran along Feather River Canyon, causing the need to construct the Lake Oroville Bridge.

The dam does not appear to have previously been considered for National Register of Historic Places (National Register) or California Register of Historical Resources (California Register) eligibility, likely because it is not yet 50 years of age (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 4).

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation: October** 1, 2014

(This space reserved for official comments.)



*Required information

*** P3a. Description (continued):**

The beams are located at thirds up the tower. The suspension cable has concrete wedge cable anchors. Type S railing is next to the traffic with picket railing along the sidewalk of this two lane bridge.

*** B10. Significance (continued):**

It does however appear to have the potential to be significant under Criterion A of the National Register and Criterion 1 of the California Register for its association with the development of California's water supply. Any evaluation of the Oroville Dam project under Criterion A and Criterion 1 should include the dam as well as its appurtenant features, such as the Lake Oroville Bridge. Oroville Dam project also appears have the potential to be significant for the National Register under Criterion C and California Register under Criterion 3 for its engineering achievements. Related features such as Bridge 12 0188 may contribute to the significance of the dam project. A determination of eligibility for the dam project, and its appurtenant facilities, is outside the scope of this survey. Individually, the Lake Oroville Bridge is not significant for the National Register Criterion A or California Register Criterion 1 for its association with the development of the highway network through the region. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

Suspension bridges are relatively rare in California. The technology dates to the gold rush period, during which it was often used to bridge mountainous canyon terrain leading to the gold fields, where suspended bridges could hang above swiftly moving rivers. Following the innovative period, during the early twentieth century bridge building technology transitioned to a reliance on a new building material: concrete. Increasingly, material, construction costs, as well as site suitability and local preferences, dictated bridge design. Suspension bridges were among the well-established designs available to counties for construction in remote areas where light traffic did not require a more substantial structure.

While California has no major suspension bridges from the earliest period, the lessons learned from that era helped guide construction of two of the world's most successful suspension bridges, the Golden Gate Bridge, completed in 1936, and the west span of the San Francisco-Oakland Bay Bridge (SFOBB), also finished in 1936. These two structures represent California's largest suspension bridges and were constructed during an era of major public works in the 1930s. Both bridges were previously determined eligible for listing in the National Register. Few such structures were built though, as they were relatively expensive, especially as other bridge types became increasingly affordable during the mid-twentieth century. There are currently 13 suspension bridges in California; five of which are eligible or in the National Register. Two suspension bridges constructed between 1965 and 1974, and two more prior to 2003.

The fabrication and erection of suspension bridges are almost always a significant achievement due to the nature of the construction method. Suspension spans require high amounts of engineering to construct, given that they often cross large spans. The six of the seven longest bridges in California are all suspension spans; the longest being the Golden Gate Bridge (27 0052), with a main span of 4,200 feet. The Lake Oroville Bridge has a main span of 1,108 feet in length making it the seventh longest spanning bridge in the state. While this is an impressive feat, five of the six longest spanning bridges are suspension spans that are longer and thus this span length does not make it significant as a feat of civil engineering. Although the bridge has simplistic Art Deco motifs, these minor details do not form a bridge of high Modern aesthetic value. Bridge 12 0188 is not significant under National Register Criterion C or California Register Criterion 3.

Lake Oroville Bridge was erected as part of the larger Oroville Dam project, which appears to have the potential to be significant under National Register Criterion A and California Register Criterion 1, for its association with the development of California's water supply, as well as Criterion C and Criterion 3 for its engineering achievements. Related features such as Bridge 12 0188 may contribute to the significance of the dam project. A determination of eligibility for the dam project is outside the scope of this survey.

As an individual resource, evaluated independent of the larger Oroville Dam project, Bridge 12 0188 is not associated with events that have made a significant contribution to the broad patterns of history and therefore is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 12 0188 does not embody the distinctive characteristics of suspension bridge construction, and does not possess high Modern aesthetic value. The Lake Oroville Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 12 0188 individually is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 12 0188." 1965.

Caltrans Bridge Inspection Report: August 21, 2013.

"Dam Hydropower and Reservoir Statistics." Denver, CO: United States Society on Dams. Accessed on January 13, 014 from www.usssdams.org.

"Oroville Facilities Complex." Oakland CA: California Department of Water Resources. Accessed on January 13, 2015 from www.water.ca.gov.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for

State of California Department of Transportation, n.p., January 2003.

Stahl, Frank L. and Christopher P. Gagnon, *Cable Corrosion in Bridges and Other Structures*. New York, N.Y.: American Society of Civil Engineers, 1996.

P5b. Photographs (continued):



Roadview looking north, June 2, 2014



Tower view looking north, June 2, 2014



View looking south, June 2, 2104

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

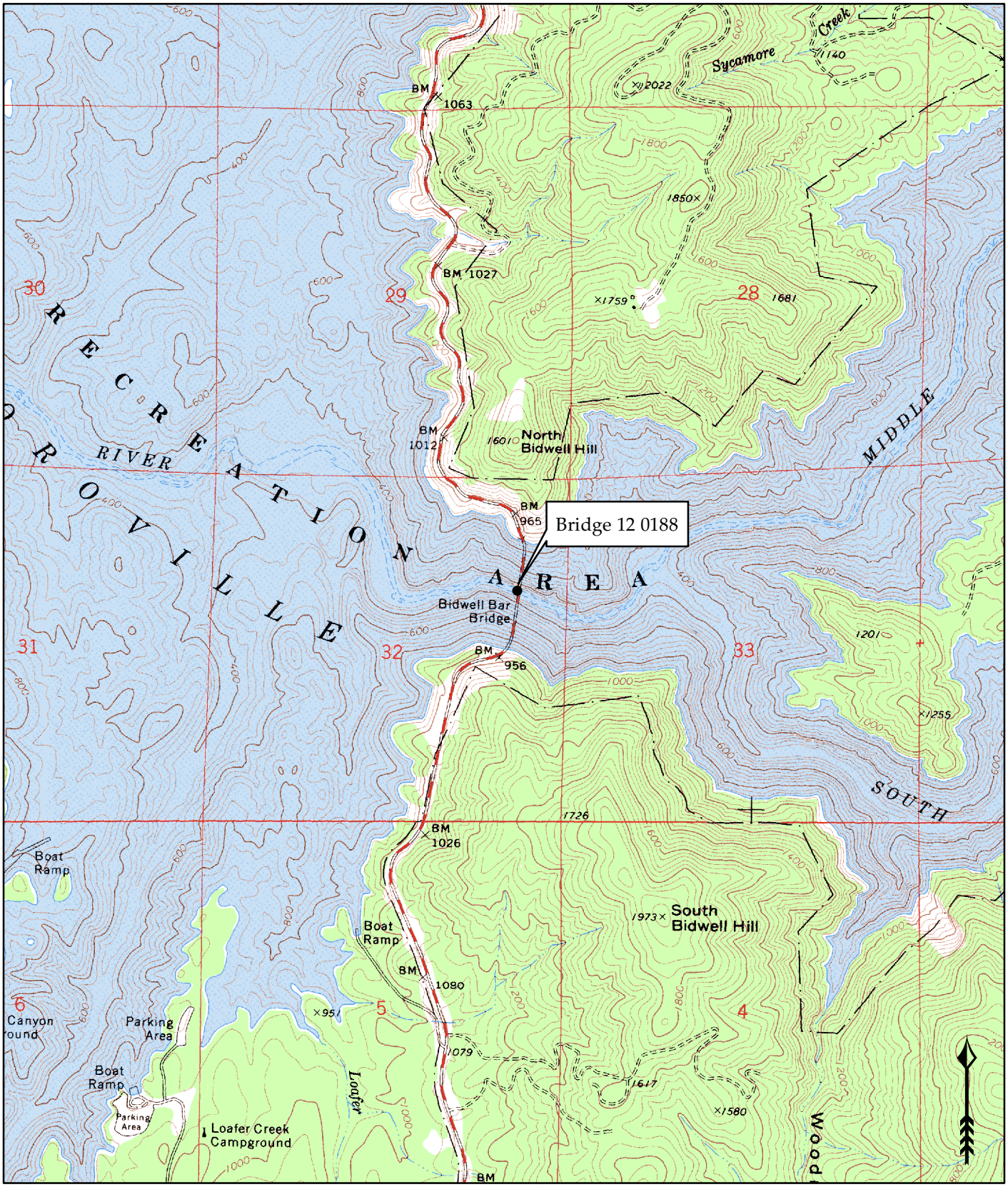
Primary #
HRI#
Trinomial

*Resource Name or #: 12 0188

*Map Name: Oroville Dam

*Scale: 1:24,000

*Date of Map: 1970



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** Bridge 12C0199

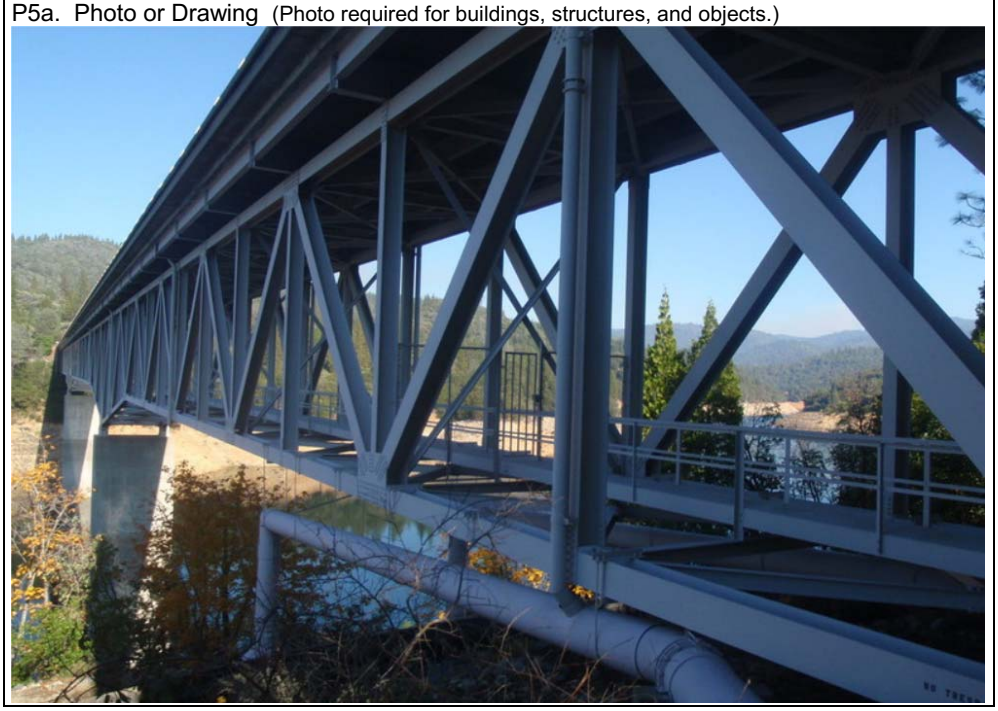
P1. Other Identifier: Enterprise Bridge or South Fork Feather River Bridge

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Butte
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Forbestown **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
On Lumpkin Road three miles north of Forbestown Road, Butte County

***P3a. Description:**
The Enterprise Bridge (12C0199) is a steel cantilevered Warren truss structure that crosses the South Fork Feather River to the east of Lake Oroville. The truss has three spans over two reinforced concrete cellular piers founded on casted-in-drilled-hole (CIDH) concrete pilings. The bridge has a reinforced concrete deck and continuous slab enclosed abutments on CIDH pile bents with abutment end walls on CIDH piles and spread footings. The central span is 440 feet in length and the spans on either side are 308 feet in length. The overall length of the bridge is 1175 feet, including the abutments. The road over the bridge is two lanes with a roadway width of 28 feet between concrete curbs and Type 2 railing. There are no pedestrian walkways.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
Side view, looking northeast
November 16, 2011
***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
Butte County
7 County Center Dr.
Oroville, CA 95965
***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
June 2, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

B1. Historic Name:
B2. Common Name: Enterprise Bridge or South Fork Feather River Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Steel Warren cantilever deck truss
***B6. Construction History:** (Construction date, alterations, and date of alterations)
The bridge was constructed in 1967 and has only undergone minor and routine maintenance since that time.
***B7. Moved?** ■**No** ☐**Yes** ☐**Unknown** **Date:** **Original Location:**
***B8. Related Features:**
Oroville Dam and Lake Oroville.

B9a. Architect: **b. Builder:**
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Enterprise Bridge (12C0199) was constructed by the California Department of Water Resources in association with the Oroville Dam project. Construction on the dam started in 1961, with completion in 1968. The dam is an earth fill embankment structure on the Feather River, east of the city of Oroville, California. It is the tallest dam of its type in the U.S., measuring 770 feet high. It is also the nation's largest state-built water and power development. The dam was installed to help supply water to farmers and residents of the San Joaquin Valley and Southern California. It also generates hydroelectricity and provides flood control. Generation of electricity began in 1968, following the completion of the Edward Hyatt Pump-Generating Plant, which at the time was the country's largest underground power station.

The dam does not appear to have previously been considered for National Register of Historic Places (National Register) or California Register of Historical Resources (California Register) eligibility, likely because it is not yet 50 years of age. It does however appear to have the potential to be significant under Criterion A of the National Register and Criterion 1 of the California Register for its association with the development of California's water supply. Any evaluation of the Oroville Dam project under Criterion A and Criterion 1 should include the dam as well as its appurtenant features, such as the Enterprise Bridge. The Oroville Dam project also appears to have the potential to be significant for the National Register under Criterion C and Criterion 3 for its engineering achievements. Related features such as the Enterprise Bridge may contribute to the significance of the dam project. A determination of eligibility for the dam project, and its appurtenant facilities, is outside the scope of this survey. (See Continuation Sheet.)

B11. Additional Resource Attributes:
***B12. References:**
See Continuation Sheet.
B13. Remarks:
***B14. Evaluator:**
Lauren Clementino
***Date of Evaluation:**
November 17, 2014.



(This space reserved for official comments.)

B10. Significance (continued):

Individually, the Enterprise Bridge is not significant under National Register Criterion A or California Register Criterion 1 for its association with the development of the highway network through the region. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. The fabrication, transportation, and erection of metal truss bridges were not a significant achievement in the state by the time the Enterprise Bridge was constructed in 1967.

The Enterprise Bridge is a Warren cantilever deck truss. The Warren truss was one of the most common truss types built in California. California and many other states had developed standard designs for truss bridges by the 1920s and the Warren truss was commonly used along California highways in the 1920s and 1930s. The majority of Warren trusses constructed in California were pony trusses; later design variations with vertical supports and polygonal top chords were utilized in the 1940s through the 1950s. The typical range of highway Warren truss bridge span lengths is between 40 and 500 feet.

Longer spans were achieved using cantilever trusses. Cantilever metal truss bridges were first constructed in the United States following the Civil War, first with iron and later with steel. Cantilever truss bridges provide a distinct advantage by permitting a long uninterrupted span created by the two opposing trusses meeting without a center support. Cantilever truss bridges continued to be built, albeit somewhat infrequently, in California into the 1970s. Only two cantilever truss bridges were constructed during the period from 1965-1974. The largest cantilever truss bridges in California are the 1956 Richmond-San Rafael Bridge (28 0100) and the 1958 East Carquinez Bridge (23 0015R), both of which are through cantilever trusses with main spans greater than 1,000 feet. The largest deck truss varieties are the Foresthill Bridge (19C0060), with a main span of 862 feet, and the Warm Springs Creek Bridge (20C0438) in Sonoma County with a main span of 753 feet. The Enterprise Bridge, a deck truss with a main span of 440 feet, is not notable when compared to other cantilever truss bridges in California. The Enterprise Bridge was constructed after the cantilever truss was an established type in California and does not represent a significant innovation in bridge engineering or display a significant variation within an established bridge type. The Enterprise Bridge does not display any decorative features or significant architectural details. The Enterprise Bridge is not significant as a work of civil engineering or for aesthetic value and is therefore not significant under National Register Criterion C or California Register Criterion 3.

The Enterprise Bridge was erected as part of the larger Oroville Dam project, which appears to have the potential to be significant under Criterion A and Criterion 1 for its association with the development of California's water supply, as well as Criterion C and Criterion 3 for its engineering achievements. Related features such as the Enterprise Bridge may contribute to the significance of the dam project. A determination of eligibility for the dam project is outside the scope of this survey.

As an individual resource, evaluated independent of the larger Oroville Dam project, the Enterprise Bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or National Register Criterion 2. The Enterprise Bridge is not a distinctive example of metal truss bridge construction does not represent the work of a

master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Enterprise Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or National Register Criterion 4. The Enterprise Bridge individually is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

"Dam Hydropower and Reservoir Statistics." Denver, CO: United States Society on Dams. Accessed on January 13, 2014 from www.usssdams.org.

Department of Transportation. Bridge Inspection Reports for Bridge Number 12C0199. November 16, 1967 to November 13, 2013.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

"Oroville Facilities Complex." Oakland CA: California Department of Water Resources. Accessed on January 13, 2015 from www.water.ca.gov.

P5b. Photographs (continued):



Deck view, looking north (June 2, 2014)



Underside view, looking north (July 23, 2013)


Underside view, looking north (July 23, 2013)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

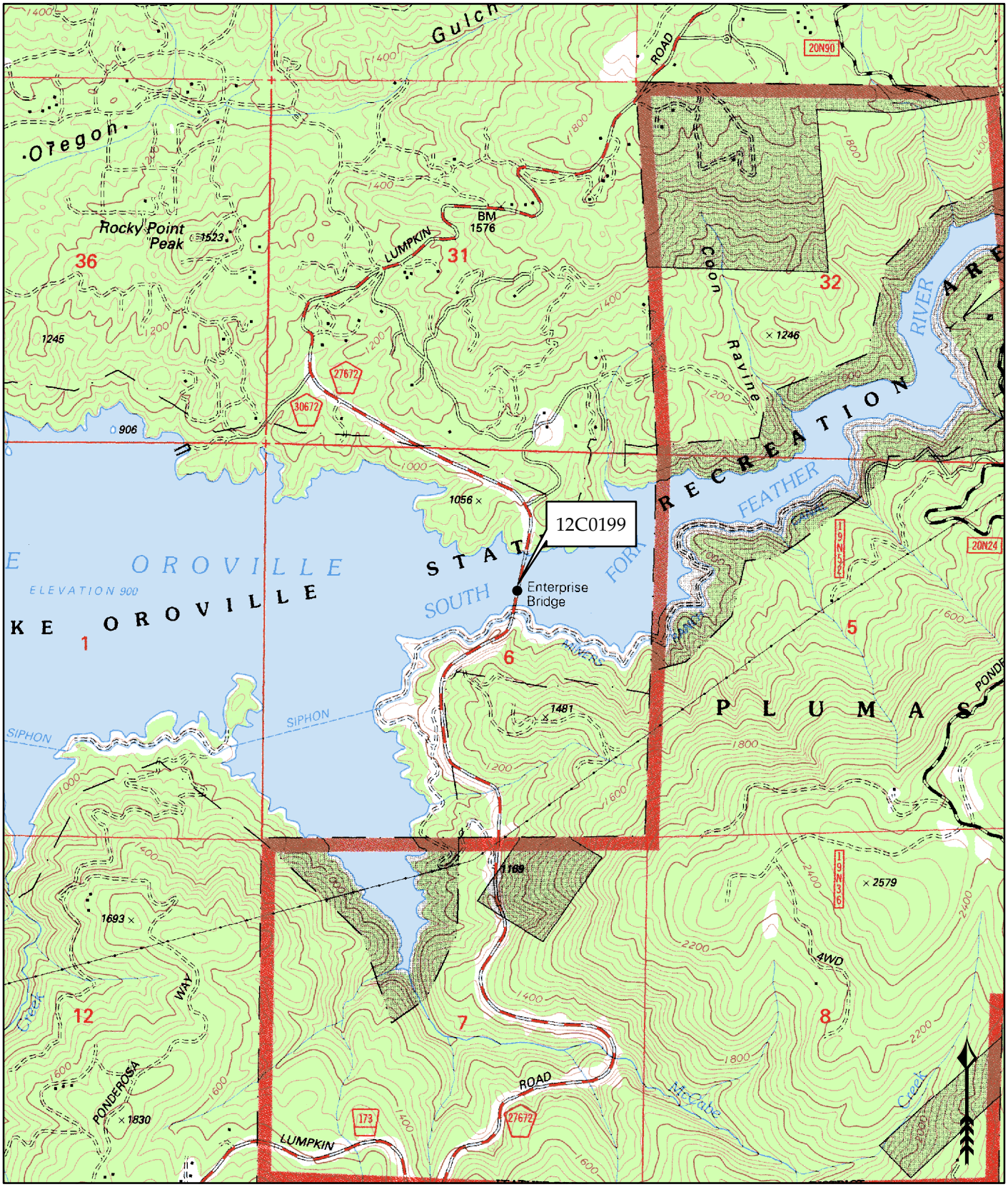
Primary #
HRI#
Trinomial

*Resource Name or #: 12C0199

*Map Name: Forbestown

*Scale: 1:24,000

*Date of Map: 1970



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 17 0077

P1. Other Identifier: Banner Lava Cap Road Overcrossing
***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Nevada
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
Banner Lava Cap Road Overcrossing is located in Nevada County on State Route 20 at postmile 15.41.

***P3a. Description:**
Bridge 17 0077 is a concrete box structure, 308 feet in length, separating Banner Lava Cap Road from State Route 20. Banner Lava Cap Road is a two lane local road with a sidewalk on the north side. The bridge has four spans with the main span measuring 94 feet in length. The reinforced concrete continuous box girder (4 cell) spans have reinforced concrete two-column bents, with reinforced concrete open-end diaphragm abutments. The abutments and bent 4 are on steel piles, other bents are on spread footings. The column bents are in a modern style containing three main structural features; there are two sections that make up either half (left and right) of the "X" shape, which is reinforced at the intersection by a third rectangular concrete section. The two lane overcrossing has Type S railing on the north side, protecting the pedestrian sidewalk and Type 1 railing on the south side, both with chain link fence.
***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking south
June 2, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:** Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 17 0077

B1. Historic Name:

B2. Common Name: Banner Lava Cap Road Overcrossing

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**
The overcrossing was built in 1967.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**
The bridge is located on the local road Banner Lava Cap Road, which crosses over State Route 20.

B9a. Architect: O. Bender, Bridge Department **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Banner Lava Cap Road Overcrossing was constructed by Granite Construction Co. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the overcrossing is not associated with other events that would make it significant under National Register Criterion A and California Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014



(This space reserved for official comments.)

*Required information

B10. Significance (continued):

Bridge 17 0077 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the Banner Lava Cap Road Overcrossing was constructed in 1967. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The Banner Lava Cap Road Overcrossing with a total length of 308 feet and main span of 94 feet in length is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bridge 17 0077 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 17 0077 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history, therefore it is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 17 0077 does not embody the distinctive characteristics of a concrete box bridge construction, does not represent the work of a master and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Banner Lava Cap Road Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 17 0077 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 17 0077." 1964.

Caltrans Bridge Inspection Report: August 16, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



Roadway looking west, June 2, 2014



Central column looking north, June 2, 2014



View of abutment 1 looking west, June 2, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

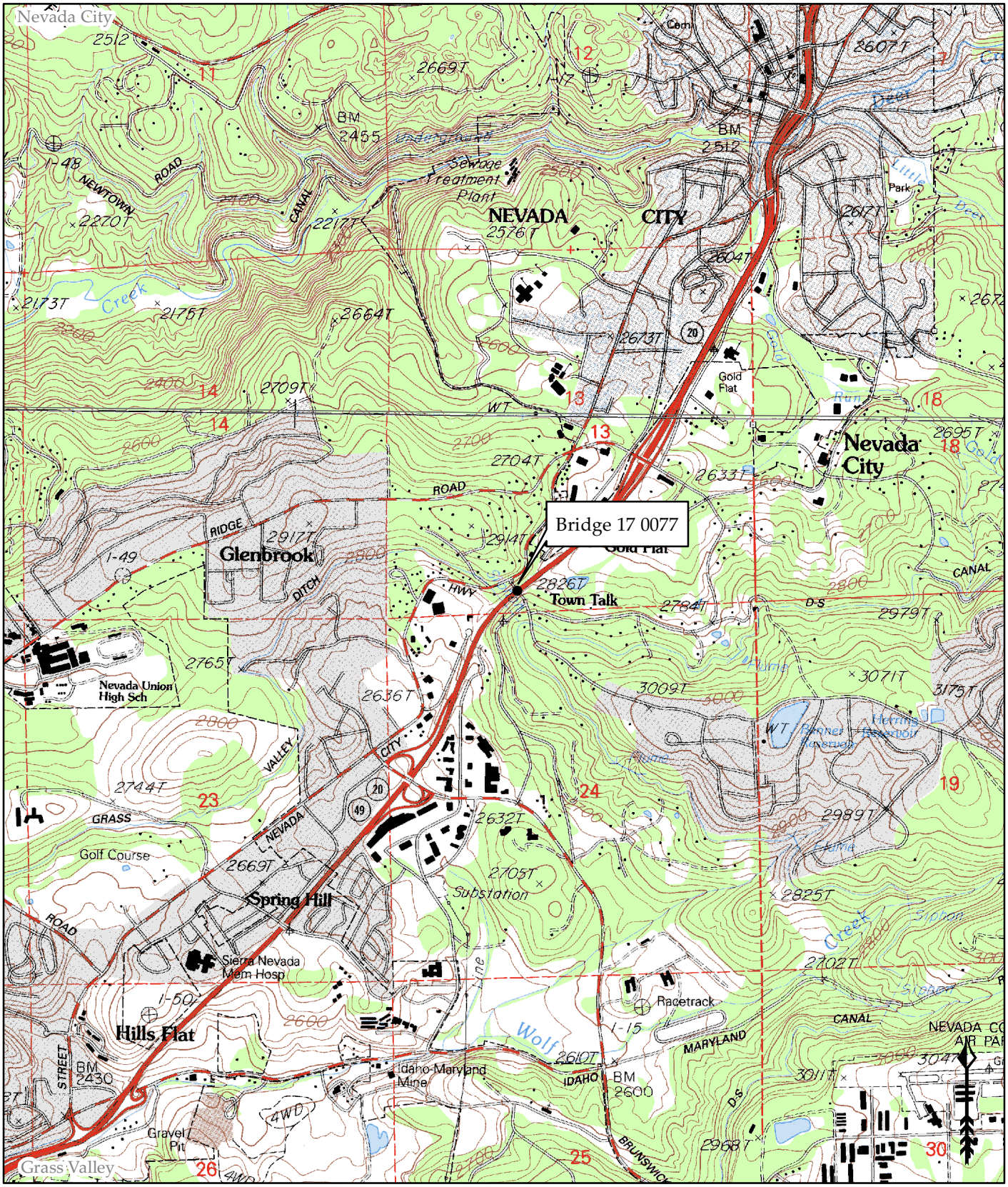
Primary #
HRI#
Trinomial

*Resource Name or #: 17 0077

*Map Name: Grass Valley

*Scale: 1:24,000

*Date of Map: 1995



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** Bridge 19 0077

P1. Other Identifier: South Roseville Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Placer
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Citrus Heights **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Roseville Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: Elevation:

The South Roseville Overcrossing is located in Placer County on Interstate 80 at post mile 0.27.

***P3a. Description:**

The overcrossing carries two lanes of traffic in either direction along Riverside Ave, in Roseville northeast of Sacramento. Bridge 19 0077 is a long span concrete box-girder structure, 500 feet in length, which crosses over 11 lanes of traffic on Interstate 80, at a skew of 49 degrees. The bridge has two spans with the main span measuring 243 feet in length. The continuous cast in place prestressed concrete box girder spans have a reinforced concrete 3-column bent on spread footings and reinforced concrete closed end backfilled counterfort abutments on concrete cast in drilled hole piles. The concrete horizontal profile is in a parabolic shape, widening at the hunches above the 3-column bents, in a modern style. (See Continuation Sheet, page 3)

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
June 2, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1973, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo,
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 19 0077

B1. Historic Name:

B2. Common Name: South Roseville Overcrossing

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The overcrossing was built in 1973. The deck was overlaid with a concrete riding surface in 2011.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The overcrossing is located on Riverside Ave. over Interstate 80.

B9a. Architect: **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The South Roseville Overcrossing was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

October 1, 2014

(This space reserved for official comments.)



*Required information

***P3a. Description:**
Vertically, the concrete is stepped twice, widening at the top and creating slimming lines the length of the span, complementing the corner grooves in the columns. The six lane bridge has type 12 railing with chain link fence protecting the pedestrian sidewalk on either side of the roadway.

B10. Significance (continued):
Bridge 19 0077 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges were not a significant achievement in the state by the time the South Roseville Overcrossing was constructed in 1973. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The South Roseville Overcrossing, with a total length of 500 feet and main span of 243 feet in length, is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bridge 19 0077 is not significant under National Register Criterion C or California Register Criterion 3.

The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4.

Bridge 19 0077 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 19 0077 does not embody the distinctive characteristics of a concrete box bridge construction, does not represent the work of a master and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The South Roseville Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 19 0077 is not eligible for inclusion on the National Register or California Register.

***B12. References:**
"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 19 0077." 1970.

Caltrans Bridge Inspection Report: November 7, 2013

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



View looking southwest, June 2, 2014



Overcrossing roadway looking north, June 2, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

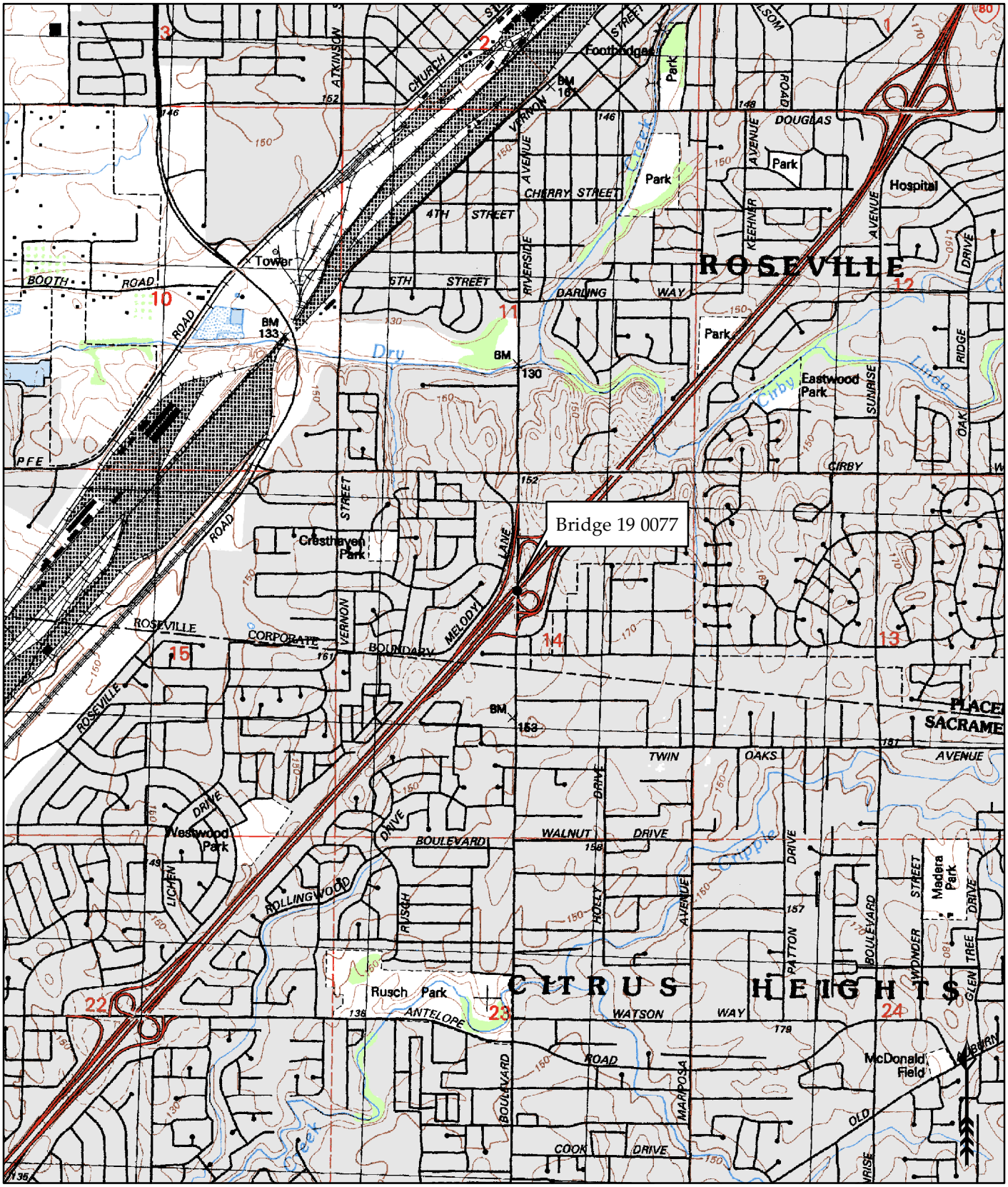
Primary #
HRI#
Trinomial

*Resource Name or #: 19 0077

*Map Name: Citrus Heights

*Scale: 1:24,000

*Date of Map: 1975



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 19C0060

P1. Other Identifier: Foresthill Bridge or North Fork American River Bridge

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Placer
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Auburn **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
In Placer County on the Auburn-Foresthill Road east of I-80

***P3a. Description:**
The Foresthill Bridge (19C0060) is a steel Warren cantilever deck truss structure that crosses the North Fork American River at a skew of 27 degrees. The cast-in-place (CIP) reinforced concrete deck is set on a continuous composite welded and rolled steel stringers. The stringers are on welded steel floor beams which are on continuous welded steel deck truss supported by reinforced concrete bin type abutments and reinforced concrete piers. All piers are on spread footings. The bridge has three spans—the central span is suspended. The central span of the bridge is 862 feet in length and the spans on either side are 639 feet in length. The total length of the bridge is 2,428 feet and the total width is 75 feet. The two lane bridge has concrete barrier and metal rails.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
View, looking north
June 2, 2014
***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
1972, Caltrans Bridge Files
***P7. Owner and Address:**
Placer County
3091 County Center Drive
Auburn, CA 95603
***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status** 2

***Resource Name or #** (Assigned by recorder) Bridge 19C0060

B1. Historic Name:
B2. Common Name: Foresthill Bridge or North Fork American River Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Steel Warren cantilever deck truss
***B6. Construction History:**
The bridge was constructed in 1972. A large seismic retrofit project which also included replacing the bridge deck, upgrading the pedestrian railings, and repainting the bridge was completed in April 2014. The original bridge deck had a 16.75 foot gap between the two travel lanes which opened to the truss below. The new deck is solid across to accommodate wider travel lanes and the possibility of a third travel lane or passing lane in the future. The new pedestrian railings were raised to 6.5 feet in height (the original were 4 feet) to meet new safety standards.

***B7. Moved?** ■No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
None.

B9a. Architect: Unknown **b. Builder:** Unknown
***B10. Significance: Theme:** Engineering **Area:** Placer County
Period of Significance: 1972 **Property Type:** Structure **Applicable Criteria:** C
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
The Foresthill Bridge was constructed by the United States Bureau of Reclamation as part of the Auburn Dam project. The Foresthill Bridge and realigned Auburn-Foresthill Road were intended to replace Highway 49 and the old Auburn-Foresthill Road which would be covered in water by the planned Auburn Reservoir. However, the Auburn Dam project was halted due to seismic safety concerns following the August 1, 1975 earthquake near the Oroville Dam. The Foresthill Bridge is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for association with the Auburn Dam as the Auburn Dam project was never completed. The bridge is not associated with highway improvements and is not significant under National Register Criterion A or California Register Criterion 1 for association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2. (See Continuation Sheet.)

B11. Additional Resource Attributes:

***B12. References:**
See Continuation Sheet.

B13. Remarks:

***B14. Evaluator:**
Lauren Clementino

***Date of Evaluation:** November 17, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. The fabrication, transportation, and erection of metal truss bridges were not a significant achievement in the state by the time the Foresthill Bridge was constructed in 1972.

The Foresthill Bridge is a Warren cantilever deck truss. The Warren truss was one of the most common truss types built in California. California and many other states had developed standard designs for truss bridges by the 1920s and the Warren truss was commonly used along California highways in the 1920s and 1930s. The majority of Warren trusses constructed in California were pony trusses; later design variations with vertical supports and polygonal top chords were utilized in the 1940s through the 1950s. The typical range of highway Warren truss bridge span lengths is between 40 and 500 feet.

Longer spans were achieved using cantilever trusses. Metal cantilever truss bridges were first constructed in the United States following the Civil War, first with iron and later with steel. Cantilever truss bridges provide a distinct advantage by permitting a long uninterrupted span, created by the two opposing trusses meeting without a center support. Cantilever truss bridges continued to be built, albeit somewhat infrequently, in California into the 1970s. Only two cantilever truss bridges were constructed during the period from 1965-1974. The main span of the Foresthill Bridge is the third longest among cantilever truss bridges in California. The largest cantilever truss bridges in California are the 1956 Richmond-San Rafael Bridge (28 0100) and the 1958 East Carquinez Bridge (23 0015R), both of which are through cantilever trusses with main spans greater than 1,000 feet. The largest deck truss varieties are the Foresthill Bridge, with a main span of 862 feet, and the Warm Springs Creek Bridge (20C0438) in Sonoma County with a main span of 753 feet.

The Foresthill Bridge was constructed at a great height to allow for clearance over the Auburn Reservoir once the Auburn Dam was constructed. The dam was never constructed and the Foresthill Bridge towers above the North Fork of the American River below. At a height of 730 feet, measured from the North Fork American River to the top of the bridge deck, it is the highest bridge in California and the fourth highest in the United States.

A large seismic retrofit project was completed in April 2014. The most conspicuous alterations to the Foresthill Bridge through this project (those which could impact the integrity of the bridge) included replacing the bridge deck and the pedestrian railings. The original bridge deck had a gap between the two travel lanes which opened to the truss below while the new deck is solid across. The new pedestrian railings are 6.5 feet in height (higher than the original were 4 feet). These alterations impact the integrity of the bridge's design and materials. However, as the bridge derives its significance from its engineering value as a long span cantilever truss and the tallest bridge in the state, alterations to the bridge deck and pedestrian railings are minor impacts which do not detract from the qualities which qualify the bridge for listing on the National Register. The Foresthill Bridge retains sufficient integrity of design, materials, workmanship, setting, location, feeling, and association to convey its significance under National Register Criterion C and California Register Criterion 3.

The Foresthill Bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4.

The Foresthill Bridge is a distinctive example of metal truss bridge construction and is significant under National Register Criterion C and California Register Criterion 3. It retains sufficient integrity of design, materials, workmanship, setting, location, feeling, and association to convey its significance under National Register Criterion C and California Register Criterion 3. The Foresthill Bridge is eligible for inclusion on the National Register and California Register.

B12. References (continued):

Bizjak, Tony. "Foresthill Bridge to undergo major upgrades." The Sacramento Bee. August 7, 2010.

Department of Transportation. Bridge Inspection Reports for Bridge 19C0060. July 30, 1976 to August 28, 2012.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

Thomson, Gus. "$70-million retrofit? Local span similar to Minnesota structure that collapsed two years ago." Auburn Journal. September 22, 2009.

Thomson, Gus. "Caltrans gets its way on new Foresthill Bridge railing height." Auburn Journal. September 13, 2010.

Thomson, Gus. "Foresthill Bridge losing its stature to China spans." Auburn Journal. January 21, 2010. http://www.auburnjournal.com/article/media-life-foresthill-bridge-losing-its-stature-china-spans

Thomson, Gus. "Higher Foresthill Bridge railings decrease trash dumping, allow expanded cleanup." Auburn Journal. September 19, 2014. http://www.auburnjournal.com/article/9/18/14/higher-foresthill-bridge-railings-decrease-trash-dumping-allow-expanded-cleanup

Thomson, Gus. "New law puts Auburn's Foresthill Bridge suicide prevention in focus: Golden Gate, Placer County spans ID'd by legislator as tragic targets of jumpers." Auburn Journal. October 15, 2013. http://www.auburnjournal.com/article/new-law-puts-auburn%E2%80%99s-foresthill-bridge-suicide-prevention-focus

Thomson, Gus. "Placer County marking completion of Foresthill Bridge work: $74 million project was started in January 2011 and includes a new paint job." Auburn Journal. April 8, 2014. http://www.auburnjournal.com/article/placer-county-marking-completion-foresthill-bridge-work

Thomson, Gus. "Sky-high retrofit: $71 million overhaul for Placer County's Foresthill Bridge." Auburn Journal. February 10, 2010. http://www.auburnjournal.com/article/sky-high-retrofit-71-million-overhaul-placer-county%E2%80%99s-foresthill-bridge

Wiley, Walt. "High bridge rates low in official view." The Sacramento Bee. March 22, 1986.

Wilson, Wayne. "Placer jumps to lure movies: Modifies law on 'flight' from bridge." The Sacramento Bee. June 13, 1995.

P5b. Photographs (continued):



Detail, looking north (June 2, 2014)



Bridge deck, looking west (June 2, 2014)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

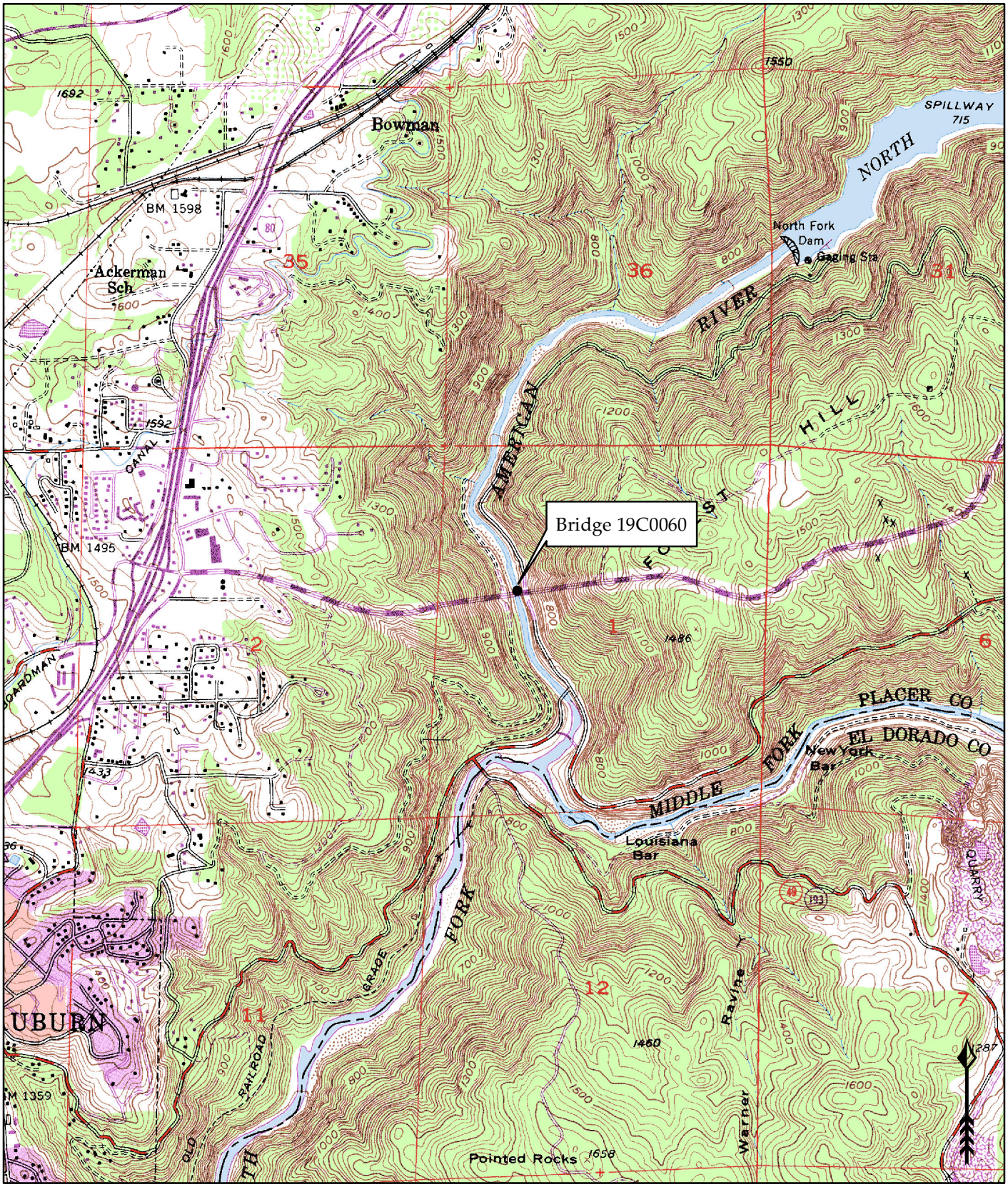
Primary #
HRI#
Trinomial

*Resource Name or #: 19C0060

*Map Name: Auburn

*Scale: 1:24,000

*Date of Map: 1975



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 24 0004L&R

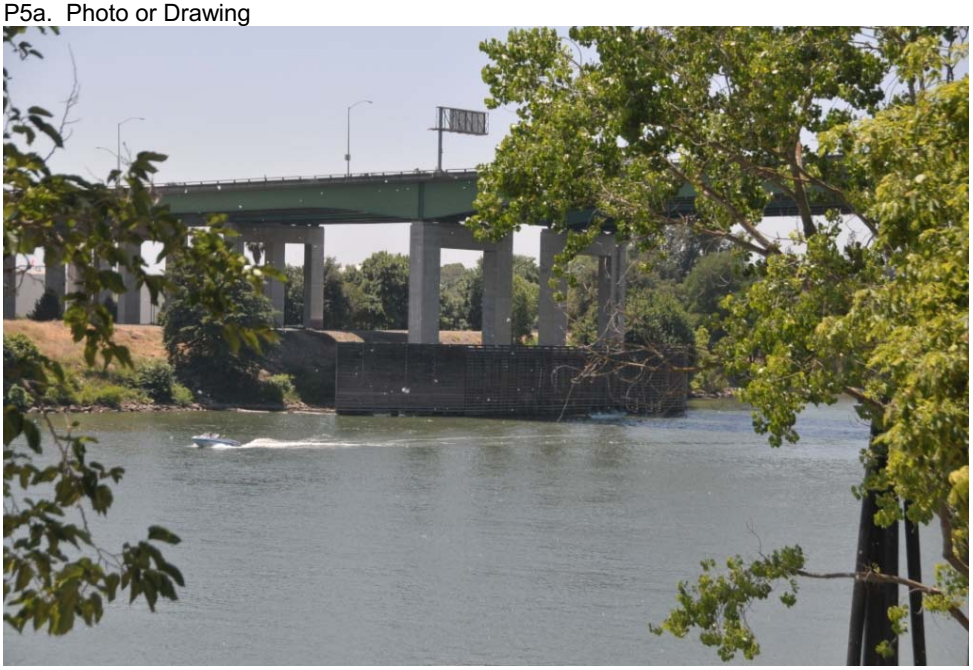
P1. Other Identifier: Sacramento River Viaduct/ Pioneer Memorial Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Sacramento
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** West Sacramento **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Sacramento Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
The Sacramento River Viaduct is located in Sacramento County on US Route 50 at post mile 0.01 in Sacramento.

***P3a. Description:**
The bridges, left and right, cross the Sacramento River as well as various city streets, railroads and State Highway 99. Bridges 24 0004L&R are long span steel girder structures, each 6360 feet in length, crossing the Sacramento River Viaduct side by side at a skew of 99 degrees. Both bridges have 39 spans with the main span measuring 275 feet in length and are 3 lanes wide. Bridges 24 0004L&R have steel welded composite girder spans, simple and continuous, with reinforced concrete continuous slab spans, that have 1, 2, 3, and 4 column reinforced concrete bents on concrete piles, closed end cellular abutments, open end seat abutments, and closed end-backfilled cantilever abutments all on concrete piles. The piers are on timber piles.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates,)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north,
June 1, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1966, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo,
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridges 24 0004L&R

B1. Historic Name:
B2. Common Name: Sacramento River Viaduct
B3. Original Use: Bridge
B4. Present Use: Bridge
*B5. Architectural Style: Modern
*B6. Construction History:
The bridge was built in phases during the years; 1964 (substructure), 1966 (superstructure).

*B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:
*B8. Related Features:

B9a. Architect: J. T. Hall, Bridge Department, California Division of Highways
b. Builder: Fruin-Colnon Construction Co. and Le Boeuf Dougherty Contracting Co.
*B10. Significance: Theme: N/A Area: N/A
Period of Significance: N/A Property Type: N/A Applicable Criteria: N/A

The substructure of the Sacramento River Viaduct was constructed by Fruin-Colnon Construction Co. and Le Boeuf Dougherty Contracting Co. with the Superstructure contractor being Kaiser Steel Corp. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridges 24 0004 L&R are not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for their association with the development of the highway network through the region. In addition, the bridges are not associated with other events that would make them significant under National Register Criterion A or California Register Criterion 1. They are not associated with a person who made a significant contribution to history at the local, state, or national level, and are not significant under National Register Criterion B or California Register Criterion 2.

This structures are two of over 500 bridges of the type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Sacramento River Viaduct was constructed in 1966. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References: (See Continuation Sheet, page 3)
B13. Remarks:

*B14. Evaluator:
Helen Blackmore
California Department of Transportation

*Date of Evaluation:
October 1, 2014

(This space reserved for official comments.)



B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams. Because of this those used in the Sacramento River Viaduct were not considered a significant technological achievement at the time. Bridges 24 0004L&R are fairly typical examples of steel girder construction for this period. They are not one of the larger examples of this type and do not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Sacramento River Viaduct with a total length of 6360 feet and main spans of 275 feet in length are not significant as a work of civil engineering. The Sacramento River Viaduct is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 24 0004L&R were erected as typical transportation improvement projects of the period and the bridges are not associated with events that have made a significant contribution to the broad patterns of history, therefore are not significant under National Register Criterion A or California Register Criterion 1. They are not associated with the lives of significant persons in history and are not significant under National Register Criterion B or California Register Criterion 2. Bridges 24 0004L&R do not embody the distinctive characteristics of a steel girder bridge construction, and do not represent the work of a master, and do not possess high artistic values. Further, they do not represent a significant and distinguishable entity whose components may lack individual distinction. The Sacramento River Viaduct is not significant under National Register Criterion C or California Register Criterion 3. The bridges have not yielded and are not likely to yield information important in history and are not significant under National Register Criterion D or California Register Criterion 4. Bridges 24 0004L&R are not eligible for inclusion on the National Register or California Register.

***B12. References:**

An Architect Concentrates on Aesthetics in Bridge Design. *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. A s Built Plans Bridge 24 0004L, 1962.

Caltrans Bridge Inspection Report: October 24, 2013

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report Caltrans St atewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking southwest, June 1, 2014



View looking south, June 1, 2014



View looking northwest, June 1, 2014



Detail looking northwest, June 1, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

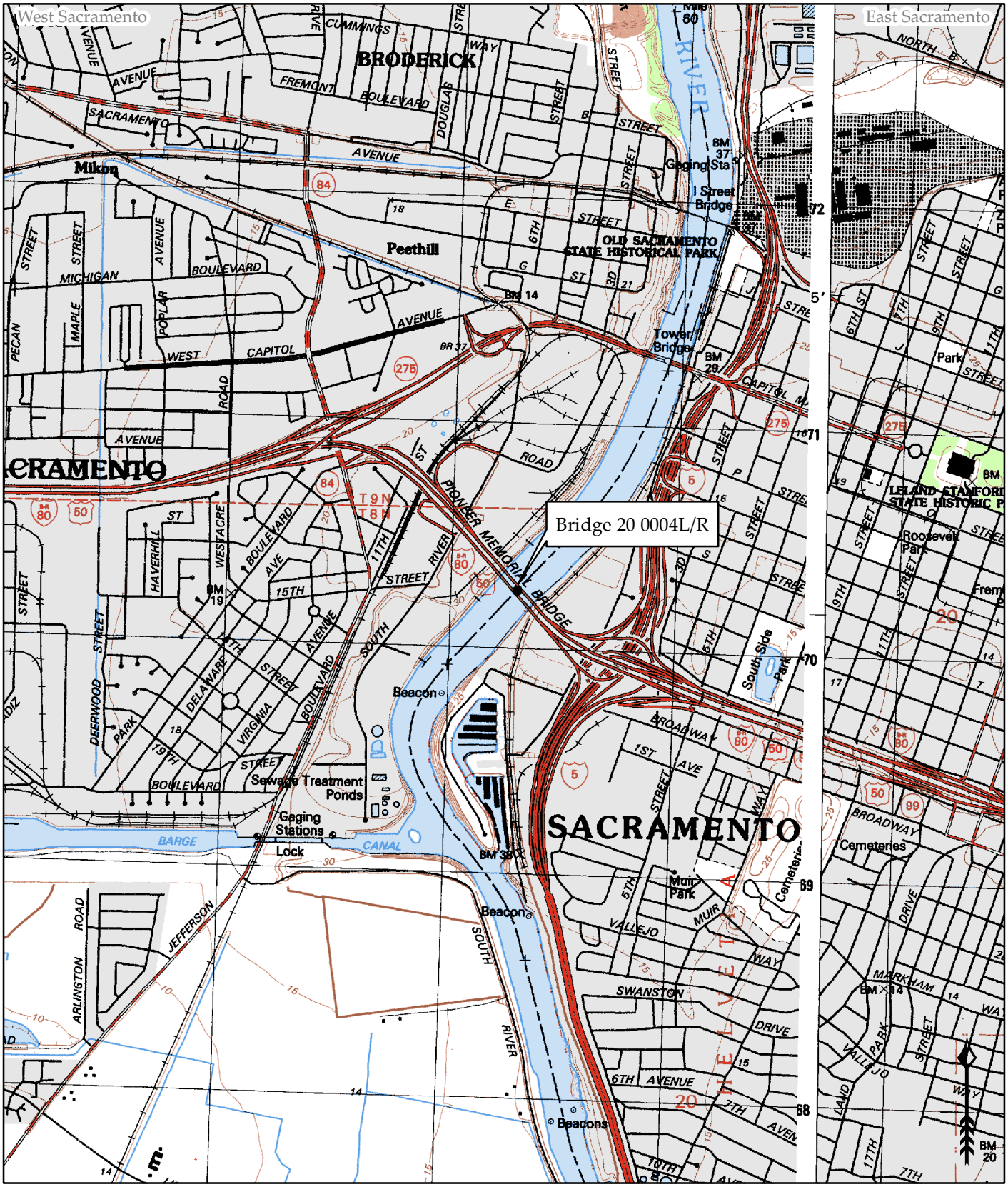
Primary #
HRI#
Trinomial

*Resource Name or #: 20 0004L/R

*Map Name: West Sacramento

*Scale: 1:24,000

*Date of Map: 1992



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 *Resource Name or #: Bridge 25C0065

P1. Other Identifier: Pedestrian path over Schnell School Road

***P2. Location:** ☐ Not for Publication ☒ Unrestricted **and** (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County:** Placer

***b. USGS 7.5' Quad:** Placerville **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Placerville Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
03-ED-831-0-PLCR

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
Bridge 25C0065 is a segmental precast concrete box girder structure with a 62 foot single span carrying a two lane pedestrian path over Schnell School Road. It has four reinforced Portland concrete box girders units running longitudinally, supported by cantilevered abutment walls. Each girder was composed of eight precast concrete boxes that were plant manufactured and assembled, post-tensioned and then erected onsite. The four complete concrete box girders were hoisted individually onto the abutments, the tie rods tightened and the beam grouted together to form a single unit. The exterior profile of the abutments are composed of reinforced concrete crib walls. The original galvanized steel tube handrail has been replaced with chainlink fence.

***P3b. Resource Attributes:** (List attributes and codes) HP19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
View, facing north

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1974-1975, The Mountain Democrat Times, 9 Jan 1975

***P7. Owner and Address:**
City of Placerville
310 Center Street
Placerville, CA 95667

***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
August 31, 2014

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # (Assigned by recorder) Bridge 25C0065

B1. Historic Name: Grade Separation Structure 18-7.4B/Schnell School Road Underpass
B2. Common Name: Pedestrian path over Schnell School Road
B3. Original Use: Railroad Bridge B4. Present Use: Pedestrian Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:** (Construction date, alterations, and date of alterations)
Built 1974-1975 (Caltrans inaccurately reports the bridge having been built in 1970) , railroad tracks removed by 1989, as of 1993 the structure supported a paved pedestrian path, pipe railing handrail removed and a chain link fence erected at a point before 2000.
***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
*B8. Related Features: Originally constructed for the Camino, Placerville and Lake Tahoe Railroad – the rail alignment in the immediate vicinity has been converted to a pedestrian path.

B9a. Architect: The Murray-McCormick Environmental Group b. Builder: Hunsaker Construction
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
Bridge 25C0065 was built by the City of Placerville for the Camino, Placerville and Lake Tahoe Railroad to replace a previously existing trestle crossing to the south. As the area north of Highway 50 developed, the old wooden trestle became a bottleneck for vehicles using Schnell School Road. The City opened bids for the construction contract in early 1974. By January 1975, the bridge was open for rail traffic. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**
Caltrans Bridge Inspection Report: January 20, 2011

Bridge Beams, *The Mountain Democrat and Placerville Times*, 1 August 1974, A2.

Bridge Construction, *The Mountain Democrat and Placerville Times*, 8 August 1974, 1.

City Seeks Bids for Schnell School Underpass Project, *The Mountain Democrat and Placerville Times*, 28 February 1974, A2.

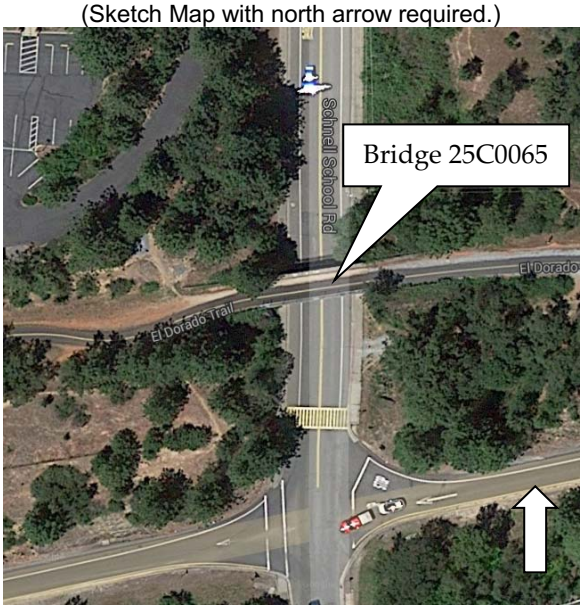
Concrete Bridge Replaces Wooden Trestle on Schell School Road, *The Mountain Democrat and Placerville Times*, 9 January 1975, E4.

B13. Remarks:

***B14. Evaluator:**
Noah Stewart
Dept. of Transportation

***Date of Evaluation:** October 1, 2014

(Sketch Map with north arrow required.)



(This space reserved for official comments.)

***Recorded by:** Janice Calpo & Noah Stewart ***Date:** October 1, 2014 ☒ **Continuation** ☐ **Update**

B10. Significance (continued):

The Camino, Placerville and Lake Tahoe Railroad was a private rail line used for hauling wood products from the El Dorado National Forest to Placerville, which were then taken to market via the Southern Pacific Railroad. The line began in 1903 and lasted until 1986, when it was abandoned. The tracks were removed from the bridge by 1989, and as of 1993, the bridge supported a pedestrian path as it does today. In the immediate area little, if anything, remains of the Placerville and Lake Tahoe Railroad.

Bridge 25C0065 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the region. The existing bridge replaced an earlier structure that was erected as part of a railroad alignment. Little, if anything, remains of the railroad within the immediate area. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

While the bridge is identified in Caltrans records as a precast segmental concrete box girder structure, rather than the short box unit form that defines the bridge type, the span was composed of four individual longitudinal precast segments ganged together to form a single box girder. Each beam was comprised of eight segments bonded together and post-tensioned. Following manufacture each of the four beams were transported to the project site and hoisted into place. While it was constructed in segments at an offsite facility, it was not completed in the way that defined the bridge type. Sections of each beam were precast and then bonded together at the factory to form a single beam. The is more closely associated with earlier concrete prestressed and box girder designs and is similar to the early designs of Eugène Freyssinet, rather than those of Jean Muller, which define the bridge type. The pedestrian path bridge over Schnell School Road does not represent a significant innovation in bridge engineering or display a significant variation and it does not display any decorative features or significant architectural details. Bridge 25C0065 is not significant as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3.

The pedestrian path bridge over Schnell School Road was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The bridge is not a distinctive example of precast segmental concrete box girder construction, does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. Bridge 25C0065 is not significant under National Register Criterion C or California Register Criterion 3 and it has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 25C0065 is not eligible for inclusion on the National Register or California Register.

State of California The Resources Agency
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LOCATION MAP

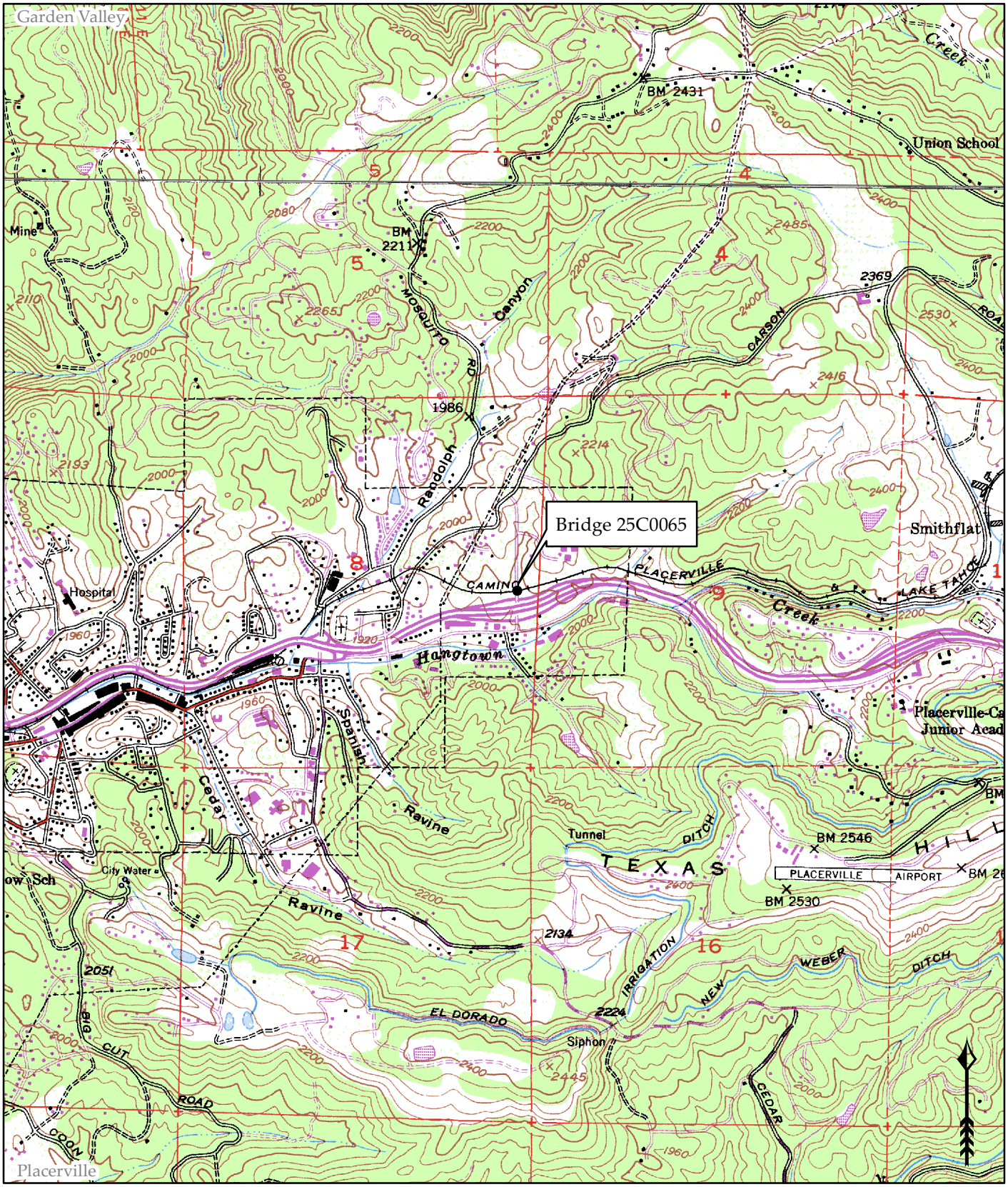
Primary #
HRI#
Trinomial

*Resource Name or #: 25C0065

*Map Name: Placerville

*Scale: 1:24,000

*Date of Map: 1950



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 28 0015L

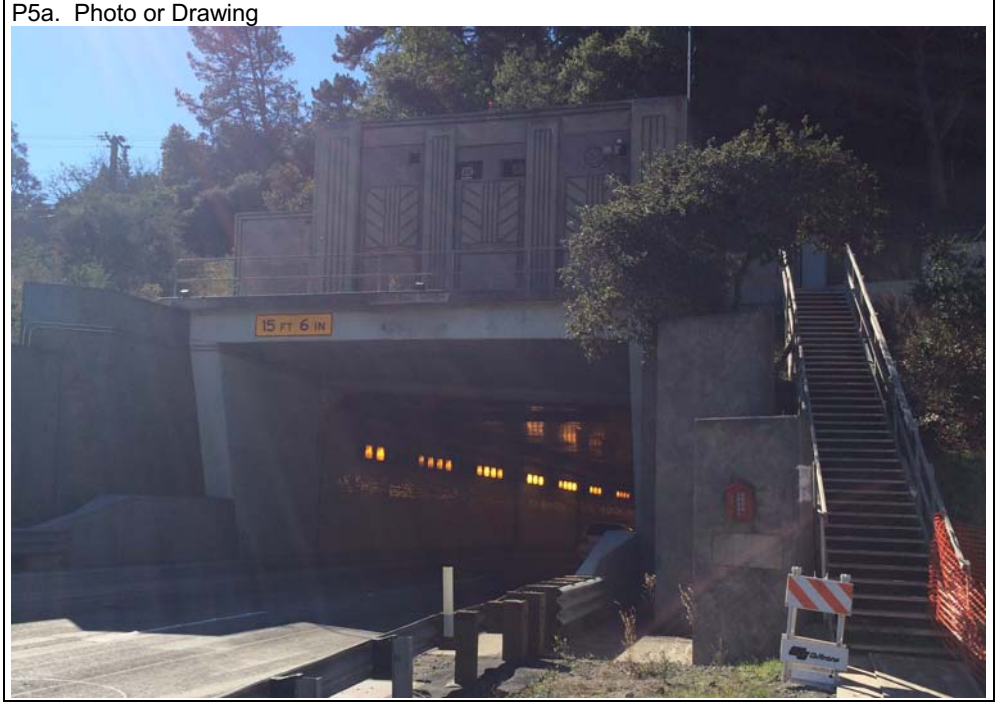
P1. Other Identifier: Caldecott Tunnel Bore 3

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Alameda
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** East Oakland **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Oakland Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Caldecott Tunnel Bore 3 is located on State Route 24 at post mile 0.01 in Oakland.

***P3a. Description:**
The Caldecott Tunnel Bore 3 is a two lane, reinforced concrete arch tunnel, 3,371 feet in length that passes through the Oakland-Berkeley Hills at the end of the Temescal Canyon. The tunnel is a bore tunnel carrying two lanes of traffic along State Route 24 west bound, north of the original two bores (28 0015R and 28 0015). The west tunnel portal mimics the Art Deco styling of Bores 1 and 2, although on a smaller scale and in a more crude manner. The portal designers incorporated vertical lines with chevrons present in the details of Bores 1 and 2. The bas relief delineating is painted purple, emphasizing the details. There are three step concrete retaining walls on either side of the roadway leading to the portal, increasing in size towards the entrance.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View looking west November 10, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1965, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
November 14, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

*Resource Name or # Bridge 28 0015L

B1. Historic Name:
B2. Common Name: Caldecott Tunnel Bore 3
B3. Original Use: Tunnel B4. Present Use: Tunnel

***B5. Architectural Style:**

***B6. Construction History:**

The tunnel was constructed in 1965. It has undergone minor maintenance, including: grinding of pavement (1969); removal of ceiling tile (1975); maintenance on to ventilation fans (1978); and an 8-inch water line replaced (1985). In 1982, an accident occurred in the tunnel causing damage to the ceiling and walls; work repairing this was completed in 1987. Further maintenance occurred including: tile replacement, cracks in roadway sealed and light replacement (1995); and right side curb patched (2001).

***B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:**

***B8. Related Features:**

The Caldecott Tunnel Bore 3 is located on westbound State Route 24. There are three other two lane tunnels that make up the Caldecott Tunnel system: The original two bores, built in the 1930s, carry the eastbound traffic and Bores 3 and 4 each carry two lanes of westbound traffic.

B9a. Architect: W. A. Chesney, bridge Department, California Division of Highways b. Builder:

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Caldecott Tunnel Bore 3 was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 28 0015L is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2. (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 14, 2014

(This space reserved for official comments.)



***P3a. Description (continued):**

The exit to the tunnel on the east is equal in massing to that of Bores 1 and 2, but does not have the Art Deco detailing. The concrete façade is divided by five extrusive vertical concrete features. There is a four step concrete retaining wall on the right side of the portal. The tunnel is lined with white tiles, with the left sidewalk of 4 foot and 2 foot 6 inches on the right. There are interior square light boxes, and ventilation in the ceiling.

B10. Significance (continued):

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 in the State of California. Tunnel building was not a significant achievement in the state by the time the Caldecott Tunnel Bore 3 was constructed in 1965. By 1965, the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of national public works projects. The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties, containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the Counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Most of the state's tunnels were constructed by boring through hillsides or mountains. However, during the period 1965-1974, bore tunnels accounted for four of the nine tunnels constructed with cut-and-cover making up the other five. There is a third type of tunnel not constructed during this period, built of precast concrete tube sections. The bore tunnels are constructed by the excavation of earth and rock. Most have an arched, concrete lined interior, partially lined or unlined with light colored tiles making the interior brighter and easier to clean. The use of white tiles to line the tunnel is not significant to the constructed of the Caldecott Tunnel Bore 3. The longest bore tunnel in California is the Wawona Tunnel in Yosemite National Park measuring 4,236 feet in length, second and third longest tunnels are Bores 1 and 3 of the Caldecott Tunnel. Bore 1 measures 3,615 feet; and Bore 2, 3,609 feet. While the first two bores of the Caldecott Tunnel are eligible for their length, by the time that bore 3 was constructed in, 1965 the length of tunnel, whilst not an easy undertaking was not a considerable feat of civil engineering. Thus the Caldecott Tunnel Bore 3, measuring 3,371 feet in length, was not a significant achievement of civil engineering in 1965. Further, the use of Art Deco decoration to adorn the entrance portal is not aesthetically significant. Caldecott Tunnel Bore 3 is not significant under National Register Criterion C or California Register Criterion 3.

The Caldecott Tunnel Bore 3 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 28 0015L does not embody the distinctive characteristics of a tunnel construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Caldecott Tunnel Bore 3 is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Caldecott Tunnel Bore 3, Bridge 28 0015L, is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

California Division of Highways. "As Built Plans – Bridge 28 0015L." 1960.

Caltrans Bridge Inspection Report: June 27, 2014

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

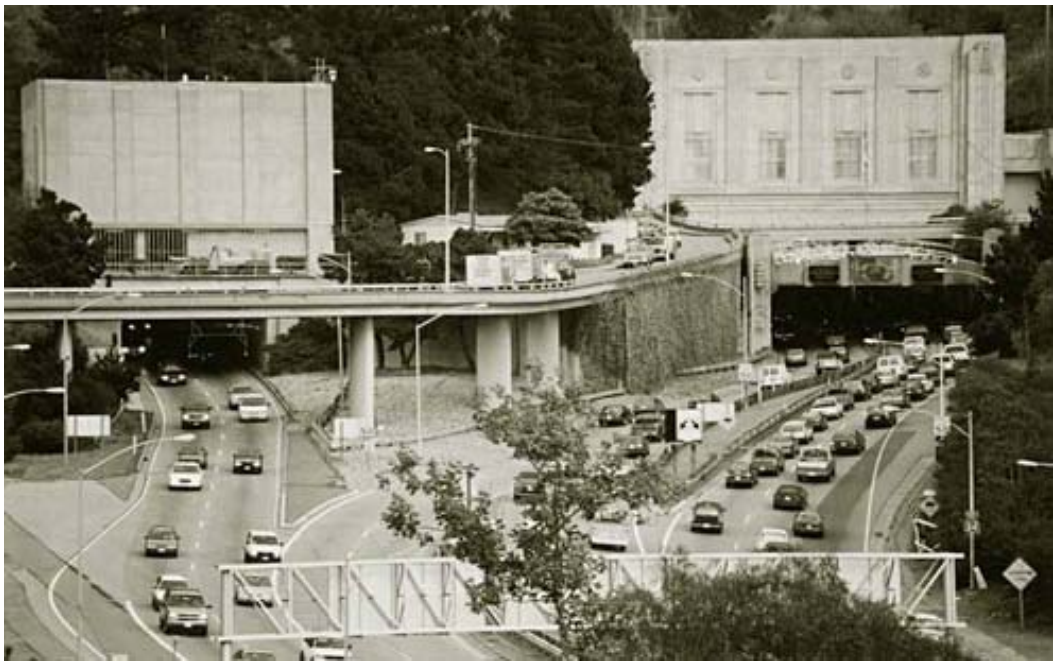
P5b. Photographs (continued):



View looking east between Call Boxes 9 and 10, October 5, 2009.



View of the western portal looking east, May 2011.



View of the western portals for Bore 1 (far right), Bore 2 (adjacent to Bore 1), and Bore 3 (left), from http://www.mtc.ca.gov/library/caldecott/ date unknown.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

*Resource Name or #: 28 0015L

*Map Name: East Oakland

*Scale: 1:24,000

*Date of Map: 1959



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 29 0203

P1. Other Identifier: Old US 50 Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Joaquin
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Tracy **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:
The Old US 50 Overcrossing is located in San Joaquin County on Interstate 205 at post mile 3.37.

***P3a. Description:**
The overcrossing is located at State Route 205/West 11th Ave where it joins Interstate 205, west of Tracy, in San Joaquin County. Bridge 29 0203 is a one lane long span steel girder overcrossing, 408 feet in length, and carries Old US Highway 50 over State Route 205, at a skew of 54 degrees. The overcrossing has two spans with the main span measuring 200 feet in length. The structure has three continuous span welded composite steel girders with a reinforced concrete deck on three reinforced concrete column bents and reinforced concrete open end seat abutments and "U" wingwalls on piles. The railing is standard Type 9.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking west,
October 30, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1970, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
October 30, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

***Resource Name or #** Bridge 29 0203

B1. Historic Name:
B2. Common Name: Old US 50 Overcrossing
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was built in 1970.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: Geo. Inengaga, Bridge Department, California Division of Highways
b. Builder: Gordon H. Ball Inc
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Old US 50 Overcrossing was constructed by Gordon H. Ball Inc., of Danville, California. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 29 0203 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register of Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Old US 50 Overcrossing was constructed in 1970. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete.
(See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in Old US 50 Overcrossing, and was not considered a significant technological achievement. Bridge 29 0203 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The 29 0203 bridge with a total length of 408 feet and main span of 200 feet in length is not significant as a work of civil engineering. The Old US 50 Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 29 0203 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 29 0203 does not embody the distinctive characteristics of steel girder bridge construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Old US 50 Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 29 0203 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

An Architect Concentrates on Aesthetics in Bridge Design. *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. A s Built Plans Bridge 29 0203, 1967.

Caltrans Bridge Inspection Report: March 25, 2014

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report Caltrans St atewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking east, October 30, 2014



View looking north, October 30, 2014



View of southern abutment, October 30, 2014



Roadway looking southwest, October 30, 2014



View of roadway looking northeast, October 30, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

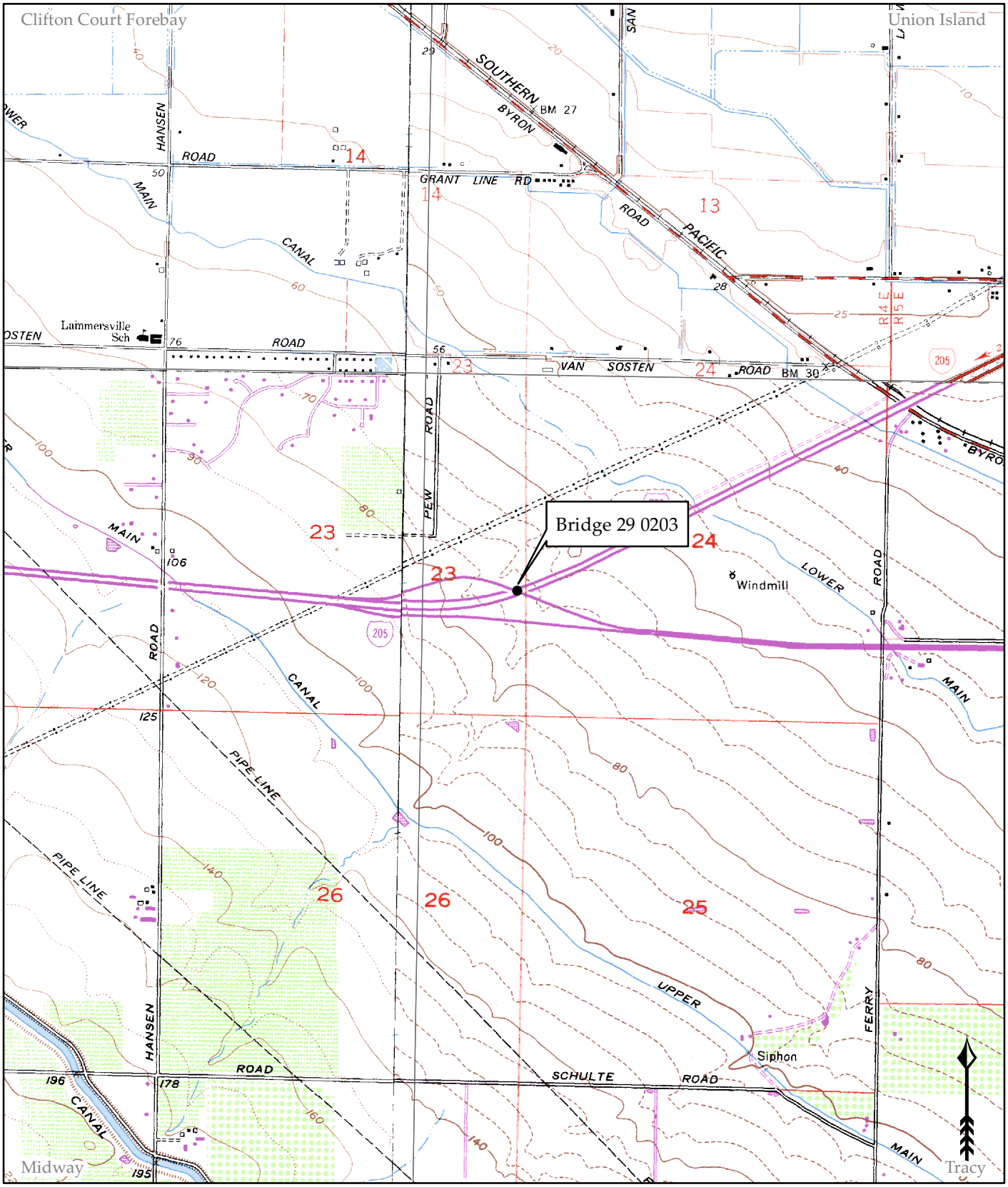
Primary #
HRI#
Trinomial

*Resource Name or #: 29 0203

*Map Name: Tracy

*Scale: 1:24,000

*Date of Map: 1955



*Required information

State of California — The Resou
DEPARTMENT OF PARKS AND R
PRIMARY RECORD

This attached DPR for Bridge #32 0018 is the original form submitted to SHPO as part of the Statewide Historic Bridge Inventory Update for bridges constructed between 1965 and 1974. The final SHPO consensus, not reflected in this form, is that status is deferred pending further studies that may be part of future projects; therefore, "Historic significance not determined," or Caltrans Category 4, is the determination as of this writing. Caltrans Structures Maintenance List of Historic Significance (online) will reflect the most current status.

 ***Resource Name or #** Bridge 32 0018

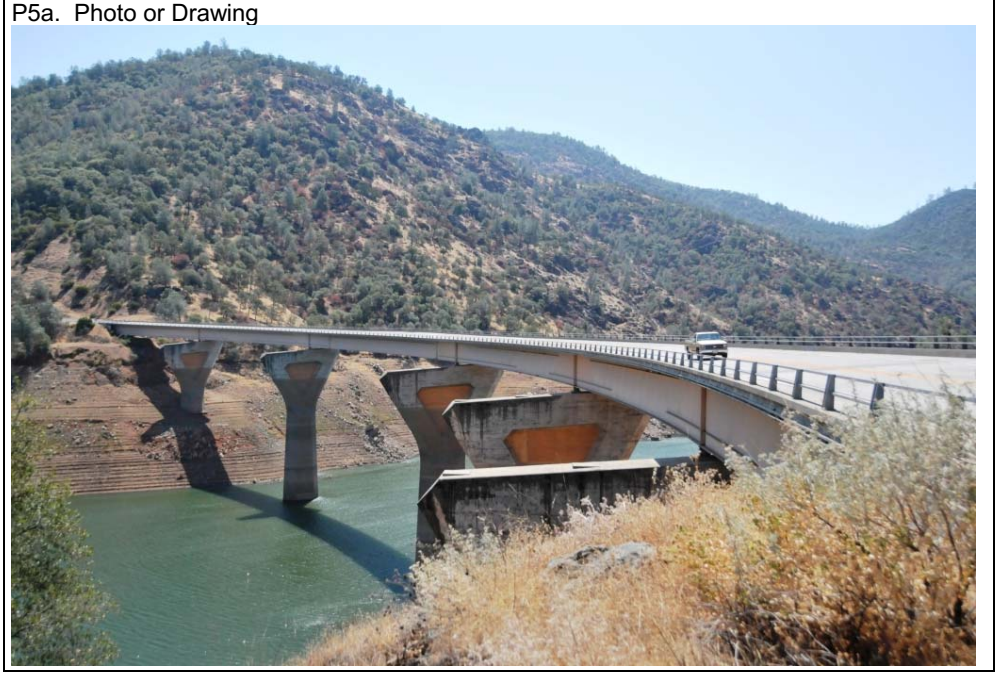
P1. Other Identifier: Don Pedro Reservoir State Route (SR) 120 Crossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Tuolumne
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Chinese Camp **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Don Pedro Reservoir carries State Route 120 in Tuolumne County, at post mile 19.61.

***P3a. Description:**
The Don Pedro Reservoir Crossing carries two lanes of traffic on State Route 120. Bridge 32 0018 is a long span steel girder structure, 1391 feet in length, with a main span of 350 feet. Six composite welded steel plate girder (two girders per span) spans have a lightweight cast in place reinforced concrete deck. The steel girders are continuous over all the bents with two hinges in Span 4. The abutments are reinforced concrete seats founded on spread footings and the bents are single reinforced concrete mined columns, are a capped Y shape. The roadway is placed on the southern half of the bents creating an unfinished appearance; this design is unlike other bridge of its type. The two lane bridge has type 9-11 railing.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View, looking north
August 20, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1971, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 32 0018

B1. Historic Name:
B2. Common Name: Don Pedro Reservoir SR 120 Crossing
B3. Original Use: Bridge B4. Present Use: Bridge

*B5. Architectural Style:

*B6. Construction History:
The bridge was built 1971. Since its construction the bridge has only undergone maintenance, including: deck patching (1981, 1993, 1997, 2010); and straightening of left girder flange and gouges in the right girder flange (1984).

*B7. Moved? ☒No ☐Yes ☐Unknown Date: Original Location:

*B8. Related Features:

B9a. Architect: R. A. Dokken, Bridge Department, California Division of Highways
b. Builder: Peter Kiewit Sons Co.

*B10. Significance: Theme: N/A Area: N/A
Period of Significance: N/A Property Type: N/A Applicable Criteria: N/A

The Don Pedro Reservoir SR 120 Crossing Bridge was constructed by Peter Kiewit Sons' Co. as part of one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 32 0018 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register of Criterion A or California Register Criterion 1.

The bridge was named for James E. Roberts in 2007 after his death in 2006. Roberts served the Department of Transportation (Caltrans) as a structural engineer for a half century. He also served in Korea in 1953, where he repaired damaged bridges after the war ended. Roberts reached the position of Chief Bridge Engineer and was instrumental in the developing the seismic performance requirements for bridges after the 1989 Loma Prieta Earthquake. Further, he established the Bridge Design Academy and was instrumental in creating opportunities for women to be promoted within the field of engineering. However, Roberts was not directly associated with the Don Pedro Reservoir Bridge during design or construction and thus the bridge is not directly associated with a person who made a significant contribution to history at the local, state, or national level; therefore it is not significant under National Register Criterion B or California Register Criterion 2. (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

*B12. References: (See Continuation Sheet, page 3).
B13. Remarks:

*B14. Evaluator:
Helen Blackmore
California Department of Transportation

*Date of Evaluation:
November 24, 2014



(This space reserved for official comments.)

*Required information

B10. Significance (continued):

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Don Pedro Reservoir SR 120 Crossing Bridge was constructed in 1971. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed in California. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete.

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in 1971, were not considered a significant technological achievement. Bridge 32 0018 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek was built in 1967 and achieved a 360 foot main span. The Don Pedro Reservoir SR 120 Crossing Bridge with a total length of 1391 feet and main span of 350 feet in length is not significant as a work of civil engineering by the 1971. Bridge 32 0018 is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s.

Bridge 32 0018 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 32 0018 does not embody the distinctive characteristics of steel girder bridge construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Don Pedro Reservoir SR 120 Crossing Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 32 0018 is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

An Architect Concentrates on Aesthetics in Bridge Design. *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. A s Built Plans Bridge 32 0018, 1968.

Caltrans Bridge Inspection Report: October 8, 2013.

Faigin, Daniel P. State Route 120. *California Highways*. Accessed on November 24, 2004 from www.cahighways.org

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report Caltrans St atewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



Detail looking north, August 20, 2014



View looking northwest, August 20, 2014



View looking east, August 20, 2014.



View looking southwest, August 20, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

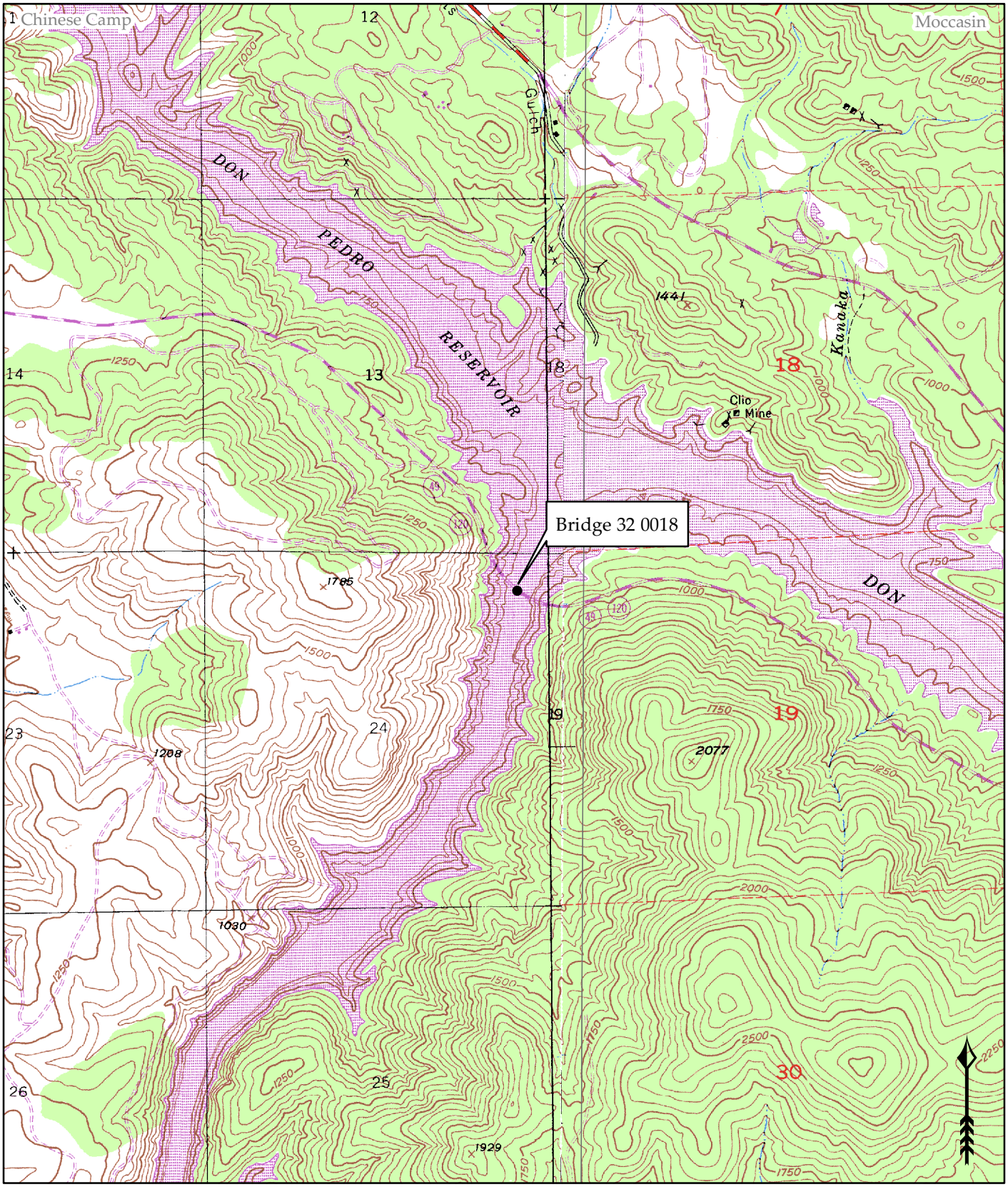
Primary #
HRI#
Trinomial

*Resource Name or #: 32 0018

*Map Name: Chinese Camp

*Scale: 1:24,000

*Date of Map: 1948



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 33C0147

P1. Other Identifier: Oakland Estuary Bridge (Miller Sweeney Bridge/Fruitvale Avenue Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Alameda
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** East Oakland **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Alameda Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

The Oakland Estuary Bridge is located on Fruitvale Avenue, 0.3 miles south of Interstate 880. The bridge carries traffic to Alameda Island over the Tidal Canal connecting the San Leandro Bay to the south, and the Brooklyn Basin to the north, which links to the San Francisco Bay.

***P3a. Description:**
The Oakland Estuary Bridge carries two lanes of traffic in both directions. Bridge 33C0147 is a single leaf steel bascule bridge, 394 feet in length that crosses the Oakland Estuary at a skew of three degrees. The steel girder (9) structure has reinforced concrete deck approach spans (1 and 2), the a main span (3) is an orthotropic deck single leaf bascule, supported with a steel box (4 cells) in the first part of the span; and steel girders for the second half of the span length. There are eight precast concrete/prestressed concrete "I" girders in Spans 4 and 5. All piers are on spread footings. The four lane bridge has steel railings with sidewalks on both sides. The bridge is parallel to a railway vertical lift bridge which is no longer in use.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
November 10, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1974, Caltrans Bridge Files
***P7. Owner and Address:**
Alameda County
399 Elmhurst St
Hayward, CA 94544
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
November 20, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 33C0147

B1. Historic Name:

B2. Common Name: Oakland Estuary Bridge (Miller Sweeney Bridge/Fruitvale Avenue Bridge)

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The Oakland Estuary Bridge was built in 1974. Since its construction the bridge has undergone maintenance in 1989 after the Loma Prieta Earthquake, and in 1991 after a barge collided with the bridge, including: repair to the saw tooth detail joint between the bascule section and the fixed plate (1990); and bolt replacement (1991).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: McGreary, Koretsky International Corp. **b. Builder:** Hensell Phelps Construction Co.

***B10. Significance: Theme:** Engineering **Area:** State

Period of Significance: 1974 **Property Type:** Structure **Applicable Criteria:** C

The Oakland Estuary Bridge was constructed for the US Army Corps of Engineers in return for permission and right-of-way to dredge the channel between San Antonio Creek and the San Leandro Bay. The general contractor was Hensell Phelps Construction Co. and steel fabrication and erection was handled by Kaiser Steel Corp. Bridge 33C0147 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. The bridge was turned over to Alameda County in 1975 and named Miller Sweeney, after two local legislators who promoted the funding of the bridge. Congressman George P. Miller and Supervisor Leland W. Sweeney do not have direct association with the bridge. Bridge 33C0147 is not directly associated with a person or persons who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

Early forms of bascule (drawbridge) bridges were first constructed in Europe during the first half of the nineteenth century, but modern bascules were not developed until the 1880s. In the United States the first bascule bridges were constructed in Chicago in 1893. (See continuation sheet, page 3).

B11. Additional Resource Attributes:

***B12. References:** (See continuation sheet, page 3).

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

They gained popularity in California in the early twentieth century, featuring a hinge, or a trunion that pulls the movable span upward and inward, thereby allowing vessels to pass through an unobstructed waterway. Bascules do not need a central pier, thus allowing the waterway to be unobstructed. There are currently 38 moveable bridge in California; 16 bascule bridges, 16 swing bridges, and 6 lift bridges. Bascule bridges only occur around the Bay Area and the Sacramento River Delta in Alameda, Sacramento, San Francisco, San Joaquin, Sonoma, and Yolo counties. The other moveable bridge types are also located in the aforementioned counties as well as Contra Costa, Los Angeles, Napa, San Diego and Sutter Counties; only two of 38 moveable bridges occur outside of the combined Bay Area and Sacramento River Delta. The distribution of moveable bridges across the state is not far reaching, thus the Oakland Estuary Bridge is not unique with regard to its type, located in part of the state where such bridges are common, however, its construction type of bascule with orthotropic deck is unique to the state and rare nationwide.

Orthotropic steel decks consist of a thin steel deck plate stiffened by the addition of ribs, or channels, running longitudinally (in the direction of the deck's span) on the deck's underside, this is incorporated into the superstructure. In the case of the Oakland Estuary Bridge the orthotropic deck allows for the bridge to have a narrow profile, whilst retaining rigidity when being raised. Of the nearly 25,000 bridges in California, only 16 bridges are classified as orthotropic steel deck, four of which were built in the 1960s. The Oakland Estuary Bridge was constructed in 1974, and the remaining bridges were constructed in the 1990s. Orthotropic decks are usually used to span large distances and reduce the number of spans required. The Oakland Estuary Bridge only spans 396 feet, with the orthotropic deck spanning 128 feet in comparison to the larger decks spanning 500 feet. However, these long spans are not used for moveable bridges, which makes the Oakland Estuary Bridge unique in the state. Further, in 1974, the bridge won the American Institute of Steel Construction award for "Most Beautiful Bridge – Moveable Span," in recognition of its sleek appearance created by the use of the orthotropic deck. Given the small number of movable bridges in the state and the new technology of the orthotropic deck the Oakland Estuary Bridge combines an old construction model with new techniques. Bridge 33C0147 is eligible for the National Register under Criterion C and California Register Criterion 3 as a unique example of bridge construction.

Bridge 33C0147 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 33C0147 is a unique example of a steel bascule bridge with an orthotropic deck in California, and thus is significant under National Register Criterion C and California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 33C0147 also retains high degree of integrity in its design, feeling, location, association, workmanship, and setting with only minor changes in materials, where the bridge was repaired. Bridge 33C0147 is eligible for inclusion on the National Register at the state level and the California Register.

***B12. References (continued):**

Alameda County Drawbridges. "Miller-Sweeney Bridge." Alameda County Drawbridges. Accessed on November 20, 2014 from http://home.comcast.net/~kenseq/bridges/miller.html

Alameda County Public Works Agency. "Miller Sweeney Bridge." Alameda County Public Works Agency. Accessed on November 20, 2014 from www.acgov.org

AISC, "Moveable bridge category Miller-Sweeney Bridge - McCreary Koretsky International Inc." AISC Prize Bridges, American Institute of Steel Construction, (Chicago IL, 1974).

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Caltrans Bridge Inspection Report: September 10, 2013.

California Division of Highways. "As Built Plans – Bridge 33C0147." 1971.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

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----- "2008 International Orthotropic Bridge Conference – The Bus Tour." (Sacramento, CA: International Orthotropic Bridge Conference, 2008).

Ucovich, Ron "How come the Webster Street Tube has no name?" *The Alameda Museum Quarterly Newsletter* 51. No. 3, Fall 2009.

P5b. Photographs (continued):



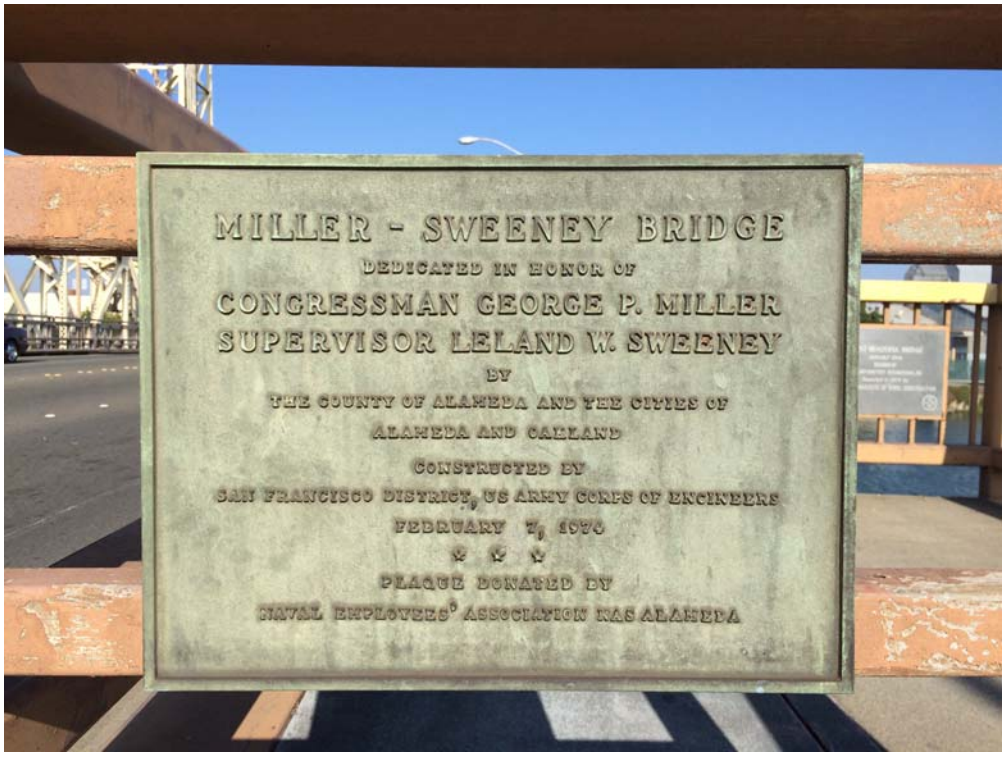
View looking northwest, date unknown.



View looking southeast, November 10, 2014.



View looking east, November 10, 2014.



Plaque, November 10, 2014.



"Most Beautiful Bridge" Plaque, November 10, 2014.



View looking west, November 10, 2104.



View of abutements 2 and 3 looking north, November 10, 2104.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

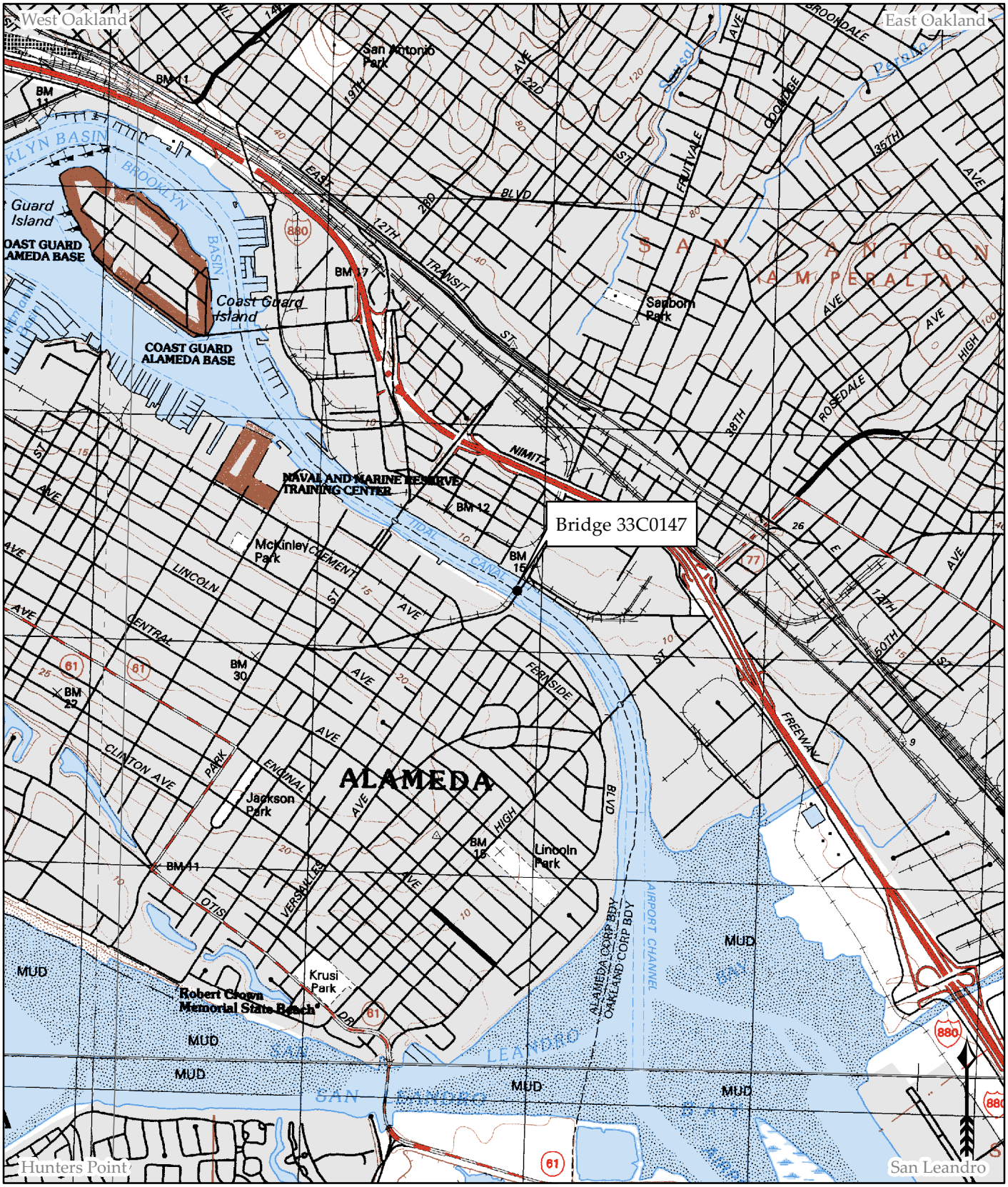
Primary #
HRI#
Trinomial

*Resource Name or #: 33C0147

*Map Name: East Oakland

*Scale: 1:24,000

*Date of Map: 1959



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 33C0202

P1. Other Identifier: Hegenberger Road Overhead

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Alameda
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** East Oakland **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Oakland Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
Hegenberger Road Overhead is located in Alameda County on Hegenberger Road, 0.4 miles south of 66th Avenue.

***P3a. Description:**
The Hegenberger Road Overhead is a pre-cast concrete, inverted U section structure (also known as waffle construction). It is 899 feet in length with a main span of 290 feet. The bridge crosses over the Union Pacific Railroad and BART tracks at San Leandro Street at a skew of 45 degrees. It has continuous, inverted pre-cast concrete inverted U sections, post- tensioned with cables running laterally and longitudinally, these cables are grouted to fill the spaces and make a continuous piece that forms the waffle construction and appearance on the underside of the bridge. Open end cantilever abutment seats and two open arch piers with two parallel bents and two solid piers allow for slimmer bents and more light under the bridge. (See Continuation Sheet, page 3).

***P3b. Resource Attributes:** HP. 19 Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking east
November 26, 2012
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1966, Caltrans Bridge Files
***P7. Owner and Address:**
City of Oakland
Public Works Agency
250 Frank H Owaga Plaza
Oakland CA, 94612
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Avenue
Oakland, CA 94612
***P9. Date Recorded:**
November 24, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 33C0202

B1. Historic Name:

B2. Common Name: Hegenberger Road Overhead

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The Hegenberger Road Overhead was built in 1966. Since its construction the bridge has only undergone minor maintenance, including the reinforcement of spalls in the top deck (2001). The bridge underwent a seismic retrofit in 2012, which increased the width and depth of both columns at piers 4 and 5.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The bridge is located on Hegenberger Road over the Union Pacific Railroad and the BART tracks.

B9a. Architect: Tung-Yen Lin **b. Builder:**

***B10. Significance: Theme:** Engineering **Area:** Alameda County

Period of Significance: 1966 **Property Type:** Structure **Applicable Criteria:** C

The Hegenberger Road Overhead was constructed as one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. The bridge was designed by Tung-Yen Lin (T. Y. Lin), an engineer credited with standardizing the practical use of prestressed concrete originally designed by Eugene Freyssinet of France. He is also known for his emphasis on the structural aesthetics aspect of engineering, regardless of a project's economic limitations. T. Y. Lin is a world renowned engineer and personally designed the innovative waffle construction of the Hegenberger Bridge. Thus, the bridge is directly associated with a person who made a significant contribution to history at the national level as his contributions to the use of precast concrete influenced construction across the country. However, it is more apt to consider the bridge a work of a master under National Register Criterion C and California Register Criterion 3 rather than under National Register Criterion B and California Register Criterion 2. Thus bridge 33C0202 is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete girder bridge in California was erected in 1911. The structural type was innovative for its design flexibility, helping to meet the growing demand for short, (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

***B12. References: (See Continuation Sheet, page 4).**

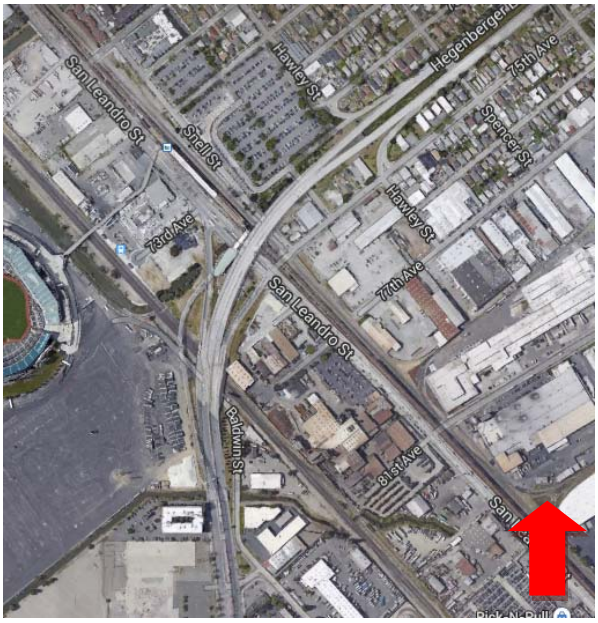
B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 24, 2014



(This space reserved for official comments.)

*Required information

***P3a. Description (continued):**

Bents 2 and 3 carry a spread V shaped arch on octagonal piers. The piers have since been seismically retrofitted, with the piers being tied together, and further concrete support was added to the V shaped arches on either side of the original pier, making for a bulky appearance. Bents 1 and 4 are a hunched design in concrete on octagonal columns. The underside of the deck utilizes a honeycomb structure to lighten the appearance and give the bridge deck a slender profile. The bridge carries six lanes of traffic and has a concrete railing (Type 1111).

B10. Significance (continued):

wide bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete girder bridges could also be erected at significant cost savings. Only a small number of concrete girder bridges were built before World War II, however after the war their numbers increased. By 1965, there were 161 concrete girder bridges in California.

The Hegenberger Road Overhead with a total length of 899 feet and main span of 290 feet in length. It is the first example of post-tensioned concrete girder construction with a waffle concrete design. While the fabrication, transportation, and erection of large concrete girder bridges were not a significant achievement in the state by the time the bridge was constructed in 1966, use of the combination of precast waffle panels and Y-shaped piers is important. The waffle concrete design was an important evolution in post-tensioned concrete construction. It changed highway bridge construction and was useful in many other applications where it has become a common method for structural floor construction, particularly in highrise buildings. The slumped Y arches also demonstrate the effort to create an aesthetically pleasing bridge. However, these arches have been altered through a seismic upgrade. The columns were original not connected and sat on slender octagonal bases. This was changed in 2012 when additional support was added, widening the column bases and connecting the two piers at piers 4 and 5. These changes do not detract from the significance of the distinctive characteristic of the waffle construction and the slender arches and piers are still discernable within the bridge construction. Hegenberger Road Overhead is significant under National Register Criterion C and California Register Criterion 3 for its civil engineering and aesthetics. It is also the work of a master, T. Y. Lin, who personally came up with the new design. Bridge 33C0202 is significant under National Register Criterion C and California Register Criterion 3.

The Hegenberger Road Overhead retains high integrity in the aspects of location, association, and setting as the bridge has not been moved or substantially altered. However, the integrity of design and workmanship has been impacted by the seismic retrofit and alterations to the two pairs of columns at piers 4 and 5 of the bridge. These two aspects now only retain moderate integrity, as the original design is still evident and has not been removed but reinforced with additional concrete structures, which creates a less refined column shape. Further, the aspect of material has been somewhat impacted as additional concrete was added during the retrofit but the material was concordant with the bridge's original materials, and no historic fabric was removed, thus it retains moderate integrity in material. As the bridge is such a large structure, with minor alteration, Bridge 33C0202 retains moderate integrity overall.

Bridge 33C0202 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 33C0202 does embody the distinctive characteristics of a concrete box bridge construction, and does represent the work of a master, and does possess high Modern aesthetic value. Further, it does represent a significant and distinguishable entity whose components that have individual distinction. The Hegenberger Road Overhead is significant under

National Register Criterion C and California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 33C0202 is eligible for inclusion on the National Register and California Register with state significance in the design of bridges, and retains moderate integrity.

***B12. References (continued):**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

Bridge Photo of the Day. "Alameda County, California Bridges: Hegenberger Road OH across the UPRR (1). June 14, 2014. Accessed on January 5, 2015 from www.bphod.com.

California Division of Highways. "As Built Plans – Bridge 33C0202." 1967.

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JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Lin, T. Y. " The Father of Prestressed Concrete 1 : Teaching Engineers, Bridging Rivers and Borders, 1931 to 1999." An oral history conducted in 1999 by Eleanor Swent, Regional Oral History Office, The Bancroft Library, University of California, Berkeley, 2001.

Lin, T. Y., Felix Kulka, and Y. C. Yang. "Post-Tensioned Waffle and Multispan Cantilever System with Y-Pier Composing the Hegenberger Overpass." *Special Publication* 23. 1969. International Concrete Abstracts Portal. 495-506.

Lucko, Gunnar. "The Construction Process of Segmental Bridges." *Bridge Engineering* Handbook. Edited by Chen W. F. and Duan Lian. London, U.K.: CRC Press LLC, 1999.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

Yang, Sarah. "T.Y. Lin, world renowned structural engineer, dies at age 91." Press Release, *UC Berkeley News*, November 18, 2003.

P5b. Photographs (continued):



View looking north, November 10, 2014



View looking northwest or western abutment, November 10, 2014



View of Roadway looking east, November 10, 2014.



Hegenberger Road Overhead, June 2014 from Bridge Photo of the Day, before seismic retrofit.



Hegenberger Road Overhead, June 2014 from Bridge Photo of the Day, after seismic retrofit.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

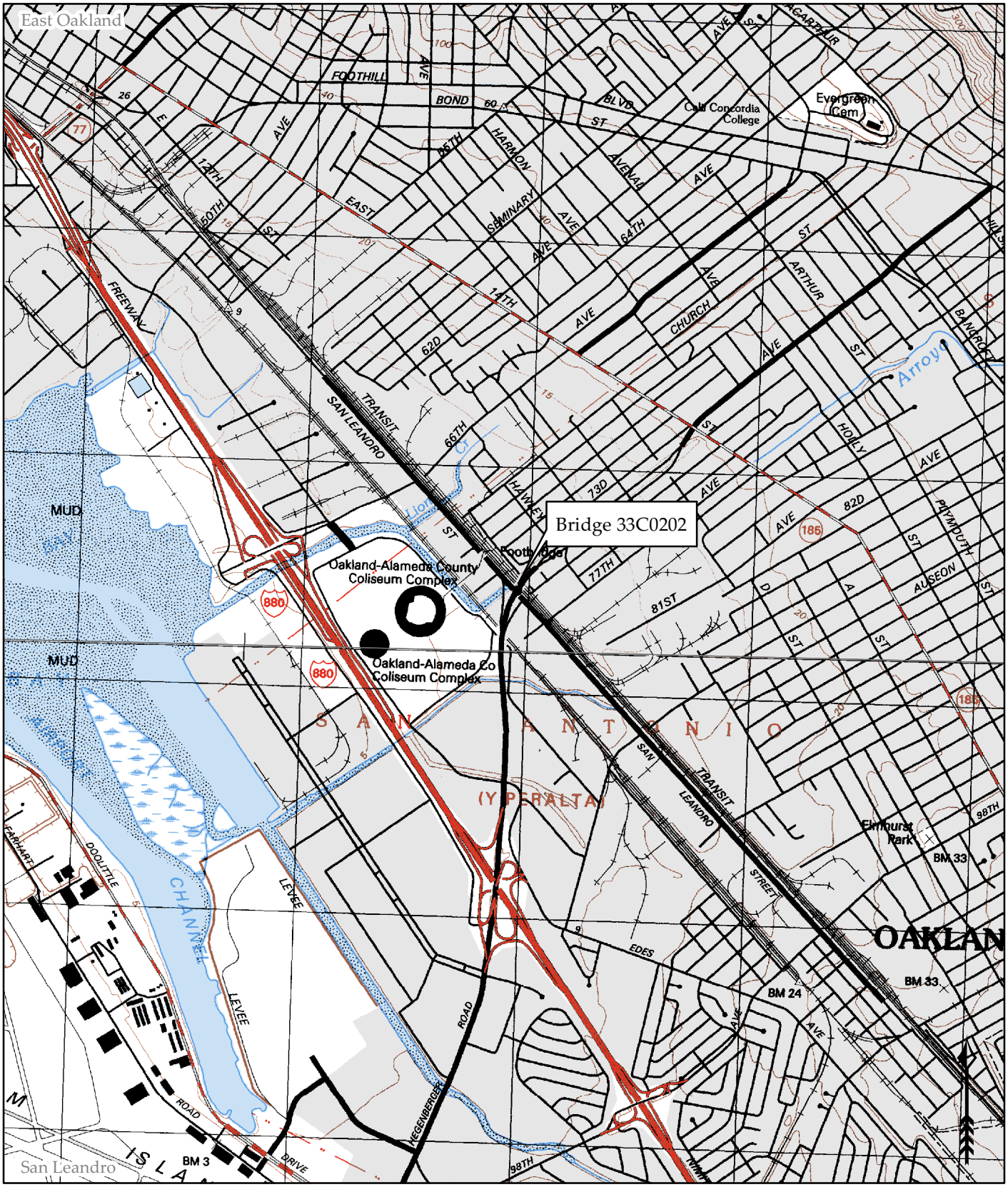
Primary #
HRI#
Trinomial

*Resource Name or #: 33C0202

*Map Name: East Oakland

*Scale: 1:24,000

*Date of Map: 1959



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #** Bridge 35 0054

P1. Other Identifier: San Mateo-Hayward Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Mateo and Alameda
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** San Mateo and Redwood Point **Date: T ; R ; ¼ of ¼ of Sec ;** M.D. **B.M.**
c. Address: n/a City: Oakland Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
State Route 92, from postmile 14.44 in San Mateo County to approximate postmile 2.4 in Alameda County.

***P3a. Description:**
The San Mateo-Hayward Bridge crosses the southern portion of San Francisco Bay from Foster City in San Mateo County to the vicinity of Hayward in Alameda County. The 80-foot wide roadway carries six lanes of traffic. The total length of the bridge is 35,746 feet, or approximately 6¾ miles, making it one of the longest bridges in the world. There are three segments to the bridge: a short approach segment over land at the west end, the highrise segment (approximately 1.8 miles in length), and a trestle segment at the east end (approximately 4.8 miles in length). At the east end of the bridge is a toll plaza and ancillary buildings, constructed on earth fill amid the salt ponds at the East Bay shoreline. (See Continuation Sheet, page 3)

***P3b. Resource Attributes:** HP. 19 Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: Caltrans archival photo, unknown date.
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1967, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Andrew Hope
Dept. of Transportation
111 Grand Avenue
Oakland, CA 94612
***P9. Date Recorded:**
December 2012, updated October 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 35 0054

B1. Historic Name:

B2. Common Name: San Mateo-Hayward Bridge

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:** Construction was underway by 1961 and the bridge opened in 1967. Caltrans carried out a major seismic retrofit project in the late 1990s, and the east trestle segment was widened from four lanes to six in 2002. See the discussion of integrity on page 10 for additional formation on alterations to the bridge.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

There is a toll plaza a short distance from the east end of the bridge, constructed on earth fill. The toll plaza is outside of the historic property boundary. The historic property includes only the bridge structure itself.

B9a. Architect: Bay Toll Crossings Division, California Department of Public Works and William Stephen Allen, San Francisco (architectural consultant)

b. Builder: Pomeroy-Gerwick-Steers (highrise segment, substructure); Murphy Pacific Bridge Bldrs. (highrise segment, superstructure)

***B10. Significance: Theme:** Engineering **Area:** California

Period of Significance: 1967 **Property Type:** Structure **Applicable Criteria:** C

The original San Mateo-Hayward Bridge

The first San Mateo-Hayward Bridge opened in 1929. It was a two-lane structure without the rise in elevation of the current bridge, remaining just a short distance above the water for its entire length. Most of the bridge consisted of a trestle structure, but there were five through-truss spans of 300 feet each near the bridge's western end. The middle span of the truss segment was a lift span that could be raised to allow ships to pass between the northern and southern portions of San Francisco Bay. Figure 5 shows the 1929 truss bridge with the 1967 bridge rendered in. (See Continuation Sheet, page 10)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 7).

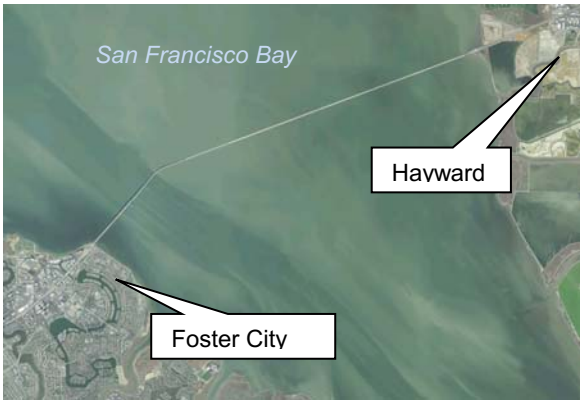
B13. Remarks:

***B14. Evaluator:**

Andrew Hope, edited by Noah Stewart
California Department of Transportation

***Date of Evaluation:**

December 2012, updated October 2014



(This space reserved for official comments.)

*P3a. Description (continued):

Bents 2 and 3 carry a spread V shaped arch on octagonal piers. The piers have since been seismically retrofitted, with the piers being tied together, and further concrete support was added to the V shaped arches on either side of the original pier, making for a bulky appearance. Bents 1 and 4 are a hunched design in concrete on octagonal columns. The underside of the deck utilizes a honeycomb structure to lighten the appearance and give the bridge deck a slender profile. The bridge carries six lanes of traffic and has a concrete railing (Type 1111).

B10. Significance (continued):

The 1929 bridge was constructed as a privately-owned toll bridge (as were the original Dumbarton, Carquinez, and Antioch bridges). The State of California acquired the bridge in 1951 for $6 million.[1] With only two lanes and frequent delays caused by the need to raise the lift span, the bridge was clearly inadequate to accommodate traffic growth in the Bay Area in the decades following World War II. In the early 1960s, the lift span had to be raised six to twelve times daily, sometimes causing traffic to back up for more than three miles.[2]

Selecting a design for the new bridge

By 1961, construction was underway on the eastern trestle segment of the replacement bridge. In the fall of that year, the State Toll Bridge Authority approved a design for the highrise segment of the new bridge, which would carry the roadway high enough above the water that ships could pass underneath without the need for a moveable span. The design called for a double-deck bridge with three traffic lanes on each deck, carried by a truss structure with a 750-foot cantilever span over the ship channel. As shown in Figure 6 on page 10, the proposed design is similar to the double-deck truss structures on the eastern portion of the San Francisco-Oakland Bay Bridge (completed in 1936) and the Richmond-San Rafael Bridge (completed in 1956).

The cantilever truss design was a logical choice, given the need for a long span over the ship channel. At that time, there were only six bridges in California with spans of 750 feet or greater, including four cantilever truss structures (the two mentioned above and the 1927 and 1958 Carquinez bridges) and two suspension bridges (the Bay Bridge west span and the Golden Gate Bridge). No other bridge types had been attempted for such long spans in California, although there were some steel arches in the United States and a few concrete arches in Europe with spans of 750 feet or greater. The Cold Springs Canyon Bridge in Santa Barbara County, completed in 1963, is still the largest steel arch in the state with a span of 700 feet. In contrast, the longest concrete arch spans in the state are only 320 feet, while the longest steel girder span constructed by the early 1960s was 350 feet. The longest concrete box-girder span, completed in 1959, was a comparatively short 235 feet. The state's bridge engineers therefore had a limited range of options for the new San Mateo-Hayward Bridge, unless they were willing to take a chance on a more experimental design.

On September 15, 1961, the *San Francisco Chronicle* announced the Toll Bridge Authority's decision to build a double-deck truss for the highrise segment of the bridge. The following month, the *Chronicle* published a three-part critical essay by Allan Temko, the paper's architecture critic. Temko called the design "another monumental catastrophe" comparable to the "visual disaster" of the recently completed Richmond-San Rafael Bridge.[3] He proclaimed that the proposed bridge "timidly adheres to conventional steel-truss construction that belongs to the pre-World War I era," adding that the design "could have been built 50 or 60 years ago."[4] An additional criticism leveled at the design is that the double-deck configuration deprives the boxed-in motorists on the lower deck of the striking view from high

[1] "State Buys Spans," *California Highways and Public Works*, September-October 1951, 11.
[2] "State Orders High Bridge at San Mateo," *San Francisco Chronicle*, September 15, 1961, 1/1.
[3] Allan Temko, "Rip van Winkle Bridge Threatens the Bay," *San Francisco Chronicle*, October 16, 1961, 1/3. Also "Let's Build a Splendid Bridge," October 17, 1961, 1/4, and "The Way to Build a Bridge," October 18, 1961, 1/3.
[4] Temko, October 16, 1961.

above the bay. Temko called for a reconsideration of the design in favor of an alternative that would embody "majestic grace and exhilarating strength," and that would carry the six lanes side-by-side rather than one above the other.[5] He did not advocate a particular alternative design, but the third installment of his critical essay gave considerable attention to the possibilities of prestressed concrete.

The day following the third installment of Temko's critical essay, the *Chronicle* cited support for reconsideration of the bridge design from prominent Bay Area architects Gardner Dailey and William Wurser (who was then the Dean of the Department of Environmental Design at U.C. Berkeley). Also expressing support for Temko's view was the famous writer and architecture critic Lewis Mumford, who at that time was a visiting professor at Berkeley.[6] Shortly thereafter, the Northern California chapter of the American Institute of Architects passed a resolution calling for a different bridge design.[7] The *Chronicle* also received a letter to the editor praising Temko's articles from the prominent Bay Area landscape architect Lawrence Halprin.[8] The public controversy over the proposed bridge design prefigured a similar controversy more than three decades later, over the design of the replacement eastern span of the San Francisco-Oakland Bay Bridge.

With portions of the bridge already under construction, the Toll Bridge Authority reacted quickly to the controversy. On October 25, 1961, Governor Edmund G. Brown, who headed the five-member Authority, called for the construction of a "really splendid and beautiful bridge." He also insisted that "I won't have anything more around here like the Richmond-San Rafael Bridge."[9] At a public hearing in San Francisco in early December, the Toll Bridge Authority presented five alternative designs for the highrise segment of the bridge, in addition to the previously approved steel truss design. These included two steel arch designs, a prestressed concrete bridge, a self-anchored suspension span, and one alternative described as "an advanced concept used on a span over the Fraser River in western Canada."[10] This was a reference to the Port Mann Bridge in Vancouver, British Columbia, then under construction, which was to be the first orthotropic deck bridge in the Americas.[11] At the public hearing, the Toll Bridge Authority expressed unanimous (although unofficial) preference for the orthotropic deck design. This was confirmed in late January 1962, when the Authority gave formal approval to the steel orthotropic deck and box-girder design.[12] The Authority also retained San Francisco architect William Stephen Allen, a partner in the firm of Anshen and Allen, to consult on design and aesthetic matters.[13]

The steel orthotropic deck

An orthotropic deck is a steel deck that has been stiffened by the addition of ribs or channels on the underside. The ribs or channels run in the direction of the deck's span, typically between floor beams. The section drawing below shows a typical orthotropic deck on a small bridge. The thin steel deck has a series of evenly spaced, three-sided steel channels welded to the underside to increase the deck's stiffness. In this example, a pair of steel I-beams carry the deck and floor beams. The top flanges of the two beams are integral with the orthotropic deck. A thin layer of asphalt

[5] Temko, October 16, 1961.
[6] "Criticism of Planning for New Bay Span Praised," *San Francisco Chronicle*, October 19, 1961, 4/1.
[7] "Architects Ask Better Bridge Plan," *San Francisco Chronicle*, October 20, 1961, 1/5.
[8] *San Francisco Chronicle*, October 27, 1961, 32/3.
[9] "Brown Pledges a 'Splendid' New Bridge," *San Francisco Chronicle*, October 26, 1961, 1/1.
[10] "Hayward Bridge Design Hearing," *San Francisco Chronicle*, December 2, 1961, 4/5.
[11] No author, *Design Manual for Orthotropic Steel Plate Deck Bridges* (New York: American Institute of Steel Construction, 1963), 4-5.
[12] "San Mateo-Hayward Bridge Design is Approved," *California Highways and Public Works*, January- February 1962, 61.
[13] "San Mateo-Hayward Bridge Design is Approved.

or concrete installed on the top of the deck provides the roadway surface. In the case of the San Mateo-Hayward Bridge, the orthotropic deck has vertical ribs 9" deep and spaced 15" apart. The ribs run in the direction of the bridge spans, parallel to the box-girders. The deck is integral with the top flange of the bridge's two steel box-girders.

The advantage of the orthotropic deck is that it acts as an integral part of the overall structural system, rather than simply being additional dead load (the weight of the structure itself) that needs to be transferred to the floor beams, girders, and ultimately to the piers and foundations. The orthotropic deck acts as the top flange of the steel beam or box-girder. Since the deck is much larger than the top flange of a typical beam or girder, it contributes significantly to the strength of the bridge superstructure and therefore its ability to span longer distances. A bridge superstructure of monolithic reinforced concrete acts in a similar way, but achieving the same effect with steel results in a much lighter structure. The substantial reduction in dead load allows for longer spans and in turn reduces the required size and strength of the piers and foundations, resulting in the use of less material overall and therefore lower cost. (However, the cost savings is partially offset by the cost of fabrication of the orthotropic deck, due to the extensive welding required.) The additional strength provided by the orthotropic deck also allows for a shallower superstructure depth and therefore long spans with very slender profiles.[14] This slender profile, with the roadway seemingly carried on a thin ribbon of steel, was (and remains) a much admired quality in modern bridge design.

The orthotropic deck was originally developed in the Federal Republic of Germany (West Germany) in the years following World War II. With many bridges to rebuild and a shortage of steel, engineers searched for new bridge designs that would use steel more efficiently. The first orthotropic deck bridge opened in West Germany in 1950, and by 1960 there were at least 40 such bridges in that country and a few in other European countries.[15] E. R. Foley, Chief of the Division of Bay Toll Crossings within the State's Department of Public Works, traveled to West Germany in the spring of 1964 to consult with that country's leading experts on the design of orthotropic deck bridges, and to have those German experts review the design for the San Mateo-Hayward Bridge.[16]

The San Mateo-Hayward Bridge opened to traffic in October of 1967. The State then demolished most of the 1929 bridge. However, San Mateo County purchased the west trestle segment of the old bridge from the State in 1969, for $10, for use as a public fishing pier.[17] The 4,000-foot long trestle/pier is extant, but is no longer open to the public due to its deteriorated condition.

Significance of the San Mateo-Hayward Bridge

The first orthotropic steel deck bridge built in California is a rather simple bridge, located within the I-580 and I-680 interchange, in Alameda County, near the City of Dublin, California . The four span bridge (33 0371G), which was completed in 1965, has two spans of 75 feet and two of 85 feet. It was designed with two completely different rib and deck systems as well as two different wearing surfaces. The Division of Highways (the precursor agency of the Department of Transportation) constructed the bridge as an experiment to check the accuracy of the design software

[14] M.S. Troitsky, *Orthotropic Bridges: Theory and Design* (Cleveland: James F. Lincoln Arc Welding Foundation, 1967), 21-26 and *Design Manual for Orthotropic Steel Plate Deck Bridges,* 1-29.
[15] Troitsky, 1 and *Design Manual for Orthotropic Steel Plate Deck Bridges*, 3-5.
[16] "San Mateo-Hayward Bridge," *California Highways and Public Works*, September-October 1964, 65 and "San Mateo-Hayward Bridge," *San Francisco Chronicle*, May 6, 1964, 22/2.
[17] "Mateo Span Sold – Now Fishing Pier," *San Francisco Chronicle*, April 27, 1969, 3/3.

as well as deck wearing surfaces.[18] A second experimental bridge, in actuality just the two outside lanes of a wider bridge, Ulatis Creek Bridge (23 0052R), was constructed by the Division of Bay Toll Crossings in 1966, again, to test as a deck wearing surfaces. This bridge was a five span bridge, each span measuring 26 feet. What was learned at these two bridges was used in the design and construction of much larger structures: the 1967 San Mateo-Hayward (35 0054) and the 1969 San Diego-Coronado (57 0857) Bridges.

The San Diego-Coronado Bridge opened in 1969 as the second large orthotropic deck bridge in California. This bridge has main spans of 660 feet. More recently, the original concrete deck of the Golden Gate Bridge was replaced by a steel orthotropic deck, which significantly reduced the dead load of the superstructure supported by the suspension cables. When it opened in 1967, the 750-foot main span of the San Mateo-Hayward Bridge was the longest bridge span in California that was not a suspension or cantilever truss structure, and it retains that distinction to the present. It was also the longest steel girder span in the United States in the mid-1960s.[19] The bridge's orthotropic deck was one of the earliest uses of this new technology in the country, and the 5,500-foot length of the orthotropic deck made it one of the world's largest applications of this technology at the time. In 1968, the new bridge received the Outstanding Civil Engineering Achievement Award from the American Society of Civil Engineers.[20]

The San Mateo-Hayward Bridge meets National Register of Historic Places (National Register) Criterion C at the state level of significance, and thus the California Register of Historical Resources (California Register) Criterion 3, as an early and outstanding example of a steel orthotropic deck bridge. The period of significance is 1967, the year construction was completed.

The boundary of the property encompasses the entire 6.8-mile long bridge structure, from the west abutment in San Mateo County to the east abutment in Alameda County. The historic property does not include the toll plaza, which is physically separate from the bridge structure, has been altered since the opening of the bridge, and is not related to the bridge's significance in engineering. In addition, the historic property does not include the remnant portion of the 1929 bridge or the electrical transmission line that parallels the bridge just to the south.

Integrity

The two major alterations to the bridge since 1967 include extensive seismic retrofit work undertaken in the late 1990s and widening of the east trestle segment from four to six lanes that was completed in 2002. The seismic retrofit work included strengthening of the piers, bents, and superstructure of the highrise segment. This included enlarging the spandrel beams that link the tops of the paired piers at each pier location, wrapping the concrete columns of the bents in elliptical casings, and enlarging the bent caps. This work visibly enlarged the substructure's concrete components, and changed the shape of the concrete columns from rectangular to elliptical, but the substructure retains its original overall form and no new piers or bents were added. The steel bents were reinforced internally, as were the steel box girders of the superstructure.

Widening of the trestle segment doubled the width of this portion of the structure by adding a new three-lane westbound roadway on the north side of the existing structure. The original four-lane structure was then converted to a three-lane eastbound roadway, with wider shoulders on both sides of the travel lanes. The railing on the north side of the original structure thus became part of the median barrier of the widened trestle, backed up to a new median barrier on the westbound side. As part of the widening, the westbound vehicle pullouts were removed, while the original vehicle pullouts on the south side remain.

[18] Mangus, Alfred R. and California Department of Public Works, *Surfacing California's First Orthotropic Deck Plate Bridge*, ed. B. Gunderson, (Sacramento, CA: Division of Highways, Bridge Department 1967), 2.
[19] "Building the Bay's New Bridge," *San Francisco Chronicle*, October 27, 1965, 4/2.
[20] "San Mateo Bridge Gets an Award," *San Francisco Chronicle*, July 17, 1968, 6/1.

The original lighting consisted of linear, tube-like fixtures mounted atop the median barrier and outer railings, approximately at eye level to motorists. The present lighting, installed in the late 1970s, consists of tall gooseneck light poles, with two-arm poles installed on the median barrier in the highrise segment and single-arm poles installed on the outer railings in the east trestle and west approach segments. The elongated fixtures at the ends of the pole arms are more recent than the late 1970s, replacing the more rounded earlier fixtures. (It is also possible that the poles themselves have been replaced since the late 1970s.) The protective fenders at piers 19 and 20, flanking the ship channel, were reconstructed in 2001.

The highrise segment of the bridge, which includes the steel box-girder and orthotropic deck structure that are the basis of the bridge's significance, retains its original median barrier and outer railings. It appears essentially as originally built in the 1960s, except for alterations resulting from the seismic retrofit project and replacement of the original lighting. Overall, the bridge retains sufficient integrity of design and materials to be eligible for National Register and California Register listing.

***B12. References (continued):**

Articles in *California Highways and Public Works*:

Sept.-Oct. 1951: "State Buys Spans," 11 (no author).

Jan.-Feb. 1962: "San Mateo-Hayward Bridge Design is Approved," 61 (no author).

Jan.-Feb. 1963: Raab, Norman, "San Mateo-Hayward Bridge," 25-31.

Sept.-Oct. 1964, "San Mateo-Hayward Bridge," 65 (no author).

Articles in the *San Francisco Chronicle*:

Sept. 15, 1961: "State Orders High Bridge at San Mateo," 1/1.

Oct. 16, 1961: Temko, Allan, "Rip van Winkle Bridge Threatens the Bay," 1/3.

Oct. 17, 1961: Temko, Allan, "Let's Build a Splendid Bridge!," 1/4.

Oct. 18, 1961: Temko, Allan, "The Way to Build a Bridge," 1/3.

Oct. 19, 1961: "Criticism of Planning for New Bay Span Praised," 4/1.

Oct. 20, 1961: "Architects Ask Better Bridge Plan," 1/5.

Oct. 26, 1961: "Brown Pledges a 'Splendid' New Bridge" 1/1.

Oct. 27, 1961: "Both Splendor and Economy" editorial, 32/1.

Oct. 27, 1961: Letter to the Editor from Lawrence Halprin.

Dec. 2, 1961: "Hayward Bridge Design Hearing," 4/5.

Dec. 7, 1961: "State Scraps 'Rip Van Winkle' Bridge Design," 1/1.

Dec. 29, 1961: "Top Designer for New Bridge," 5/4.

Jan. 26, 1962: "State Okays 'Graceful' New Bridge," 1/2.

May 6, 1964: "San Mateo-Hayward Bridge," 22/2.

Oct. 27, 1965: "Building the Bay's New Bridge," 4/2.

Oct. 16, 1967: "A Musical March to Open Bridge," 38/8.

July 17, 1968: "San Mateo Bridge Gets An Award," 6/1.

Apr. 27, 1969: "Mateo Span Sold – Now Fishing Pier," 3/3.

Other sources:

Caltrans Library and History Center, Caltrans Headquarters, Sacramento. Historic photos and archival material.

Design Manual for Orthotropic Steel Plate Deck Bridges. New York: American Institute of Steel Construction, 1963.

Troitsky, M. S. *Orthotropic Bridges: Theory and Design.* Cleveland: James F. Lincoln Arc Welding Foundation, 1967.

P5b. Photographs (continued):



Figure 2: The 1967 San Mateo-Hayward Bridge under construction. A crane on a barge is lifting one of the box-girder segments into position atop the steel bents. The photo is taken from the 1929 bridge. (Caltrans Library and History Center, Sacramento.)



Figure 3: The 1967 San Mateo-Hayward Bridge, with the 1929 bridge at right. (Caltrans Library and History Center, Sacramento.)



Figure 4: View from below the central span of the highrise segment, showing the two box girders, Floor beams, and a suspended catwalk between the box-girders. The 1929 bridge is at left. (Caltrans Library and History Center, Sacramento.)



Figure 5: The truss segment of the original 1929 bridge, with the 1967 bridge rendered in. (Caltrans Library and History Center, Sacramento.)



Figure 6: Double-deck truss structure proposed in 1961 for the highrise segment of the San Mateo-Hayward Bridge. (Caltrans Library and History Center, Sacramento).

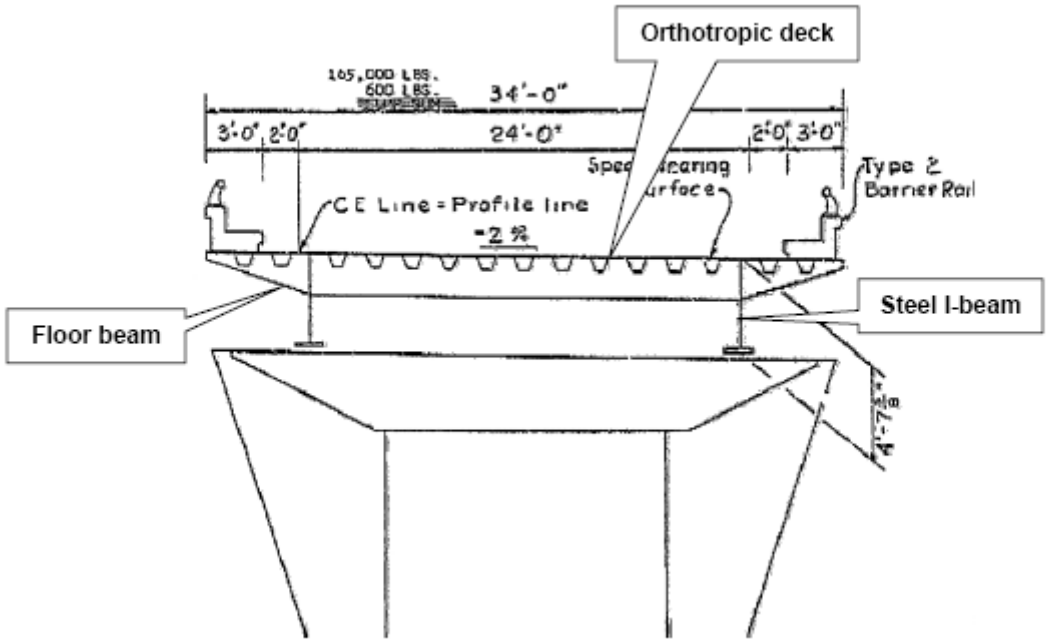


Figure 7: Diagram of the Orthotropic Deck system.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

 *Resource Name or #: 35 0054

*Map Name: San Mateo, Redwood Point *Scale: 1:24,000 *Date of Map: 1993



 *Required information

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

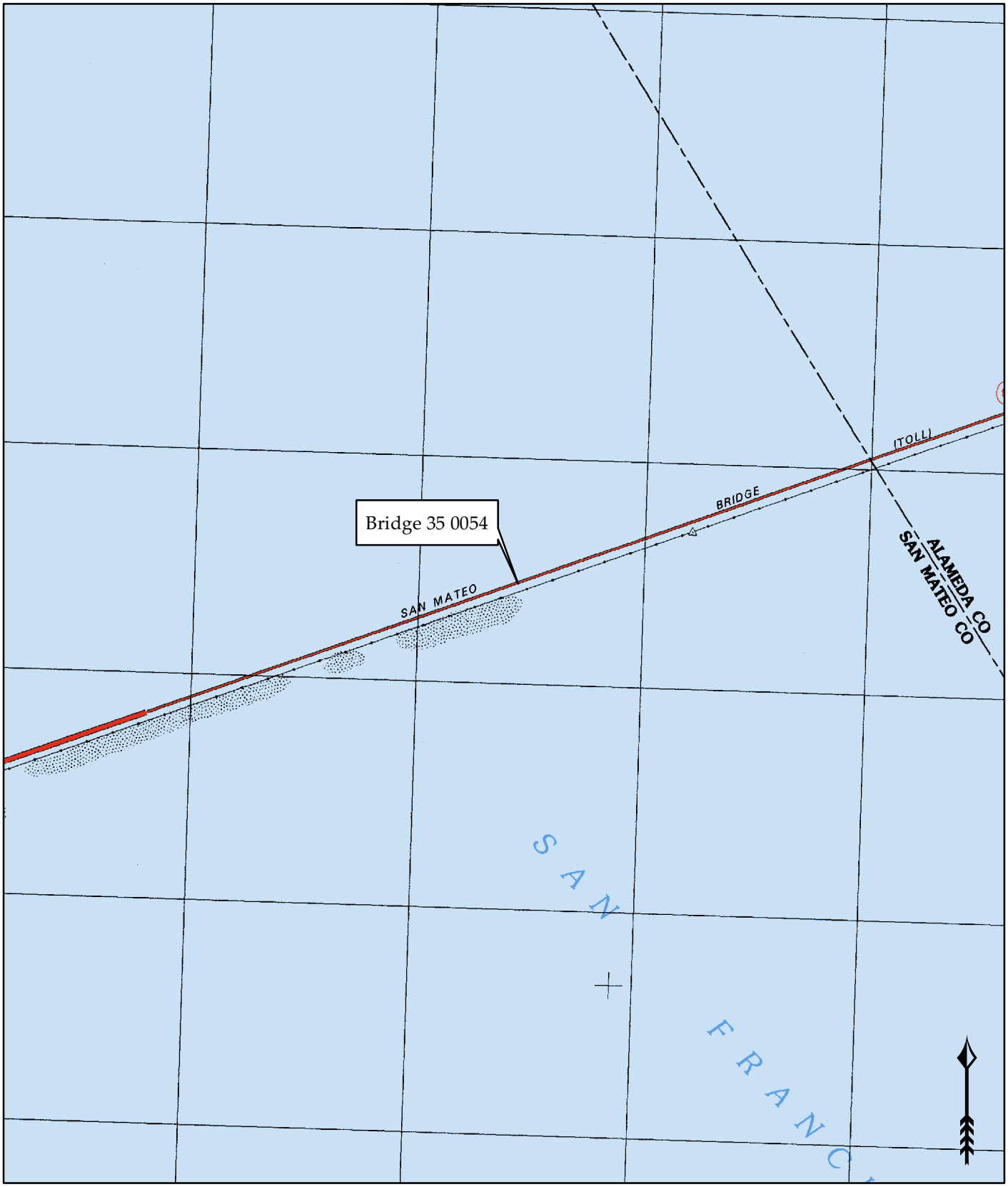
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*Resource Name or #: 35 0054

*Map Name: Redwood Point

*Scale: 1:24,000

*Date of Map: 1993



*Required information

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

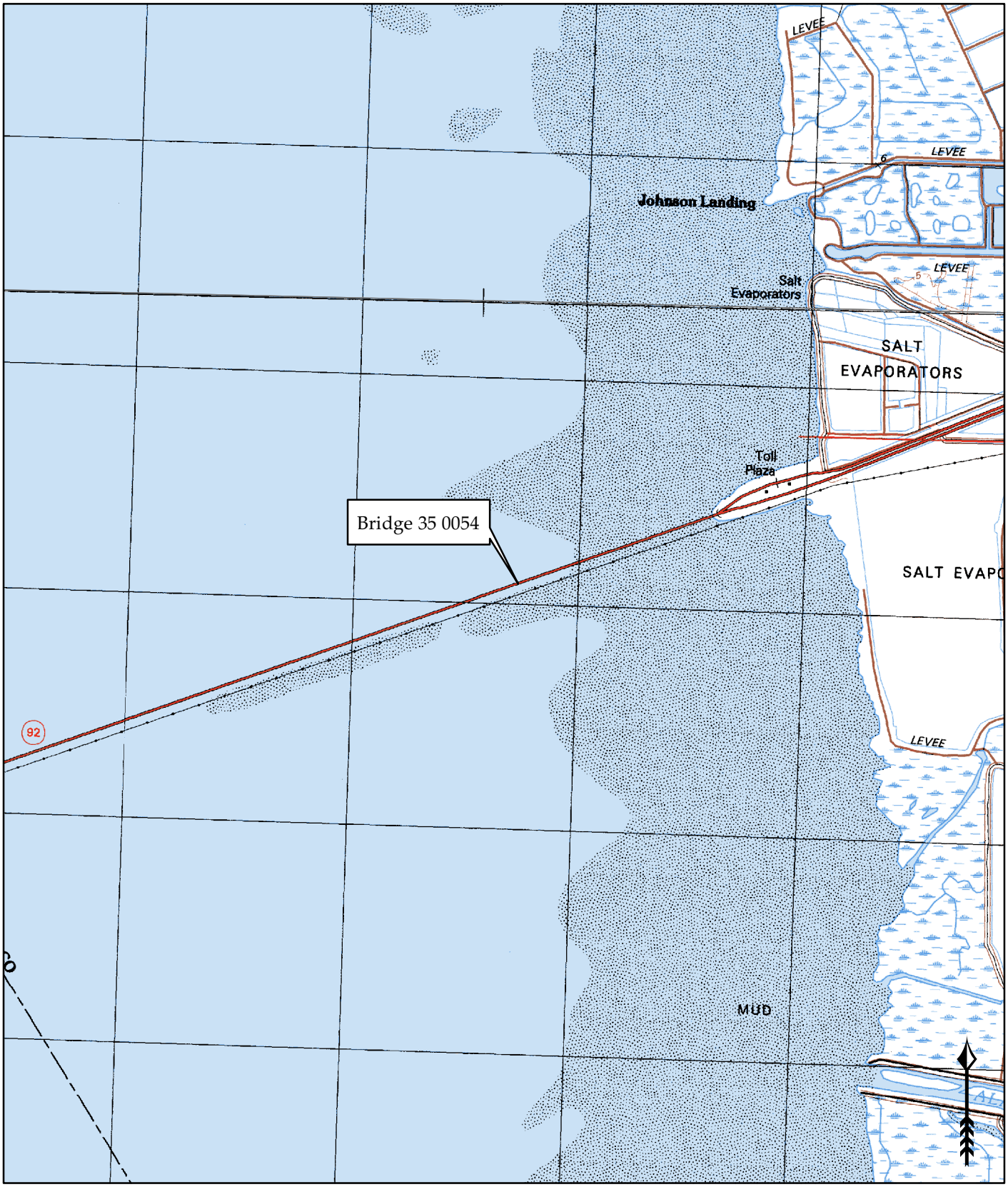
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*Resource Name or #: 35 0054

*Map Name: Redwood Point

*Scale: 1:24,000

*Date of Map: 1993



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 *Resource Name or # Bridge 35 0173L

P1. Other Identifier: State Route 1/280 Separation

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Mateo
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** South San Francisco **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Daly City Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The State Route 1/280 Separation is located in San Mateo County on State Route 1 at post mile 48.36 in Daly City.

***P3a. Description:**
The tunnel carries three lanes of traffic in both the southbound and northbound directions on State Route 1, underneath John Daly Boulevard, and over Interstate 280. The cut and cover tunnel is 56 feet in length with a curb to curb width of 98 feet. The single span cast in place concrete box girder (91 cells) reaches over the cut and cover section, under six feet of fill on reinforced concrete strutted abutments with spread footings. The portals have unadorned concrete facades. The tunnel has painted sides and ceiling on which are two lines of square luminaries.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking south,
July 24, 2013
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1965, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
November 17, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

B1. Historic Name:
B2. Common Name: Route 1/280 Separation
B3. Original Use: Tunnel **B4. Present Use:** Tunnel
***B5. Architectural Style:**
***B6. Construction History:**
The tunnel was constructed in 1965. It underwent a safety upgrade in 1980, which included the addition of a reinforced concrete median barrier rail. The only other work that has occurred on this tunnel is the placement of signage showing the tunnel's clearance and the replacement of luminaries.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**

B9a. Architect: G. M. Low, Bridge Department, Division of Highways **b. Builder:** Peter Kewit Sons' Company
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
The 1/280 Separation was constructed by Peter Kewit Sons' Company as part of one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 35 0173L is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

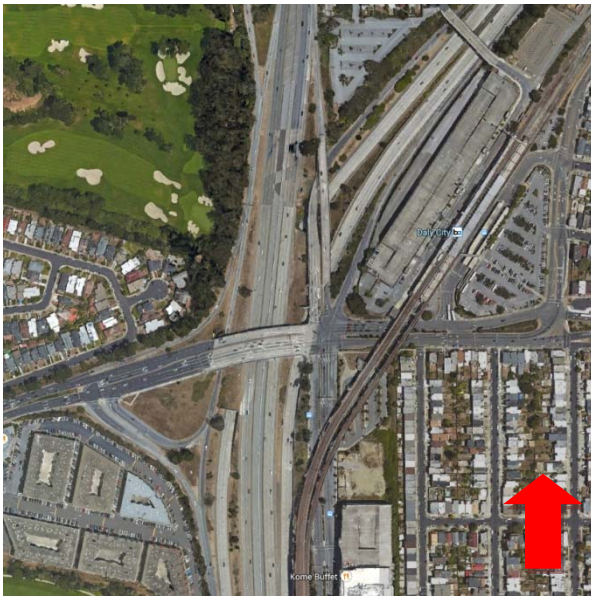
This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 in the State of California. Tunnel building was not a significant achievement in the California by the time the Route 1/280 Separation was constructed. By 1965 the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of national public works projects. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:** November 14, 2014



B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurs in Los Angeles, Ventura, and Orange Counties containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the Counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Several of the shortest tunnels in California were constructed as passages through berms carrying railroads or roadways utilizing the cut and cover method of construction. During this period cut and cover tunnels accounted for five of the nine tunnels constructed, while bore tunnels accounting for the other four. There is a third type of tunnel not seen in this period constructed of precast concrete tube sections. Cut and cover tunnels are similar to concrete arch bridges or culverts but are classified as tunnels simply because they span roadways rather than waterways, and their length between portals is greater than the width of arch span. Cut and cover tunnels are generally constructed at the same time as the berms that they pass through. The first cut and cover tunnel was the McClure Tunnel in Santa Monica (53 0008), constructed in 1935. By the 1960s the construction of cut and cover tunnels was not a significant achievement aligned with the construction of the berm, and thus the Route 1/280 Separation is not significant under National Register Criterion C or California Register Criterion 3. Further, the use of no style to adorn the entrance of the tunnel is not aesthetically significant under National Register Criterion C or California Register Criterion 3.

The Route 1/280 Separation was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of persons significant in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 35 0173L does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master, and does not possess high artistic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. State Route 1/280 Separation is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 35 0173L is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

California Division of Highways. "As Built Plans – Bridge 35 0173L." 1963.

Caltrans Bridge Inspection Report: July 24, 2014

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

(This space reserved for official comments.)

P5b. Photographs (continued):



View of southbound south portal on Interstate 280, July 24 2013.



View of roadway northbound Route 1 on top of buried bridge, July 24 2013.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

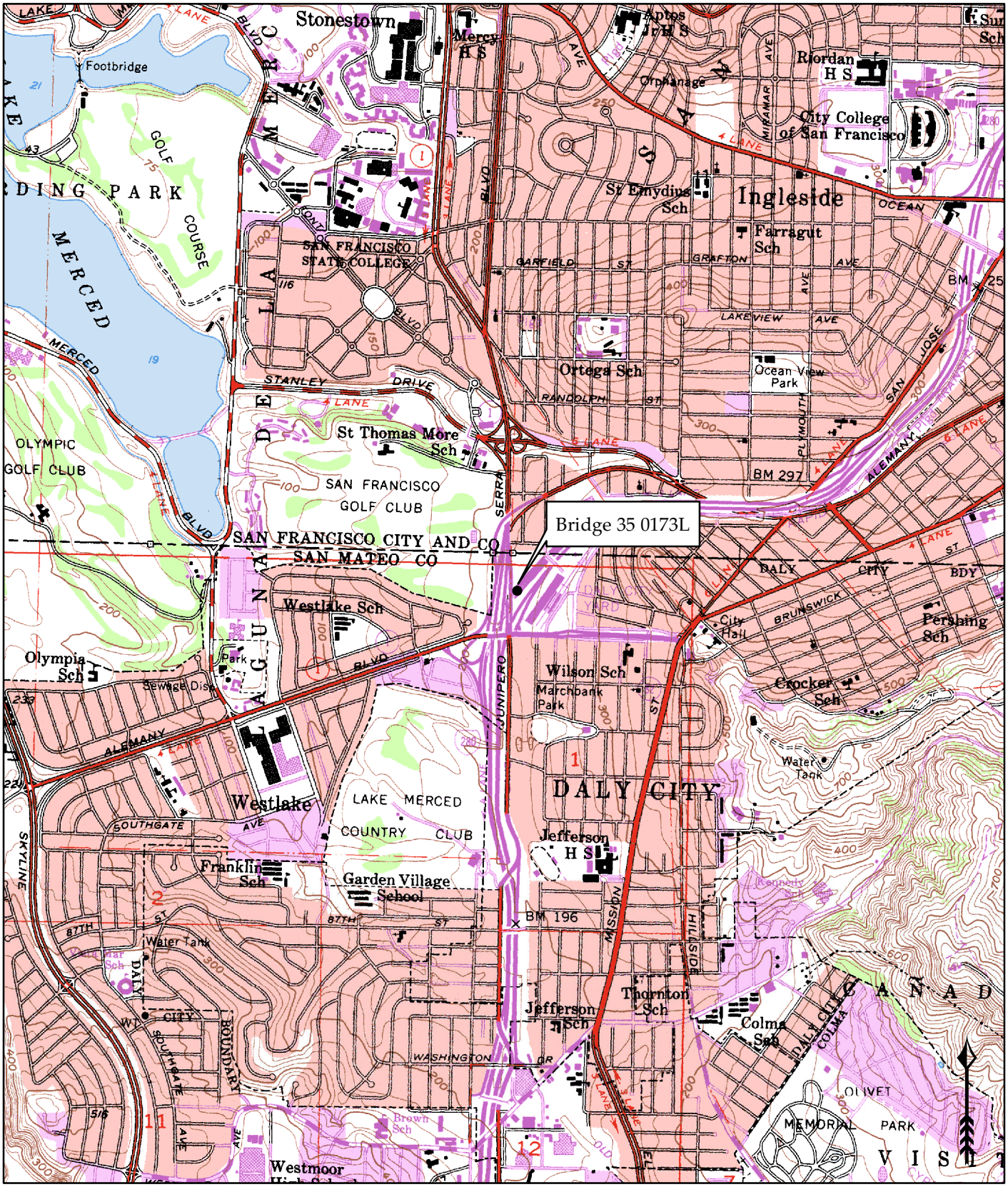
Primary #
HRI#
Trinomial

*Resource Name or #: 35 0173L

*Map Name: South San Francisco

*Scale: 1:24,000

*Date of Map: 1978



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 35 0246F

P1. Other Identifier: W92-S280 Connector Undercrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Mateo
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** San Mateo **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The W92-S280 Connector Undercrossing is located in San Mateo County State Route 92(SR-92) at postmile 7.36 at its intersection with Interstate 280 (I-280). Bridge 35 0246F connects westbound SR-92 with southbound I-280.

***P3a. Description:**
The W92-S280 Undercrossing is a cut and cover tunnel linking the westbound State Route 92 with the southbound Interstate 280. Bridge 35 0246F is a tunnel undercrossing connector, 49 feet in length, carrying six lanes of Interstate 280 over the southbound two lanes of State Route 92. The reinforced concrete box girder (2 cell) structure is under about 33 feet of fill, with abutments founded partly on spread footings and partly on steel piles. The entrance portal is flanked on the north side by a quarter basin spaced fan with vertical line rustication. Interior lighting is located above either lane, in square housings. The walls and ceiling are faced with white tile. This tunnel has three other built resources associated with it: two ventilation towers and a pumphouse. (See Continuation Sheet, page 3)

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking southwest
October 14, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1973, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Noah M. Stewart
Dept. of Transportation
111 Grand Avenue
Oakland, CA 94612
***P9. Date Recorded:**
November 17, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 35 0246F

B1. Historic Name:

B2. Common Name: W92-S280 Connector Undercrossing

B3. Original Use: Undercrossing B4. Present Use: Undercrossing

***B5. Architectural Style:**

***B6. Construction History:** (Construction date, alterations, and date of alterations)

The W92-S280 Connector Undercrossing was built 1973. The tunnel has only received minor maintenance, including: light replacement (1992); tile replacement (1996); and, new concrete pavement was placed on the roadway inside the tunnel (2002).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The tunnel carries SR-92 under I-280. There are two ventilation towers and pumphouse associated with the tunnel.

B9a. Architect: Friedman, Bridge Department, Division of Highways **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The W92-S280 Connector Undercrossing was constructed as one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 35 0246F is not significant under National Register of Historic Places (National Register) Criterion A or the California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 in the State of California. The tunnel building was not a significant achievement in the state by the time the W92-S280 Connector Undercrossing was constructed in 1973. By 1965 the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of public works projects nationally. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 4).

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 17, 2014

(This space reserved for official comments.)



*Required information

***P3a. Description (continued):**

The two ventilation towers are located southeast of the tunnel entrance, approximately half way through the tunnel, within the entrance loop of S92-N280. They are modern is shape and industrial in appearance. Their foundations are concrete and raised two feet above ground level. There are four one-over-one ribbon windows on all four sides; and the roof is curved steel curving downwards on the north and south sides, with vertical sides on the east and west.

The pumphouse is in a modern style with a rectangular footprint and a flat roof, which slopes downwards at the eaves. The building is accessed from the northbound State Route 92, and the northbound W92-N280 connector. It was constructed in brick with large pin holed, corrugated entrances on the south and west sides. Adjacent to this structure is a small electrical transformer that is fenced off with chain link, which has been backed with thick corrugated white plastic.

B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties, containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the Counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo accounted for 37 percent.

Several of the shortest tunnels in California were constructed as passages through berms carrying railroads or roadways utilizing the cut and cover method of construction. During this period cut and cover tunnels accounted for five of the nine tunnels constructed, with bore tunnels accounting for the other four. There is a third type of tunnel not seen during this period, constructed of precast concrete tube sections. Cut and cover tunnels are similar to concrete arch bridges or culverts but are classified as tunnels simply because they span roadways rather than waterways, and their length between portals is greater than the width of arch span. Cut and cover tunnels are generally constructed at the same time as the berms that they pass through. The first cut and cover tunnel was the McClure Tunnel in Santa Monica (53 0008), constructed in 1935. By the 1960s the construction of cut and cover tunnels was not a significant achievement at the time. The use of rusticated concrete finishing to adorn the entrance of the tunnel is not aesthetically significant under Criterion C. W92-S280 Connector Undercrossing is not significant under National Register Criterion C or California Register Criterion 3.

The W92-S280 Connector Undercrossing was erected as a typical transportation improvement project of the period and the tunnel is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 35 0246F does not embody the distinctive characteristics of tunnel construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The W92-S280 Connector Undercrossing is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 35 0246F is not eligible for inclusion on the National Register or Calfornia Register.

***B12. References (continued):**

California Division of Highways. "As Built Plans – Bridge 35 0246F." 1971.

Caltrans Bridge Inspection Report: April, 15, 2014.

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

P5b. Photographs (continued):



South portal, looking north, October 13, 2010.



Ventilation towers, view looking north, October 14, 2014.



Pump house building, view looking north, January 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

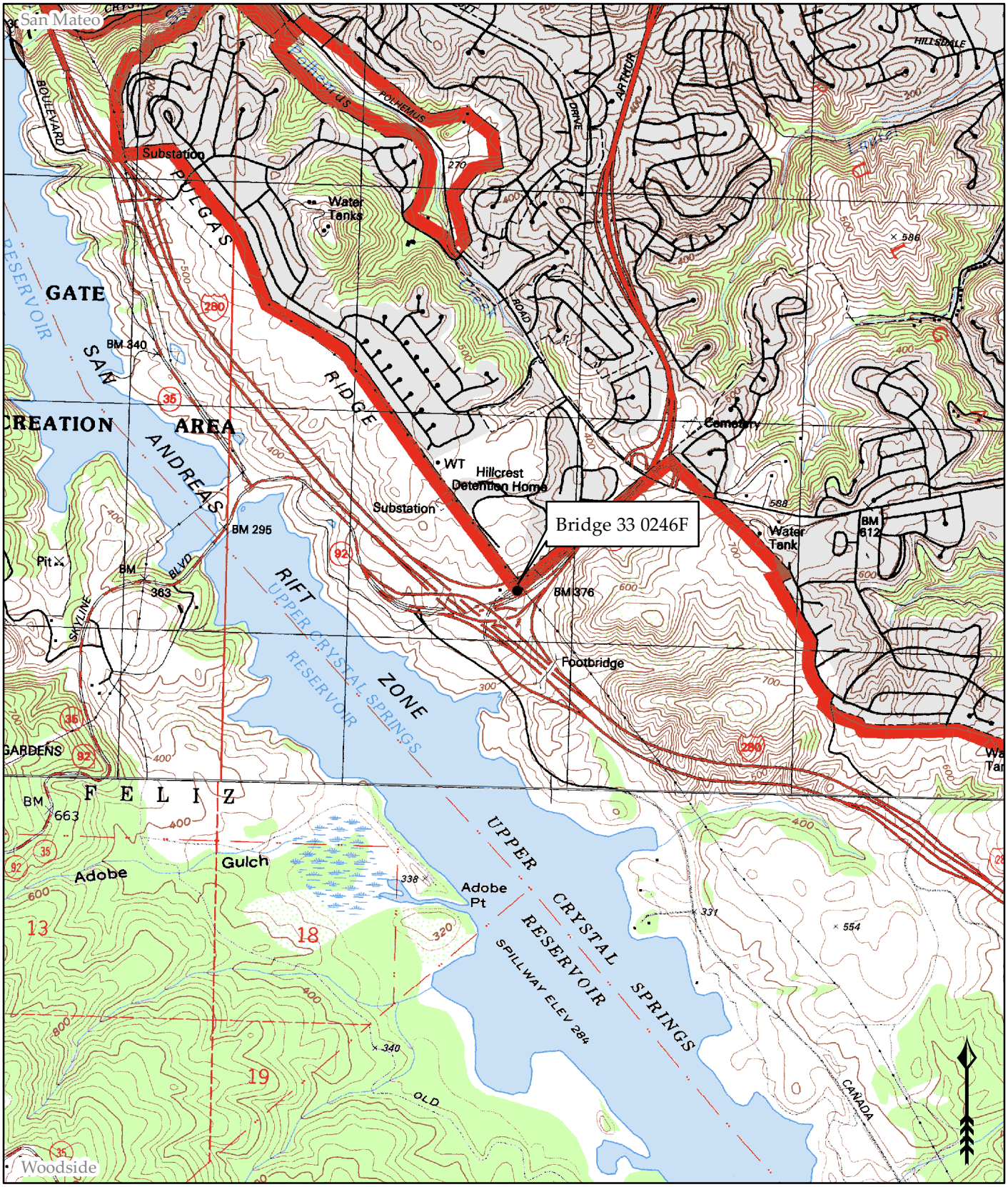
Primary #
HRI#
Trinomial

*Resource Name or #: 33 0246F

*Map Name: San Mateo

*Scale: 1:24,000

*Date of Map: 1993



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 36C0102

P1. Other Identifier: San Lorenzo River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Santa Cruz
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Santa Cruz **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Santa Cruz Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

The San Lorenzo River Bridge is located on Laurel Street 0.8 miles east of State Route 1, in Santa Cruz.

***P3a. Description:**

The San Lorenzo River Bridge carries two lanes of traffic in both east and west directions as well as a right turn lane for west bound traffic over the San Lorenzo River, at a skew of 25 degrees. The bridge is a concrete box girder structure, 335 feet in length, with a main span of 170 feet in length. It has a reinforced concrete continuous box (11 cell) girder with cantilevered end spans and a precast and prestressed concrete "I" girder suspended center span. The reinforced concrete wall piers are elegantly stepped into a plunging Y shape as it meets the water. The reinforced concrete diaphragm abutments are all on reinforced concrete piles. The bridge has modified Type 27 railing; the columns with indented panels have stepped tapered bases, and new Victorian style lamp posts have been placed on top of the columns.

***P3b. Resource Attributes:** HP. 19 Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
October 6, 2011

***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1968, Caltrans Bridge Files

***P7. Owner and Address:**
City of Santa Cruz
Public Works
809 Center Street
Santa Cruz, CA 95060

***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Avenue
Oakland, CA 94612

***P9. Date Recorded:**
November 24, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 36C0102

B1. Historic Name:
B2. Common Name: San Lorenzo River Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:**
***B6. Construction History:**
The San Lorenzo River Bridge was built in 1968. The bridge has undergone substantial work since its construction, including: concrete approach built up to match the deck elevation (1976); and, the approach pavement was patched (1996). Later in 1996, the Water Street Bridge Rehabilitation Project involved the removal and replacement of the northern half of the bridge, which was comprised of two older concrete arch bridges that had been constructed in 1908 and 1914; and an earthquake retrofit of the southern portion. The northern side was designed to match the aesthetics of the southern half of the bridge, which was constructed in 1968. These improvements were designed by Boyle Engineering Corporation with construction by RGW Construction, Inc. Further, a seismic retrofit that included compaction grouting, pier confinement and abutment confinement was completed 2002-2006.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The bridge is carries Water Street over the San Lorenzo River.

B9a. Architect: George S. Nolte, Inc. Bridge Department, California Division of Highways **b. Builder**:
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
The San Lorenzo River Bridge was constructed by the City of Santa Cruz as one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

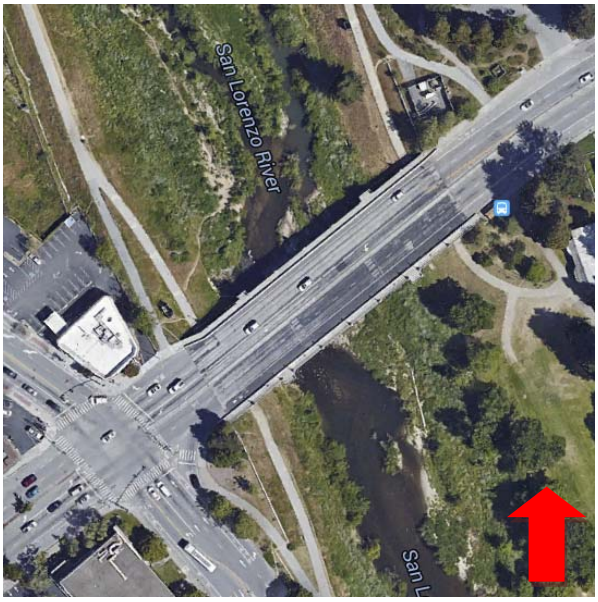
The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:
***B12. References:** (See Continuation Sheet, page 3)
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore & Noah Stewart
California Department of Transportation

***Date of Evaluation:**
November 24, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974.

Bridge 36C0102 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the San Lorenzo River Bridge was constructed in 1968. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The San Lorenzo River Bridge, with a total length of 335 feet and main span of 170 feet in length is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. While, the designer of the bridge sought to create an aesthetically pleasing bridge with tapered stepped columns, the addition of the columns and the changes to the railing means the bridge has lost integrity in its design, as well as the large number of changes due to the seismic retrofit in 1996, causing the bridge to loose integrity in two other critical aspects; workmanship and materials. Bridge 36C0102 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 36C0102 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 36C0102 does not embody the distinctive characteristics of concrete box bridge construction, does not represent the work of a master, and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The San Lorenzo River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Criterion 4. Bridge 36C0102 is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 36C0102." 1971.

Caltrans Bridge Inspection Report: September 24, 2013

City of Santa Cruz. "Water Street Bridge Fact Sheet." *City of Santa Cruz Green Focus.* Accessed on November 26, 2014 from http://www.cityofsantacruz.com/.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



View of Roadway looking east, October 6, 2011.



Aesthetic stepping at the top of the Pier 3, August 24, 2013.



Aesthetic Stepping at the bottom of Pier 3, August 24, 2013.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

*Resource Name or #: 36C0102

*Map Name: Santa Cruz

*Scale: 1:24,000

*Date of Map: 1954



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 38C0170

P1. Other Identifier: Gallup Creek Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Stanislaus
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
Copperstown Road, 2.8 miles northwest of La Grange Road

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Gallup Creek Bridge (38C0170) is a steel Pratt pony truss structure that crosses Gallup Creek. It is 83.3 feet in total length with a single span of 80 feet. The bridge has a total width of 20.2 feet with a roadway width of 20 feet. It has a riveted and bolted steel truss with corrugated metal bridge deck planks on steel stringers and steel floor beams. The deck has an asphaltic concrete (AC) overlay and is covered in gravel. The bridge is founded on reinforced concrete closed end wall abutments. The one lane bridge has metal guard railings that are bolted to the truss. There are no pedestrian walkways.

***P3b. Resource Attributes:** (List attributes and codes)
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
View, looking northwest
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1965, Caltrans Bridge Files
***P7. Owner and Address:**
Stanislaus County
Public Works
1716 Morgan Road
Modesto CA 95358
***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo, Caltrans
Architectural Historian
1120 N Street
Sacramento, CA 95818
***P9. Date Recorded:**
August 20, 2014
***P10. Survey Type:** (Describe)
Intensive, Statewide Bridge Update
***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # (Assigned by recorder) Bridge 38C0170

B1. Historic Name:

B2. Common Name: Gallup Creek Bridge B3. Original Use: Bridge B4. Present Use: Bridge

*B5. Architectural Style:

*B6. Construction History: (Construction date, alterations, and date of alterations)

Caltrans bridge records state that the truss of the bridge appears to have been moved from another location to this site and reassembled in 1965. Bridge records estimate that the steel truss members and floor beams date from 1905 to 1936 and the steel stringers date from after 1936.

*B7. Moved? ☐No ■Yes ☐Unknown Date: 1965 Original Location: Unknown

*B8. Related Features:

The Gallup Creek Bridge is located on Copperstown Road.

B9a. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme: N/A Area: N/A

Period of Significance: N/A Property Type: N/A Applicable Criteria: N/A

The Gallup Creek Bridge (38C0170) was moved to the site and reconstructed in 1965 by Stanislaus County as a local transportation improvement project. The Gallup Creek Bridge is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. The fabrication, transportation, and erection of metal truss bridges were not a significant achievement in the state by the time the Gallup Creek Bridge was constructed in 1965. (See Continuation Sheet 3)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

Caltrans Bridge Inspection Report: October 10, 20134

B13. Remarks:

*B14. Evaluator:

Noah Stewart & Lauren Clementino
Caltrans Architectural Historians

*Date of Evaluation:

(This space reserved for official comments.)



*Required information

*Recorded by: Janice Calpo & Noah Stewart *Date: October 1, 2014 ☒ Continuation ☐ Update

B10. Significance (continued):

The Gallup Creek Bridge is a Pratt pony truss with a single span of 80 feet. The Pratt is one of the most common truss types that remain from the early to mid-twentieth century in California. The Pratt truss was patented by Thomas Pratt in 1844 and was distinctive for its vertical compression members and diagonal tension members. Standard designs for truss bridges were readily used through many states by the 1920s, including California. Due to limited access to concrete plants and equipment in rural areas, it was often economical to relocate dismantled trusses rather than erect new bridges, which was likely the case for the Gallup Creek Bridge. Although the truss of the Gallup Creek Bridge dates from the 1930s, it was salvaged from an earlier bridge and moved to the current location in 1965, thus suffering a loss of integrity of location and setting. The Gallup Creek Bridge is a basic Pratt pony truss and was constructed well after the Pratt was an established truss type in California. The bridge is a relatively typical example of a common bridge type and does not represent a significant innovation in bridge engineering or display a significant variation within an established bridge type. Its span length of 80 feet is comparable to other Pratt truss bridges and it does not display any decorative features or significant architectural details. The Gallup Creek Bridge is not significant as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3.

The Gallup Creek Bridge was erected as a typical transportation improvement project of the period and is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The Gallup Creek Bridge is not a distinctive example of metal truss bridge construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Gallup Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Gallup Creek Bridge is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

Department of Transportation. Bridge Inspection Reports for Bridge Number 38C0170. April 10, 1980 to October 10, 2013.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

P5b. Photographs (continued):



View, looking northwest (August 20, 2014)



View, looking west (August 20, 2014)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

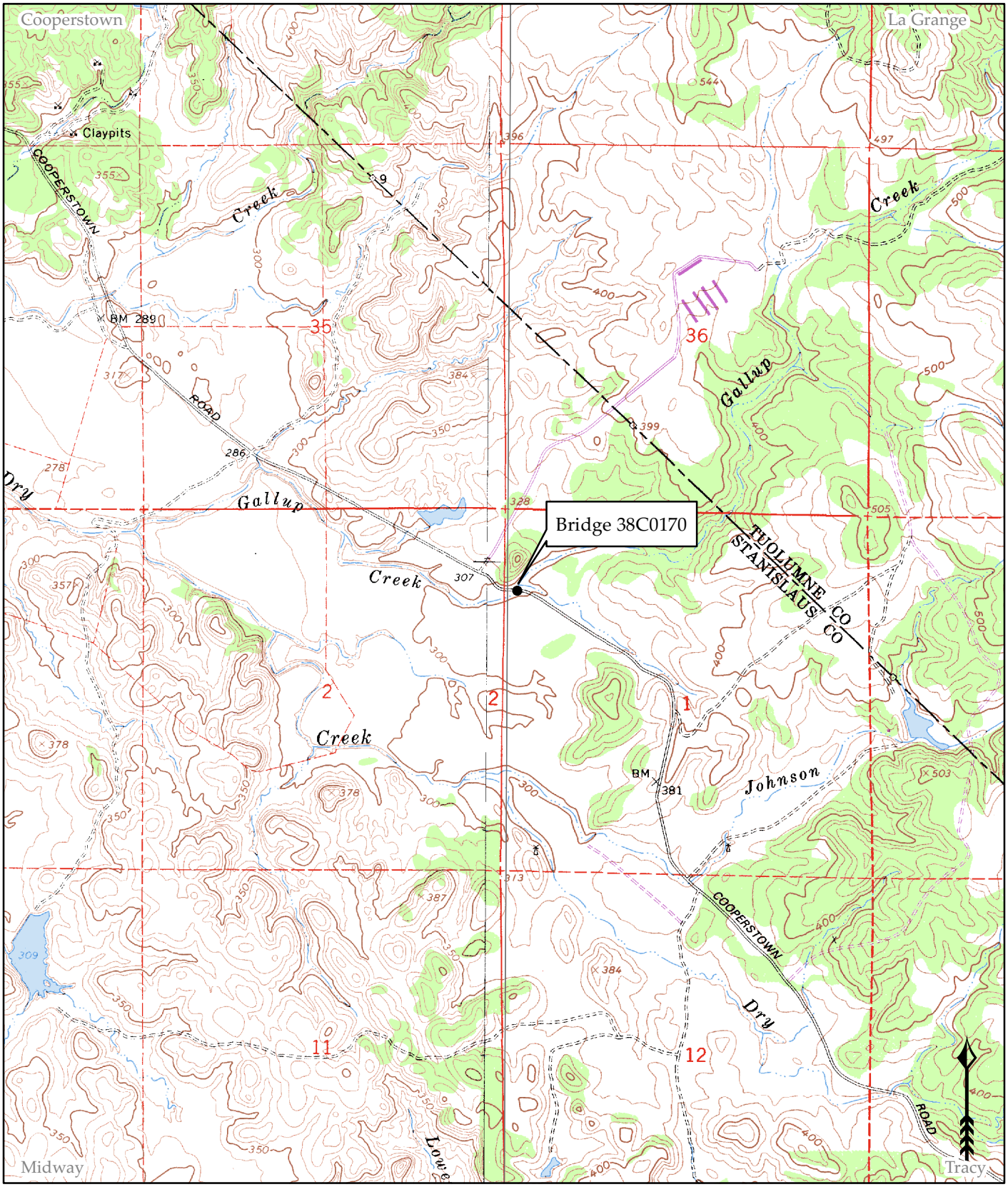
Primary #
HRI#
Trinomial

*Resource Name or #: 38C0170

*Map Name: La Grange

*Scale: 1:24,000

*Date of Map: 1962



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or # Bridge 40 0048

P1. Other Identifier: East Fork Chowchilla River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Mariposa
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

The East Fork Chowchilla River Bridge is located in Mariposa County on State Route 49 at postmile 2.87.

***P3a. Description:**

The bridge carries the State Route 49 over the East Folk of the Chowchilla River, and the local Kembrel Road, north of Ahwahee, in Maripose County. Bridge 40 0048 is a long span concrete box-girder structure, 720 feet in length. The bridge has three spans with the main span measuring 300 feet in length. It has continuous cast-in-place (CIP) prestressed box girder (three cells) on reinforced concrete single column bents on spread footings. The concrete box girder is tapered from the roadway, decreasing in width to the bent. The bent column is a slender organic form beginning in a tight arc at the underside of the box girder and tapering toward the ground. Reinforced concrete seat abutments have "U" wingwalls on steel piles. The two lane bridge has type 9-11 railing.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
August 20, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1972, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:**

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 40 0048

B1. Historic Name:
B2. Common Name: East Fork Chowchilla River Bridge
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:**
The bridge was built in 1972. In 1985 the metal bean guard rail was replaced.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The bridge is located on State Route 49.

B9a. Architect: D. Hopkins, Bridge Department, California Division of Highways
b. Builder: Eastco and H & L
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The East Fork Chowchilla River Bridge was constructed by Eastco and H & L, of Redding, California. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register of Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. Because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)
B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation
***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

Bridge 40 0048 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the East Fork Chowchilla River Bridge was constructed in 1972. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The East Fork Chowchilla River Bridge with a total length of 720 feet and main span of 300 feet in length is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it standout with regards to modern bridge aesthetics. Bridge 40 0048 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 40 0048 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 40 0048 does not embody the distinctive characteristics of a concrete box bridge construction, does not represent the work of a master, and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The East Fork Chowchilla River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 40 0048 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 40 0048." 1970.

Caltrans Bridge Inspection Report: October 17, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

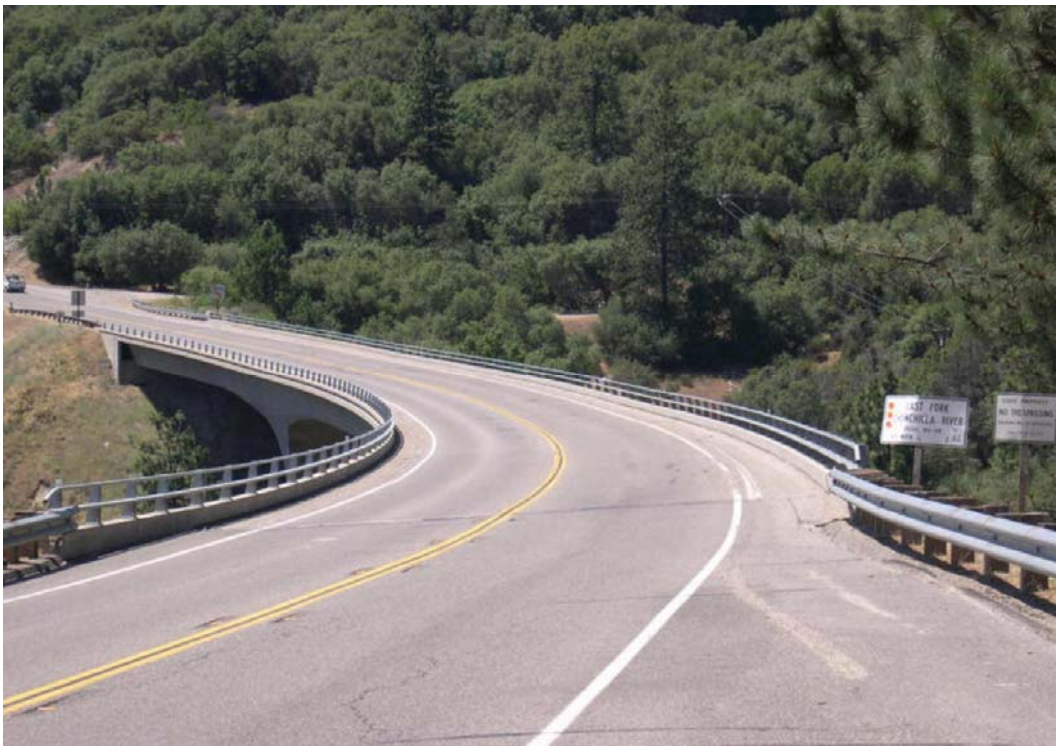
Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



View looking northwest, July 10, 2006



Roadway looking northwest, July 10, 2006

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

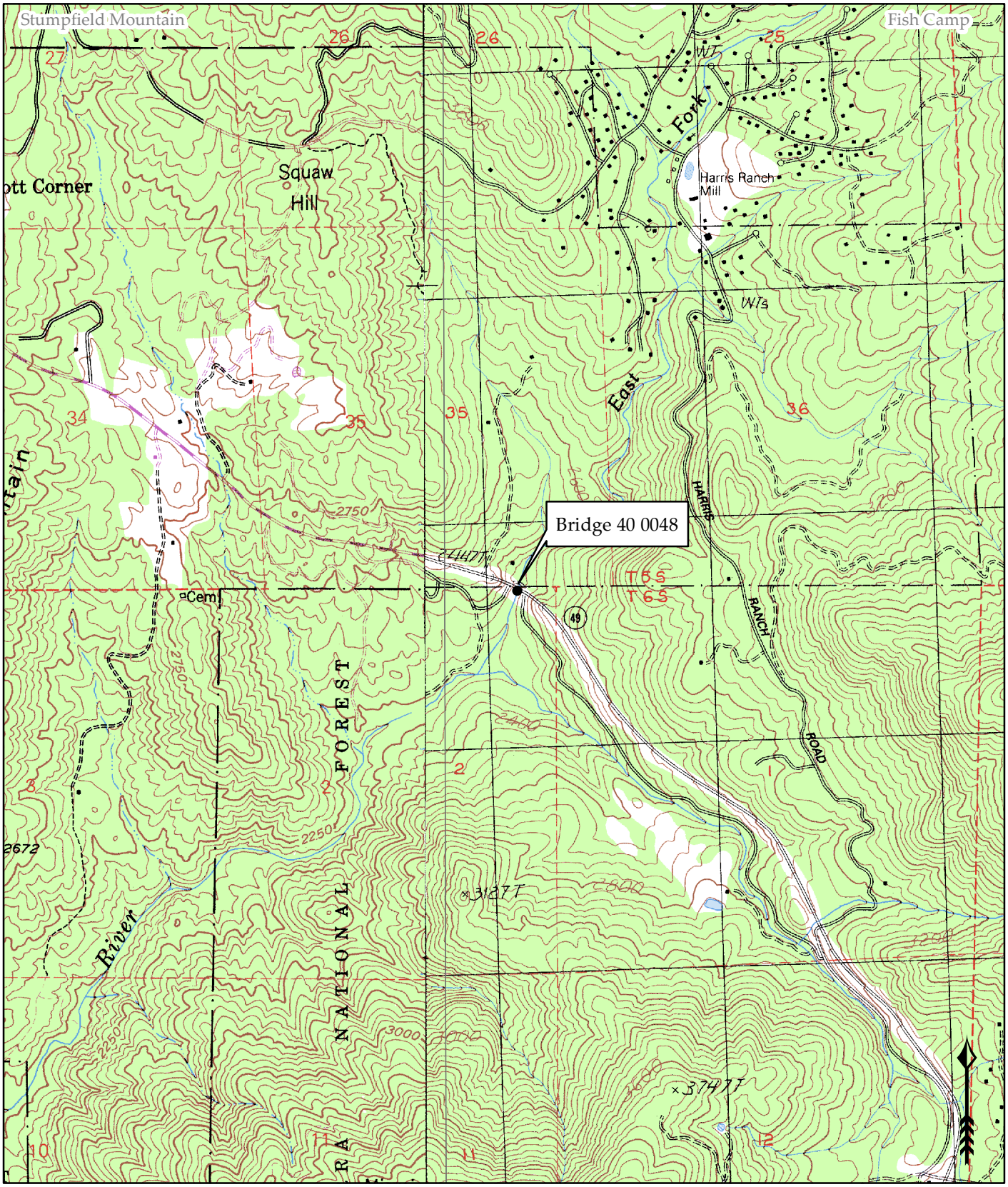
Primary #
HRI#
Trinomial

*Resource Name or #: 40 0048

*Map Name: Fish Camp

*Scale: 1:24,000

*Date of Map: 1990



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 44C0064

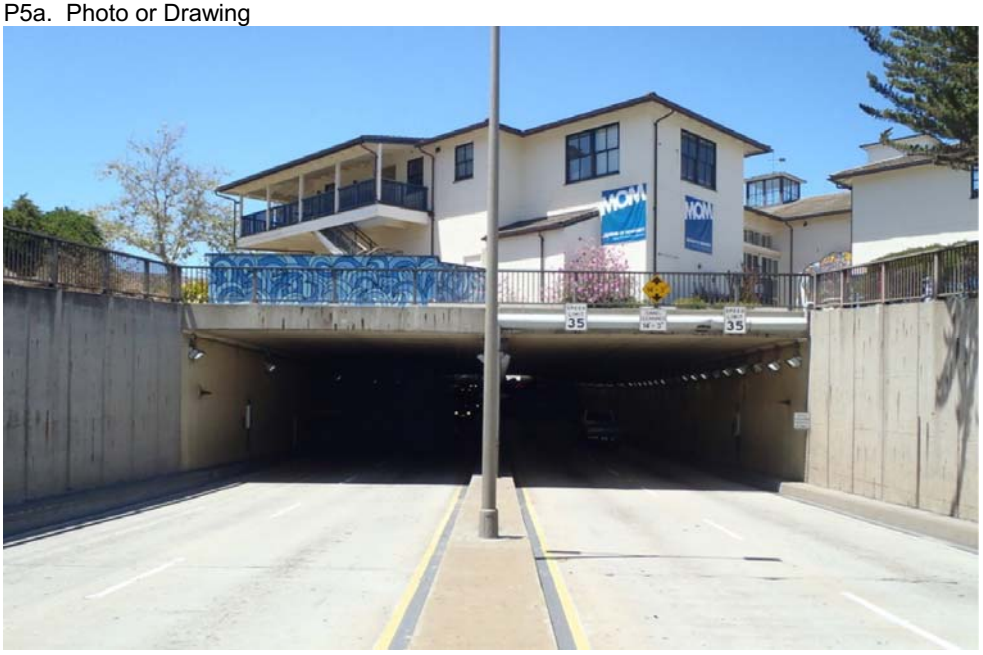
P1. Other Identifier: Custom House Tunnel (Lighthouse Avenue)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Monterey
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Monterey **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Monterey Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Custom House Tunnel is located on Lighthouse Avenue in Monterey.

***P3a. Description:**
The Custom House Tunnel is a cut and cover tunnel carrying Lighthouse Avenue beneath the Museum of Monterey and Monterey State Historic Park along with a new commercial development. Bridge 44C0064, the "Custom House" tunnel, is a depressed roadway, 997 feet in length, within a cast in place cut and cover reinforced concrete frame. Fill depth varies between two and 10 feet. The four lane tunnel has metal picket bridge rails attached to the top of the frame at each exterior edge. Both the north and south portals are unadorned and have a smooth concrete finish. The interior of the tunnel is lined with white tiles on the walls and ceiling and there are square box lights running on both sides of the tunnel walls in both directions of travel.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View looking northwest, June 20, 2012
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1968, Caltrans Bridge Files
***P7. Owner and Address:**
City of Monterey
580 Pacific Street
Monterey, CA 93940
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Avenue
Oakland, CA 94623
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 44C0064

B1. Historic Name:

B2. Common Name: Custom House Tunnel (Lighthouse Avenue)

B3. Original Use: Tunnel **B4. Present Use:** Tunnel

***B5. Architectural Style:**

***B6. Construction History:**

The Custom House Tunnel was built 1968. The tunnel has only undergone minor maintenance since its construction, including: the potholes being patched (1993).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The tunnel is located on Lighthouse Avenue and travels beneath the Museum of Monterey and Monterey State Historic Park along a new commercial development in Monterey.

B9a. Architect: Sverdruo-Parcel Inc. **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Custom House Tunnel was constructed as part of Monterey's urban renewal project. It was one of the many highway improvements carried out during the late 1960s and 1970s. The tunnel is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 in the State of California. Tunnel building was not a significant achievement in California by the time the Custom House Tunnel was constructed in 1968. By 1965 the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of public works projects nationally. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3).

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties, containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the Counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Several of the shortest tunnels in California were constructed as passages through berms carrying railroads or roadways utilizing the cut and cover method of construction. During this period cut and cover tunnels accounted for five of the nine tunnels constructed with bore tunnels accounting for the other four. There is a third type of tunnel not seen in this period constructed of precast concrete tube sections. Cut and cover tunnels are similar to concrete arch bridges or culverts but are classified as tunnels simply because they span roadways rather than waterways and their length between portals is greater than the width of the arch span. Cut and cover tunnels are generally constructed at the same time as the berms that they pass through. The first cut and cover tunnel was the McClure Tunnel in Santa Monica (53 0008), constructed in 1935. By the 1960s the construction of cut and cover tunnels was not a significant achievement. Further, the use of smooth finished concrete to adorn the entrance of the tunnel is not aesthetically significant. The Custom House Tunnel is not significant under National Register Criterion C or California Register Criterion 3.

The Custom House Tunnel was erected as a typical transportation improvement project of the period and the tunnel is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 44C0064 does not embody the distinctive characteristics of tunnel construction, does not represent the work of a master, and it does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Custom House Tunnel is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 44C0064 is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

Caltrans Bridge Inspection Report: April, 15, 2014.

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

P5b. Photographs (continued):



North Portal, view facing south, June 20, 2012.



Northbound tunnel, view facing north, June 2011.



View looking northeast from Pacific street connecting to Lighthouse Avenue northbound, June 20, 2013.

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LOCATION MAP

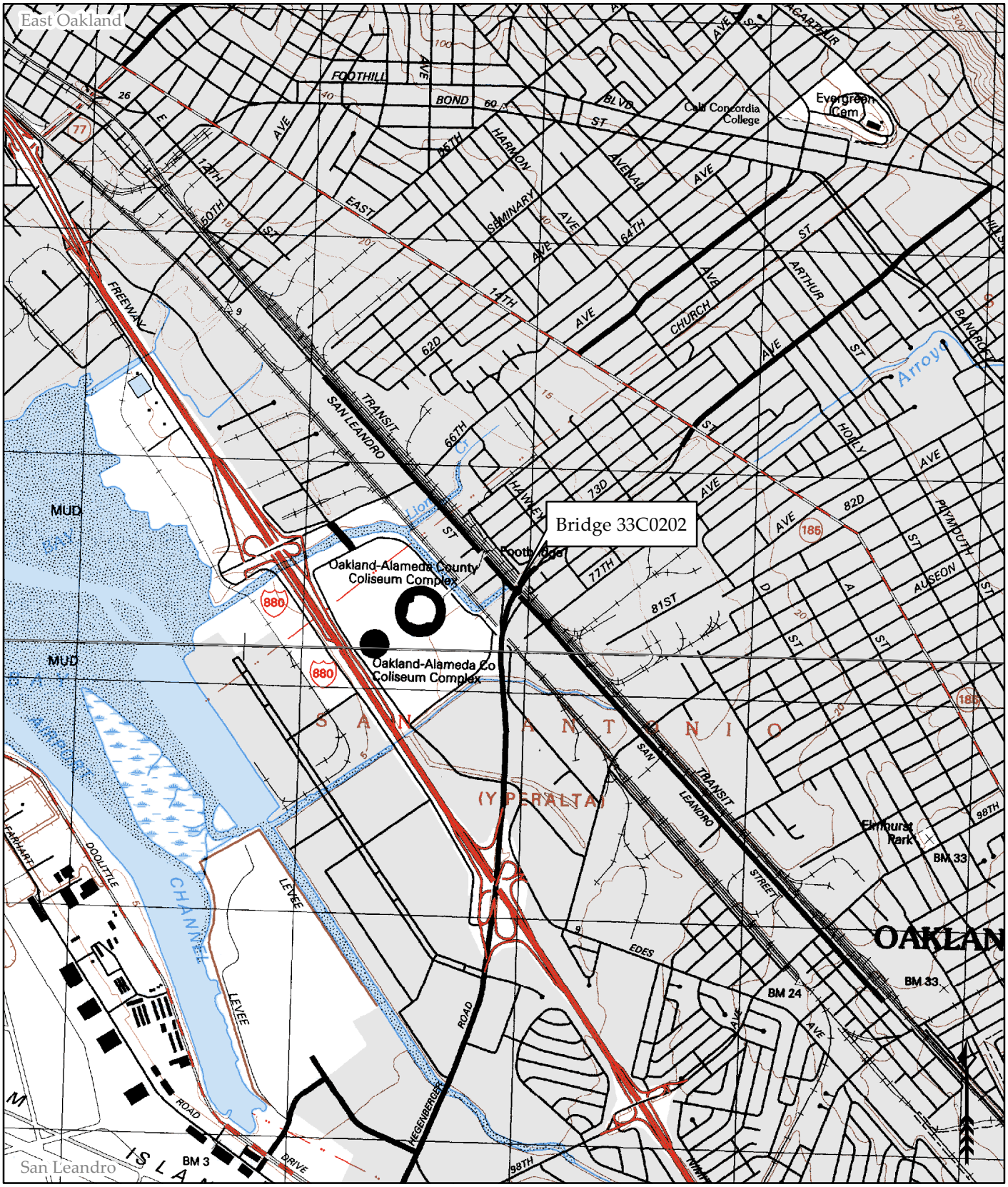
Primary #
HRI#
Trinomial

*Resource Name or #: 33C0202

*Map Name: East Oakland

*Scale: 1:24,000

*Date of Map: 1959



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #** Bridge 50 0279

P1. Other Identifier: Kern River Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Kern
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Miracle Hot Spring **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

The Kern River Bridge is located in Kern County on State Route 178 at postmile 38.84.

***P3a. Description:**

Bridge 50 0279 is a long span steel girder structure, 470 feet in length that crosses the Kern River. The bridge has three spans with the main span measuring 200 feet in length. It has four welded steel girders, continuous over bents with a simple suspended section in Span 2. The bridge is supported on two reinforced concrete column bents and open end seat abutments founded on spread footings. The four lane bridge has Type 11 railing.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north,
June 20, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1968, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:** Intensive

***P11. Report Citation:**

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 50 0279

B1. Historic Name:

B2. Common Name: Kern River Bridge

B3. Original Use: Bridge

B4. Present Use: Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The bridge was built in 1968. The deck was replaced in with a Protectorwrap preformed membrane and 3 of AC; and the Type 9 railings were removed and replaced by Type 11 railings, in 1975.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Tom L. Pollock, Bridge Department, California Division of Highways

b. Builder: Oberg Construction Corporation

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Kern River Bridge was constructed by Oberg Construction Corporation. It was one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 50 0279 is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of over 500 bridges of its type constructed between 1965 and 1974. Prior to this, there were more than 1,800 steel girder bridges in the State of California. The fabrication, transportation, and erection of large steel girder bridges was not a significant achievement in the state by the time the Kerns River Bridge was constructed in 1968. By the early 1970s, only 10% of all new bridges in the state were erected in steel. Steel girder bridges had their heyday in the 1930s, when they accounted for one third of bridges constructed. By the 1950s, steel girder bridge construction had dropped to 20% of new bridges erected throughout the state. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

By the 1960s, nearly any beam length could be fabricated and assembled on-site and long steel beams, such as those used in Kern River Bridge, were not considered a significant technological achievement. Bridge 50 0279 is a fairly typical example of steel girder construction for this period. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. Whiskey Creek Bridge held title to the longest main span of 350 feet in length from its initial construction in 1961 until 1967, when a bridge carrying Interstate 280 over San Mateo Creek achieved a 360 foot main span. The Kern River Bridge with a total length of 470 feet and main span of 200 feet in length is not significant as a work of civil engineering. Bridge 50 0279 is not significant under National Register Criterion C or California Register Criterion 3. Its construction was typical for the 1960s and 1970s, and was not a significant work of civil engineering.

Bridge 50 0279 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 50 0279 does not embody the distinctive characteristics of a steel girder bridge construction, does not represent the work of a master, and it does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Kern River Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 50 0279 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, np. 4 (April 1958): 86-87.

California Division of Highways. "As Built Plans – Bridge 50 0279, 1966.

Caltrans Bridge Inspection Report: November 29, 2012

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types*. Californian Department of Transportation, November 2004.

Mead & Hunt. *Historic Resource Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. California Department of Transportation, 2010.

P5b. Photographs (continued):



View looking north, June 20, 2014



View looking south, June 20, 2014



Underside view of superstructure and deck looking north, June 20, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

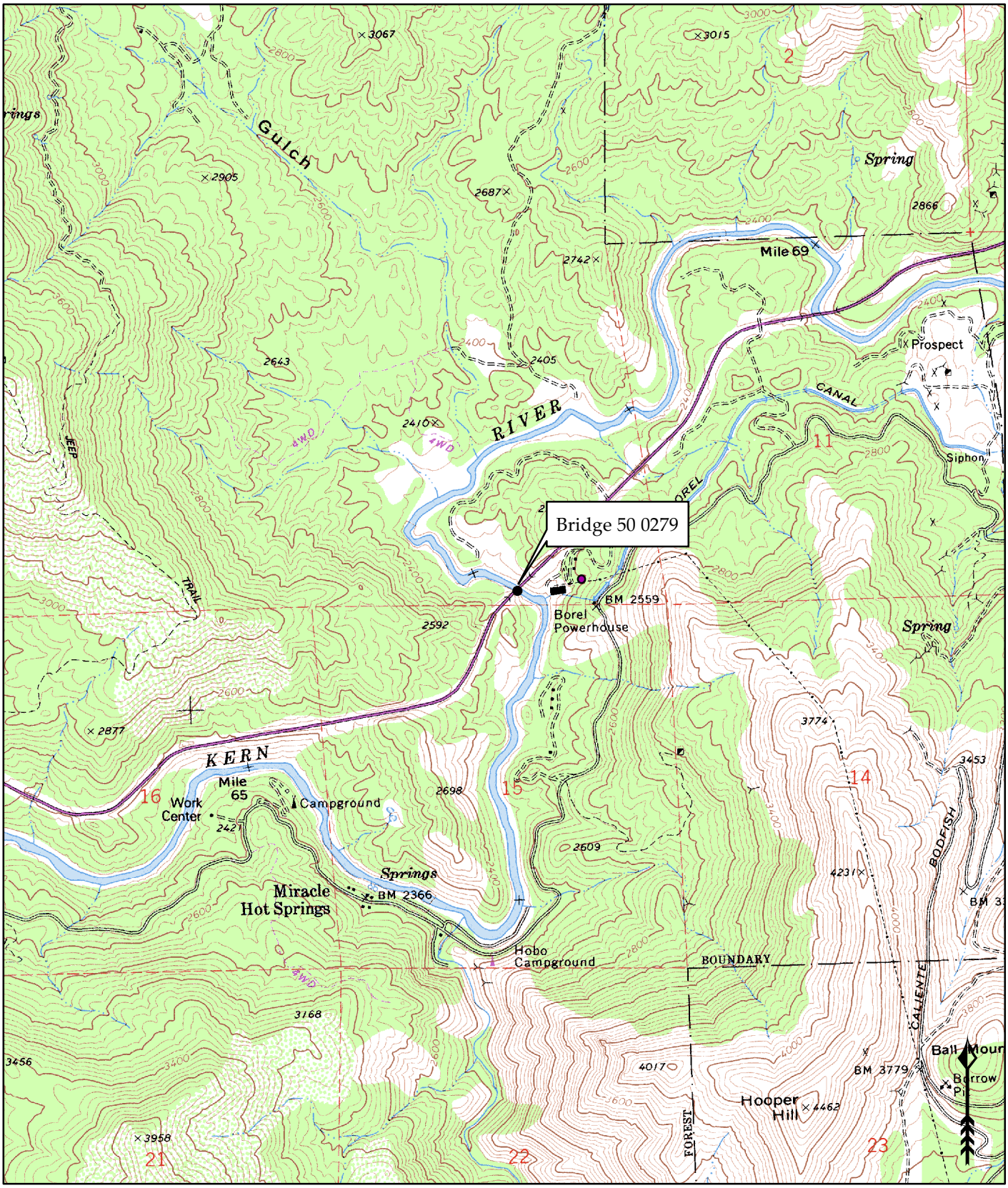
Primary #
HRI#
Trinomial

*Resource Name or #: 50 0279

*Map Name: Miracle Hot Spring

*Scale: 1:24,000

*Date of Map: 1972



*Required information

State of California — The Resour
DEPARTMENT OF PARKS AND R
PRIMARY RECORD

This attached DPR for Bridge #53 2639 is the original form submitted to SHPO as part of the Statewide Historic Bridge Inventory Update for bridges constructed between 1965 and 1974. The final SHPO consensus, not reflected in this form, is that status is deferred pending further studies that may be part of future projects; therefore, "Historic significance not determined," or Caltrans Category 4, is the determination as of this writing. Caltrans Structures Maintenance List of Historic Significance (online) will reflect the most current status.

 ***Resource Name or #:** Bridge 53 2369

P1. Other Identifier: State College Pedestrian Overcrossing

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Los Angeles **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Los Angeles Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data:
Over State Route (SR) 10 at post mile C21.25, in Los Angeles County

***P3a. Description:**
The State College Pedestrian Overcrossing (53 2369) is a welded steel Vierendeel through truss structure that serves as a pedestrian walkway over State Route 10 from the California State University, Los Angeles (Cal State LA) Metrolink and Busway Station to Cal State LA. It has a single span of 127 feet with a total length of 128 feet and a total width of 9.3 feet. The bridge deck is composed of cast-in-place reinforced concrete on corrugated steel and rolled steel floor beams. Reinforced concrete columns on spread footings support the structure. There are vertical columns along the walkway, connecting to the top cord. Chain link railing lines the structure.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View, looking west
June 23, 2014
***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both
1974, Caltrans Bridge Files
***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status** 6Z

***Resource Name or #** Bridge 53 2369

B1. Historic Name:
B2. Common Name: State College Pedestrian Overcrossing
B3. Original Use: Pedestrian Overcrossing B4. Present Use: Pedestrian Overcrossing
***B5. Architectural Style:** Steel Vierendeel through truss
***B6. Construction History:**
The bridge was constructed in 1974. A seismic retrofit was completed in 1997, which included column isolation and abutment retrofit (cast-in-drilled-hole piles and shear keys).

***B7. Moved?** ■No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The bridge is located over State Route 10.

B9a. Architect: Kaiser Engineers/DMJM **b. Builder: Unknown**
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The State College Pedestrian Overcrossing (53 2369) was constructed by the Southern California Rapid Transit District to connect the San Bernardino Busway University Station and Cal State LA. It was one of the many highway improvements carried out during the late 1960s and 1970s. The State College Pedestrian Overcrossing is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. (See Continuation Sheet 3)

B11. Additional Resource Attributes:
***B12. References:**
See Continuation Sheet 3
B13. Remarks:

***B14. Evaluator:**
Lauren Clementino
California Department of Transportation

***Date of Evaluation:**
November 17, 2014



(This space reserved for official comments.)

B10. Significance (continued):

The fabrication, transportation, and erection of metal truss bridges were not significant achievements in the state by the time the State College Pedestrian Overcrossing was constructed in 1974.

The State College Pedestrian Overcrossing (53 2369) is a Vierendeel through truss with a single span of 127 feet. Developed in 1896 by Belgian engineer Arthur Vierendeel, the Vierendeel truss is characterized by the absence of diagonals. The Vierendeel truss replaces diagonal rods with rigid vertical members, giving it a distinctive look. Although the Vierendeel truss uses less steel than trusses with diagonal members, thus providing a cost savings, its application is limited to short span bridges. The Vierendeel truss never became popular in the state or the nation. The Army Corps of Engineers used the truss type for three bridges in Glendale, California on city streets over a flood control channel in 1937. The three Glendale Vierendeel trusses and the State College Pedestrian Overcrossing are unique among California bridges and are likely among the only bridges of their type in the United States. Although the State College Pedestrian Overcrossing is a rare truss type it is a late example of an unpopular type and does not represent a significant innovation in bridge engineering or display a significant variation. The State College Pedestrian Overcrossing does not display any decorative features or significant architectural details. The State College Pedestrian Overcrossing is not significant as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3.

The State College Pedestrian Overcrossing was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The State College Pedestrian Overcrossing is not a distinctive example of metal truss bridge construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The State College Pedestrian Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The State College Pedestrian Overcrossing is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

Condit, Carl W. *American Building: Materials and Techniques from the Beginning of the Colonial Settlements to the Present*. Chicago: The University of Chicago Press, 1968.

Department of Transportation. Bridge Inspection Reports for Bridge Number 53 2639. May 7, 1975 to July 8, 2013.

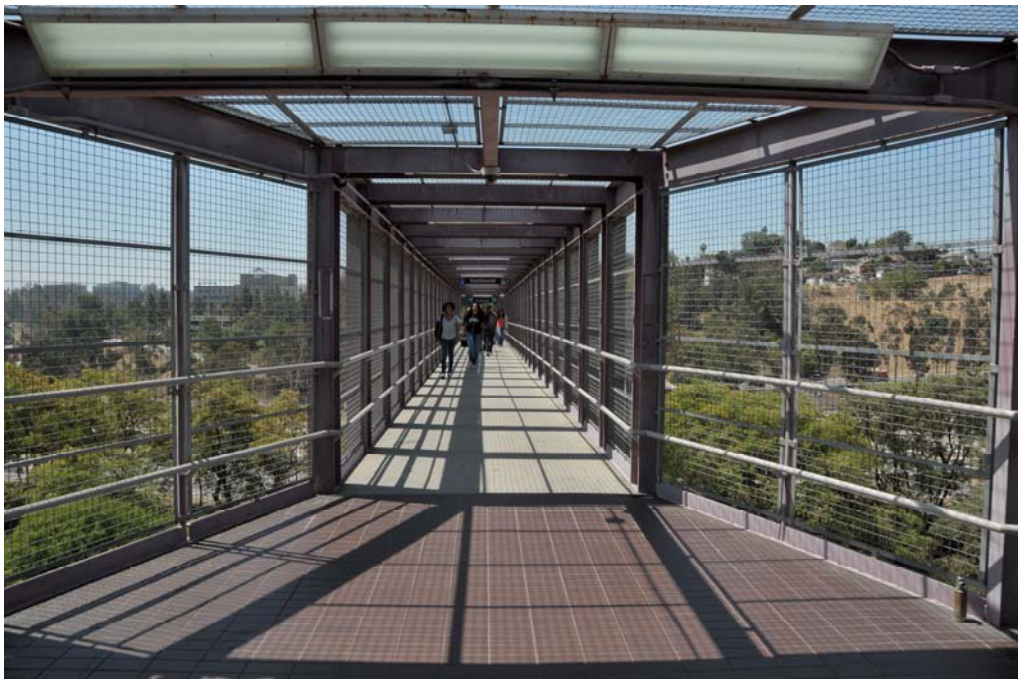
JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

P5b. Photographs (continued):



View, looking south (June 23, 2014)



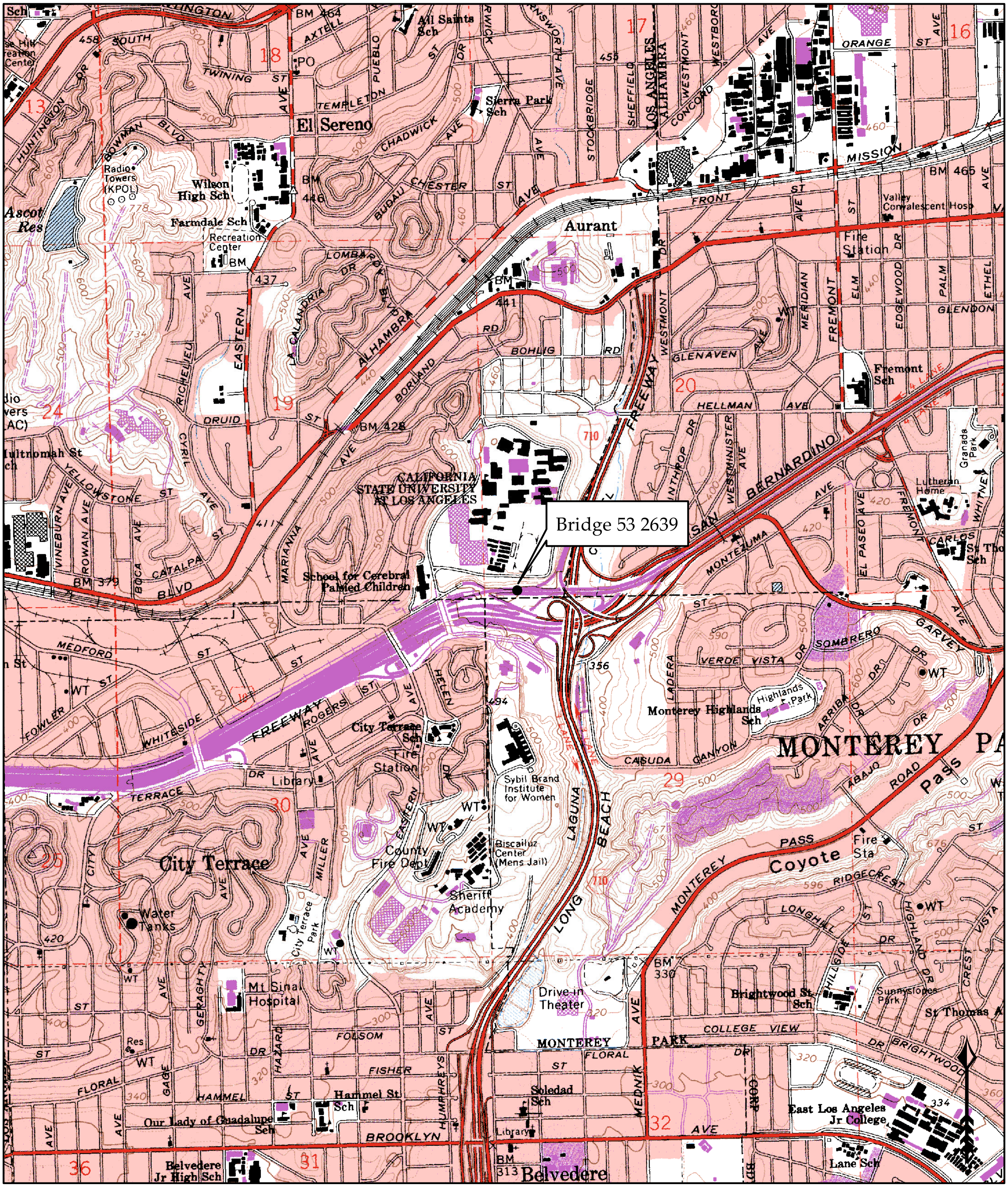
View, looking south (June 23, 2014)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

 ***Resource Name or #:** 53 2639

***Map Name:** Los Angeles ***Scale:** 1:24,000 ***Date of Map:** 1975



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridges 53C0551L&R

P1. Other Identifier: Queensway Drive Bridges/ Los Angeles River Bridges

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Long Beach **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Long Beach Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
Queens Way Drive 0.6 miles south of Ocean Boulevard, Long Beach, California

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Bridges 53C0551L and 53C0551R are nearly identical three span welded steel box girder structures (single cell) with orthotropic decks. They are located in the City of Long Beach and cross the Los Angles River. The bridges are 1,329 feet in length, with a 500 foot central span flanked by 350 foot spans. Their center spans are cantilevered over piers with a suspended middle section. The structures are seated on reinforced concrete pier wall abutments on reinforced precast pile footing foundations above the water level and two cellular reinforced concrete piers on pile caps with prestressed reinforced concrete bearing piles. The bridges have two single end spans composed of cast in place (see Continuation Sheet)

***P3b. Resource Attributes:** HP19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo:
View looking west
June 30, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic
☐Prehistoric ☐Both
1969, Caltrans Bridge Files
***P7. Owner and Address:**
City of Long Beach
333 West Ocean Blvd
Long Beach, CA 90802
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # (Assigned by recorder) Bridges 53C0551L&R

B1. Historic Name: Magnolia Avenue Bridges
B2. Common Name: Queensway Drive Bridges
B3. Original Use: Bridge **B4. Present Use:** Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:** (Construction date, alterations, and date of alterations) Built 1969. Routine maintenance over the years, but no major alterations.
***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:** N/A
B9a. Architect: M. A. Nishkian & Co. (Consulting Engineers) and John K. Minasian (Structural Engineer)
b. Builder: Murphy Pacific Corp. (general contractor, responsible for the superstructure and steel fabricator) and Guy F. Atkinson Co. (substructure)
***B10. Significance: Theme:** Engineering **Area:** State
Period of Significance: 1969 **Property Type:** Structure **Applicable Criteria:** C
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Bridges 53C0551L and 53C0551R, which cross the Los Angeles River, were built by the City of Long Beach to connect the Port of Long Beach to the Citys downtown. At the time the Port was experiencing significant growth; Piers J and F were completed and containerization operations had begun at Pier G, the first such facility at the Port. Queensway Drive Bridges were tied to the expansion of the southern section of the Port as well as the development of the Citys Queensway Bay waterfront development project. The bridges would also provide connection from downtown Long Beach to the Queen Mary, the former luxury cruise liner docked in Long Beach Harbor as a tourism attraction and hotel.

The bridges were designed by M. A. Nishkian & Co., as the consulting engineers, and John K. Minasian, as the structural engineer. Both M. A. Nishkian & Co. and Minasian were important in the field of engineering during the mid-twentieth century. M. A. Nishkian & Co. was a Long Beach based engineering organization run by Martin A. Nishkian. The firm practiced general engineering and was responsible for many important works in the Los Angeles region as well as throughout California and the West. The firm designed many large scale central heating and cooling works, including plants for the Los Angeles Civic Center, and the Miramar Naval Air Station, as well as the California State Capitol Complex. M. A. Nishkian & Co. designed a jet fuel storage underground (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:**
Caltrans Bridge Inspection Report: February 12, 2013

B13. Remarks:

***B14. Evaluator:**
Noah Stewart
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(Sketch Map with north arrow required.)

(This space reserved for official comments.)

*Required information

***P3a. Description:** reinforced concrete T-beams supported by reinforced concrete closed end cellular bin abutments seated on Portland concrete and reinforced concrete bearing pile foundations. 53C0551L (southbound) supports three lanes of traffic while 53C0551R (northbound) carries two lanes of vehicle traffic and a pedestrian path. The pedestrian and automobile lanes on 53C0551R are separated by modified K-rail, while both bridges have Type E concrete and steel tube railing with aluminum pickets.

B10. Significance (continued): tanks and a 20,000 foot distribution system for the Naval Air Station San Diego as well as a $12 million gas compressor station in Needles. M. A. Nishkian & Co. was also retained by the Atomic Energy Commission to prepare plans for additions to the material reactor site at the National Reactor Testing Station in Idaho Falls, Idaho. Closer to home, the engineers planned the Long Beach Municipal Gas Department Compressor Plant and most significantly, the world's largest water flooding project to halt land subsidence at Long Beach Harbor caused by oil extraction at Wilmington.

John K. Minasian was a structural engineer who specialized in the design of towers and other large engineering works. He designed more than 80 towers throughout the country during his career. His more important projects include launch towers for the Atlas and Saturn missiles at Cape Kennedy, missile test stands at Edwards Air Force Base, and missile gantries at Cape Canaveral, as well as two television towers on Mount Wilson, Los Angeles County. He is, however, most famous for his work on the Seattle Space Needle, built for the 1962 World's Fair. One three men responsible for the structure's design, Minasian was the chief consulting engineer responsible for the structural design of the tower.

The Queensway Drive Bridges is a combination of steel box girder and orthotropic deck construction. Of the few steel box girder bridges in California, this arrangement is all the more rare. Originally orthotropic deck bridges were built with steel girders, however soon it was realized that the steel box girder-orthotropic deck was not only torsionaly stronger than the steel girder version, it was also less expensive to construct. Steel box superstructures can be combined with reinforced concrete deck systems and can also be used in suspension spans.

Early steel box girder bridges constructed in California illustrate the system's flexibility. The first such bridge, Indian Creek Bridge (02C0147), was erected in 1966 and had a concrete deck supported by six fairly small steel box girders, rather than a smaller number of larger boxes which later became more common for the type. That same year, the Klamath River Bridge (04 0069) was completed using a combination steel box girder superstructure and suspended span. Other early bridges of this type include a pair (28C0315 and 28C0316) erected in 1968, over MacDonald Avenue, in Richmond, as part of the Bay Area Rapid Transit system (BART). The San Mateo-Hayward Bridge, which opened to traffic in 1967, was the first major orthotropic deck bridge in the United States and featured a steel box girder superstructure for its 750 foot main span. Like the San Mateo-Hayward Bridge, the main span of the San Diego-Coronado Bay Bridge, which opened in 1969, incorporated a steel box girder and orthotropic deck system. The San Diego-Coronado Bay Bridge stretched technology by using cantivered construction to achieve two main spans with a length of 600 feet each.

The Queensway Drive Bridges were completed in late 1969, the same year as the San Diego-Coronado Bay Bridge. Unlike the two earlier long span bridges (San Mateo-Hayward and the San Diego-Coronado Bay Bridges), the superstructures of both Queensway Drive Bridges were entirely steel box girder with orthotropic deck construction (both earlier bridges consisted of steel box girder and orthotropic deck main spans, but also included other superstructure and deck systems for their approaches). The three span Queensway Drive Bridges each feature 500 foot central spans flanked on either side by 350 foot spans. Their center spans are cantilevered over piers with a suspended middle section. While not the longest steel box girder bridges at the time they were erected, they were quite elegant in profile. The steel box girder and orthotropic deck superstructure configuration allowed the designers to achieve long clear spans with relatively shallow profiles and the sleek appearance much admired in modern bridge design. To this end, in 1971, the bridges won a prize from the American Institute of Steel Construction for best long span.

The Queensway Drive Bridges were two of the many highway improvements carried out during the late 1960s and early 1970s. They are not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for their association with the development of the highway network through the region. While the bridges were associated with the growth of the Port,

waterfront development and expansion of the tourist industry in Long Beach, construction of the bridges were not the

cause of this expansion. Rather, the bridges were part of a well-organized, large-scale development plan for the City's waterfront. Therefore, the bridges are not associated with events that would make them significant under National Register Criterion A or California Register Criterion 1.

The Queensway Drive Bridges were designed by M. A. Nishkian & Co. and John K. Minasian, both of whom were important in the field of engineering during the mid-twentieth century. Although the bridges are associated with two prominent engineers, the connection between the bridges and their designers is more appropriately considered under National Register Criterion C and California Register Criterion 3 as the work of a master rather than under Criteria B and 2. Bridges 53C0551L and 53C0551R were not associated with a person who made a significant contribution to history. The Queensway Drive Bridges are not significant under National Register Criterion B or California Register Criterion 2.

Steel box girder bridges are relatively rare in California. The combination steel box girder and orthotropic deck are even more unusual. Both technologies date to the post-World War II period. The system creates a torsionaly strong bridge that is extremely efficient. While the combination is less expensive than the earlier steel girder and orthotropic deck system, as steel costs escalated and major contractors invested in equipment dedicated to concrete construction, steel bridges were only erected in unique circumstances. Nishkian & Co. and John K. Minasian chose the design for the Queensway Drive Bridges because the conditions made the system the most aesthetically pleasing and cost effective solution. The Queensway Drive Bridges are significant under National Register Criterion C and California Register Criterion 3 as early long span steel box girder bridges with orthotropic decks as well as for their sleek modern bridge aesthetic. As far as the bridge designers, Nishkian & Co. and John K. Minasian, they were important in the field of engineering during the mid-twentieth century, however neither were known as bridge specialists. Research has yet to identify other bridges designed by either of the two. Because of this, the bridges do not represent the work of a master. Additionally, they do not represent a significant and distinguishable entity whose components may lack individual distinction.

The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D and California Register Criterion 4.

Bridges 53C0551L and 53C0551R retain all seven aspects of integrity. They have not been moved and retain integrity of location. The setting and feeling have been unaltered. The association of the bridge has been unchanged. The design, materials and workmanship of the bridges have been retained, having had only minor maintenance over the years. The Queensway Drive Bridges retain high integrity.

Bridges 53C0551L and 53C0551R were erected as a typical transportation improvement project of the period and they are not associated with events that have made a significant contribution to the broad patterns of history and are not significant under National Register Criterion A and California Register Criterion 1. They are not associated with the lives of significant persons in history and are not significant under National Register Criterion B or California Register Criterion 2. The Queensway Drive Bridges embody the distinctive characteristics of steel box bridge with orthotropic deck construction and possess high Modern aesthetic value. Bridges 53C0551L and 53C0551R are significant under National Register Criterion C and California Register Criterion 3. The bridges have not yielded and are not likely to yield information important in history and are not significant under National Register Criterion D or California Register Criterion 4. Additionally, the Queensway Drive Bridges retain high integrity. Bridges 53C0551L and 53C0551R are eligible for inclusion on the National Register and California Register.

P5b. Photographs (continued):



View looking west, June 30, 2014



Detail looking south, June 30, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

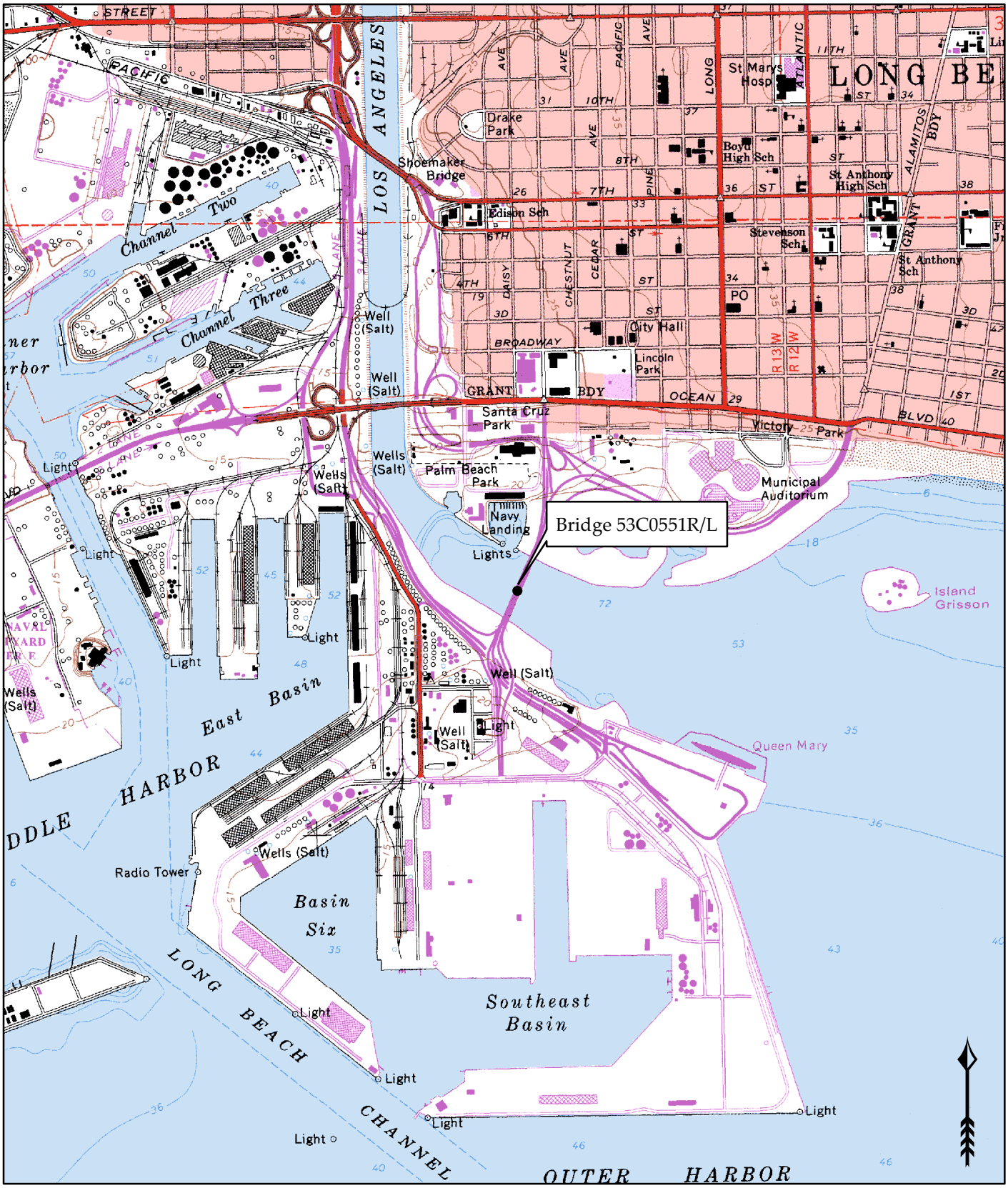
Primary #
HRI#
Trinomial

*Resource Name or #: 53C0551R/L

*Map Name: Long Beach

*Scale: 1:24,000

*Date of Map: 1964



*Required information

State of California — The Resou
DEPARTMENT OF PARKS AND I
PRIMARY RECORD

This attached DPR for Bridge #53C0556 is the original form submitted to SHPO as part of the Statewide Historic Bridge Inventory Update for bridges constructed between 1965 and 1974. The final SHPO consensus, not reflected in this form, is that status is deferred pending further studies that may be part of future projects; therefore, "Historic significance not determined," or Caltrans Category 4, is the determination as of this writing. Caltrans Structures Maintenance List of Historic Significance (online) will reflect the most current status.

***Resource Name or #:** Bridge 53C0556

P1. Other Identifier: Rebecca Lopez Pedestrian Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** San Dimas **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Pomona Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Rebecca Lopez Pedestrian Overcrossing crosses Valley Boulevard 150 feet west of Orange Freeway in Pomona, Los Angeles County.

***P3a. Description:**
Bridge 53C0556 is the Rebecca Lopez Pedestrian Overcrossing, which is an aluminum arch structure 161 feet in length over Valley Boulevard, within the City of Pomona. The structure has an aluminum deck truss on reinforced concrete abutments with precast concrete piles. The concrete abutments are comprised of two columns bents, with a horizontal concrete connector at the top. The top portion of the abutement is curved at the same degree as the arch above, allowing for a continuous flow from arch to abutment. The two parabolic arches spanning the road become closer together at the top of the arch and spread out where they meet the concrete abutment. There are transverse braces connecting the arches. Vertical posts connect the arches and the suspended pedestrian deck. The walkway is encased in a wire mesh with stepped entrances to the north and south sides of the road.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking south
June 23, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1974, Caltrans Bridge Files
***P7. Owner and Address:**
City of Pomona
505 South Garey Avenue
Pomona
CA 91766
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
December 30, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 53C0556

B1. Historic Name:

B2. Common Name: Rebecca Lopez Pedestrian Overcrossing

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:**

***B6. Construction History:**

The bridge was built in 1974. Since construction the overcrossing has undergone minor maintenance including: roadway cracks repaired (1982). In 1996, new handrails were installed on the lower part of the north and south staircases.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

B9a. Architect: Reynolds Metal Co. **b. Builder:** Modern Alloys, Inc.

***B10. Significance: Theme:** **Area:**

Period of Significance: **Property Type:** **Applicable Criteria:**

The Rebecca Lopez Pedestrian Overcrossing was erected by the City of Pomona; constructed by Reynolds Metal Co. and installed by Modern Alloys, Inc. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. The bridge was named for Rebecca Lopez who was five years old when she was killed while using a crosswalk in May 1973, at the site where the overcrossing now stands. She was using the crosswalk to get to Kellogg Elementary School, and after her death the city constructed the pedestrian overcrossing, which was dedicated to her on March 23, 1974, shortly after its completion. While Rebecca's death is tragic, she did not make a significant contribution to history at the local, state, or national level, and thus the overcrossing is not significant for an association with a person who contributed to history under National Register Criterion B or California Register Criterion 2.

Aluminum arch bridges are rare in California when considering only state and city bridges. However, they are likely prolific in number for private bridges. Generally, metal arches are more difficult and expensive to fabricate and construct than metal truss bridges, and as the twentieth century progressed bridge designers and builders found other bridge types to be more economical and easier to build. (See Continuation Sheet, page 3).

B11. Additional Resource Attributes:

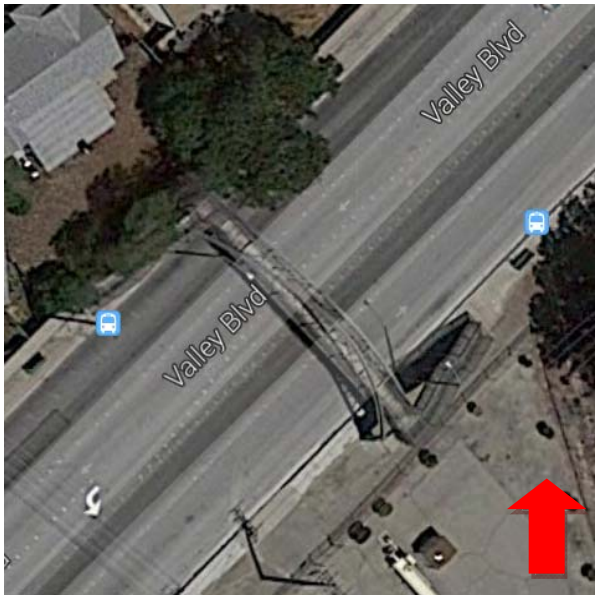
***B12. References:** (See Continuation Sheet, page 3).

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
December 30, 2014

(This space reserved for official comments.)



B10. Significance (continued):

During the early period of motor vehicle traffic in the state, steel arches were among the various metal bridges used to effectively and economically provide safe crossing.

Whereas steel arches are relatively cheap to construct in comparison to aluminum arches, they are also heavier and often require more maintenance. In some circumstances the arch form was chosen for aesthetic reasons, invoking the Classical architecture popular during the early twentieth century. Environmental circumstances also made the from the best design solution for a setting, where reinforced concrete was not economically feasible. Aluminum arches are built with parallel arches and support members, constructed both as in-deck and through forms. The practice of using aluminum bridges can be traced to 1933, when the deck of the Smithfield Street Bridge in Pittsburgh, Pennsylvania, was replaced with an aluminum deck. This significantly lightened and increased its live-load capacity. The first full aluminum bridge in North America was erected in Arvida, Canada, over the Saguenay River in 1950. It was (and still is) a 290 feet long, arch bridge.

In the 1960s and 1970s, aluminum alloys were among the materials considered for the construction of new bridges. In addition to its natural advantages, aluminum was seriously considered for bridges in part because of the long lead times to obtain steel during that period. However, given the cost of aluminum in relation to steel, and the higher complexity of engineering for aluminum to retain structural integrity; this bridge type was more commonly used for shorter spans. Aluminum bridges were and are relatively easy to construct and transport, and often the bridges would be prefabricated and transported around the country often from private use, such as pontoon bridges on jetties. Further, the most common type of aluminum bridge is a truss, the arch system is more complex and thus more rare.

Bridge 53C0556 is a fairly typical example of aluminum arch construction. The fabrication, transportation, and erection of aluminum arch bridges were not a significant achievement in the state by the time the Rebecca Lopez Pedestrian Overcrossing was constructed in 1974. While the bridge is of a rare type and construction material, the systems used to construct the bridge was relatively simple, and when compared to other metal arch bridges seemingly unimpressive and architecturally non-distinctive. Bridge 53C0556 is typical of an aluminum arch bridge erected in the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bridge 53C0556 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 53C0556 was erected as a typical transportation improvement project of the period and it is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 53C0556 does not embody the distinctive characteristics of an aluminum arch bridge construction, does not represent the work of a master, and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Rebecca Lopez Pedestrian Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 53C0556 is not eligible for inclusion on the National Register or California Register.

*B12. References (continued):

Alumatter. "Case Study: Aluminum Bridges." Accessed on December 30, 2014 from www.Aluminium.matter.org.uk.

"Aluminum Bridge over Datten-Hamm-Kanal celebrates its 50th birthday." *GDA Artikeldienst* 29, April 2006.

American Association of State Highway Officials. *Proceedings, Convention Group Meetings, Papers and Discussions* 54. American Association of State Highway Officials, 1968.

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Caltrans Bridge Inspection Report: January 28, 2014.

Cannon, Phyllis. "Children help dedicate new bridge to classmate, 5, killed at crosswalk." *Progress Bulletin*, March 23, 1974. 1.

Das, Subodh K. and J. Gilbert Kaufman. "Aluminum Alloys for Bridges and Bridge Decks." *Aluminum Alloys for Transportation, Packaging, Aerospace, and Other Applications*. Edited by Subodh K. Das and Weimin Yin, The Minerals, Metals & Materials Society, 2007.

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Grant, Arthur Hastings and Harold Sinley Buttenheim. *The American City,* 85. Pittsfield, MA:Buttenheim Publishing Corp., 1970.

Jacobs, David and Anthony E. Neville. *Bridges, Canals & Tunnels.* Princeton, N.J.: American Heritage Pub. Co., 1968.

Kassler, Elizabeth Bauer. *The Architecture of Bridges*. New York, N.Y.: Museum of Modern Art, 1950.

Overman, Michael. *Roads, Bridges and Tunnels: modern approaches to road engineering.* London: Aldus Books, 1968.

"Progress on World's First Aluminum Bridge." *Canadian Trasnportation* 52, 1949. 457.

Walbridge, Scott and Alexandre de la Chevotiere. "Opportunities for the use of Aluminum in Vehicular Bridge Construction." Montreal, QC: MAADI Group, June 2012.

P5b. Photographs (continued):



Detail looking south, June 23, 2014



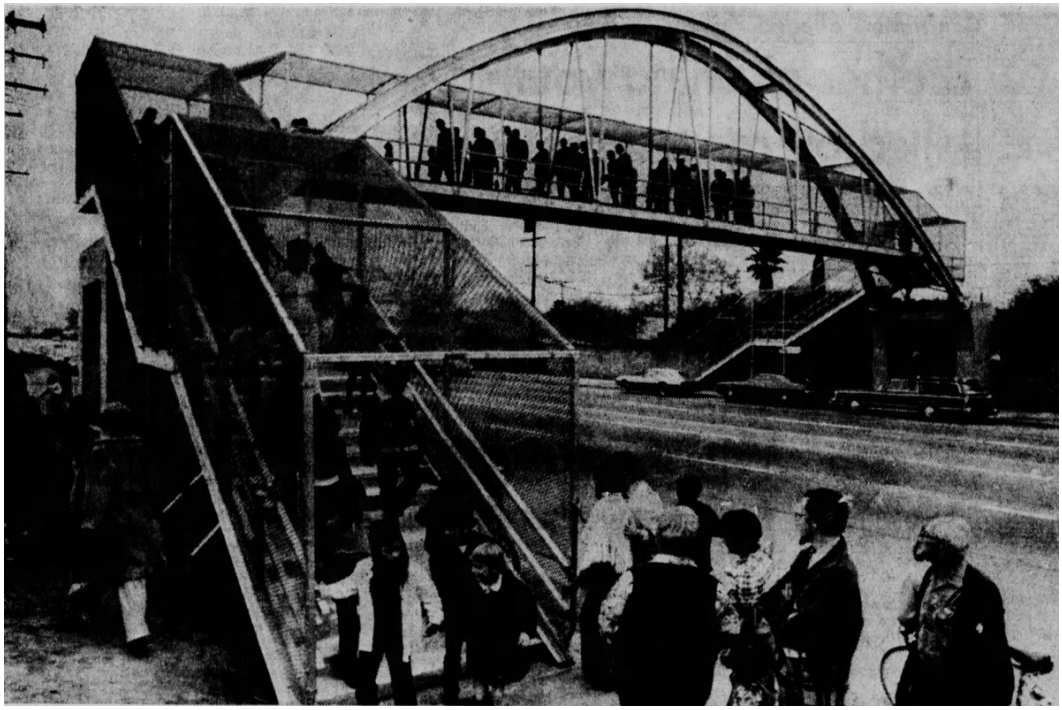
Detail of eastern abutement southern column, June 23, 2014



Detail of arch looking south, June 23, 2014



View looking northeast, June 23, 2014



Photograph from the dedication ceremony with children from Kellogg Elementary School, from *Progress Bulletin*, March 23, 1974, page 1.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

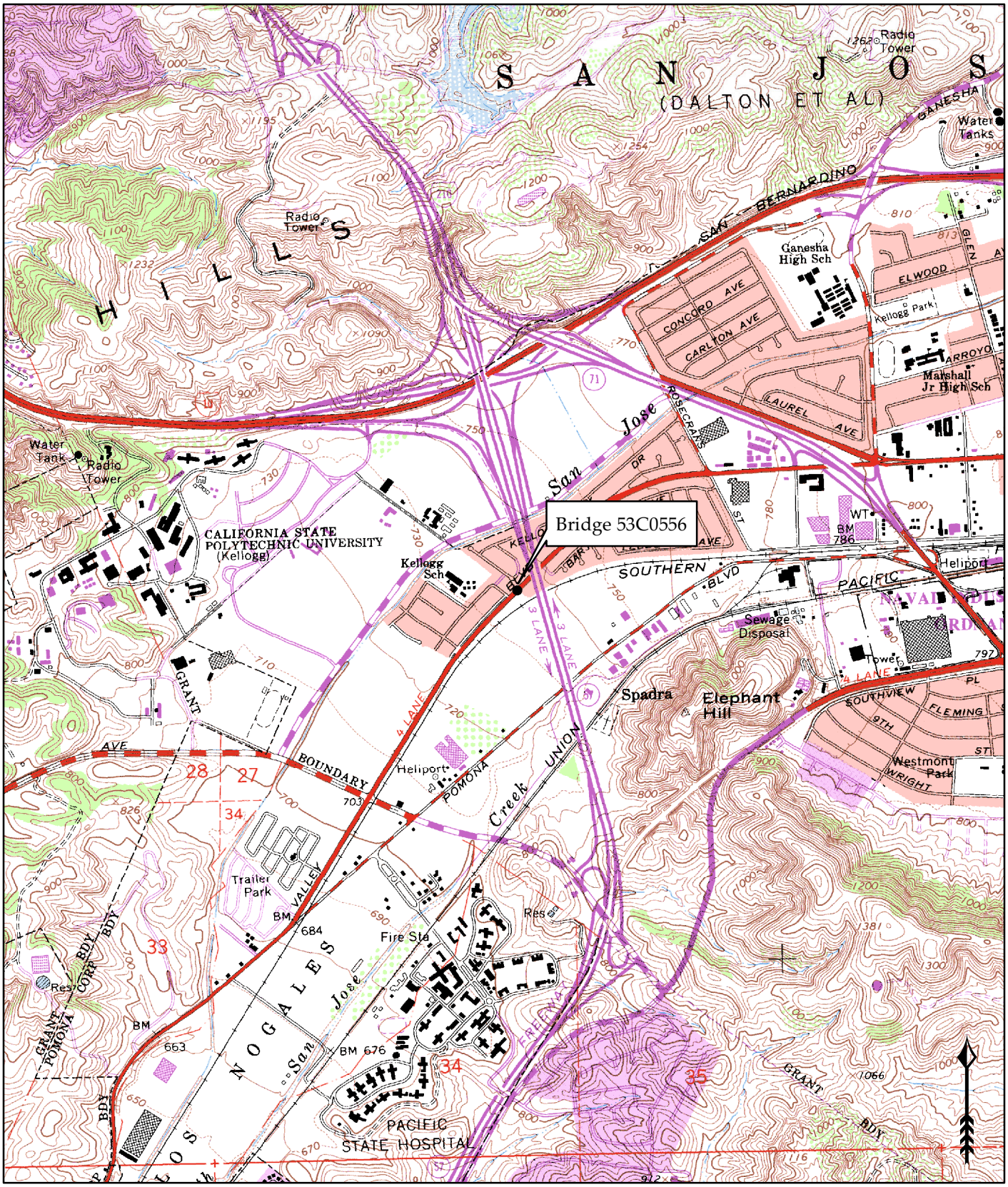
Primary #
HRI#
Trinomial

*Resource Name or #: 53C0556

*Map Name: San Dimas

*Scale: 1:24,000

*Date of Map: 1966



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** Bridge 53C0899R

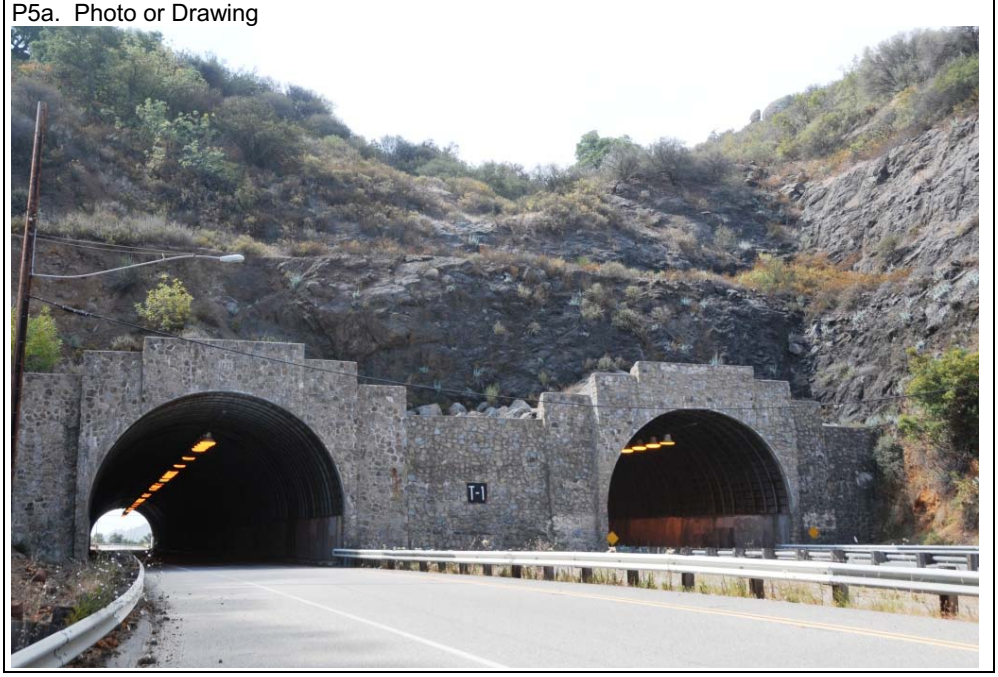
P1. Other Identifier: Kanan Dume Road Northbound Tunnel #1

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Point Dume **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: city Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Kanan Dume Road Northbound Tunnel #1 is located on State Route N9, in Los Angeles County 4.3 miles north of its junction with the Pacific Coast Highway.

***P3a. Description:**
The Kanan Dume Road Northbound Tunnel #1 is located on State Route N9. It is one of two tunnels that carry two lanes of traffic in both directions. The tunnels have steel arches on a concrete footing. The northbound bore is 518 feet in length, carrying two lanes of northbound traffic with five foot curbs. Since the construction of the second bore in 1983, both tunnels have been faced with a stepped stone rubble façade. The face has four steps with the lowest central step visually unifying the portals of the two bores. The northbound bore has a steel rib lining that fits behind a five foot high concrete lining.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: Entry portal (on right) looking southeast, June 23, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1974, Caltrans Bridge Files
***P7. Owner and Address:**
Los Angeles County
Road Department
900 S. Fremont Ave.
Alhambra, CA 91803
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
November 19, 2014
***P10. Survey Type:**
Intensive
***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 53C0899R

B1. Historic Name:

B2. Common Name: Kanan Dume Road Northbound Tunnel #1

B3. Original Use: Tunnel **B4. Present Use:** Tunnel

***B5. Architectural Style:**

***B6. Construction History:**

The Kanan Dume Road Northbound Tunnel #1 was built 1974. The tunnel has undergone minor maintenance since its construction, including: repair of the north approach guardrail (1993); and spalls were patched, gunite areas were completely lined (1995).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The northbound bore is one of two bores carrying Kanan Dume Road.

B9a. Architect: **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Kanan Dume Road Northbound Tunnel #1 was constructed as one of the many highway improvements carried out during the late 1960s and 1970s. The tunnel is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A and California Register of Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 tunnels in the State of California. Tunnel building was not a significant achievement in the state by the time the Kanan Dume Road Northbound Tunnel #1 was constructed in1974. By 1965 the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of public works projects nationally. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 19, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the Counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Most of the state's tunnels were constructed by boring through hillsides or mountains. However, during the period 1965-1974, bore tunnels accounted for four of the nine tunnels constructed, with cut and cover accounting for the other five. There is a third type of tunnel not seen in this period, constructed of precast concrete tube sections. The bore tunnels are constructed by the excavation of earth and rock. Most have an arched, concrete lined interior; or are partially or unlined; others have light colored tiles making the interior brighter and easier to clean. The use of steel arch with steel rib lining is not unique to the construction of Kanan Dume Road Northbound Tunnel #1. The longest bore tunnel is the Wawona Tunnel in Yosemite National Park measuring 4,236 feet in length; second and third longest tunnels are Bores 1 and 3 of the Caldecott tunnel, Bore 1 measures 3,615 feet and Bore 2, 3,609 feet. Kanan Dume Road Northbound #1, measuring 518 feet in length, was not a significant achievement of civil engineering in 1974. Further, the use of stepped rubble-faced portals to adorn the entrance of the tunnel is not aesthetically significant. Kanan Dume Road Northbound Tunnel #1 is not significant under National Register Criterion C or California Register Criterion 3.

The Kanan Dume Northbound Tunnel #1 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The tunnel does not embody the distinctive characteristics of tunnel construction, does not represent the work of a master and does not possess high artistic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Kanan Dume Road Northbound Tunnel #1 is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Kanan Dume Road Northbound Tunnel #1 (Bridge 53C0899R) is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

Caltrans Bridge Inspection Report: April 3, 2013

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

P5b. Photographs (continued):



Detail entry portal, looking south (on right), June 23, 2014.



Detail of stepped rubble façade of the northbound tunnel, June 23, 2014.



View of tunnel interior looking northwest, June 23, 2014.



View of exit portal (left) looking north, June 23, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

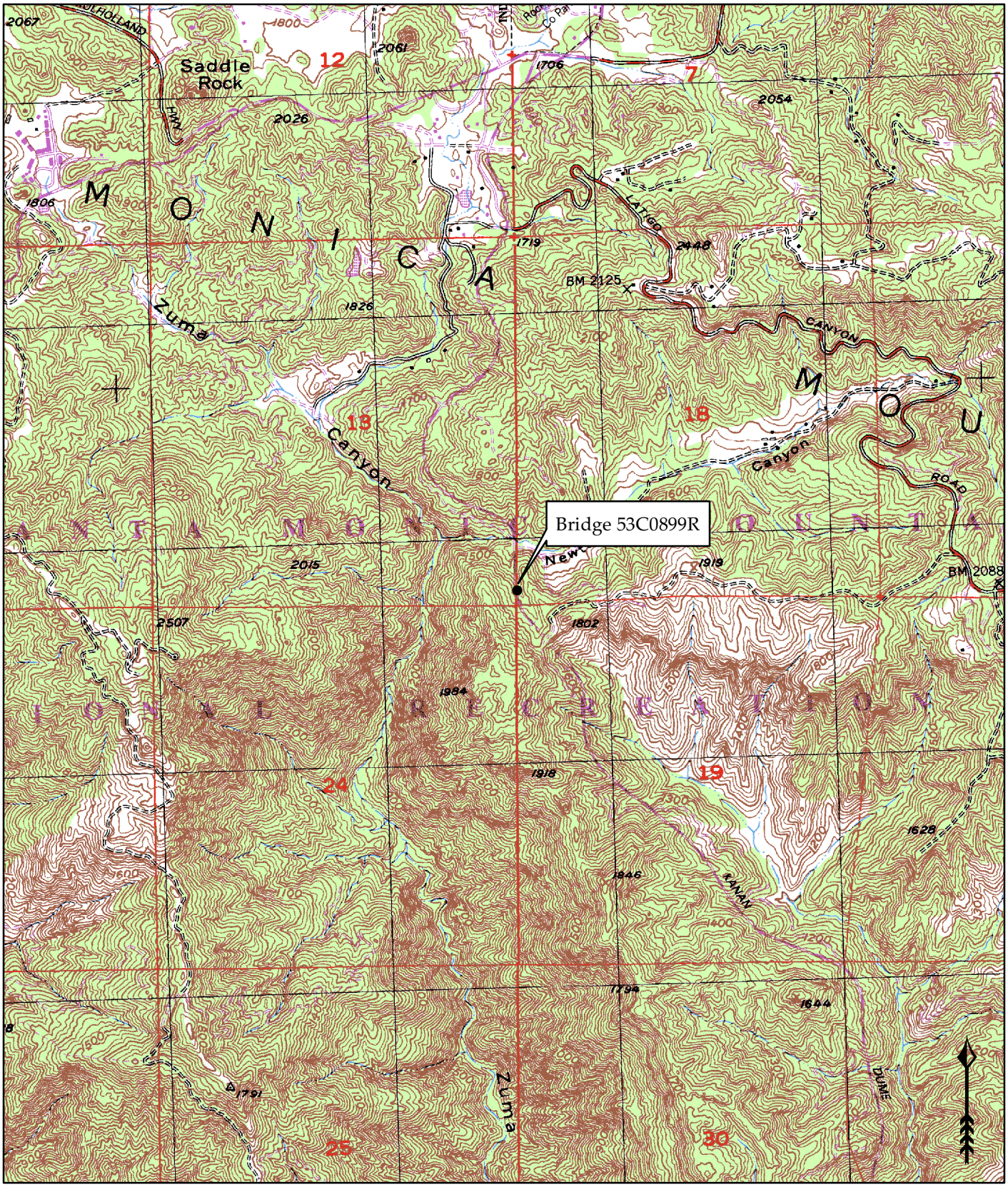
Primary #
HRI#
Trinomial

*Resource Name or #: 53C899R

*Map Name: Point Dume

*Scale: 1:24,000

*Date of Map: 1995



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 53C0900R

P1. Other Identifier: Kanan Dume Road Northbound Tunnel #2

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** Point Dume **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

The Kanan Dume Road Northbound Tunnel #2 is located on State Route N9, 0.7 miles north of Mulholland Highway, in Los Angeles County.

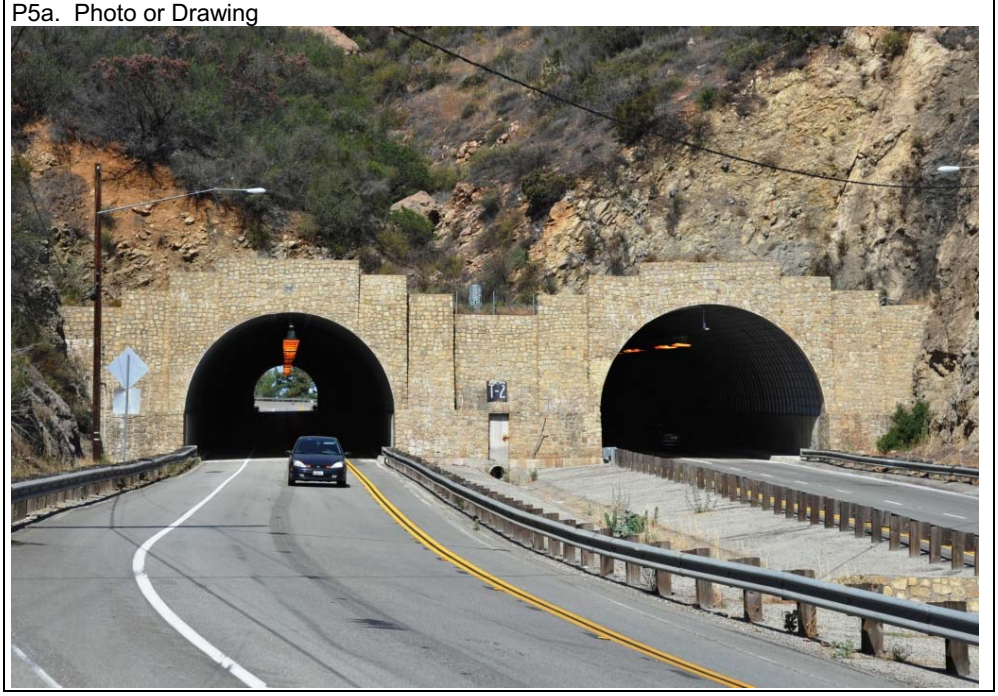
***P3a. Description:**

The Kanan Dume Road Northbound Tunnel #2 bore is located on State Route N9. It is one of two tunnels that carry two lanes of traffic in both directions. The tunnels have steel arches on a concrete footing, with the northbound bore 850 feet in length, carrying two lanes of northbound traffic with five foot curbs. Since the construction of the second bore in 1983, both tunnels have been faced with a stepped stone rubble façade. The face has four steps with the lowest central step visually unifying the portals of the two bores. The bore has a steel rib lining that fits behind a five foot high cement lining.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: Entry portal (right), view looking west, June 23, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1968, Caltrans Bridge Files

***P7. Owner and Address:**
Los Angeles County
Road Department
900 S. Fremont Ave.
Alhambra, CA 91803

***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612

***P9. Date Recorded:**
November 19, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 53C0900R

B1. Historic Name:

B2. Common Name: Kanan Dume Road Northbound Tunnel #2

B3. Original Use: Tunnel **B4. Present Use:** Tunnel

***B5. Architectural Style:**

***B6. Construction History:**

The Kanan Dume Road Northbound Tunnel #2 was built 1968. In 1976 the guardrail approach was constructed on both approaches. The tunnel has undergone minor maintenance since its construction, including: replacement of lights (1976).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The northbound bore is one of two bores carrying Kanan Dume Road.

B9a. Architect: **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Kanan Dume Road Northbound Tunnel #2 was constructed as one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 53C09000R is not significant under National Register of Historical Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 tunnels in the State of California. Tunnel building was not a significant achievement in the state by the time the Kanan Dume Road Northbound Tunnel #2 was constructed in 1968. By 1965 the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of national public works projects. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 19, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties, containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Most of the state's tunnels were constructed by boring through hillsides or mountains. However, during the period 1965-1974, bore tunnels accounted for four of the nine tunnels constructed, with cut and cover accounting for the other five. There is a third type of tunnel not seen in this period, constructed of precast concrete tube sections. The bore tunnels are constructed by the excavation of earth and rock. Most have an arched, concrete lined interior or are partially or unlined. Others have light colored tiles making the interior brighter and easier to clean. The use of steel arch with steel rib lining is not unique to the construction of Kanan Dume Road Northbound Tunnel #2. The longest bore tunnel in the state is the Wawona Tunnel in Yosemite National Park measuring 4,236 feet in length, second and third longest are Bores 1 and 3 of the Caldecott tunnel. Bore 1 measures 3,615 feet and bore 2, 3,609 feet. Thus the Kanan Dume Road Northbound #2 measuring 850 feet in length was not a significant achievement of civil engineering in 1974. Further, the use of stepped rubble to adorn the entrance of the tunnel is not aesthetically significant. Kanan Dume Road Northbound #2 is not significant under National Register Criterion C or California Historic Register Criterion 3.

The Kanan Dume Northbound Tunnel #2 was erected as a typical transportation improvement project of the period and the tunnel is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 53C0900R does not embody the distinctive characteristics of tunnel construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Kanan Dume Road Northbound Tunnel #2 is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Kanan Dume Northbound Tunnel #2 (Bridge 53C0900R) is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

Caltrans Bridge Inspection Report: December 7, 2012

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

P5b. Photographs (continued):



Detail looking east, June 23, 2104



Exit portal (on left), view looking west, June 23, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

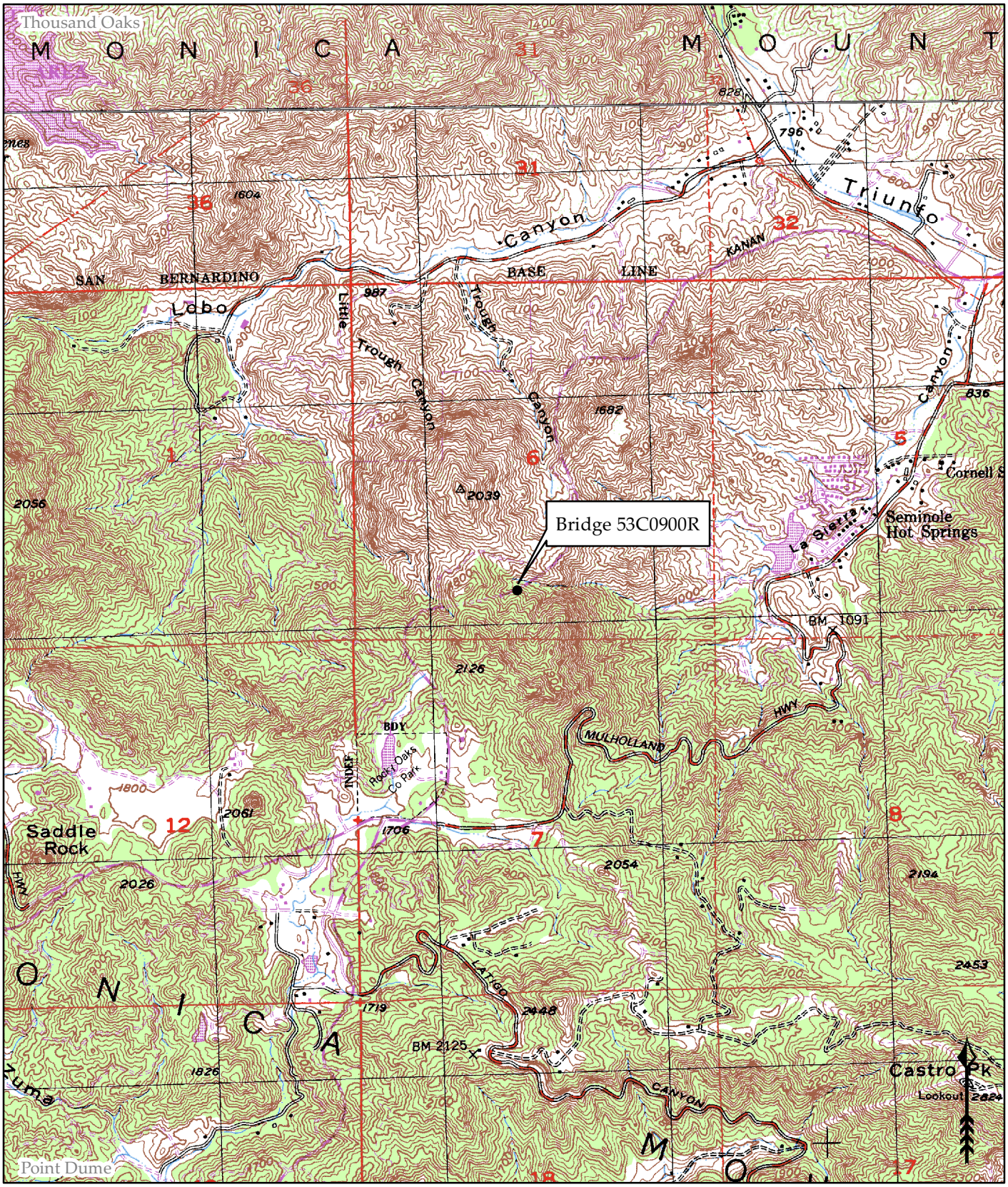
Primary #
HRI#
Trinomial

*Resource Name or #: 53C900R

*Map Name: Point Dume

*Scale: 1:24,000

*Date of Map: 1995



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 *Resource Name or #: Bridge 53C0901R

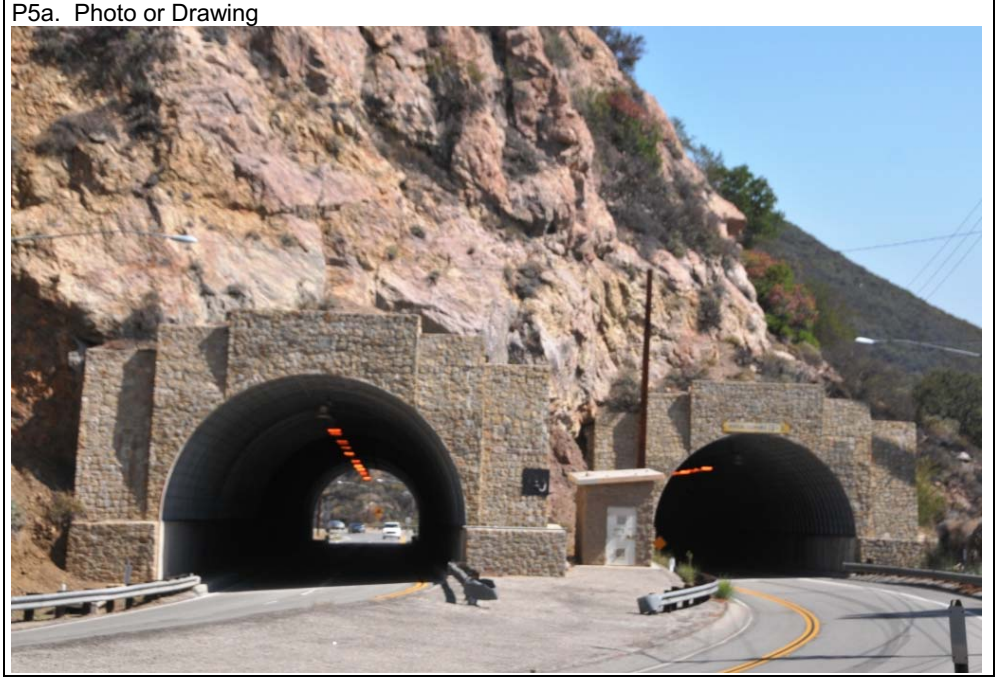
P1. Other Identifier: Kanan Dume Road Northbound Tunnel #3

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** Siskiyou
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** Point Dume **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: city Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
The Kanan Dume Road Northbound Tunnel #2 is located on State Route N9, 1.5 miles north of Mulholland Highway, in Los Angeles County.

***P3a. Description:**
The Kanan Dume Road Northbound Tunnel #3 bore is located on State Route N9. It is one of two tunnels that carry two lanes of traffic in both directions with steel arches on a concrete footing. The northbound bore is 328 feet in length, carrying two lanes of northbound traffic with five foot curbs. Since the construction of the second bore in 1978, both portals on the north end have been faced with a stepped stone rubble façade. The south portals have been treated the same, except that they are not flush with one another; the northbound portal is recessed back (north) from the southbound portal. The portal face has four steps with the lowest central step visually unifying the portals of the two bores. The northbound bore has a steel rib lining that fits behind a five foot high concrete lining.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: Entry portal (on right), view looking north, June 23, 2014
***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1968, Caltrans Bridge Files
***P7. Owner and Address:**
Los Angeles County
Road Department
900 S. Fremont Ave.
Alhambra, CA 91803
***P8. Recorded by:**
Helen Blackmore
Dept. of Transportation
111 Grand Ave
Oakland, CA 94612
***P9. Date Recorded:**
November 18, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:** Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 53C0901R

B1. Historic Name:

B2. Common Name: Kanan Dume Road Northbound Tunnel #3

B3. Original Use: Tunnel **B4. Present Use:** Tunnel

***B5. Architectural Style:**

***B6. Construction History:**

The Kanan Dume Road Northbound Tunnel #3 was built in 1968. In 1976 the guardrail approach was constructed on the northwest corner. The tunnel has undergone minor maintenance since its construction, including replacement of lights (1976).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The northbound bore is one of two bores carrying Kanan Dume Road.

B9a. Architect: **b. Builder:**

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Kanan Dume Road Northbound Tunnel #3 was constructed as one of the many highway improvements carried out during the late 1960s and 1970s. Bridge 53C09001R is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the tunnel is not associated with other events that would make it significant under National Register Criterion A. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of nine tunnels constructed between 1965 and 1974. Prior to this, there were 53 in the State of California. Tunnel building was not a significant achievement in the state by the time the Kanan Dume Road Northbound Tunnel #3 was constructed in 1968. By 1965, the construction of tunnels was in decline as those needed for city improvements or to replace roads skirting around mountains had been constructed to align with current roadways. There were two periods when the majority of tunnels were constructed in California: the first period during the 1930s, specifically 1930-32 and 1935-38, when 23 tunnels were built during the era of national public works projects. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

November 18, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

The second major period was during the early 1950s, when ten of the state's roadway tunnels were built. The majority of tunnel construction occurred in Los Angeles, Ventura, and Orange Counties containing 46 percent of tunnels built prior to 1999. Bay Area tunnels in the counties of Marin, Contra Costa, Alameda, San Francisco and San Mateo account for 37 percent.

Most of the state's tunnels were constructed by boring through hillsides or mountains. However, during the period 1965-1974, bore tunnels accounted for four of the nine tunnels constructed, with cut and cover accounting for the other five. There is a third type of tunnel not seen in this period, constructed of precast concrete tube sections. The bore tunnels are constructed by the excavation of earth and rock. Most have an arched, concrete lined interior or are partially or unlined. Others have light colored tiles making the interior brighter and easier to clean. The use of steel arch with steel rib lining is not unique to the construction of Kanan Dume Road Northbound Tunnel #3. The longest bore tunnel in the state is the Wawona Tunnel in Yosemite National Park measuring 4,236 feet in length, second and third are bores 1 and 3 of the Caldecott tunnel. Bore 1 measures 3,615 feet and Bore 2, 3,609 feet. Thus the Kanan Dume Road Northbound #3, measuring 328 feet in length, was not a significant achievement of civil engineering in 1974. Further, the use of stepped rubble to adorn the entrance of the tunnel is not aesthetically significant. Kanan Dume Road Northbound Tunnel #3, is not significant under National Register Criterion C or California Register Criterion 3.

The Kanan Dume Northbound Tunnel #3 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The tunnel does not embody the distinctive characteristics of tunnel construction, it does not represent the work of a master and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Kanan Dume Road Northbound Tunnel #3 is not significant under National Register Criterion C or California Register Criterion 3. The tunnel has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 53C0901R is not eligible for inclusion on the National Register or California Register.

***B12. References (continued):**

Caltrans Bridge Inspection Report: December 7, 2012

Feldman, Jessica B. *Caltrans Statewide Historic Bridge Inventory Update – Tunnels*. Revisions by David Lemon and Andrew Hope. (Sacramento, California: California Department of Transportation, Sacramento, 2006).

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Mead & Hunt. *Historical Resources Evaluation Report – Caltrans Statewide Historic Bridge Inventory: 2010 Update*. (Sacramento, California: California Department of Transportation, Sacramento, 2010).

P5b. Photographs (continued):



Detail looking south, June 23, 2104.



Exit portal (on left), view looking south, June 23, 2104.



Entry portal (on right), view looking north, June 23, 2014.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

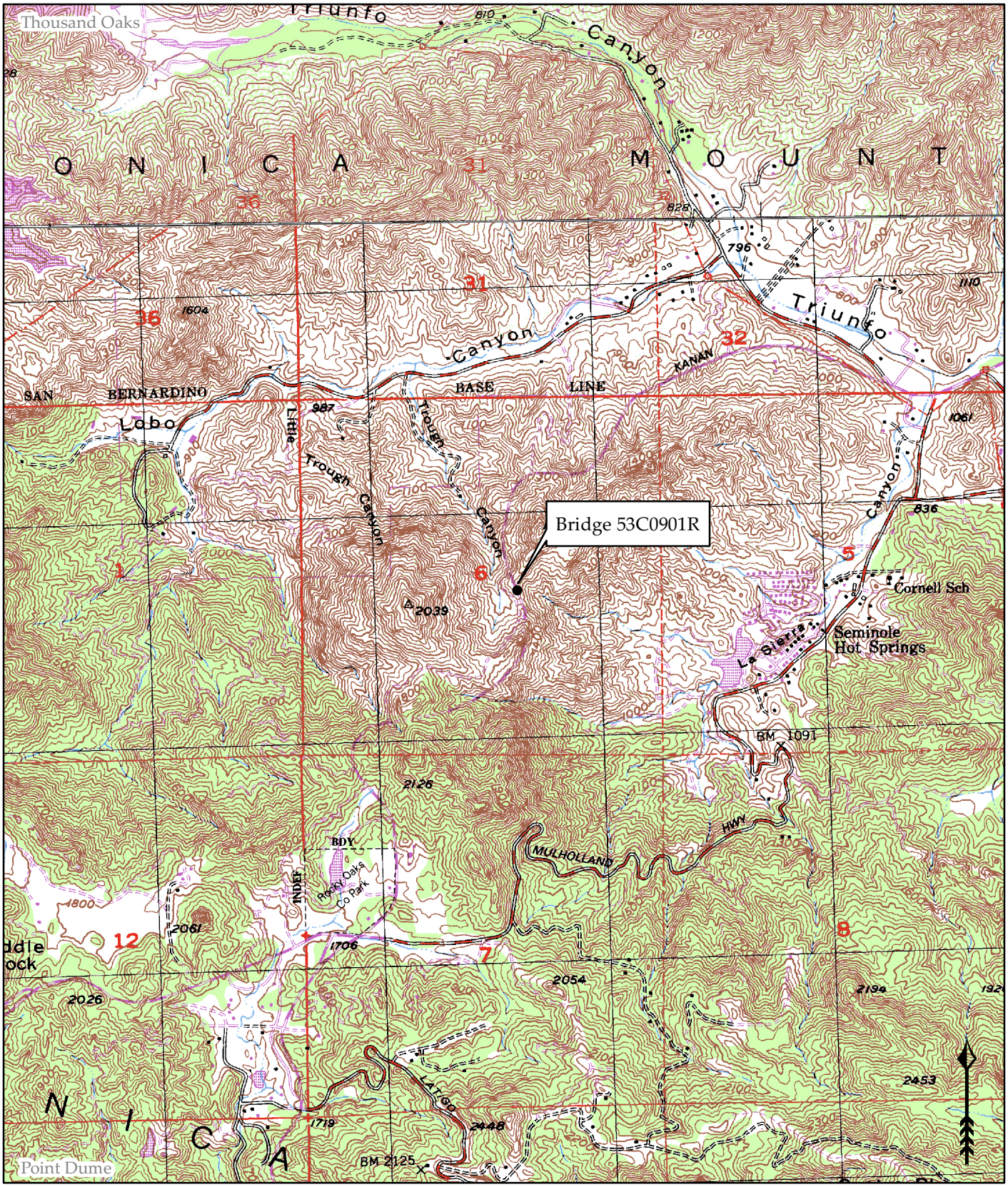
Primary #
HRI#
Trinomial

*Resource Name or #: 53C901R

*Map Name: Point Dume

*Scale: 1:24,000

*Date of Map: 1995



*Required information

State of California — The Resou
DEPARTMENT OF PARKS AND R
PRIMARY RECORD

This attached DPR for Bridge #53C1560 is the original form submitted to SHPO as part of the Statewide Historic Bridge Inventory Update for bridges constructed between 1965 and 1974. The final SHPO consensus, not reflected in this form, is that status is deferred pending further studies that may be part of future projects; therefore, "Historic significance not determined," or Caltrans Category 4, is the determination as of this writing. Caltrans Structures Maintenance List of Historic Significance (online) will reflect the most current status.

 ***Resource Name or #:** Bridge 53C1560

P1. Other Identifier: Friendly Hills Country Club Pedestrian Overcrossing

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted** ***a. County:** Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad:** La Habra **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: Whittier Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data:
Crosses over Lindante Drive approximately 500 feet north of the intersection of Lindante and Youngwood Drives, in Los Angeles County.

***P3a. Description:**
Bridge 53C1560, Friendly Hill Country Club Pedestrian Overcrossing, is a simple laminated redwood timber arch structure resting on reinforced concrete seat abutments. The bridge is a single span 115 feet in length, crossing Lindante Drive, connecting two holes of the Friendly Hill Country Club golf course. The deck is open grate steel and has steel picket handrails.

***P3b. Resource Attributes:** HP 19. Bridge
***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking north
June 30, 2014
***P6. Date Constructed/Age and Sources:** ■Historic
☐Prehistoric ☐Both
1970, Caltrans Bridge Records
***P7. Owner and Address:**
City of Whittier
3230 Penn Street
Whittier, CA 90602
***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814
***P9. Date Recorded:**
October 1, 2014
***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status**

***Resource Name or #** Bridge 53C1560

B1. Historic Name:
B2. Common Name: Friendly Hills Country Club Pedestrian Overcrossing
B3. Original Use: Pedestrian Overcrossing **B4. Present Use:** Pedestrian Overcrossing
***B5. Architectural Style:**
***B6. Construction History:**
In 1997, the original plywood deck was replaced with an open grid steel deck. At the same time the laminated wood handrails were replaced with steel picket railings. The south abutment timber cap was also replaced.

***B7. Moved?** ■No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
The Friendly Hills Country Club Pedestrian Overcrossing links two parts of the Friendly Hill Country Club golf course.

B9a. Architect: unknown **b. Builder:** unknown
***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A
Friendly Hills Country Club Pedestrian Overcrossing (53C1560) connects two holes of the Friendly Hill Country Club golf course separated by Lindante Drive. erected as part of the Friendly Hills Country Club, which was a component of the larger Homes of Friendly Hills subdivision started in 1966. The 500 acre/600 unit master planned community was laid out around the golf course with houses on the ridge tops and links in the valleys below. Work on the subdivision started in 1964 and was completed by 1971. The development was the brainchild of Walter R. Gayner of Republic Homes, a major Southern California developer. The subdivision was envisioned as a throwback to the area's rural past. Much of the mature landscape was retained, including large stands of decades old eucalyptus. Each home site was one-half acre and buyers could choose between one and two story as well as split level designs, all with three car garages, in a variety of architectural styles: "Spanish, provincial, modern and California Ranch." Plans for the community were produced by Jennings, Halderman and Hood, Engineers and Planners, based in Santa Ana, California. The golf course was designed by James "Jimmy" Hines, a professional golfer turned course designer. It is unclear who designed the bridge itself.

Laminated wood arch structures are relatively unique in highway bridge applications and are most often used on private roads and pedestrian overcrossings. The main superstructure elements are comprised of glued laminate wood beams (generally referred to as glulam beams), (See Continuation Sheet 3).

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** See Continuation Sheet 3
B13. Remarks:

***B14. Evaluator:**
Noah M. Stewart
California Department of Transportation

***Date of Evaluation:** October 1, 2014



(This space reserved for official comments.)

B10. Significance (continued):

which are plant manufactured from thin pieces of lumber bonded together with waterproof structural adhesive and treated with preservatives after fabrication. They are most commonly used for spans of 20 to 80 feet, but can achieve spans over 200 feet.

Glulam has been used as a structural material in building applications in Europe since the early 1900's and in the United States since the mid 1930s. It was only after World War II, with the advent of waterproof adhesives and sealants, that the technology could be used for structures exposed to the elements. The first glulam arch bridges for vehicles were constructed in Oregon in the late 1940's. The Loon Lake Bridge, a three-hinge glulam arch structure, erected near Roseburg, Oregon in 1948, was one of the earliest examples of this bridge type in the United States. Since their introduction glulam wood structures have become the most common type of timber bridge in country.

Bridge 53C1560 is a unique example of bridge construction for the period. Glulam wooden bridges are an uncommon bridge type in California and are mainly used for private roads and pedestrian overcrossings. The most typical examples of laminated wooden bridges in the state are girder and truss structures. Glulam wooden arch bridges are much less common; Friendly Hills Country Club Pedestrian Overcrossing is the only such bridge identified in the Caltrans bridge database. There are likely other bridges of the type in California that are not inspected by the state because they are located on private roads and as a result are not included in the Caltrans bridge database.

Friendly Hills Country Club Pedestrian Overcrossing is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the suburban or roadway development of the Whittier area. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with persons who made a significant contribution to history at the local, state, or national level. It is not significant under National Register Criterion B or California Register Criterion 2.

The fabrication, transportation, and erection of glulam arch bridges was not a significant achievement by the time Bridge 53C1560 was constructed in 1970. Although the Friendly Hills Country Club Pedestrian Overcrossing is a rare bridge type, it is a late example of a type uncommon in the state. It does not represent a significant innovation in bridge engineering or display a significant variation of its type. It does not display decorative features or significant architectural details. Friendly Hills Country Club Pedestrian Overcrossing is not important as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 53C1560 is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

"Come Up to the Top: to the Homes of Friendly Hills," Los Angeles Times, 17 October 1965, I9.

"Friendly Hills Opens Today in Whittier," Los Angeles Times, 17 October 1965, I24.

"Republic Takes Over Whittier Tract," Los Angeles Times, 15 January 1967, I4.

Ritter, Michael A. and Jeffrey J. Morrell, *Timber Bridges: Design, Construction, Inspection, and Maintenance*. Washington, DC: United States Department of Agriculture, Forest Service, 1990.

"500 Acres Purchased for Project," *Los Angeles Times*, 4 April 1965, II7.

P5b. Photographs (continued):



Detail, abutment and underside of deck, looking southwest.

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

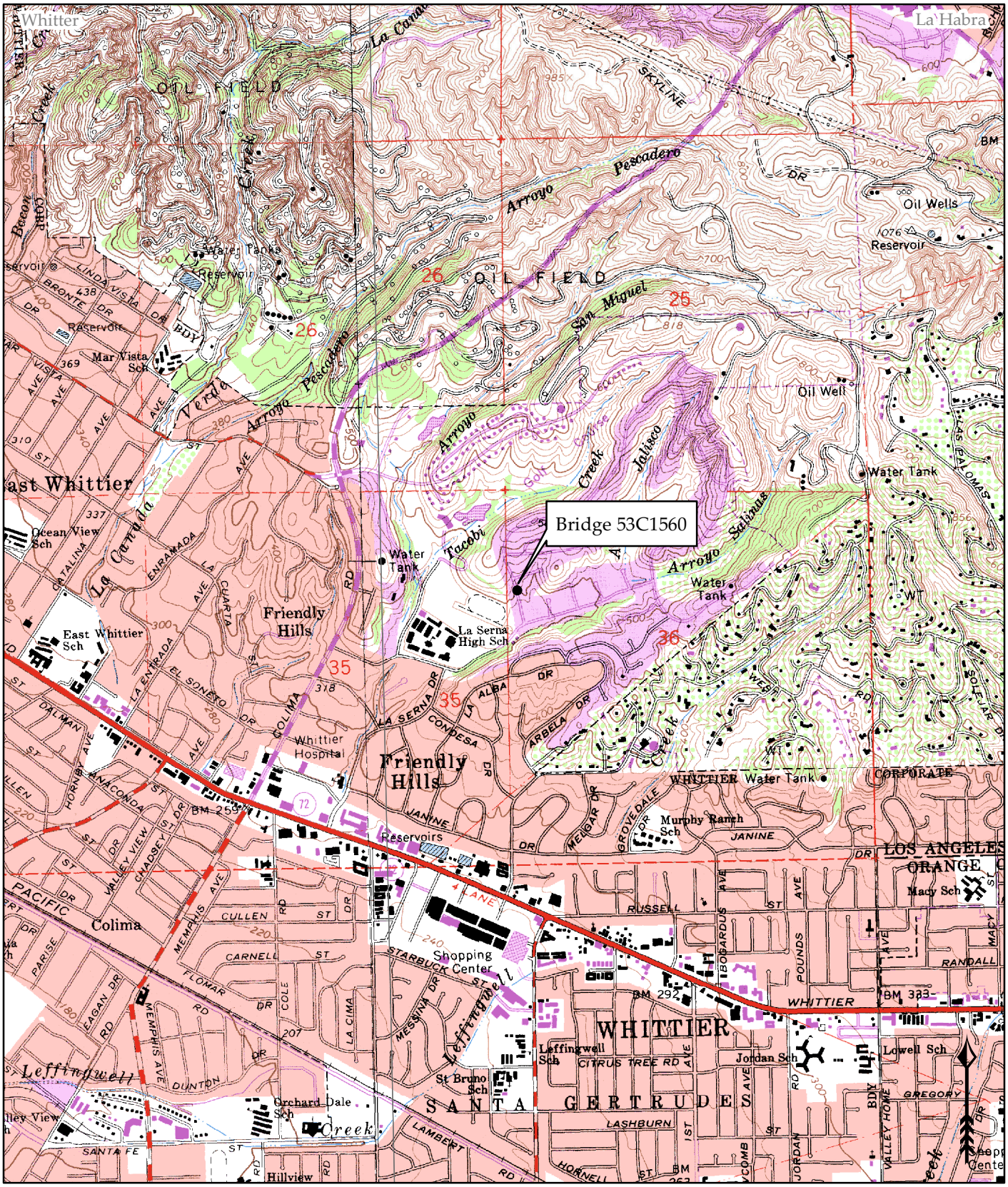
Primary #
HRI#
Trinomial

*Resource Name or #: 53C1560

*Map Name: La Habra

*Scale: 1:24,000

*Date of Map: 1974



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code | Reviewer | Date

 ***Resource Name or #:** Bridge 54C0192

P1. Other Identifier: Live Oak Creek Bridge

***P2. Location:** ☐ **Not for Publication** ■ **Unrestricted**
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County:** San Bernardino

***b. USGS 7.5' Quad:** Yucaipa **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: Redlands Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: Elevation:

On live Oak Canyon Road, 2 miles southwesterly of Interstate 10 in San Bernardino County.

***P3a. Description:**

The Live Oak Bridge (54C0192) is a steel Warren deck truss structure that crosses Live Oak Creek. It is 144.6 feet in total length with a single span of 140 feet and a total width of 29 feet. It has a cast-in-place, reinforced concrete deck on rolled steel stringers on rolled steel floor beams and is founded on two closed end and backfilled reinforced concrete cantilever abutments supported on concrete piles. The two lane bridge has metal guard railings with steel posts and chain link fencing bolted to each side of the bridge deck. There are no pedestrian walkways.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ■Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking southwest
June 27, 2014

***P6. Date Constructed/Age and Sources:** ■Historic ☐Prehistoric ☐Both
1970, Caltrans Bridge Files

***P7. Owner and Address:**
City of Redlands
35 Cajon Street
Redlands, CA 92373

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

P11. Report Citation:

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (Sacramento, California: California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ■Location Map ☐Sketch Map ■Continuation Sheet ■Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status** 6Z

***Resource Name or #** Bridge 54C0192

B1. Historic Name:
B2. Common Name: Live Oak Creek Bridge
B3. Original Use: Bridge
B4. Present Use: Bridge
***B5. Architectural Style:** Steel Warren deck truss
***B6. Construction History:**
The bridge was constructed in 1970 by the County of San Bernardino. Ownership of the bridge was transferred to the City of Redlands in 1992. The bridge has no major alterations and has only sustained minor maintenance and repair.

***B7. Moved?** ■No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:**
None.

B9a. Architect: Moffat & Nichol, Engineers
b. Builder: Unknown
***B10. Significance: Theme:** N/A
Area: N/A
Period of Significance: N/A
Property Type: N/A
Applicable Criteria: N/A

The Live Oak Creek Bridge was constructed by the County of San Bernardino Road Department as part of a local transportation improvement project. The Live Oak Creek Bridge is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

This structure is one of six metal truss bridges constructed between 1965 and 1974. There are 315 metal truss bridges in California (excluding moveable and steel arch bridges, many of which are also trusses). This bridge type was once common in California, but the number of new metal truss bridges constructed in the state dropped off substantially after the 1950s. As postwar traffic demands required wider roads, steel bridges proved less cost effective and the majority of new bridges were constructed in concrete. By the early 1970s, only 10% of all new bridges in the state were erected in steel. The fabrication, transportation, and erection of metal truss bridges was not a significant achievement in the state by the time the Live Oak Creek Bridge was constructed in 1970. (See Continuation Sheet 3)

B11. Additional Resource Attributes:

***B12. References:**
See Continuation Sheet 3

B13. Remarks:

***B14. Evaluator:**
Lauren Clementino
California Department of Transportation

***Date of Evaluation:**
November 17, 2014

(This space reserved for official comments.)



B10. Significance (continued):

The Live Oak Creek Bridge is a modified Warren deck truss with a single span of 140 feet. The Warren truss was one of the most common truss types built in California. California and many other states had developed standard designs for truss bridges by the 1920s and the Warren truss was commonly used along California highways in the 1920s and 1930s. The majority of Warren trusses constructed in California were pony trusses; later design variations with vertical supports and polygonal top chords were utilized in the 1940s through the 1950s. The typical range of highway Warren truss bridge span lengths is between 40 and 500 feet. The overall length of 144.6 feet and main span of 140 feet in length for the Live Oak Creek Bridge are not notable when compared to other Warren truss bridges in California. The Live Oak Creek Bridge was constructed after the Warren was already an established truss type in California and does not represent a significant innovation in bridge engineering or display a significant variation within an established bridge type. The Live Oak Creek Bridge does not display any decorative features or significant architectural details. The Live Oak Creek Bridge is not significant as a work of civil engineering or for aesthetic value and is not significant under National Register Criterion C or California Register Criterion 3.

The Live Oak Creek Bridge was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The Live Oak Creek Bridge is not a distinctive example of metal truss bridge construction, does not represent the work of a master, and does not possess high artistic values. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Live Oak Creek Bridge is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Live Oak Creek Bridge is not eligible for inclusion on the National Register or California Register.

B12. References (continued):

County of San Bernardino Road Department. As-Built Plans for Construction on Live Oak Canyon Road at Live Oak Creek Yucaipa Area. July 6, 1973.

Department of Transportation. Bridge Inspection Reports for Bridge Number 54C0192. January 13, 1972 to April 8, 2014.

JRP Historical Consulting. *Caltrans Historic Bridges Inventory Update: Metal Truss, Movable, and Steel Arch Bridges*. Prepared for the California Department of Transportation Environmental Program, n.p., September 2004 (revised).

JRP Historical Consulting Services. *Historic Context Statement - Roadway Bridges of California: 1936-1959*. Prepared for State of California Department of Transportation, n.p., January 2003.

P5b. Photographs (continued):



View, looking north (June 27, 2014)



View, looking south (June 27, 2014)

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

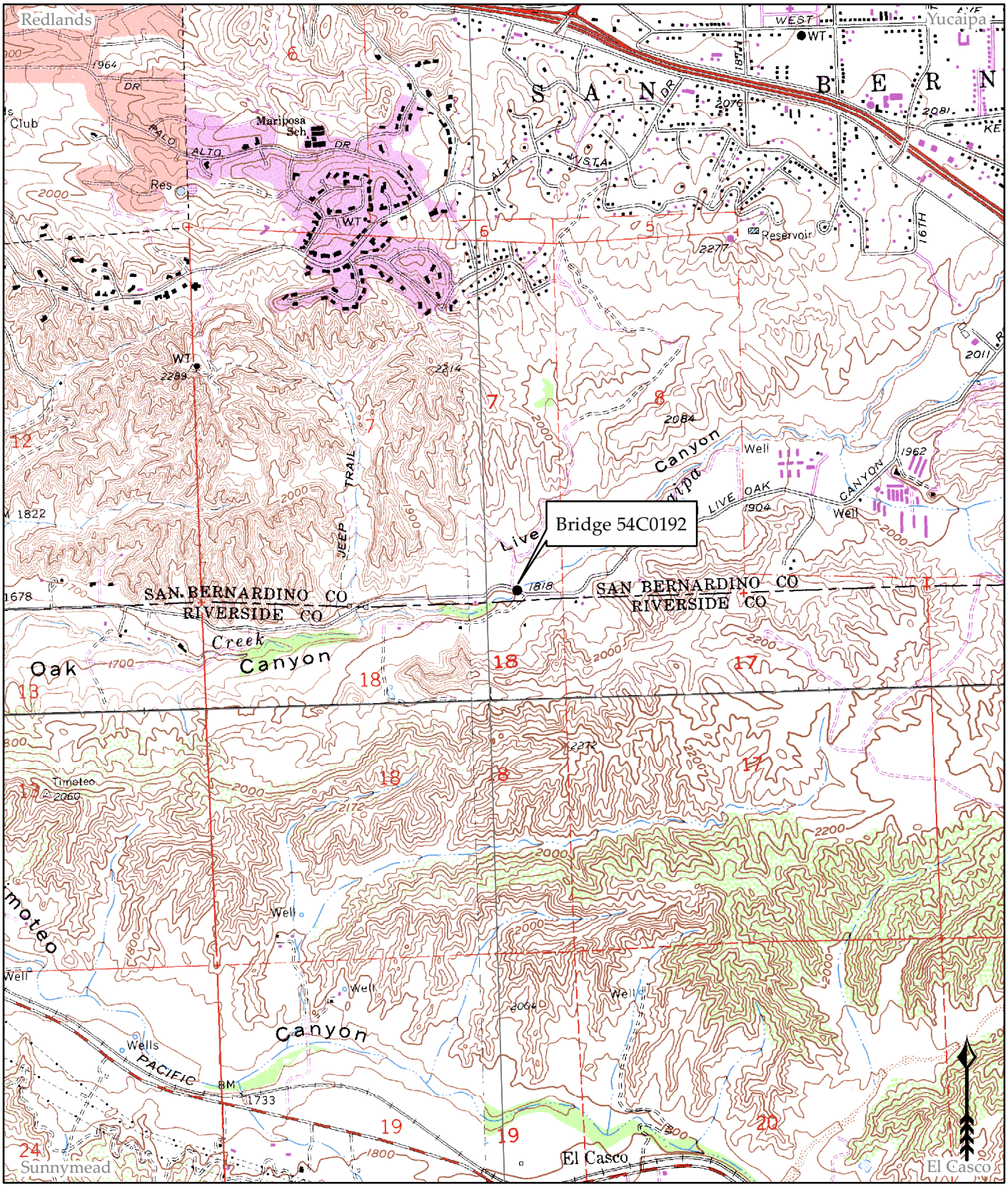
Primary #
HRI#
Trinomial

*Resource Name or #: 54C0192

*Map Name: Yucaipa

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #** Bridge 57 0619

P1. Other Identifier: Adams Avenue Overcrossing (Roscoe E. Hazard Memorial Bridge)

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County:** San Diego

***b. USGS 7.5' Quad:** La Jolla **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: San Diego Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:

The Adams Avenue Overcrossing is located in San Diego County over Interstate 805, at post mile 16.99.

***P3a. Description:**

Bridge 57 0619 is a concrete box girder structure, 439 feet in length, that carries Adams Avenue over Interstate 805. The bridge has three spans with the central, main span measuring 218 feet in length. The continuous reinforced concrete three span box girder (six cells) has reinforced concrete open end diaphragm abutments, with inclined tapered piers, all supported on spread footings. The tapered piers and hunches speak to the modern design of this bridge and soften its relation to the road; by locating the footing further back from the highway than it would have been with a straight bent. Further, the arched concrete box girder visually raises the roadway adding to the impression of space under the bridge. The two lane bridge has type 6 railing, with sidewalks on both sides of Adams Avenue.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking northeast
July 3, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1970, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 57 0619

B1. Historic Name:

B2. Common Name: Adams Avenue Overcrossing (Roscoe E. Hazard Memorial Bridge)

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The overcrossing was built in 1970. The bridge has undergone minor maintenance since its construction, including planing the approaches (1976), placement of a retaining wall in front of the west pier (1984), sidewalks at the west end were leveled (1986), south bound roadway under the bridge widened (1986), sidewalks at end approach replaced (1992), westerly AC approach repaired (1996), and AC approaches resurfaced (2002).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The overcrossing is located on Adams Avenue and crosses the Interstate 805.

B9a. Architect: E. F. Van Zee, Bridge Department, California Division of Highways b. **Builder:**

***B10. Significance: Theme:** Engineering **Area:** State

Period of Significance: 1970 **Property Type:** Structure **Applicable Criteria:** C

The Adams Avenue Overcrossing was constructed by Hazard & Maxwell Construction, as part of Jack Cramer's I-805 project in the north Clairemont area. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criteria 1 for its association with the development of the highway network through the region. In addition, the bridge is not associated with other events that would make it significant under National Register of Criterion A or California Register Criterion 1.

The overcrossing is associated with Roscoe E. Hazard whose construction company built the overcrossing, and it was dedicated to him in 1976, upon his death. Roscoe E. Hazard Sr. founded the Hazard Construction Company in the early 1920s, with its headquarters in downtown San Diego. Hazard Construction completed the construction of many southern Californian interchanges, including work on the I-8 at I-805, I-8 at I-15, I-8 at Route 125 and I-8 at Ardath Road. The company has diversified in the last decade and is now a full-service general engineering contracting firm with a focus on private sector work. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 4)

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

Roscoe E. Hazard was also a community philanthropist. He opened the R. E. Hazard Museum in Mission Valley as a site for his vast collection of frontier history artifacts. He also gifted objects from his personal collection to the Old Town State Park in 1971, as well as Seeley Stables. The bridge however, is not directly associated with this influential man, as he did not have a personal hand in building it. At the point of its construction he was in retirement with the company being operated by his son, and thus is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box girder bridges in California. More than 3,200 of the type built between 1965 and 1974.

Bridge 57 0619 is not a typical example of concrete box construction for the period. While the fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the Adams Avenue Overcrossing was constructed in 1970, its design is unique. The Adams Avenue Overcrossing does stand out with regard to modern bridge aesthetics, and its use of an arched concrete box system with tapered columns that are positioned on the diagonal. The overcrossing was sponsored in Portland Cement Association design competition by Adams Avenue School, which caused it to win the Bridge Award for Engineering Excellence in 1970 for its unique form. While the form of the bridge has retained a high level of integrity in design, materials, feeling, location, association, workmanship and setting, new railings were added detracting somewhat from the overall material integrity of the bridge. However, this minor alteration in material integrity is not substantial enough to negate the bridge from the National Register. Therefore bridge 57 0619 is significant under National Register Criterion C at the state level and thus, California Register Criterion 3.

Bridge 57 0619 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. The overcrossing is not directly associated with the life of a significant person in history, and therefore is not significant under National Register Criterion B or California Register Criterion 2. Bridge 57 0619 does embody the distinctive characteristics of concrete box bridge construction and does possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Adams Avenue Overcrossing is significant under National Register Criterion C and California Register Criterion 3 for its modern engineering aesthetic. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The bridge retains all aspects of integrity: design, material, feeling, location, association, workmanship and setting. Bridge 57 0619 is eligible for inclusion on the National Register and California Register.

***B12. References:**

Alice, Matthew. "What Happened to Roscoe Hazard's Scary Photos?" *San Diego Reader,* Nov. 7, 2002. Accessed from http://www.sandiegoreader.com/news/2002/nov/07/what-happened-roscoe-hazards-scary-photos/ on November 4, 2014.

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 57 0619." 1967.

Hazard Construction Co. "About Us, A Part of San Diego's History," Accessed from http://www.hazardconstruction.com/index.html/ on November 4, 2014.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Reading, James E. & Schlaefli, Andrew P. *History of San Diego Highway Development*.70th Anniversary Edition, San Diego Highway Development Association, 2006.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



View looking southwest, July 3, 2014



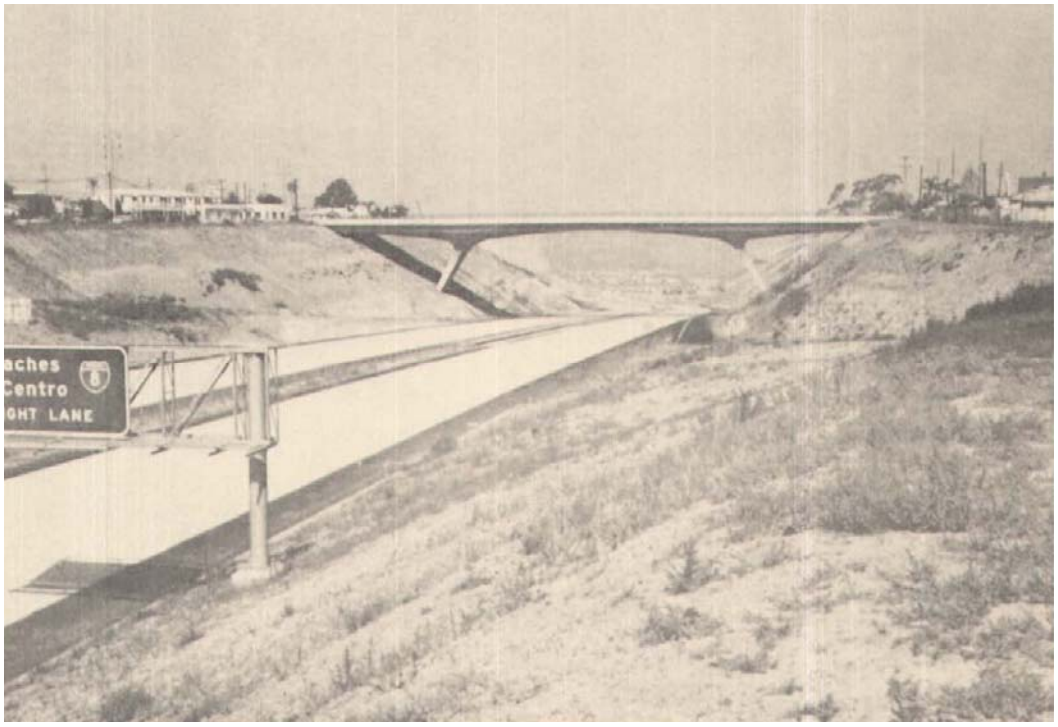
Detail looking northeast, July 3, 2014



Detail on the southeast end of bridge railing, July 3, 2014



Railings on Adams Avenue looking east, July 3, 2014



Adams Avenue Overcrossing, California Department of Transportation, from *San Diego Highway Development*

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

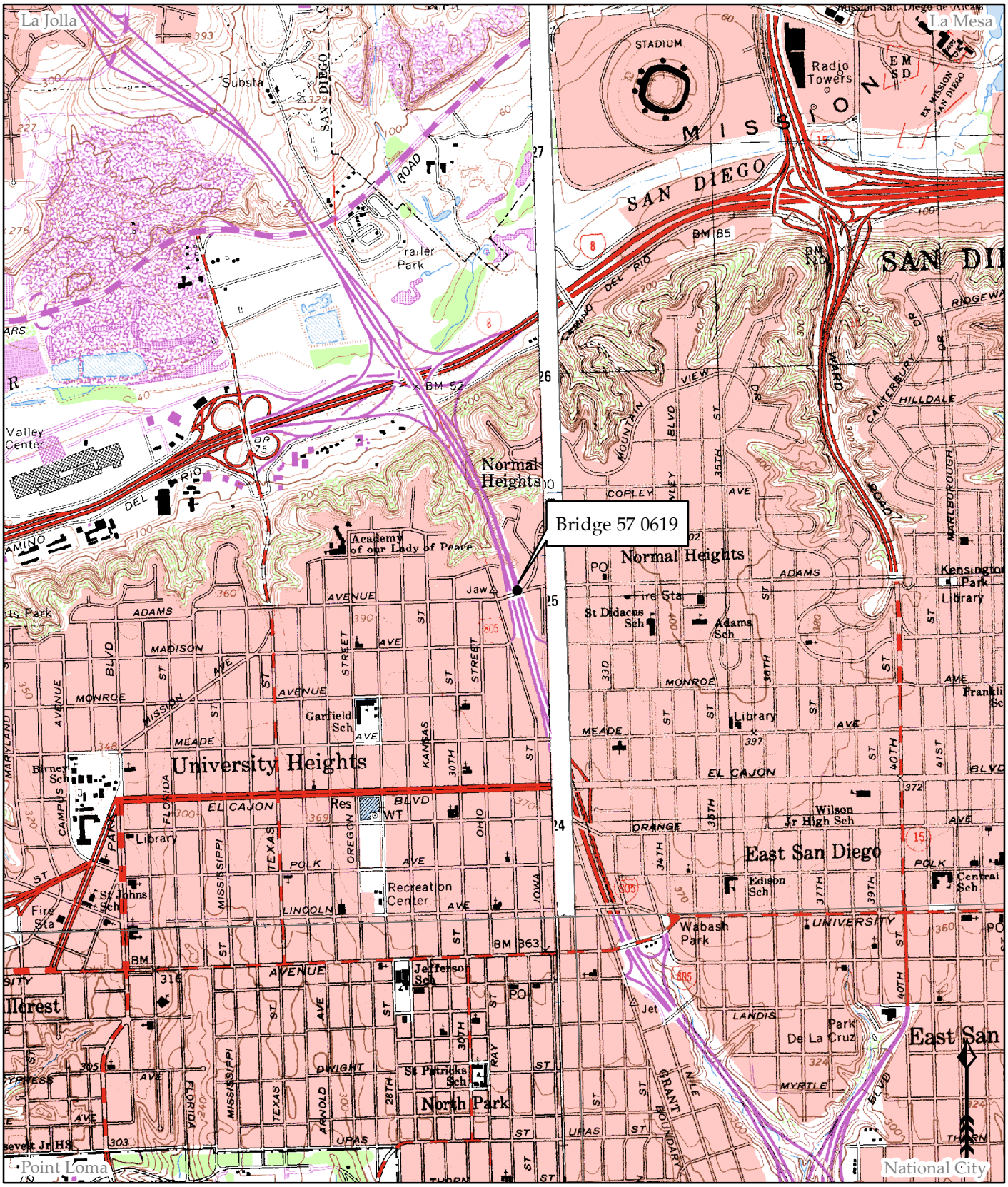
Primary #
HRI#
Trinomial

*Resource Name or #: 57 0619

*Map Name: La Jolla

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 ***Resource Name or #** Bridge 57 0676

P1. Other Identifier: Moray Ridge Road Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Diego
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** La Jolla **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: San Diego Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

The Murray Ridge Road Overcrossing is located in San Diego County over Interstate 805 at post mile 18.89.

***P3a. Description:**

The overcrossing carries the four lanes of local Murray Ridge Road over Interstate 805. Bridge 57 0676 is a concrete box- girder structure, 350 feet in length, at a skew of 18 degrees. The bridge has four spans with the main span measuring 115 feet in length. It has a continuous four span reinforced concrete box girder (nine cell) on reinforced concrete open end diaphragm abutments and wide, squat "Y" shaped bents, all on spread footings. The vertical bridge profile is narrow tapering towards the bents. The three lane bridge has type 12 railing protecting the sidewalks on either side of the roadway.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking east
July 2, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1972, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 57 0676

B1. Historic Name:

B2. Common Name: Murray Ridge Road Overcrossing

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The overcrossing was built in 1972. The east AC approach was re-surfaced in 1984.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The bridge is located on local Murray Ridge Road.

B9a. Architect: A. M. McGillivray, Bridge Department, California Division of Highways

b. Builder: Hazard, Maxwell & Matich

***B10. Significance: Theme:** N/A **Area:** N/A

Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Murray Ridge Road Bridge was constructed by Hazard, Maxwell & Matich. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the overcrossing is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. Because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**

Helen Blackmore
California Department of Transportation

***Date of Evaluation:**

October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

Bridge 57 0676 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box girder bridges was not a significant achievement in the state by the time the Murray Ridge Road Overcrossing was constructed in 1972. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The Murray Ridge Road Overcrossing, with a total length of 350 feet and main span of 115 feet in length, is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bridge 57 0676 is not significant under National Register Criterion C or California Register Criterion 3.

The overcrossing has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4.

Bridge 57-0676 was erected as a typical transportation improvement project of the period and the overcrossing is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 57-0676 does not embody the distinctive characteristics of concrete box bridge construction, it does not represent the work of a master, and does not possess high modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Murray Ridge Road Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 57 0676 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 57 0676." 1969.

Caltrans Bridge Inspection Report: November 27, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



Roadway looking north, July 2, 2014



Central bent looking east, July 2, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

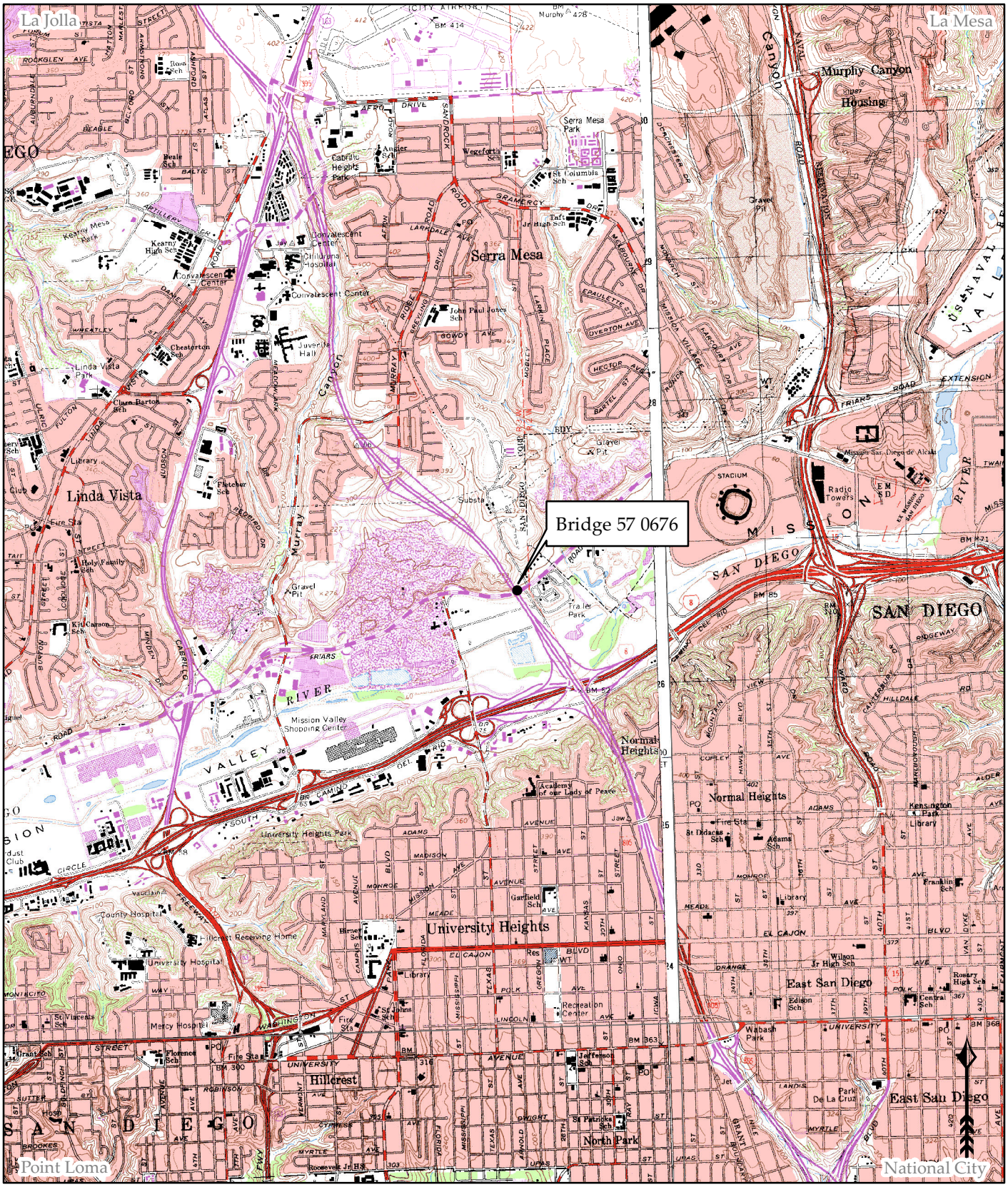
Primary #
HRI#
Trinomial

*Resource Name or #: 57 0676

*Map Name: La Jolla

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

*Resource Name or # Bridge 57 0678

P1. Other Identifier: Kearny Villa Road Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Diego
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** La Jolla **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**
c. Address: n/a City: San Diego Zip:
d. UTM: Zone: 10 ; mE/ mN (G.P.S.)
e. Other Locational Data: Elevation:

The Kearny Villa Overcrossing is located in San Diego County over Interstate 805 at postmile 20.23 in San Diego.

***P3a. Description:**

The overcrossing carries four lanes of the Kearny Villa Road over the State Route 805 in San Diego. Bridge 57 0678 is a concrete box-girder structure, 437 feet in length, at a skew of 35 degrees. The bridge has four spans with the main span measuring 130 feet in length. The continuous four span reinforced concrete (10 cell) box girder is on reinforced concrete open end diaphragm abutments with narrow "Y" bents, all on spread footings except bent # 3 on 65 ton 10BP57 piles. The concrete box tapers downwards, giving the overcrossing a slender profile, narrowing the visual impact. The four lane bridge has Types 9 and 11 railing along the sidewalk on the north side of the road and Type 12 railing on the south side.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo:
View looking southeast
July 3, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1972, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:**
Intensive

***P11. Report Citation:**
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 57 0678

B1. Historic Name:

B2. Common Name: Kearny Villa Road Overcrossing

B3. Original Use: Bridge B4. Present Use: Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**
The overcrossing was built in 1972.

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**
The overcrossing is located on Kearny Villa Road over Interstate 805.

B9a. Architect: A. McGilvray, Bridge Department, California Div. Highways **b. Builder:** Hazard, Maxwell & Matich

***B10. Significance: Theme:** N/A **Area:** N/A
Period of Significance: N/A **Property Type:** N/A **Applicable Criteria:** N/A

The Kearny Villa Road Overcrossing was constructed by Hazard, Maxwell & Matich. It was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region. In addition, the overcrossing is not associated with other events that would make it significant under National Register Criterion A or California Register Criterion 1. It is not associated with a person who made a significant contribution to history at the local, state, or national level, and it is not significant under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type were built between 1965 and 1974. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 3)

B13. Remarks:

***B14. Evaluator:**
Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

Bridge 57 0678 is a fairly typical example of concrete box construction for the period. The fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the Kearny Villa Road Overcrossing was constructed in 1972. It is not one of the larger examples of this type and it does not incorporate a significantly long main span. The Mulholland Drive Overcrossing (53 0739) in Los Angeles held title to the longest main span of 235 feet in length from its initial construction in 1959 until 1974 when the Interstate 8 bridge over the Pine Valley Creek (57 0692L/R) achieved a 450 foot main span. The Kearny Villa Road Overcrossing with a total length of 437 feet and main span of 130 feet in length is not significant as a work of civil engineering. Its construction is typical for the 1960s and 1970s and is not a significant work of civil engineering nor does it stand out with regard to modern bridge aesthetics. Bridge 57 0678 is not significant under National Register Criterion C or California Register Criterion 3.

Bridge 57 0678 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 57 0678 does not embody the distinctive characteristics of a concrete box bridge construction, it does not represent the work of a master, and does not possess high Modern aesthetic value. Further, it does not represent a significant and distinguishable entity whose components may lack individual distinction. The Kearny Villa Road Overcrossing is not significant under National Register Criterion C or California Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Bridge 57 0678 is not eligible for inclusion on the National Register or California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

California Division of Highways. "As Built Plans – Bridge 57 0678." 1969.

Caltrans Bridge Inspection Report: November 27, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



View looking south



View looking north



Roadway looking northeast

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

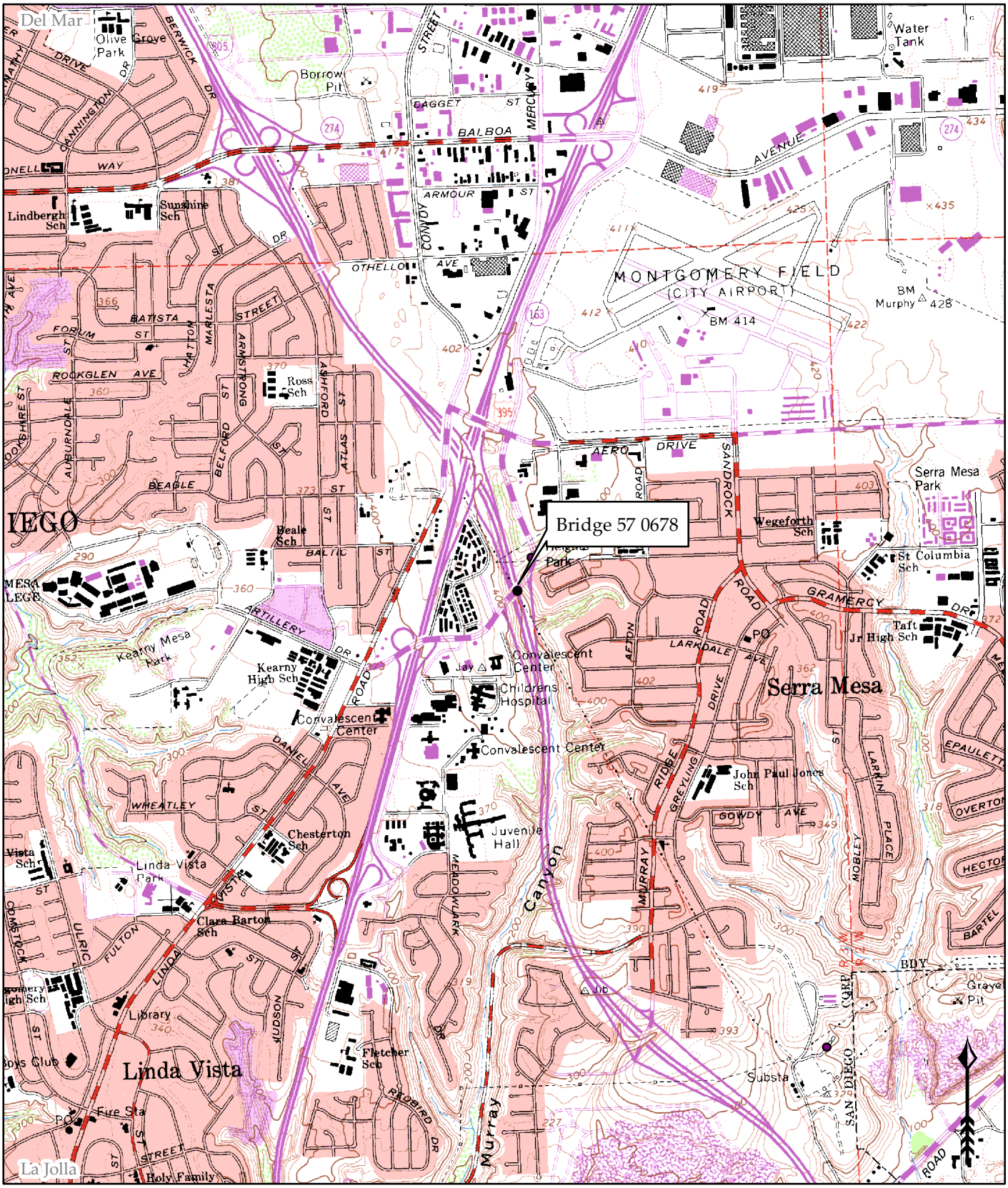
Primary #
HRI#
Trinomial

*Resource Name or #: 57 0678

*Map Name: La Jolla

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

 *Resource Name or #: Bridge 57 0762

P1. Other Identifier: Eastgate Mall Overcrossing

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted**
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***a. County:** San Diego

***b. USGS 7.5' Quad:** Del Mar **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: San Diego Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: Elevation:

The Eastgate Mall Overcrossing is located in San Diego County over Interstate 805, at postmile 26.34 in San Diego.

***P3a. Description:**

The Eastgate Mall Overcrossing, formally the Miramar Road Bridge crosses the Interstate 805 in San Diego. Bridge 57 0762 is a concrete box girder structure, 560 feet in length. The bridge has five spans with the main span measuring 180 feet in length. The central three spans are cast-in-place pre-stressed box girder (five cells) on reinforced concrete with open end, seated abutments. The bent columns are a concrete box arch, shaped like the horns of a long horn steer, and are seated on cast-in-drilled-hole piles on a spread footing. The unique lines give the bridge a modern and elegant feeling, with the horns of the columns tapering seemingly to a point carrying the roadway to the embankments. The two lane bridge has Type 9-11 and 11 railing with a pedestrian sidewalk on the north side of the bridge.

***P3b. Resource Attributes:** HP 19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing



P5b. Description of Photo: View looking northwest, July 2, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1971, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:**
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:** Intensive

***P11. Report Citation:**

Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # Bridge 57 0762

B1. Historic Name:

B2. Common Name: Eastgate Mall Overcrossing

B3. Original Use: Bridge **B4. Present Use:** Bridge

***B5. Architectural Style:** Modern

***B6. Construction History:**

The bridge was constructed in 1971, with only minor maintenance including: cleaning, repairing/replacing seals and backfilling erosion around the abutments (1981), repairing the spalls on the northerly rail (1996).

***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**

***B8. Related Features:**

The bridge is located on Eastgate Mall Road, which was formally known as Old Miramar Road. The bridge crosses over the I-805 in San Diego.

B9a. Architect: E. R. Van Zee, Bridge Dept. California Div. Highways **b. Builder:** O. G. Sensone (Construction Co.)

***B10. Significance:** **Theme:** Engineering **Area:** State

Period of Significance: 1971 **Property Type:** Bridge **Applicable Criteria:** C

The Eastgate Mall Overcrossing, formally the Old Miramar Road Bridge, was constructed by O. G. Sensone as part of the development of Interstate 805 by Jack Cramer, the construction of which was completed by 1972. It was one of the many highway improvements carried out during the late 1960s and early 1970s. The overcrossing is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register) Criterion 1 for its association with the development of the highway network through the region.

The bridge is associated with the development of recreation in the US, specifically that of skateboarding. The bridge was first featured in the San Francisco Chronicle on April 16, 1977, showing its use as an architectural half pipe (also known as a "vert ramp"). In 1991, the overcrossing was featured in a momentous centerfold spread in *Transworld Skateboarding Magazine* showing Matt Hensley propelling his skateboard into the air above the eastern transition of the bridge, the photograph made by Dan Sturt. The photograph supplemented Hensley's "Pro-spotlight" interview with the skateboarder who had recently entered the professional ranks. The interview, including the dramatic photograph, was instrumental in thrusting Hensley into the national limelight. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes:

***B12. References:** (See Continuation Sheet, page 4).

B13. Remarks:

***B14. Evaluator:**
Noah Stewart & Helen Blackmore
California Department of Transportation

***Date of Evaluation:**
October 1, 2014

(This space reserved for official comments.)



*Required information

B10. Significance (continued):

While the bridge had a connection to development of skateboarding in the US, the association was relatively minor. The events that took place at the Eastgate Mall Overcrossing did not affect the progress of skateboarding. Therefore, Bridge 57 0762 is not eligible under National Register Criterion A or California Register Criterion 1.

Matt Hensley, the professional skateboarder, was prominent in the 1990s for his contributions to the development of skateboarding on a national level. In 2013, Hensley was voted the seventh-most influential skateboarder of all time by *Transworld Skateboarding Magazine*. The photograph of Hensley ollieing on the Eastgate Mall Overcrossing's eastern transition helped launch his career as a professional skateboarder. Whilst the bridge is significant to the career of Matt Hensley, Matt Hensley is not significant to the eligibility of the bridge. As a result, Bridge 57 0762 is not eligible under National Register Criterion B or California Register Criterion 2.

The first concrete box girder bridge in California was erected in 1938. The structural type was innovative for its design flexibility, helping to meet the growing demand for longer and wider bridges as well as skewed bridges that permitted straighter, more efficient, and safer roadways. The slender bridge profiles with harmonious proportions allowed engineers to achieve the modern design aesthetic thought to showcase transportation efficiency. And because they required less steel in their construction, concrete box girder bridges could also be erected at significant cost savings. Only a small number of concrete box girder bridges were built before World War II, however after the war their numbers increased quickly. By 1965, there were more than 1,500 concrete box bridges in California. More than 3,200 of the type built between 1965 and 1974.

The Eastgate Mall Overcrossing was one of the first concrete box bridges to utilize a concrete arch support system to create the curved bent columns, for which it received awards from the Federal Highway Administration, San Diego Highway Development Association, and Prestressed Concrete Institute Awards Program for its original use of nontraditional concrete bents and curved concrete arch. The bridge was also nominated for the Bridge Award in Engineering Excellence by Adams Avenue School. In comparison to similar bridges built during the early 1970s, whose bents are linear and vertical; the undulating curved form of the bents of the Eastgate Mall Overcrossing stand out as are unique, functional and aesthetically striking.

Following the construction of this bridge, economic inflation made it more difficult and costly to create such aesthetically designed bridges, leaving this bridge as a unique example in the state of California. While, the fabrication, transportation, and erection of large concrete box bridges was not a significant achievement in the state by the time the Eastgate Mall Overcrossing was constructed in 1971, Bridge 57 0862 is not a typical example of concrete box construction for the period and an effort was made to construct a unique and architecturally interesting bridge. Bridge 57 0762 is significant under National Register Criterion C and California Register Criterion 3 for its unique architectural style and construction.

Bridge 57 0762 was erected as a typical transportation improvement project of the period and the bridge is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. It is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. Bridge 57 0762 does embody the distinctive characteristics of concrete box bridge construction. Whilst not representing the work of a master, it does possess high Modern aesthetic value. The Eastgate Mall Overcrossing is significant under National Register Criterion C and National Register Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. The Eastgate Mall Overcrossing retains all aspects of integrity; design, materials, feeling, location, association and workmanship as it has not had any work completed on it with the exception of minor maintenance. Bridge 57 0762 is eligible for inclusion on the National Register and California Register.

***B12. References:**

"An Architect Concentrates on the Aesthetics in Bridge Design." *Pacific Builder & Engineer* 64, no. 4 (Apr 1958): 86-7.

"Bridges Span Design Spectrum". *The San Diego Union*. January 11, 1976. p. F6. OCLC 13155544

Borden, Iain (2001). *Skateboarding, Space and the City: Architecture and the Body*. Oxford. Retrieved November 8, 2012.

California Division of Highways. "As Built Plans – Bridge 57 0762." 1969.

Caltrans Bridge Inspection Report: November 29, 2012.

Hope, Andrew. *Caltrans Statewide Historic Bridge Inventory Update – Survey and Evaluation of Common Bridge Types.* California Department of Transport, November 2004.

JRP Historical Consulting Services. *Historic Context Statement – Roadway Bridges of California: 1936-1959.* Prepared for State of California Department of Transportation, n.p., January 2003.

Kleske, Andrew. "The Bridges of San Diego County." *U-T San Diego*, Sept. 1, 2013. Accessed on Nov. 3, 2014 from http://www.utsandiego.com/news/2013/sep/01/san-diego-bridges-spruce-coronado-cabrillo-hp/#&panel1-13

Lewinson, David (August 16, 1984). "Outdoor Artworks Bring New Beauty to Freeway Travel". *The San Diego Union*. p. E8. OCLC 13155544

Jones, Bob (February 26, 1984). "Architecture at Its Best in S.D Freeways". *The San Diego Union*. p. F1. OCLC 13155544

Myra L. Frank & Associates. *Caltrans' Historic Bridge Inventory Update: Concrete Box Girder Bridges*. n.p., August 2003. With revisions made by Andrew Hope, California Department of Transportation, April 2004.

"Old Miramar Overcrossing." *Cross Sections, District 11*, Spring 1971. 15.

Parry, Bill (February 21, 1965). "150 Additional Freeway Miles Scheduled for San Diego Area". *The San Diego Union*. p. A31. OCLC 13155544

Parry, Bill (June 6, 1965). "Route 805 Hailed as 'Totally New'". *The San Diego Union*. p. A13. OCLC 13155544

Stuzinski, S. H. "Some Examples of Box Girder Bridges in California." *The Structural Engineer* 8, no. 41 (August 1963): 253-257.

P5b. Photographs (continued):



Detail looking southwest



North bent column looking west



Old Miramar Rd. Br. No. 57-762, dated 12/8/71. D-11 SD route 805.



Old Miramar Rd. O.C. (new), dated 4/7/71. D-11, SD route 805.

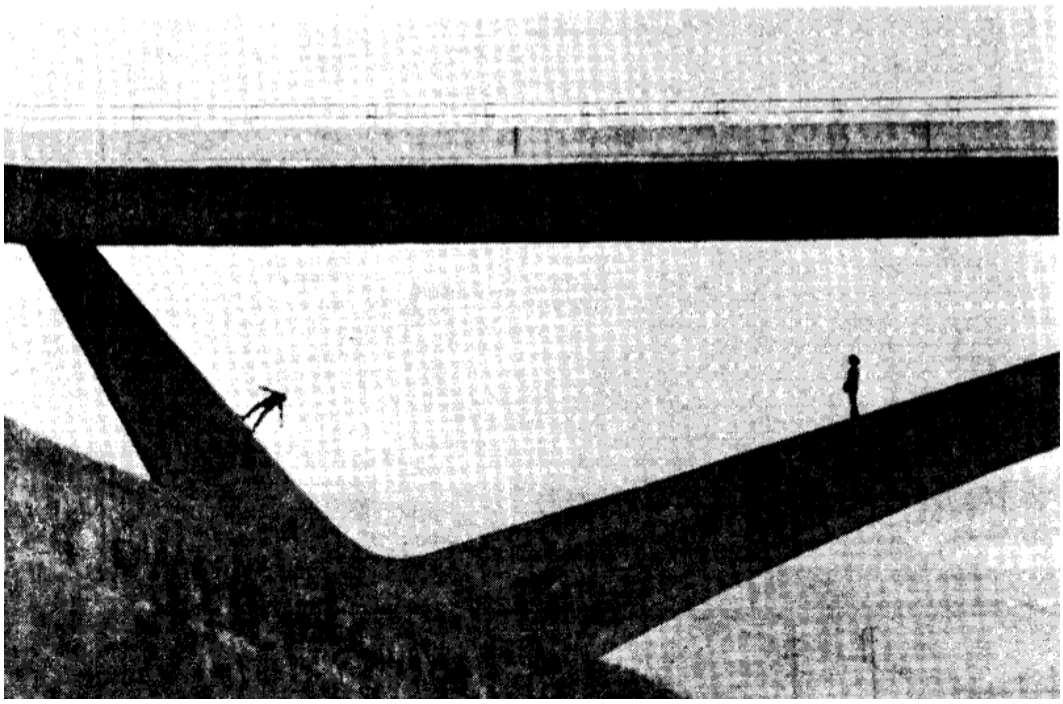


Adams Avenue School with Principal Bill Murphy, Elementary Class of/with Beth Granby, *Cross Sections*, District 11 Sprint 1971, 15.



Matt Hensley ollieing on the transition of the Eastgate Mall Overcrossing, "Matt Hensley Pro-Spotlight," *Transworld Skateboarding*, 1990, 66-67.

Quote reads: "There's this bridge. It's big, real big, and it has these huge transitions. When, and if, you drive by it, you're sure to say something like, "Wow, look at that. I wonder if it's skateable?"



"The Low Road," *San Francisco Chronicle*, Apr. 26, 1977.

Caption reads: "Two young skateboard enthusiasts found a new, arching challenge beneath Interstate 805 in San Diego. The graceful curves of the huge cement supports for the highway overpass provide a sport for the youngsters to roll on in relative quiet and safety."

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

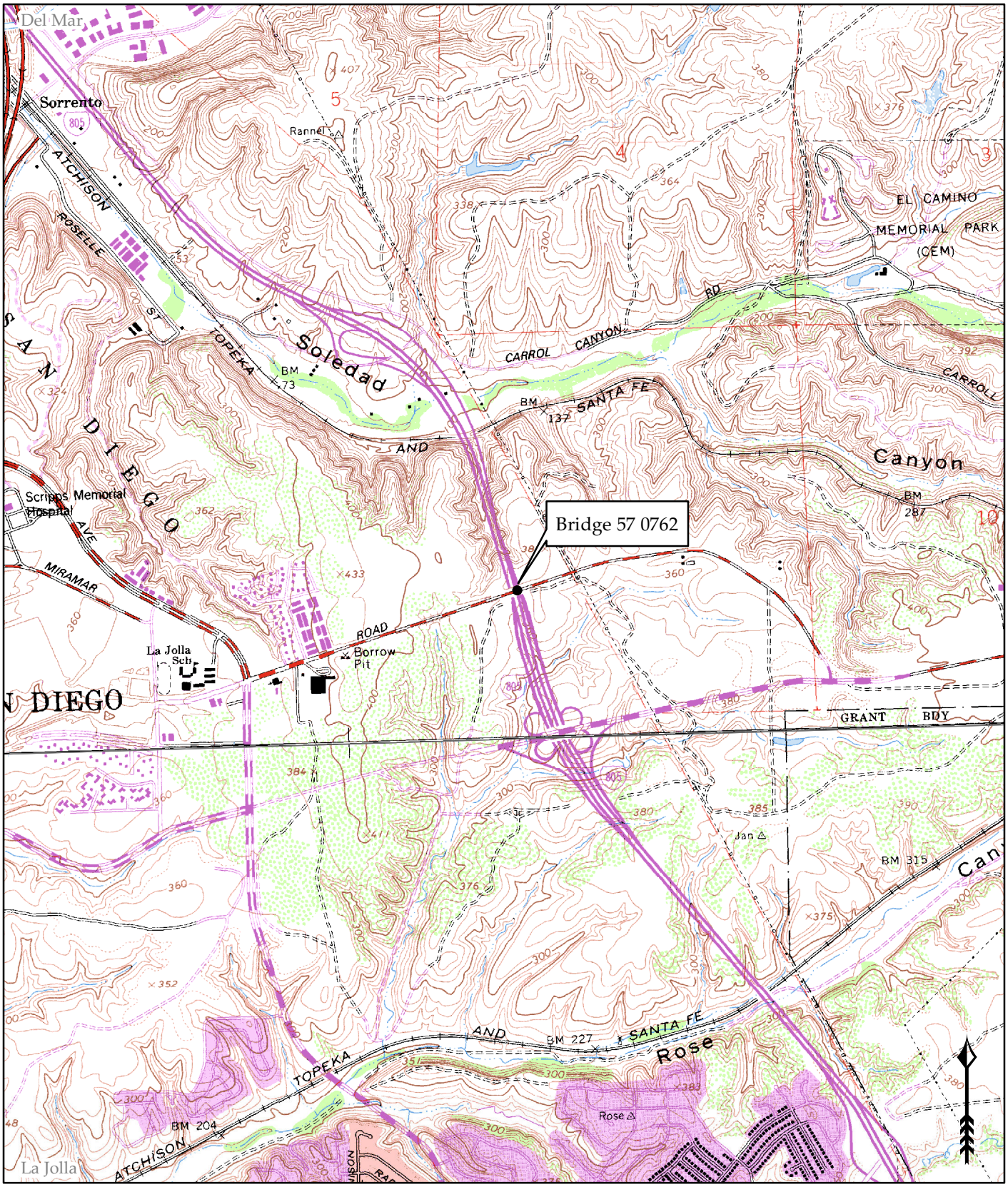
Primary #
HRI#
Trinomial

*Resource Name or #: 57 0762

*Map Name: Del Mar

*Scale: 1:24,000

*Date of Map: 1967



*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code | Reviewer | Date

 *Resource Name or #: Bridge 57 0857

P1. Other Identifier: San Diego-Coronado Bay Bridge

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County:** San Diego
and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** **Date:** **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: n/a City: San Diego Zip:

d. UTM: Zone: 10 ; mE/ mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Elevation:
San Diego County, State Route 75, postmile R20.49

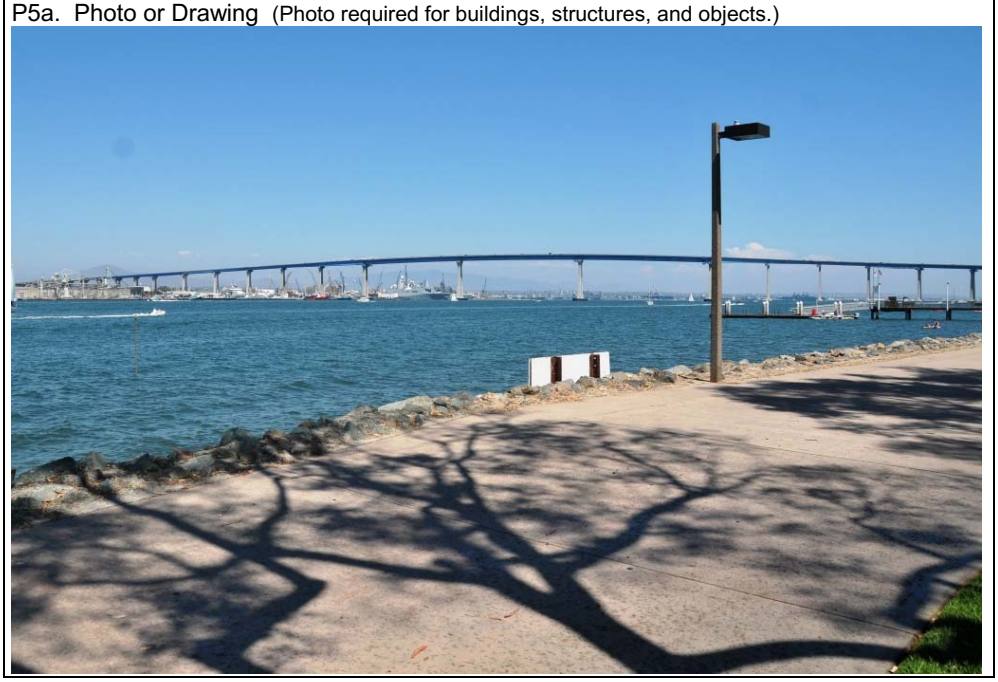
***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The San Diego-Coronado Bay Bridge, Bridge 57 0857, crosses the San Diego Bay carrying five lanes of State Route 75, connecting the cities of San Diego and Coronado (located on Coronado Island). The bridge is a complicated structure composed of several superstructure elements, including an orthotropic deck structure on a steel box girder for the main spans, continuous and simple composite welded steel plate girders, some suspended, for the west approach and parts of the east approach. The east approach is also composed of precast prestressed concrete "I" girders. The entire bridge is approximately 7,825 feet long (nearly 1.5 miles) with three main spans (two 600 foot and one 500 foot, 200 feet above the water) bridging the shipping channel. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP19. Bridge

***P4. Resources Present:** ☐Building ☒Structure ☐Object ☐Site ☐District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
View to the south (Coronado side), July 3, 2014

***P6. Date Constructed/Age and Sources:** ☒Historic ☐Prehistoric ☐Both
1969, Caltrans Bridge Files

***P7. Owner and Address:**
State of California
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P8. Recorded by:** (Name, affiliation, and address)
Janice Calpo
Dept. of Transportation
1120 N Street
Sacramento, CA 95814

***P9. Date Recorded:**
October 1, 2014

***P10. Survey Type:** (Describe)
Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Helen Blackmore, Janice Calpo, Lauren Clementino and Noah M. Stewart with contributions from Andy Hope, *Historic Resources Evaluation Report: Caltrans Statewide Historic Bridge Inventory: 2015 Update* (California Department of Transportation, Sacramento, 2015).

***Attachments:** ☐NONE ☒Location Map ☐Sketch Map ☒Continuation Sheet ☒Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*NRHP Status

*Resource Name or # (Assigned by recorder) Bridge 57 0857

B1. Historic Name: San Diego-Coronado Bay Bridge
B2. Common Name: San Diego-Coronado Bay Bridge
B3. Original Use: Bridge B4. Present Use: Bridge
***B5. Architectural Style:** Modern
***B6. Construction History:** (Construction date, alterations, and date of alterations)
Built 1969
***B7. Moved?** ☒No ☐Yes ☐Unknown **Date:** **Original Location:**
***B8. Related Features:** Administration building and toll plaza at the west end. Chicano Park and murals on columns and piers of the bridge, within Chicano Park, at the east approach. Chicano Park and the murals painted on the columns and piers of the bridge are listed in the National Register of Historic Places (National Register) and California Register of Historic Resources (California Register). The Toll Plaza, including the Administration Building, the wing-shaped canopy and surrounding designed landscape, has not been evaluated for the National Register or California Register.

B9a. Architect: Division of Bay Toll Crossings and Robert Mosher (Design Consult), of the architectural firm Mosher and Drew, and William Steven Allen (Design Consult), of the architectural firm Anshen and Allen.
b. Builder: Murphy Pacific Corp. (general contractor, responsible for the superstructure and steel fabricator) and Guy F. Atkinson Co. (substructure)

***B10. Significance: Theme:** Engineering **Area:** State
Period of Significance: 1969 **Property Type:** Structure **Applicable Criteria:** C
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

A bridge traversing the San Diego Bay was first contemplated in 1888 by Hampton Story and Elisia Babcock, developers of the Hotel del Coronado. Rather than build a bridge, the entrepreneurs constructed a rail line that skirted the bay and up a land spit that connected the island to the mainland. During the first half of the twentieth century, local interests suggested several schemes to connect San Diego with the island; however opposition from Coronado residents as well as the United States Navy blocked construction. It wasn't until the mid 1950s, when Governor Edmund Gerald "Pat" Brown, Sr. took personal interest in the project, dubbing it "my baby," that progress was made on the bridge. Governor Brown utilized his powerful political influences and his close relationship with President Lyndon Johnson to break the Navy's opposition to the project. (See Continuation Sheet, page 3)

B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** Caltrans Bridge Inspection Report: July 31, 2012

B13. Remarks: Administration building and toll plaza potentially eligible for the National Register under Criterion C for architecture and work of a master - William Steven Allen.

***B14. Evaluator:**
Noah Stewart
California Department of Transportation

***Date of Evaluation:** October 1, 2014

(Sketch Map with north arrow required.)



(This space reserved for official comments.)

***P3a. Description (continued):** The west approach spans (spans 1 to 17) have a lightweight cast-in-place reinforced concrete deck on continuous and simple composite welded steel plate girders (4), which rest on reinforced concrete pedestal seat abutments with reinforced concrete column bents. Spans 2, 4, 6, 8, 10, 12, 14 and 16 are suspended. Abutment 1 is on a spread footing. Bents 2 to 18 are on prestressed concrete piles. The main spans (spans 18 to 20) are composed of a single continuous orthotropic steel box girder with an epoxy asphaltic concrete wearing surface. The steel box girder segments rest on reinforced concrete column bents on prestressed concrete piles. The east approach spans (spans 21 to 29) have a lightweight cast-in-place reinforced concrete deck on continuous and simple composite welded steel plate girders (4 to 5) on reinforced concrete column bents. Spans 22, 24 and 26 are suspended. Bents 21 to 23 are on prestressed concrete piles. Bents 24 to 30 are on spread footings. Spans 30 to 32, on the approach have a lightweight cast-in-place reinforced concrete deck on simple precast, prestressed I girders (8 to 9) on reinforced concrete column bents on spread footings.

B10. Significance (continued): With the Navy placated, in 1964 Brown and the three other members of the Toll Bridge Authority approved the sale of bonds and instructed the Division of Bay Toll Crossings to begin construction. Erection of the bridge was still opposed by many Coronado politicians as well as residents. Brown chalked Coronados resistance to provincial squabbling, stating "a lot of retired Navy people didn't want (the bridge) then and will tell you they don't want it now. The growth of the area superseded their wishes. That's the reason I wanted it built -- I could foresee the growth of California and particularly of San Diego County." Brown marked the bridge as "one of the great accomplishments of my tenure as governor."

Because of opposition from Coronado, but also responding to complaints made of the recently completed Richmond-San Rafael Bridge across the northern part of the San Francisco Bay, the California Division of Bay Toll Crossings hired design consultants to help guide aesthetic decisions. Every architectural detail was considered from the graceful, nearly 90 degree, curve to the modified Type 27 railings (34 inches high) designed specifically for the bridge to allow unobstructed views from vehicles of surrounding geography. The concrete towers were designed with a curved cap echoing the arch shape associated with the region's mission architecture, while the blue painted superstructure harmonizes with the sky, bay and sea.

The final bridge was designed by the California Division of Bay Toll Crossings with contributions from architects Robert Mosher, of the La Jolla based firm Mosher and Drew, and William Steven Allen, of the San Francisco firm Anshen and Allen. Both firms Mosher and Drew and Anshen and Allen were important figures in their respective geographical areas during the mid-twentieth century for their work with modern architecture. Mosher and Drew was a La Jolla based firm run by Robert Mosher and Roy Drew. The two were responsible for many important works in the San Diego area and figured prominently in defining a regional modernist design idiom. Of their many works standouts include their own offices within the Green Dragon Colony in La Jolla as well as the La Jolla Art Center (now the Museum of Contemporary Art San Diego), a remodel of Irving Gill's Ellen Browning Scripps Residence, the Applied Physics and Mathematics Building (as well as the general plan of Muir College) at the University of California, San Diego, and the Aztec Center at San Diego State University.

Like Mosher and Drew, Anshen and Allen were prominent figures in developing a regional modernist aesthetic. Anshen and Allen are best known for their work with Joseph Eichler, an earlier developer of modernist tract housing– they designed the original Eichler houses and worked for the developer from 1950 to 1960. They were also responsible for forward-looking designs across the American West, including the Chapel of the Holy Cross in Sedona, Arizona, the Dinosaur National Monument Visitors' Center in Utah and the Berkeley Lawrence Hall of Science. Allen had previously worked with the California Division of Bay Toll Crossings consulting on design and aesthetic matters for the San Mateo-Hayward Bridge crossing the southern portion of San Francisco Bay.

The San Diego-Coronado Bay Bridge was completed in 1969, the same year as the Queensway Drive Bridges and two years after the San Mateo-Hayward Bridge. When it was completed it was the third longest orthotropic deck bridge in the country. It was the longest three-span continuous steel box girder bridge, at 1,880 feet. The curved section of bridge is composed of curved steel plate girders 2,850 feet in length, the longest usage of curved girders in the country when completed. The approach spans that cross over Interstate 5 measure up to 150 feet long; at the time, they were the longest prestressed precast concrete girders used in the U.S. Beyond the engineering considerations, the steel box girder and orthotropic deck superstructure arrangement allowed the designers to achieve long clear spans with relatively shallow profiles and the sleek appearance much admired in modern bridge design. Because of the innovative and aesthetically pleasing design, in 1970, the American Institute of Steel Construction honored the bridge with its Prize Bridge Award for best long span.

The main spans of the San Diego-Coronado Bay Bridge are a combination of steel box girder and orthotropic deck construction. Of the few steel box girder bridges in California, this arrangement is the rarest. Originally orthotropic deck bridges were built with steel girders, however soon it was realized that the steel box girder-orthotropic deck was not only torsionaly stronger than the steel girder version, it was also less expensive to construct. The advantage of the orthotropic deck is that it acts as an integral part of the overall structural system, rather than simply being additional dead load (the weight of the structure itself) that needs to be transferred to the floor beams, girders, and ultimately to the piers and foundations. The orthotropic deck acts as the top flange of the steel beam or box-girder. Since the deck is much larger than the top flange of a typical beam or girder, it contributes significantly to the strength of the bridge superstructure and therefore its ability to span longer distances.

Early steel box girder bridges constructed in California illustrate the system's flexibility. The first such bridge, Indian Creek Bridge (2C0147), was erected in 1966 and had a concrete deck supported by six fairly small steel box girders, rather than a smaller number of larger boxes which later became more common for the type. That same year, the Klamath River Bridge (04 0069) was completed using a combination steel box girder superstructure and suspended span. Other early bridges of this type include a pair (28C0315 and 28C0316) erected in 1968, over MacDonald Avenue, in Richmond, as part of the Bay Area Rapid Transit system (BART). The San Mateo-Hayward Bridge, which opened to traffic in 1967, was the first major orthotropic deck bridge in the United States and featured a steel box girder superstructure for its 750 foot main span, like the San Mateo-Hayward Bridge.

The San Diego-Coronado Bay Bridge was one of the many highway improvements carried out during the late 1960s and early 1970s. It is not significant under National Register of Historic Places (National Register) Criterion A or California Register of Historical Resources (California Register (Criterion 1 for its association with the development of the highway network through the region. While the bridge connected Coronado Island with the mainland, the both cities of Coronado and San Diego were almost completely developed prior to completion of the bridge and it did not factor into the growth of the area, but rather lessened travel times. The bridge is not associated with events that would make it significant under National Register Criterion A or California Register Criterion 1.

With regard to National Register Criterion B and California Register Criterion 2, while Governor Pat Brown championed construction of Bridge 57 0857, using his political connections to usurp the opposition, he did not have a personal hand in its design or construction. The bridge is not directly associated with Governor Brown. The San Diego-Coronado Bay Bridge was designed by the Division of Bay Toll Crossings with design assistance from Robert Mosher and Steven Allen. Both Mosher and Allen were important in development of regional expression of Modern architecture during the mid-twentieth century, however, while the bridge is associated these two prominent architects, the connection between the bridge and its designers is more appropriately considered under Criterion C and Criterion 3 as the work of a master rather than under Criterion B and Criterion 2. Bridge 57 0857 was not associated with a person who made a significant contribution to history. The San Diego-Coronado Bay Bridge is not significant under National Register Criterion B or California Register Criterion 2.

Steel box girder bridges are relatively rare in California. The combination steel box girder and orthotropic deck are even more unusual. Both technologies date to the post-World War II period. The system creates a torsionaly strong bridge that is extremely efficient. While the combination is less expensive than the earlier steel girder and orthotropic deck system, as steel costs escalated and major contractors invested in equipment dedicated to concrete construction, steel bridges were only erected in unique circumstances.

The San Diego-Coronado Bay Bridge is significant under Criterion C and Criterion 3 as an early long span steel box girder bridge with orthotropic deck, as well as for its sleek modern bridge aesthetic. The bridge pushed the envelope in terms of technology, incorporating the longest three-span continuous steel box girders, the longest usage of curved girders, the longest prestressed precast concrete girders as well as the third longest orthotropic deck bridge in the country. As far as the architects work on the San Diego-Coronado Bay Bridge, Robert Mosher was closely involved in the general aesthetic of the bridge – it's graceful lines, thin profile and blue colored superstructure – planned to blend into the sky, while William Steven Allen was largely responsible of the design of the Administration Building and toll plaza structures. Although the men were important in the field of architecture during the mid-twentieth century, neither was known as a bridge specialist. Both Mosher and Allen were known for their residential and institutional work rather than bridge design. Because of this, the bridge does not represent the work of a master. Additionally, it does not represent a significant and distinguishable entity whose components may lack individual distinction.

Bridge 57 0857 retains all seven aspects of integrity. It has not been moved and retains integrity of location. The setting and feeling have been unaltered. The association of the bridge has been unchanged. The design, materials and workmanship of the bridge has been retained, having had only minor maintenance over the years. The San Diego-Coronado Bay Bridge retains high integrity.

San Diego-Coronado Bay Bridge was erected as a typical transportation improvement project of the period and is not associated with events that have made a significant contribution to the broad patterns of history and is not significant under National Register Criterion A or California Register Criterion 1. The bridge is not associated with the lives of significant persons in history and is not significant under National Register Criterion B or California Register Criterion 2. The San Diego-Coronado Bay Bridge embodies the distinctive characteristics of an early long span steel box girder bridge with orthotropic deck as well as for its sleek modern bridge aesthetic. Bridge 57 0857 is significant under National Register Criterion C and California Criterion 3. The bridge has not yielded and is not likely to yield information important in history and is not significant under National Register Criterion D or California Register Criterion 4. Additionally, the San Diego-Coronado Bay Bridge retains high integrity. Bridge 57 0857 is eligible for inclusion on the National Register and California Register.

B12. References (continued):

Jim Fisher, *Historic Resources Evaluation Report for San Diego – Coronado Bay Bridge, Chicano Park and the Chicano Park Murals* (California Department of Transportation, Sacramento, 1996).

Steven Simpson, "The Coronado Bridge: Arc of Art and Utility," San Diego Seacoast Magazine, November 1980, 33-41.

"The San Diego – Coronado Bay Bridge" – Third Anniversary pamphlet. Division of Bay Toll Crossings.

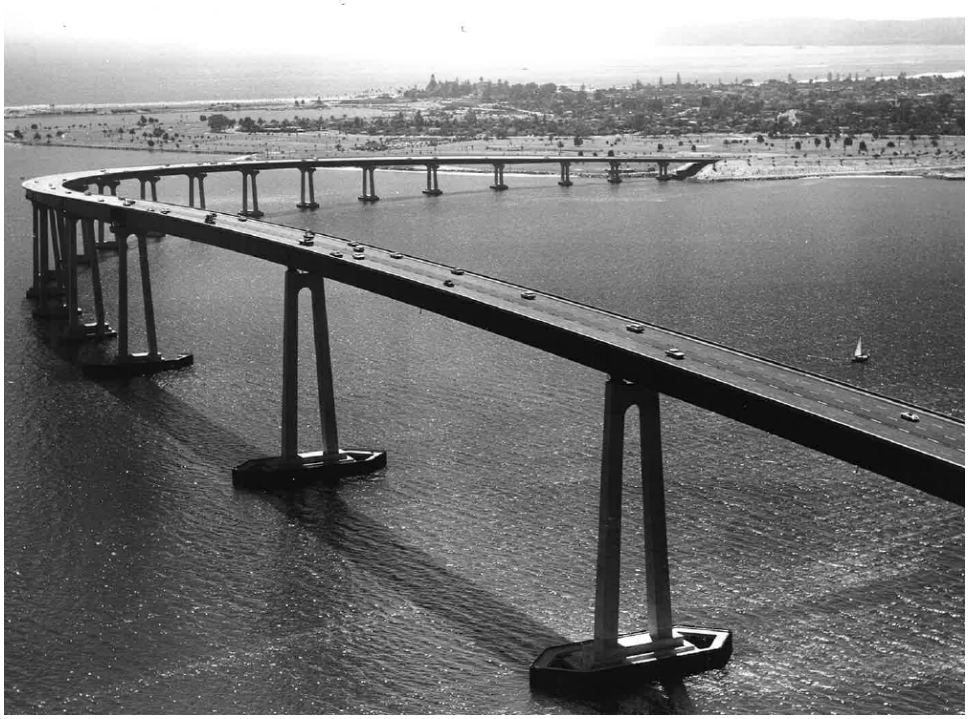
"The San Diego – Coronado Bay Bridge Wins A.I.S.C. Award of Merit" Business and Transportation Agency Bulletin, July 7, 1970.

"20 Years Later, Span Is Loved and Loathed," *Los Angeles Times*, August 02, 1989

P5b. Photographs (continued):



View north, erecting main spans - cantilevered steel box girder, December 18, 1968



View west, completed bridge open to the public, ca. late 1969



View looking south, lifting final steel box girder into place, May 28, 1969



View looking north (Coronado Side), July 3, 2014



Detail looking northwest, steel girder superstructure and arch columns (Coronado side), July 3, 2014



Detail looking northeast, prestressed precast reinforced concrete girder superstructure (San Diego Side), July 3, 2014

State of California The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

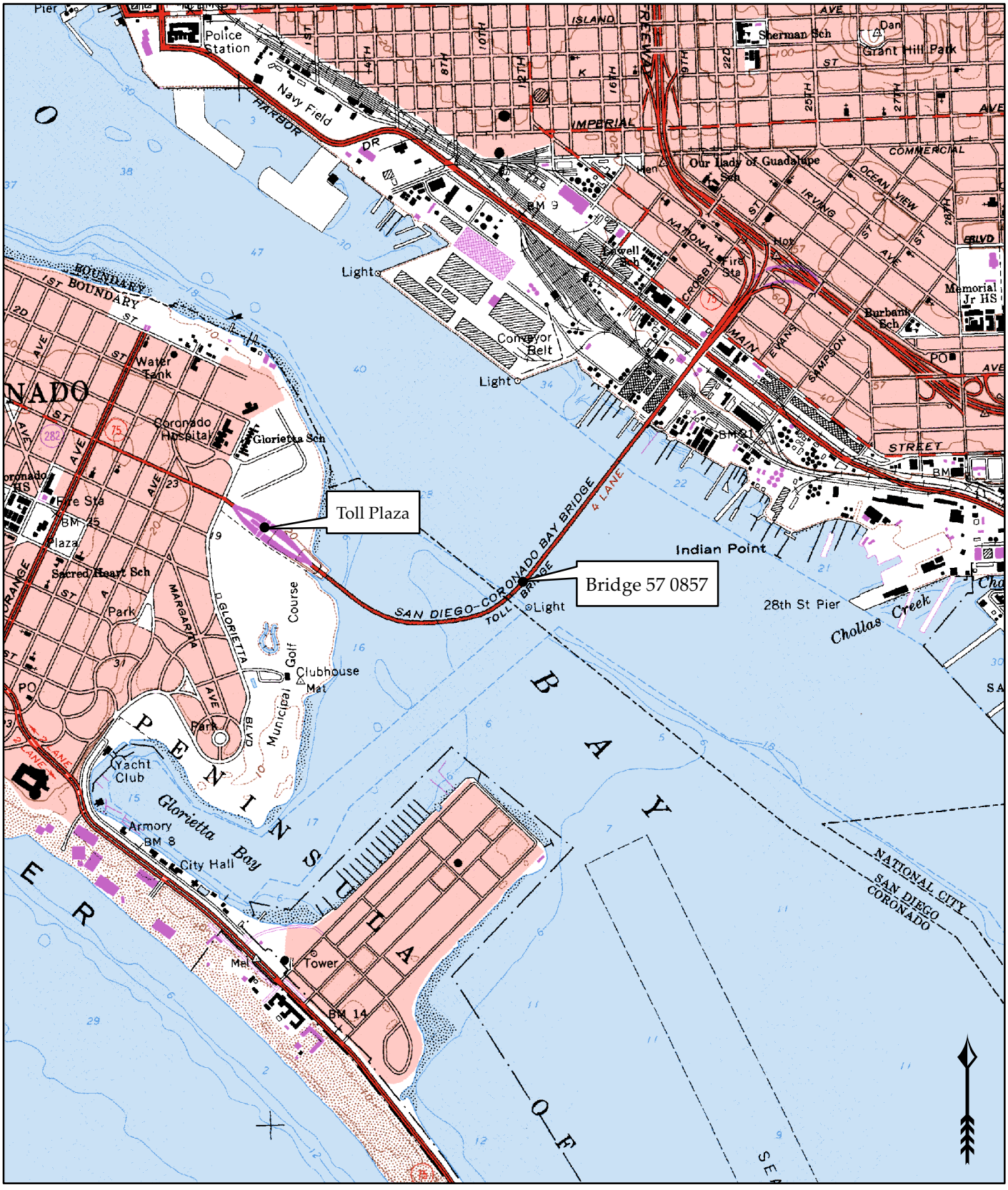
Primary #
HRI#
Trinomial

*Resource Name or #: 57 0857

*Map Name: Point Loma

*Scale: 1:24,000

*Date of Map: 1967



*Required information

Structure Maintenance & Investigations Local Agency Bridges
August 2022

Structure Maintenance & Investigations

Historical Significance - Local Agency Bridges



District 07

Los Angeles County

Bridge Number	Bridge Name	Location	Historical Significance	Year Built	Year Wid/Ext
53C1858	PUDDINGSTONE CHAN	0.1MI E/O SAN DIMAS CN RD	5. Bridge not eligible for NRHP	1985	
53C1859	VERDUGO WASH	0.3MI N/O US-101 FWY	5. Bridge not eligible for NRHP	1986	
53C1860	BOUQUET CYN CHAN	0.2MI N/O BOUQUET CYN RD	5. Bridge not eligible for NRHP	1985	2002
53C1861	HASLEY CYN WASH	0.1MI N/O HASLEY CYN RD	5. Bridge not eligible for NRHP	1983	
53C1862	UNNAMED WASH	AT 190TH ST W	5. Bridge not eligible for NRHP	1976	
53C1863	UNNAMED WASH	0.1MI W/O 190TH ST W	5. Bridge not eligible for NRHP	1976	
53C1864	CARMENITA RD UP	0.2MI N/O ROSECRANS AVE	5. Bridge not eligible for NRHP	1983	
53C1865	MILAN CRK	0.3MI N/O ROSECRANS AVE	5. Bridge not eligible for NRHP	1982	
53C1866	SNOW CRK EF	0.2MI E/O GRAND AVE	5. Bridge not eligible for NRHP	1984	
53C1867	SNOW CRK EF	0.1MI W/O LA PUENTE RD	5. Bridge not eligible for NRHP	1984	
53C1868	AMARGOSA CRK	0.6MI W/O SIERRA HWY	5. Bridge not eligible for NRHP	1989	
53C1869M	E CANYON CHANNEL	0.05 MI SW/O FWY 5	5. Bridge not eligible for NRHP	1967	
53C1870	ALAMEDA ST	0.4MI S/O CARSON STR	5. Bridge not eligible for NRHP	1986	
53C1871	PUDDINGSTONE CHAN	0.1MI S/O ALLEN AVE	5. Bridge not eligible for NRHP	1985	
53C1872	EASTERN AVE	0.3MI S/O WASHINGTON BLV	5. Bridge not eligible for NRHP	1982	
53C1874	ARROYO SECO CHANNEL	AT SR 110	2. Bridge is eligible for NRHP	1912	
53C1875	ARROYO SECO CHANNEL	AT SR 110	2. Bridge is eligible for NRHP	1939	
53C1876	ARROYO SECO CHANNEL	ATSR 110	2. Bridge is eligible for NRHP	1940	
53C1877	ARROYO SECO CHANNEL	AT SR 110	2. Bridge is eligible for NRHP	1939	
53C1878	ARROYO SECO CHANNEL	AT SR 110	2. Bridge is eligible for NRHP	1909	1939
53C1879	ARROYO SECO CHANNEL	AT SR 110	2. Bridge is eligible for NRHP	1940	
53C1881	GLENDALE BLVD SB, LA RIVER	ON GLENDALE BLVD	2. Bridge is eligible for NRHP	1929	
53C1882	SEPARATION HYPERION AVE. / RIVERSIDE RD	0.05 MI W/O FWY 5	2. Bridge is eligible for NRHP	1929	
53C1883	LOS ANGELES RIVER	0.1 MI NE FWY 5	2. Bridge is eligible for NRHP	1929	
53C1884	LOS ANGELES RIVER	0.1 MI NE FWY 5	2. Bridge is eligible for NRHP	1929	
53C1885	BALBOA BLVD SOH	AT SAN FERNANDO RD	5. Bridge not eligible for NRHP	1971	
53C1886	BOWDOIN STREET PUC	0.1 M W/O TEMESCAL CYN RD	5. Bridge not eligible for NRHP	1961	
53C1888	MILAN CRK	0.1MI E/O VALLEY VIEW AVE	5. Bridge not eligible for NRHP	1987	
53C1889	MILAN CRK	0.5MI E/O VALLEY VIEW AVE	5. Bridge not eligible for NRHP	1987	
53C1890	MILAN CRK	0.8MI S/O IMPERIAL HWY	5. Bridge not eligible for NRHP	1987	
53C1891	SDBI 528	0.1MI S/O VALLEY BLVD	4. Historical Significance not determined	1986	
53C1892	PECK RD UNDER SPTC	0.2MI N/O I-10	5. Bridge not eligible for NRHP	1988	
53C1893	ORANGE ST	50FT S/O BROADWAY	5. Bridge not eligible for NRHP	1985	
53C1894	CENTRAL AVE	0.1MI S/O BROADWAY	5. Bridge not eligible for NRHP	1985	
53C1895	REMINGTON CHAN	0.7MI W/O ROMERO CYN RD	5. Bridge not eligible for NRHP	1981	
53C1896	SAWPIT WASH	0.2MI W/O MOUNTAIN AVE	5. Bridge not eligible for NRHP	1968	
53C1897	SAWPIT WASH	0.2MI W/O MOUNTAIN AVE	5. Bridge not eligible for NRHP	1968	
53C1898	MTA	INTX MARENGO CORSON I-210	5. Bridge not eligible for NRHP	1976	
53C1899	FIGUEROA ST	0.2MI S/O CARSON ST	5. Bridge not eligible for NRHP	1962	
53C1900	APPIAN WAY / PROMENADE	0.6MI W/O LINCOLN BLVD	5. Bridge not eligible for NRHP	1939	
53C1901	FAIRGROVE STORM DRN	0.3MI W/O BLDWN PK BL	5. Bridge not eligible for NRHP	1956	
53C1902	FRONT ST, SPTCO, FLOWER	AT I-5 FWY	5. Bridge not eligible for NRHP	1959	
53C1903	FRONTAGE RD / SPTCO	AT I-5 FWY	5. Bridge not eligible for NRHP	1959	

Appendix I

ADA Access for the Santa Monica Pier Bridge Project

City of Santa Monica
Civil Engineering Division
1437 4th Street, Suite 300
Santa Monica, CA 90401

December 14, 2015

Mr. Vijay Kopparam
Office of Local Assistance
Department of Transportation, District 7
100 S. Main Street, #12-389
Los Angeles, CA 90012

RE: Response to CA DOT Inquiries on the ADA Access Improvements Proposed for the New Santa Monica Pier Bridge.

Dear Mr. Kopparam:

Pursuant to our phone conversation on October 6, 2015, we are providing herewith the responses to the inquiries made by staff from Caltrans District 7 and Caltrans Headquarters regarding our proposed ADA access improvements for the new Santa Monica Pier Bridge.

1. Justify the need for mechanical equipment. Provide an explanation why a structural strategy is not feasible to provide practical and useable ADA Access along the proposed Pier Bridge.

Structural ADA Paths

- The elevation difference from the highest point of the Pier Bridge to the pier deck is approximately *36'*. The elevations of the key points are as follows:
  - *Pier Bridge High Point: +58'*
  - *Pier Deck Elevation: +22'*
  - *Ocean Front Walk Elevation: +13'*
- A maximum slope for the ramps permitted under ADA requirements is;
  - *5% sloped path with no landings or*
  - *8.3% sloped path with minimum 5' long landing at every 30'' (2.5') elevation difference.*
- Regardless of the shape, for a 36' elevation difference, the total travel length of a ADA compliant path would be;
  - *720' long* for a max. 5% sloped ramp or
  - *502' long* for a max. 8.3% sloped ramp including the required intermediate landings.

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Santa Monica, CA 90401

720’ long ADA path for 5% sloped ramp

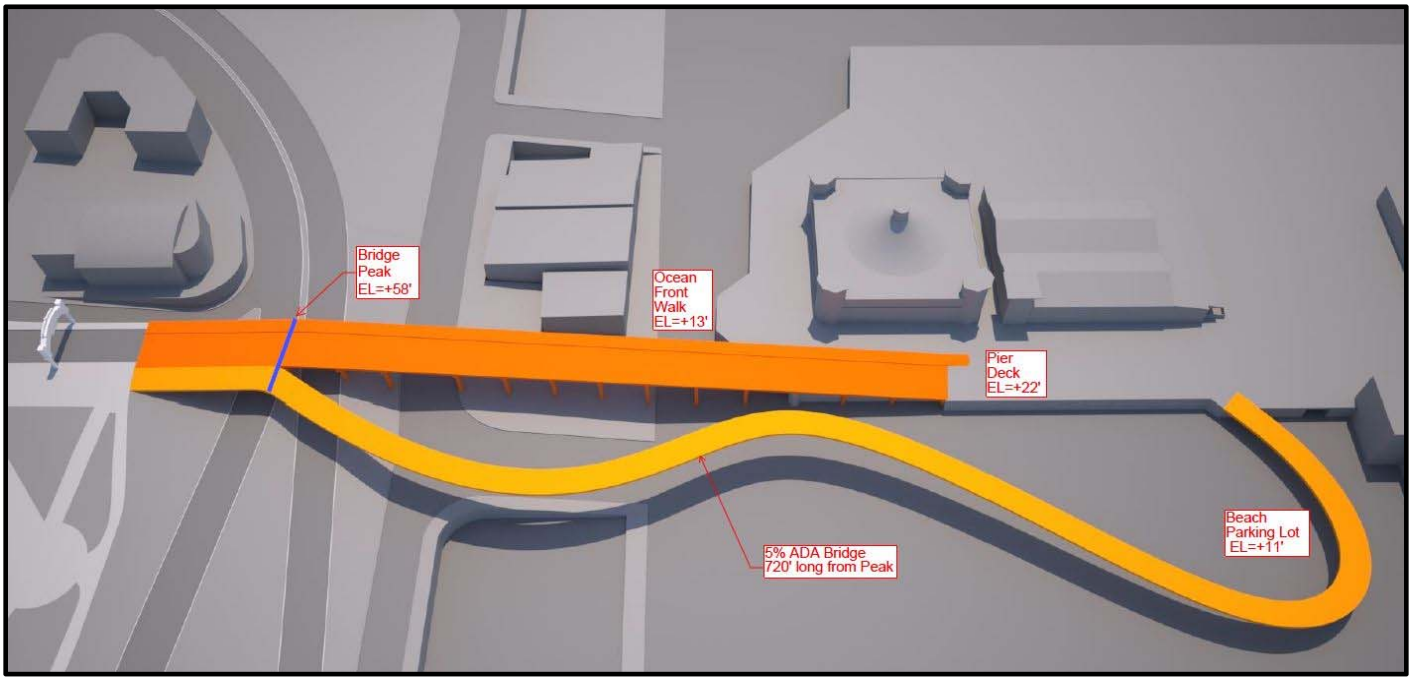


Figure 1-with a bifurcated 5% ADA Path

Figures 1 and 2 show two perspectives of an ADA path on the north side of the Pier Bridge with a maximum 5% slope. The length of the 5% sloped path from the high point to the pier is 720 feet. The alignment shown the figures requires the structure to encroach outside the City right-of-way into Lot-1 North, which is on the State property. The pier deck is approximately 11’ above the beach parking lot level and the structure encroaching into the parking lot would not provide sufficient vertical clearance for vehicles traffic at the parking lot. The alternatives similar but in different shapes shown in figures 3 pose the same fundamental infeasibilities.

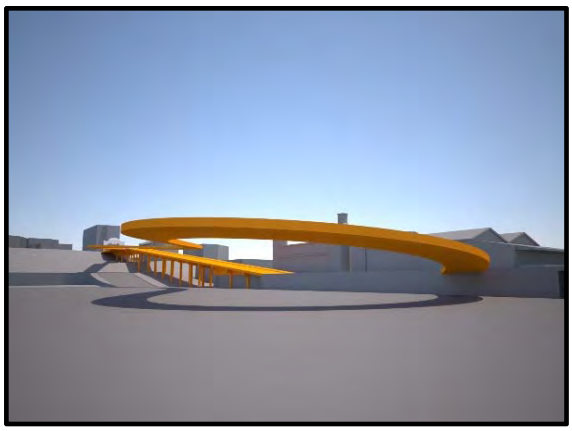


Figure 2 – view from the beach level

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Santa Monica, CA 90401

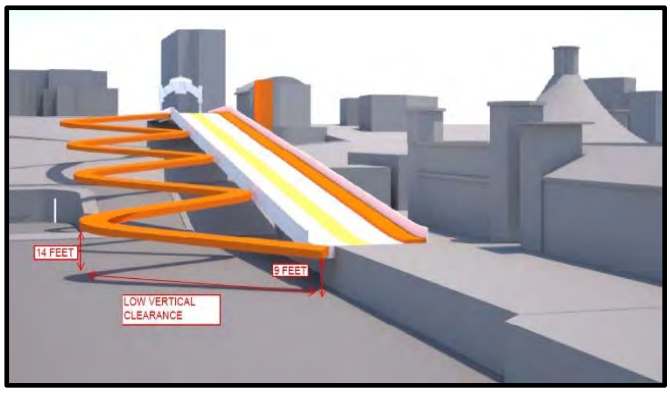


Figure 3 – Switchback configuration with 5% slope

The configurations shown in figures 1, 2 and 3 would significantly impact the views of the site. The cost of this type of a structure was not analyzed however the cost expected to be significantly higher compared to the alternatives discussed further in this letter. This alternative was eliminated due to the right-of-way encroachment and vertical clearance limitation.

A circular structure with 5% sloped path at the south side of the Pier Bridge over Ocean Front Walk was explored as shown on Figures 4, 5 and 6. A large radius of curvature is required for a full circle ramp structure with 720' long travel distance at 5% slope. The structural supports are expected to take a significant amount of space on the Pier Deck, at the Aquarium below and on the Ocean Front Walk which would limit accessible space and general use by public. The large mass of the structure in this configuration shown in Figures 4, 5 and 6 would obstruct the views of the site from various viewpoints. The path would encroach over the Ocean Front Walk and would not provide a minimum vertical clearance of 13.5' for emergency vehicles traversing Ocean Front Walk per the California Fire Code. This alternative was eliminated for these reasons.

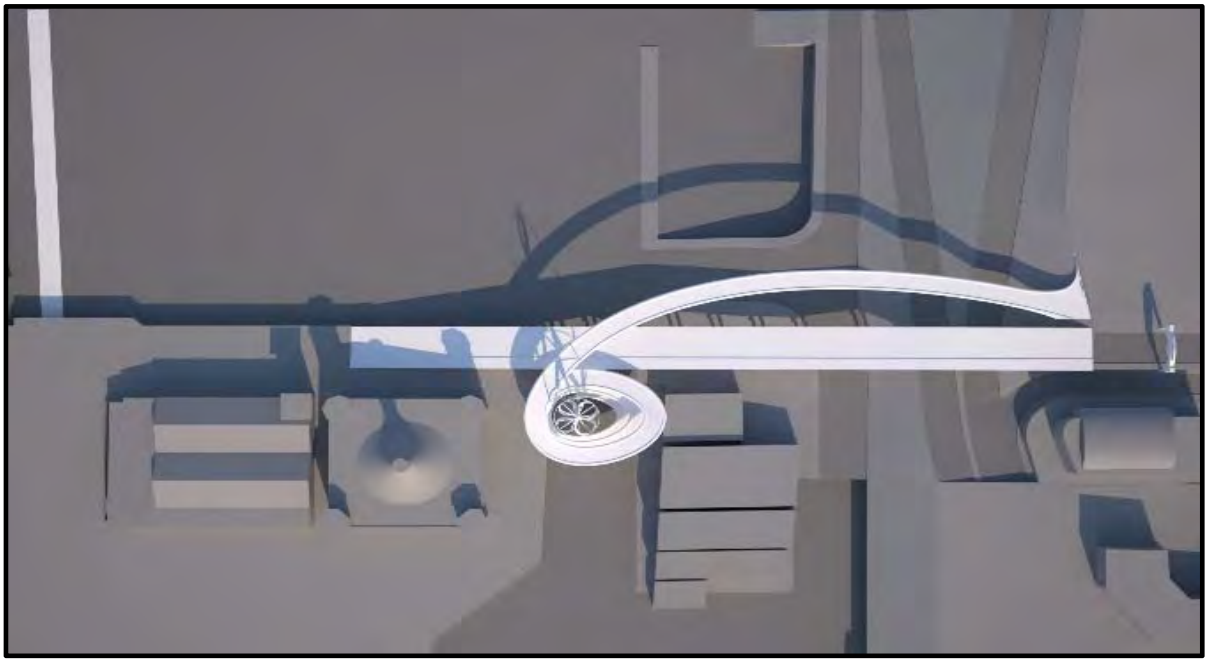


Figure 4 –Circular 5% ADA Path

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Santa Monica, CA 90401

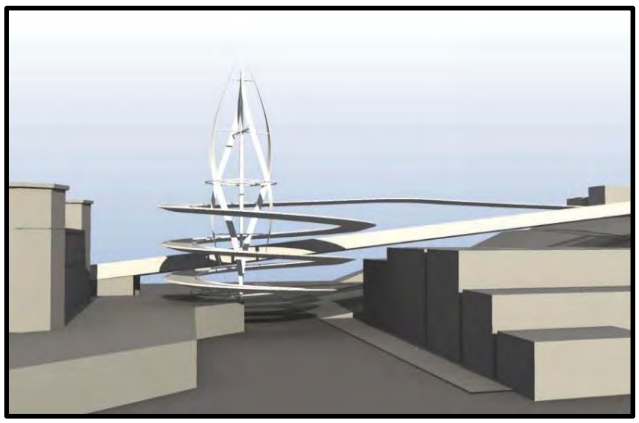


Figure 5 – view from South Side of the Pier

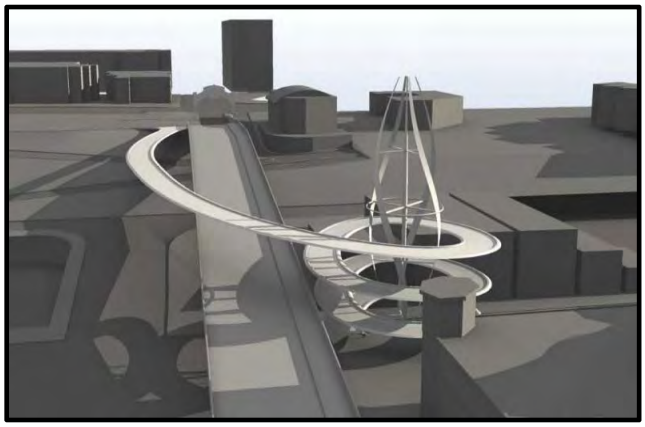


Figure 6 – View from West

502’ long ADA path for 8.3% sloped path

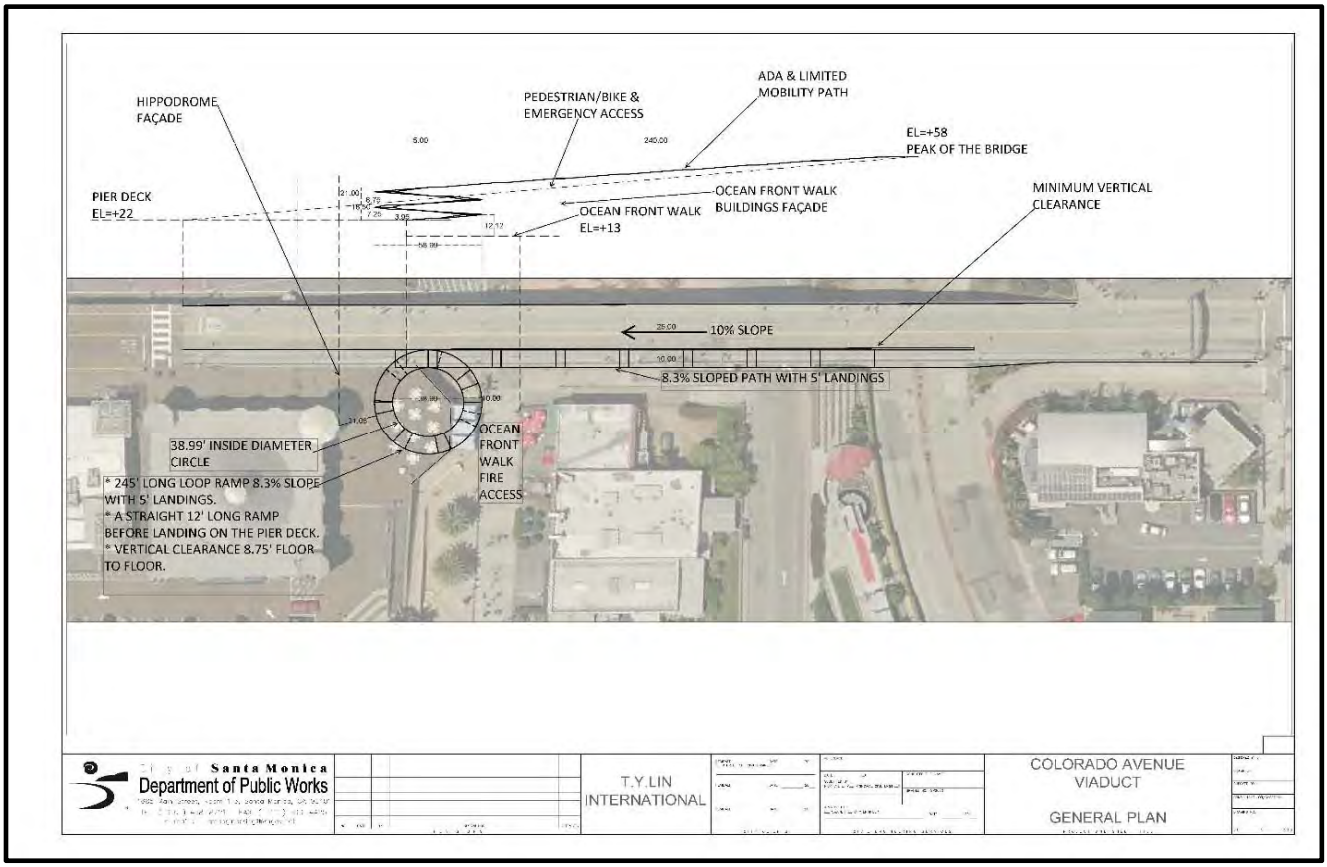


Figure 7 – with 8.3% circular ADA path

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Civil Engineering Division
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Figure 7 shows an 8.3% sloped ADA ramp with 5’ long flat landings at every 30” of elevation difference. Entire ADA path would be 502’ long including the required intermediate landings. This option is designed to be the shortest length possible for an ADA path in this topography. It places the full circular structure over the pier deck. The supports would be through the pier deck and impact the Aquarium below the deck. This would reduce the amount of useable space on the pier deck and in the Aquarium.

In addition, the structure over the Pier deck would not provide sufficient vertical clearance and preclude the use of this part of the Pier. The structure’s mass would obstruct the view corridors of the beach, pier and historical buildings and would to be close proximity of the Historical Carousel Building.

Figures 7 and 8 show an alternative with a path that uses an 8.3% slope with landings at every 2.5 feet in elevation change and is cantilevered from the sides of the Pier Bridge. Although this alternative is a feasible option and meets the design criteria for ADA compliance, it may not be effective or user-friendly as it forces pedestrians in a back and forth motion, potentially discouraging intended users with mobility impairments. This alternative is the current structural solution and the entire length of the ADA path is 502’ long.

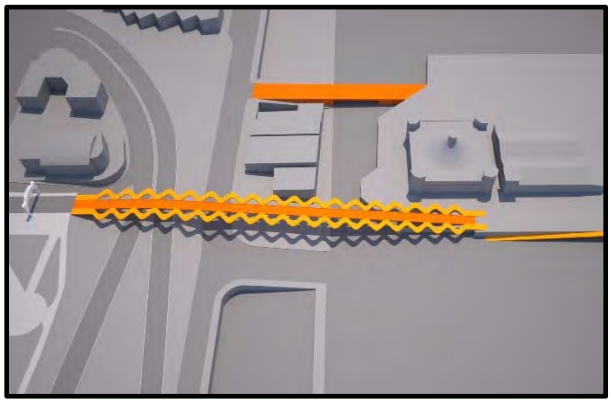


Figure 7 – with 5% undulating (semi-circular) ADA path



Figure 8 – view from West

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Improve ADA access with a straight Path followed by an Elevator, Stairway and Escalators

Due to the extensive length, odd shape and visual mass of each proposed structural solutions for the ADA path, an alternative solution is proposed. This alternative consists of a separate 216' long ADA path with at 5% slope next to the Pier Bridge that runs from the high point of the bridge profile to a landing next to the elevator as Shown in Figures 9 and 10.

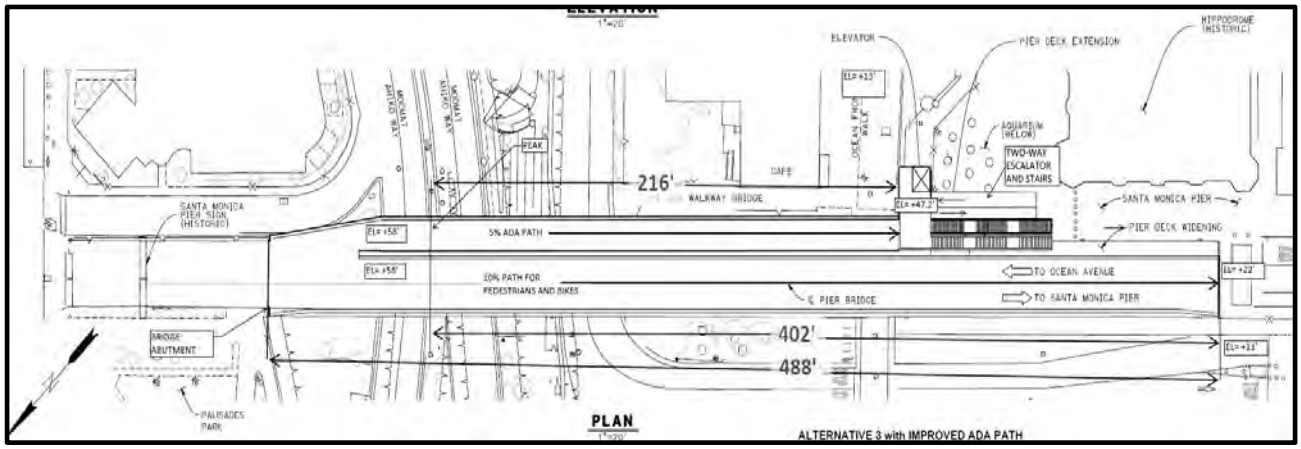


Figure 9 - with 5% straight ADA path followed by an Elevator, Escalators, and Stairway

This alternative provides the most direct access from Ocean Avenue to the pier for mobility impaired pedestrians. Since the path has a gentler grade than the Pier Bridge it is expected that persons without disabilities such as limited mobility persons, families with strollers and small children would also consider using this route. This alternative includes a set of stairs and escalators next to the elevator to handle overflow pedestrian traffic and to comply with any code requirements for egress.

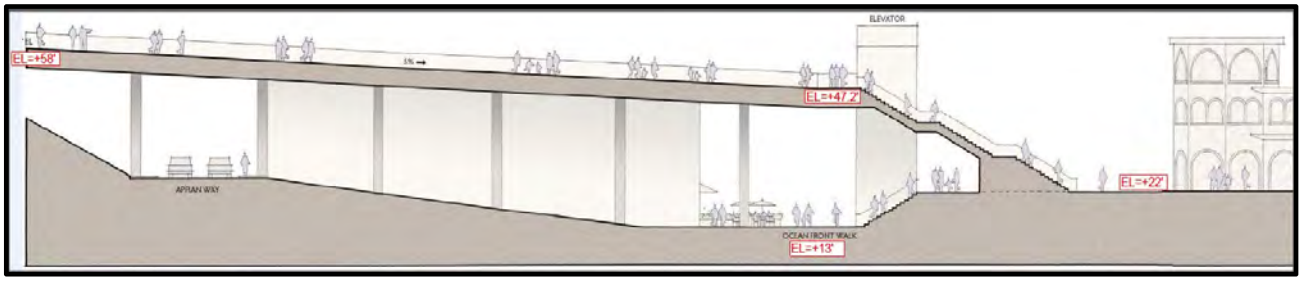


Figure 10 - section view

The use of elevators significantly shortens the traveled distance for all users of the ADA facility. At 216 feet, the total distance is at least 286' shorter compared to any other structural solution.

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Numerous discussions and comments from the public, Pier Board, community stakeholders and businesses; determined that the previously proposed undulating ADA path would neither be user-friendly nor be a reflection of the City's best effort to provide accessibility for the 75-year expected life cycle of the structure.

In the absence of structural ramps; elevators, escalators and stairways allow for the rapid movement of large pedestrian volumes and are widely used in combination at airports, transit centers, shopping malls, and other areas involving significant pedestrian movement. The existing large volumes of pedestrians on the Pier Bridge is expected to increase due to the current transit development, specifically with the Expo light Rail Station opening a few blocks east of the Pier.

2. <u>Justify the required ADA path width.</u>

The Santa Monica Pier is a very popular destination that is visited daily by thousands of people and most of the users access the pier from Ocean Avenue. On weekends and holidays the Pier Bridge can be filled to capacity as shown in Photo 1 with pedestrians spilling into the vehicular side.



Photo 1

Given the large volumes of pedestrians that use the pier bridge many will migrate to the ADA path which has a gentler slope. Anticipating this increase usage, the ADA accessible path needs to be as wide as practicable to handle crowds. Minimum passing width for an ADA path is 5'. Since this path may be heavily congested, a 10' wide path is recommended to double the passing capacity. This width is not excessive for the usage, will be contained within the City right-of-way and can be accommodated in the planned construction staging.

3. <u>Provide pertinent bridge elevations.</u>

Pertinent elevations are shown on the attached drawing.

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Civil Engineering Division
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Santa Monica, CA 90401

We hope that the information we provided meets your needs. Our original request for consideration of these ADA improvements was submitted in June 2015. Since then we have made great progress on the environmental documentation. However, our analyses on visual resources, relocation impacts, and cultural resources are currently on hold as we anticipate incorporating these ADA improvements into our final project description.

At this time we need the following determinations from Caltrans:

1. Will the proposed ADA accessibility improvements described in this, and prior, correspondence (including the elevator, escalator, and stairs at the end of the 10' wide path) be funded by the Federal Highway and Bridge Program in lieu of the originally proposed undulating ADA accessible path?

2. A conference call was previously arranged with staff from FHWA, Caltrans HQ and Caltrans District 7 in which we established the width limitations for the two-bridge alternative. Will a separate conference call be scheduled to determine the width limits for the single bridge alternatives that are being evaluated during the environmental phase of the project?

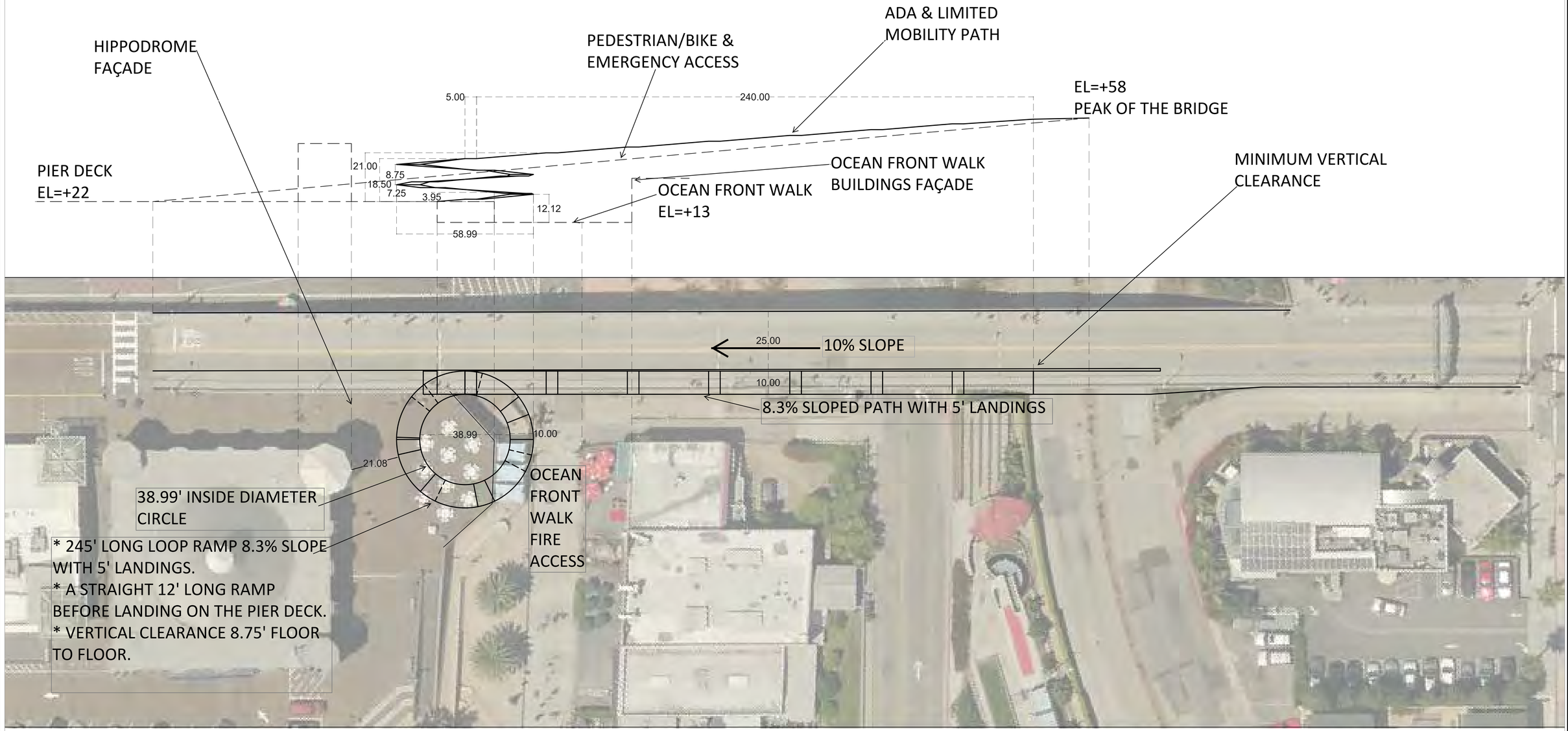
If you have any questions, please feel free to contact me directly at (310) 458-2201 ext. 5107.

Sincerely,

Selim Eren, P.E.
Civil Engineer
selim.eren@smgov.net

cc: Lee Swain, PE, City Engineer
Rick Valte, PE, Principal Civil Engineer

Encl. Elevation Drawing



City of Santa Monica
Department of Public Works
1685 Main Street, Room 113, Santa Monica, CA 90401
TEL. (310) 458-8721 FAX. (310) 393-4425
e-mail : smengineering@smgov.net

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

T.Y.LIN INTERNATIONAL

REVIEWED : SELIM EREN, P.E., CIVIL ENGINEER DATE : ____ 20__
REVIEWED : DATE : ____ 20__
REVIEWED : DATE : ____ 20__

CITY CLIENTS

REFERENCE :
DATE : ____ 20__
SUBMITTED BY : RICK VALTE, P.E., PRINCIPAL CIVIL ENGINEER
COMPUTER FILE NAME:
SP-FILE NO.: SP2060
APPROVED BY : LEE SWAIN, P.E., CITY ENGINEER DATE : ____ 20__

CIVIL ENGINEERING SERVICES

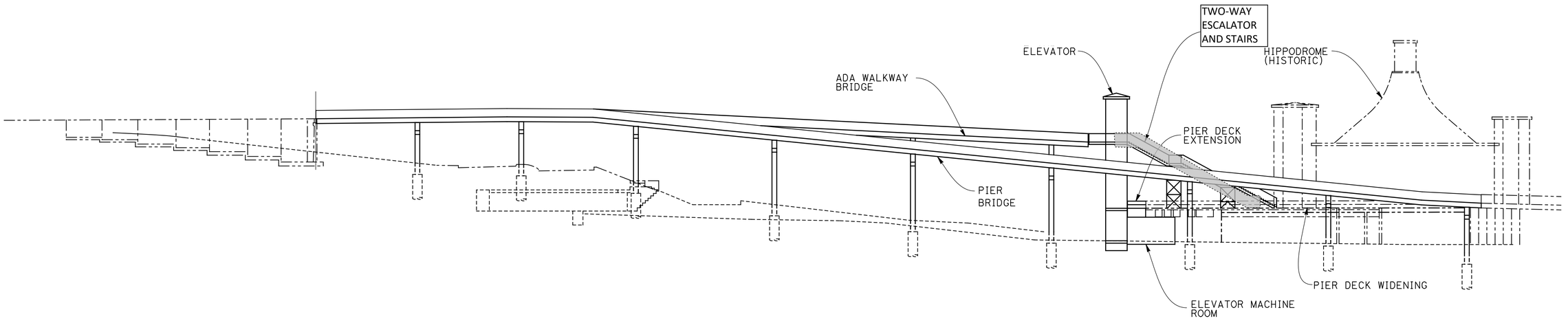
COLORADO AVENUE VIADUCT

GENERAL PLAN

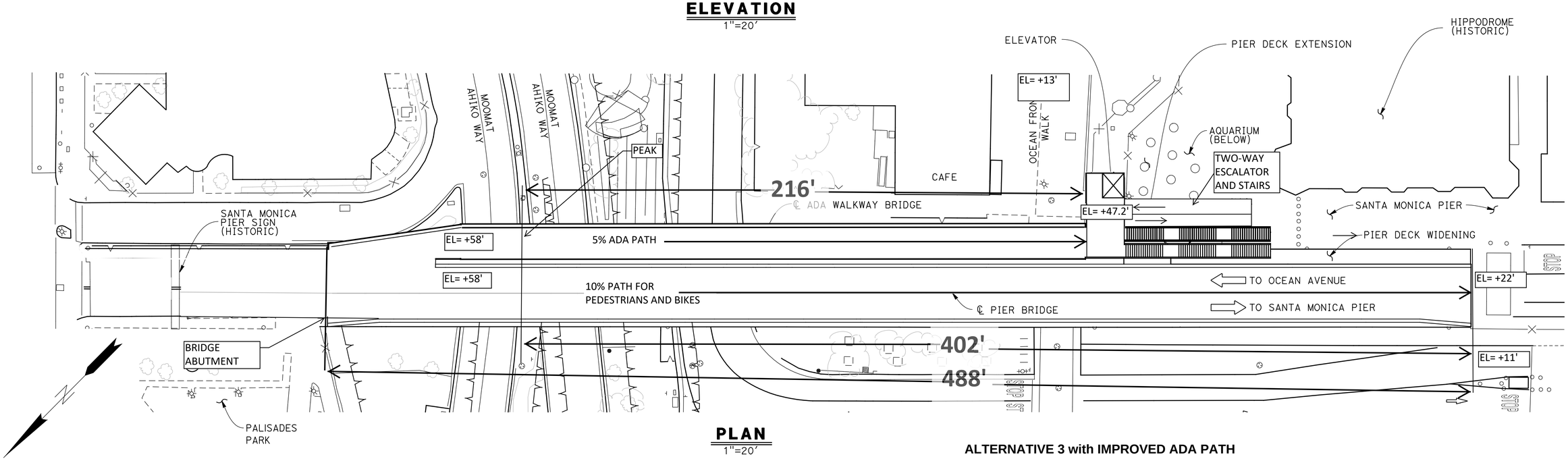
PROJECT AND SHEET TITLE

DESIGNED BY :
DRAWN BY :
CHECKED BY :
CONSULTANT JOB/SHEET NO.
DRAWING NO.
SHT OF SHTS

ALTERNATIVE 3 - with IMPROVED ADA PATH
TWO BRIDGES ALTERNATIVE WITH A STRAIGHT ADA PATH, AN ELEVATOR, ESCALATORS AND A STAIRWAY



ELEVATION
1"=20'



PLAN
1"=20'

ALTERNATIVE 3 with IMPROVED ADA PATH

City of **Santa Monica**
Department of Public Works
1437 4th Street, Suite 300 Santa Monica, CA 90401
TEL. (310)458-8721 FAX. (310)393-4425
e-mail : smengineering@smgov.net

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

DATE :

T·Y·LIN INTERNATIONAL
404 CAMINO DEL RIO SOUTH, SUITE 700, SAN DIEGO, CA. 92108
(619) 692-1920 www.tylin.com

CONSULTANT

REGISTERED PROFESSIONAL ENGINEER — No. – Exp. – CIVIL — STATE OF CALIFORNIA

REVIEWED : DATE : 20__
SELIM EREN, P.E. PROJECT MANAGER
REVIEWED : DATE : 20__
REVIEWED : DATE : 20__

CITY CLIENTS

REFERENCE :
DATE : 20__
SUBMITTED BY :
RICK VALTE, P.E., PRINCIPAL CIVIL ENGINEER
APPROVED BY : DATE : 20__
LEE SWAIN, P.E., CITY ENGINEER

COMPUTER FILE NAME :
SP-FILE NO. : 2060

ENGINEERING

COLORADO AVENUE VIADUCT

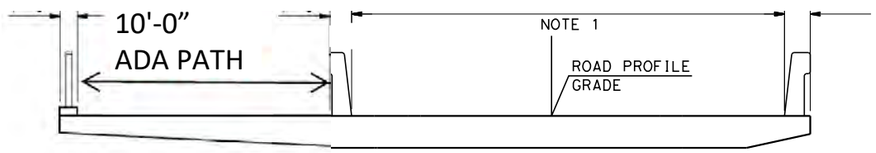
GENERAL PLAN

DESIGNED BY : PSMITH
DRAWN BY : IM
CHECKED BY : –
CONSULTANT JOB/SHEET NO. 701172.00
DRAWING NO. –
SHT OF SHTS

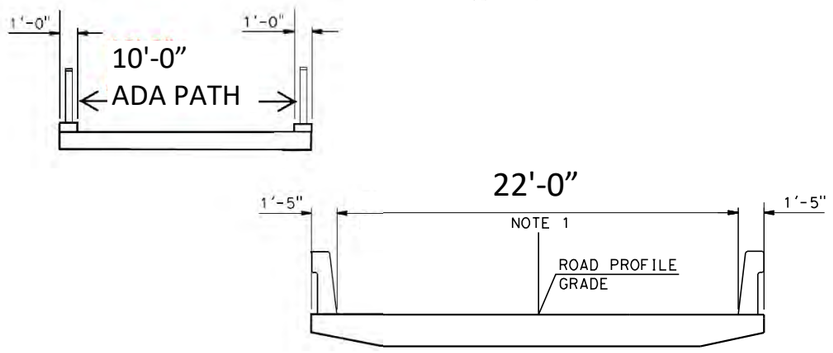
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ALTERNATIVE 3 - with IMPROVED ADA PATH

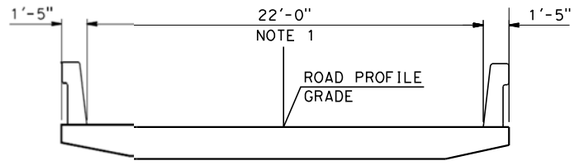
TWO BRIDGES ALTERNATIVE WITH A *STRAIGHT ADA* PATH,AN ELEVATOR, ESCALATORS AND A STAIRWAY



SECTION A-A
1/4"=1'-0'



SECTION B-B
1/4"=1'-0'



SECTION C-C
1/4"=1'-0'

NOTES:
1. Bike, pedestrian, delivery, and emergency vehicles.

ALTERNATIVE 3 with IMPROVED ADA PATH

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Department of Public Works
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e-mail : smengineering@smgov.net

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

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(619) 692-1920 www.tylin.com

CONSULTANT

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — CIVIL

REVIEWED : DATE : 20__
SELIM EREN, P.E. PROJECT MANAGER
REVIEWED : DATE : 20__
REVIEWED : DATE : 20__

CITY CLIENTS

REFERENCE :
DATE : 20__ SUBMITTED BY :
RICK VALTE, P.E., PRINCIPAL CIVIL ENGINEER
APPROVED BY : DATE : 20__
LEE SWAIN, P.E., CITY ENGINEER
COMPUTER FILE NAME :
SP-FILE NO. : 2060

ENGINEERING

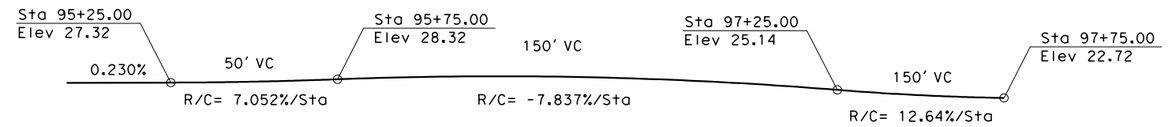
COLORADO AVENUE VIADUCT

TYPICAL SECTIONS

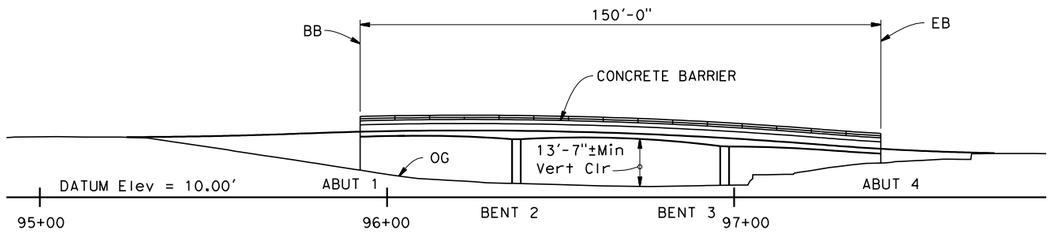
DESIGNED BY : PSMITH
DRAWN BY : IM
CHECKED BY : --
CONSULTANT JOB/SHEET NO. 701172.00
DRAWING NO. —
SHT OF SHTS

User: $USER$ Time:$TIME$ Date:$DATE$ Filename:$FILE$

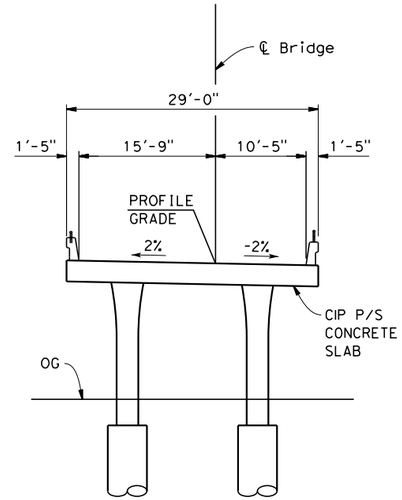
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Date:3/23/2015 Time:$TIME$



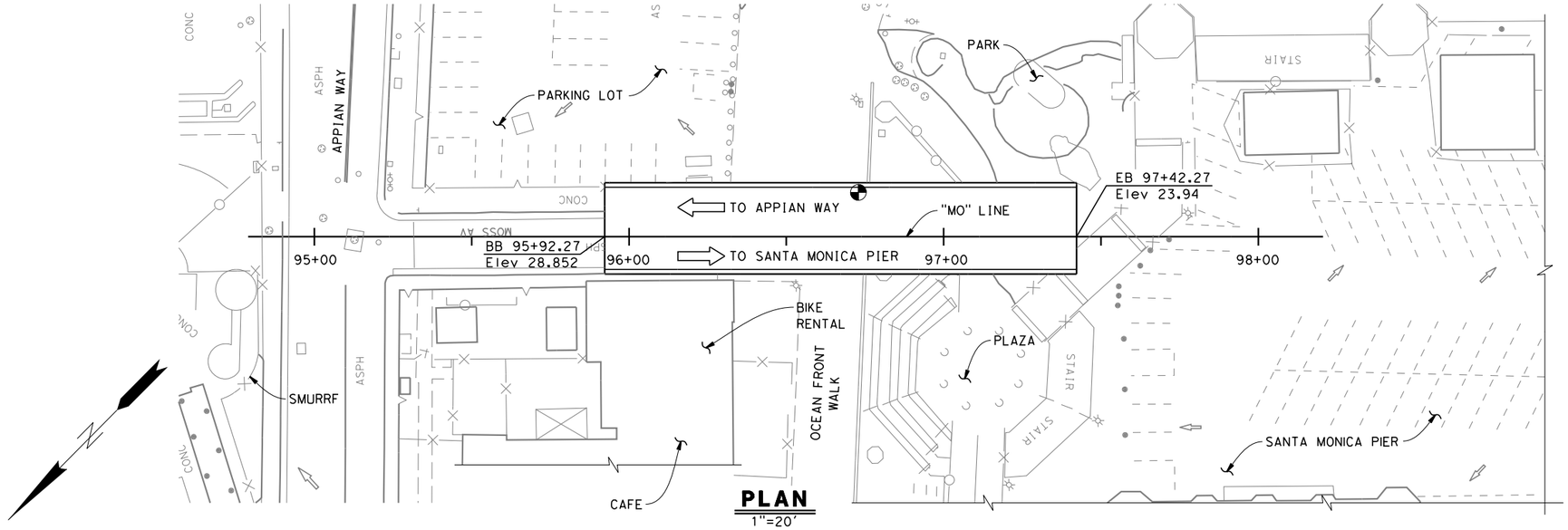
PROFILE GRADE
No Scale



ELEVATION
1"=20'



TYPICAL SECTION
1/8"=1'-0"



PLAN
1"=20'

ALTERNATIVE 3 with IMPROVED ADA PATH

City of Santa Monica
Department of Public Works
1437 4th Street, Suite 300 Santa Monica, CA 90401
TEL. (310)458-8721 FAX. (310)393-4425
e-mail : smengineering@smgov.net

REVISIONS

NO.	DATE	BY	DESCRIPTION	APPROVED

CONSULTANT
TY LIN INTERNATIONAL
401 CAMINO DEL RIO SOUTH, SUITE 100, SAN DIEGO, CA, 92108
(619) 692-1520 www.tylin.com

REGISTERED PROFESSIONAL ENGINEER — NO. - EXP. - CIVIL — STATE OF CALIFORNIA

CITY CLIENTS
REVIEWED : DATE : 20
SELIM EREN, P.E. PROJECT MANAGER
REVIEWED : DATE : 20
REVIEWED : DATE : 20

REFERENCE :
DATE : 20
SUBMITTED BY :
RICK VALTE, P.E., PRINCIPAL CIVIL ENGINEER
COMPUTER FILE NAME :
SP-FILE NO. : 2060
APPROVED BY : DATE : 20
LEE SWAIN, P.E., CITY ENGINEER
ENGINEERING

MOSS AVENUE BRIDGE

GENERAL PLAN

DESIGNED BY : PSMITH
DRAWN BY : IM
CHECKED BY : -
CONSULTANT JOB/SHEET NO. 701172.00
DRAWING NO. —
SHT OF SHTS

Filename$FILE$

Appendix J

Final Relocation Impact Memorandum

Memorandum

To:	Michael Enwedo, Senior Environmental Planner California Department of Transportation, District 7
From:	Court Morgan, Environmental Project Manager ICF
Date:	November 23, 2022
Subject:	Final Relocation Impact Memo for the Santa Monica Pier Bridge Project
File:	7-LA-SMCA BHLO-5107 (033)

It has been determined that there are impacts to owners, tenants, businesses, or persons in possession of real property to be acquired who would qualify for relocation assistance benefits or entitlements under the Union Relocation Assistance and Real Property Act of 1970, as amended.

APPROVED:



Court Morgan, Environmental Project Manager

cc: Region/District RW DDC
Region/District P&M

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PROJECT DESCRIPTION

The California Department of Transportation (Caltrans) and the City of Santa Monica (City) propose to replace the Santa Monica Pier Bridge, in the County of Los Angeles, in the City of Santa Monica, and near State Route 1 (Exhibits A and B). The proposed project would include replacement of the existing 82-year-old Pier Bridge with a safer bridge that would meet current seismic standards. For the proposed project, a no build alternative and two build alternatives are being considered.

No-Build Alternative

Under the No-Build Alternative, replacement of the Pier Bridge would not occur. The use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The existing bridge would continue to fail to meet current seismic standards, would not sufficiently and safely accommodate users during peak demand. The No-Build Alternative serves as a baseline to measure the build alternatives against, in terms of potential environmental impacts.

Build Alternatives

The proposed project would include the replacement of the existing Pier Bridge with a new, code-compliant bridge. Bridge replacement would also include the improvements at the west and east bridge approaches, and on the Pier. This section describes the proposed action and the project alternatives that have been developed to meet the identified purpose and need of the project, while avoiding or minimizing environmental impacts. Two build alternatives are being considered and are:

- Alternative 1: In-Kind Pier Bridge Replacement
- Alternative 2: In-Kind Pier Bridge Replacement

The build alternatives are further described below. For a more detailed description of the project, please see the Chapter 1 of the Recirculated EIR/EA document, as well as Exhibit C.

Alternatives 1: In-Kind Pier Bridge Replacement

Alternative 1 would provide an in-kind Pier Bridge replacement on the same alignment and profile as the existing bridge. The replacement bridge would be a structure approximately 448 feet in length and approximately 39 feet wide, 5 feet wider than the existing bridge. The additional width is to provide a wider sidewalk to safely serve the volume of pedestrians. Pedestrian access from the Ocean Avenue and Colorado Avenue intersection would be provided with a temporary bridge during construction.

Vehicles and bicycles would use a 20-foot-wide roadway located on the south side of the bridge and a 15-foot-wide sidewalk would be provided on the north side of the bridge. The roadway from Ocean Avenue would require a northeast to southwest taper from the existing curbs. The existing historic Pier Sign would be removed from its current location during construction and reinstalled at the conclusion of the project. This alternative would also require an approximately 4-foot-wide extension of the existing Pier deck for a length of approximately 157 feet, on the north side of the bridge.

The new bridge cross section shown in Exhibit C would include the following project features:

- A 20-foot-wide vehicular and bicycle lane at the south side
- A 15-foot-wide sidewalk at the north side

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Alternative 2: In-Kind Pier Bridge Replacement

Alternative 2, like Alternative 1, would provide an in-kind Pier Bridge replacement on the same alignment and profile as the existing bridge. The replacement bridge for Alternative 2 is the same as Alternative 1, but with the vehicular and bicycle lane on the northside and the sidewalk on the south side.

The new bridge cross section shown in Exhibit C would include the following project features:

- A 20-foot-wide vehicular and bicycle lane at the north side
- A 15-foot-wide sidewalk at the south side

Common Features of the Build Alternatives

The overall duration of construction for the build alternatives is projected to be 24 months. The following features are common to all of the build alternatives and are described in detail below.

The Pier Sign

The Pier Sign, located at the eastern end of the Pier Bridge just west of the Ocean Avenue/Colorado Avenue intersection, is a historically significant structure and an iconic feature of the City. It is a State Historic Landmark. The Pier Sign will be removed temporarily for the duration of construction for both build alternatives. For Alternative 1, the Pier Sign will be returned to its' original location, however for Alternative 2, the Pier Sign will be permanently relocated approximately 10' north. In all cases, the Pier Sign would remain as an identifying feature of the Pier Bridge and protected to the extent feasible.

Temporary Pedestrian Bridge

During the demolition of the existing Pier Bridge and construction of the new replacement bridge, general public pedestrian access between the Pier and the Ocean Avenue / Colorado Avenue intersection would be maintained through construction of a temporary pedestrian bridge adjacent to and south of the Pier Bridge.

The temporary pedestrian bridge would be set back approximately 5 feet south from the existing bridge to allow for safe demolition and construction of the new bridge. The temporary bridge would stay within City right-of-way and be approximately 4 feet from existing buildings to the south and be accessed via the Ocean Avenue / Colorado Avenue Intersection. The temporary pedestrian bridge would have a similar 10% grade as the existing bridge and would be 8 feet in width.

Construction Staging

The project site is surrounded by existing residential properties, businesses, roads, public walkways, a park, and structures on all sides and underneath the bridge. Given the constraints around the south side of the bridge, construction access for the project is proposed on the north side of the bridge. Construction access on the south side is not proposed due to the limitations caused by the adjacency of private residences, businesses, and structures. These constraints along the south side of the bridge would not provide sufficient space for construction work to safely proceed from the south. In addition, the temporary pedestrian bridge would further constrain the amount of space to work south of the pier. Staging space for the contractor's use is proposed within a portion of Lot 1 North. Additionally, Palisades Park and a City maintenance yard are located to the north, across Pacific Coast Highway.

Pier Deck Improvements

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The Pier structure would be affected by the construction of this project. To remove the existing bridge, portions of the Pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. For all the alternatives where the new bridge connects with the Pier, deck reconstruction of the Pier would be needed to facilitate joining of the two structures. The temporary pedestrian bridge located on the south side will touch down on the Pier deck over the aquarium and the Pier deck would be modified at this location. Portions of the Pier deck would be widened or extended for some alternatives. All of the modifications to the Pier that are visible would be reconstructed and replaced in kind so as to maintain the historic character of the Pier.

RELOCATION IMPACTS

Per guidance in Chapter 10 Relocation Assistance of the Caltrans Right-of-Way Manual, a Relocation Impact Memorandum (RIM) is prepared if there are fewer than ten displacements and there is ample replacement property.

A field review of the proposed project build alternatives was conducted to determine the potential impact on residential and non-residential uses. The build alternatives would not result in acquisition of residential uses. However, both build alternatives would require temporary displacement of one non-profit aquarium. The sole property affected is owned by the City of Santa Monica and leased to Heal the Bay (the "Aquarium"), a non-profit organization which operates the Aquarium at the property. The Aquarium is housed under the pier deck and includes exhibit space, meeting rooms, offices, and educational space that are enclosed in a 4,033 square feet environmentally controlled space. The aquarium also includes 500 square feet of storage and utility life support systems, including breeding tanks and water treatment. The Aquarium's lease was amended in October 2020 to allow for an additional 1,916 square feet of patio space. The Pier Bridge is directly adjacent to the common walls of the Aquarium offices and open life support spaces. The Pier Bridge houses restroom facilities, storage, a transformer room, the aquarium's emergency generator, and many utilities have been attached to the Pier Bridge that will all require removal prior to construction. The Aquarium walls and backside face of the restroom facilities create an additional storage space that houses a water heater and furnace that will be removed prior to construction.

The construction activities will create dust, noise, and vibrations that may affect the Aquarium exhibits, office, and life support spaces. Demolition and reconstruction of the bridge will require construction workers and equipment that will temporarily impact approximately 1,400 square feet of Aquarium space. This may require reconstruction of some walls and roof of the Aquarium. In addition, approximately 1,200 square feet of the newly leased Patio Space would be impacted (and thus temporarily reduced) by the Project.

Under both Alternatives 1 and 2, the Aquarium could resume operations as they existed prior to construction. The relocation information is provided below in Table 1. No other relocations or displacements are anticipated as a result of the build alternatives.

The City has initiated consultation with Heal the Bay to ascertain the particulars of their operations and specific replacement property needs. Through this ongoing consultation with the Aquarium, it has been determined temporary relocation may occur under the following conditions:

- The northern most area of the Aquarium, which is entirely office space, will be cordoned off for the duration of construction (estimated at 24 months), reducing the internal area by approximately 1400 square feet. The remainder of the Aquarium space (internal display areas and maintenance areas) will be fully operational.

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- The newly leased outdoor patio area will be reduced by approximately 1200 square feet for the duration of construction (estimated at 24 months). The remainder of the outdoor Patio Space will be available for the Aquarium's use.

- Intermittent closures of the facilities. During construction, due to the aquarium being immediately adjacent to the Project, there may be construction activities that necessitate temporary closure of the aquarium. Example of these activities include: bridge demolition, pile drilling, setting of falsework, installation of various bridge elements (light poles, prefabricated elements, etc.), and potentially other operations. These impacts would be coordinated with the aquarium in advance of construction beginning, and during the course of construction. The City will endeavor to limit these impacts to the aquarium and provide as much advance notice as practicable.

Per Caltrans Right-of-Way Manual Section 10.10.05.00 any person who has been temporarily relocated for a period beyond one year is considered permanently displaced and entitled to permanent relocation benefits. For both reductions in space, the City will coordinate with the Aquarium to provide in-kind replacement space, within a short proximity of the impacted leased space, for the duration of construction. While the relocations are temporary, they are expected for the full 24-month duration of construction. The City will coordinate with the Aquarium to ensure the satisfaction of both parties. The City will also coordinate with the Aquarium to limit impacts to their operations during construction, providing them sufficient notice of adjacent and impactful construction operations.

As part of the project features, the City will prepare an Adjacent Structure Monitoring Plan and Shoring Plan to safeguard adjacent resources, such as the aquarium, during construction from damage due to vibration, demolition, excavation, and general construction activities and to mitigate the possibility of settlement due to the removal of soil. The Plan shall be prepared by a qualified and California-licensed Professional Engineer who is approved by the City of Santa Monica. The Plan shall include standards that specify such items as preconstruction surveys, vibrational monitors, the establishment of vibrational thresholds and minimization measures.

All activities will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources shall be available to all displacees without discrimination.

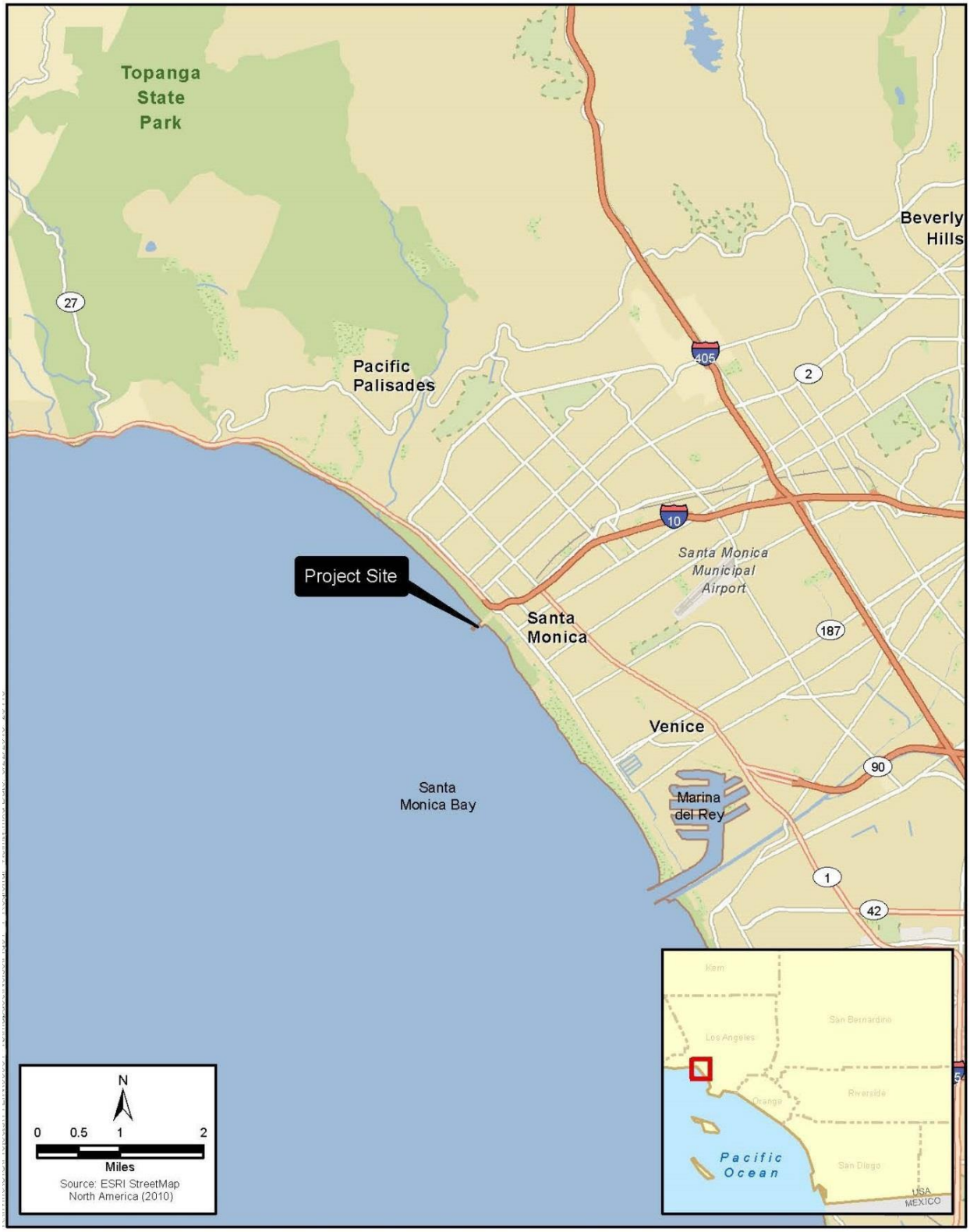
ADA Notice For individuals with disabilities, this document is available in alternate formats. For information call (916) 654-5413 Voice, CRS: 1-800-735-2929, or write Right of Way, 1120 N Street, MS-37, Sacramento, CA 95814.

Table 1: Details of Displaced Property

APN	Address	Business/ Organization Name	Property Owner	Business/ Organization Type	Anticipated project Impact
4290-023-902	200 Santa Monica Pier, Santa Monica ,CA 90401	Heal the Bay's Santa Monica Pier Aquarium	City of Santa Monica-Leased by Heal the Bay	Non-profit educational aquarium	• Temporary relocation of 1,400 square feet of aquarium during construction for both build alternatives • Temporary relocation of 1,200 square feet of enclosed outdoor patio space and office space during construction for both build alternatives • Intermittent closures during construction

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Exhibit A: Project Location and Vicinity



Source: ICF 2019

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Source: ICF 2019

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Exhibit B: Existing Conditions

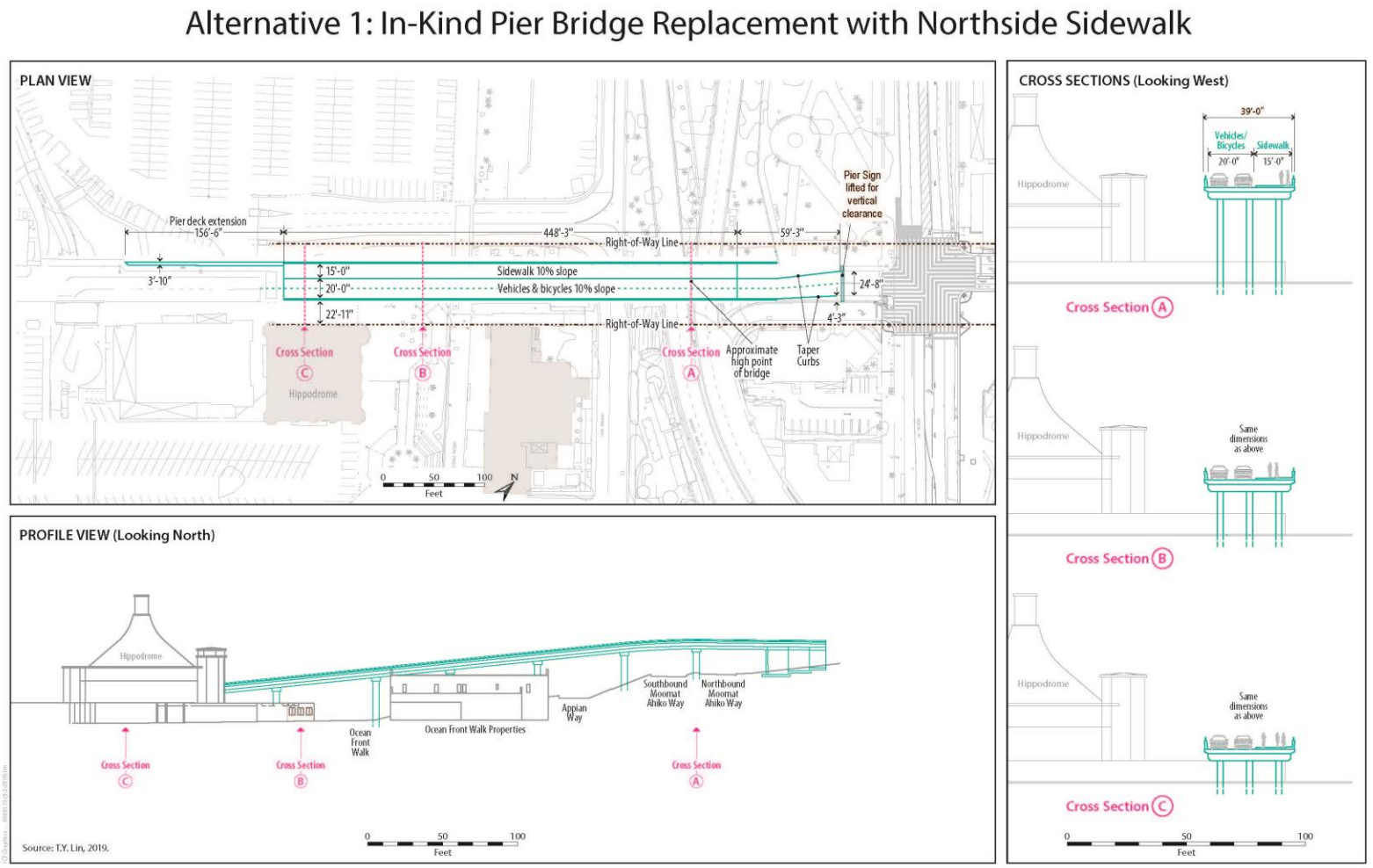


Source: ICF 2016

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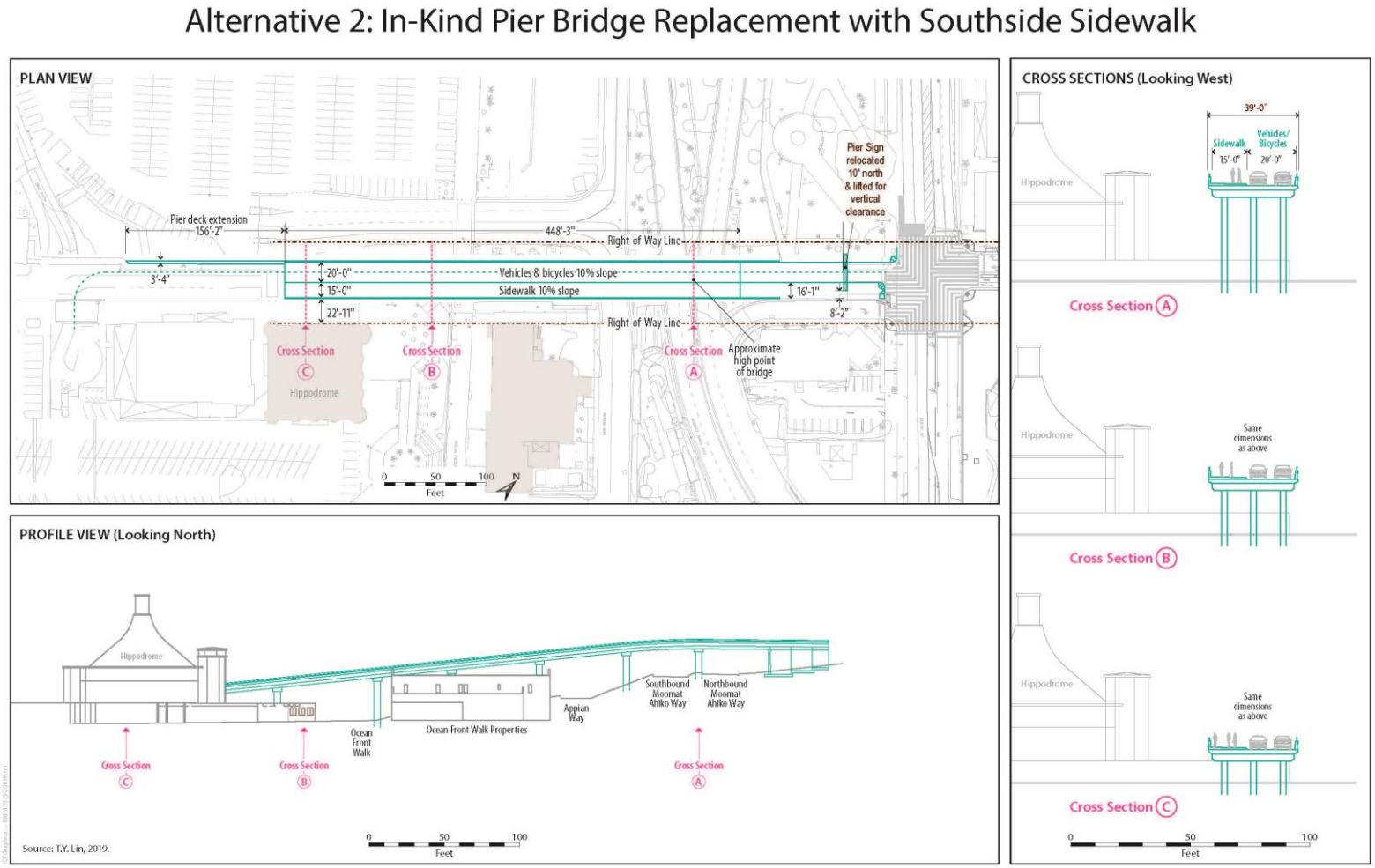
Exhibit C: Project Alternatives

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Alternative 1: In-Kind Pier Bridge Replacement with Northside Sidewalk

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Alternative 2: In-Kind Pier Bridge Replacement with Southside Sidewalk

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Appendix K

Visual Impact Assessment

Memorandum

To:	Michael Enwedo, Senior Environmental Planner California Department of Transportation, District 7 Division of Environmental Planning
From:	Alison Rondone, Senior Environmental Planner ICF
Date:	May 12, 2020
Re:	**Addendum to the Visual Impacts Assessment for the Santa Monica Pier Bridge Replacement Project**

Setting and Project Description

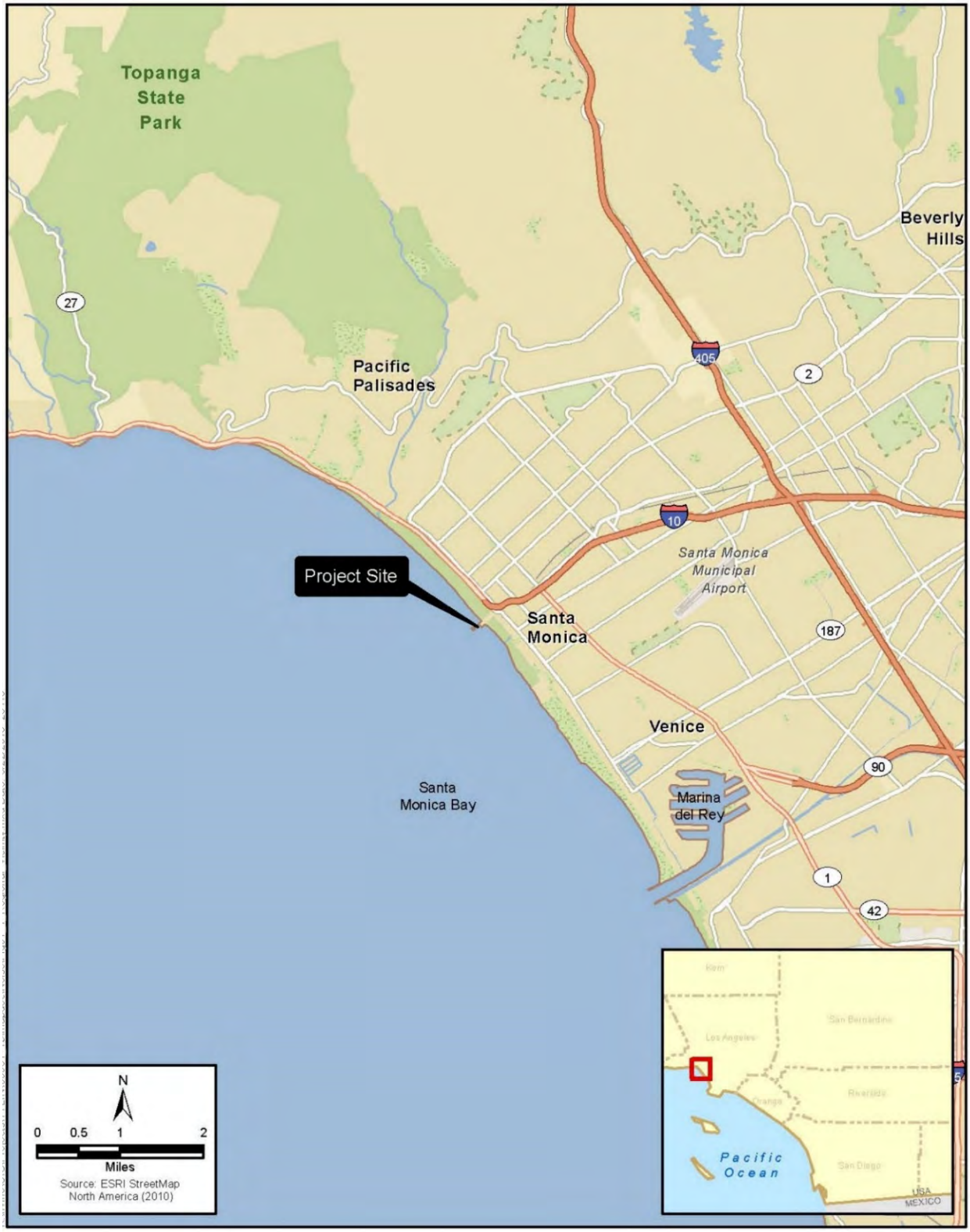
The Santa Monica Pier Bridge Replacement Project is included in the 2017 Federal Transportation Improvement Program and programmed for Highway Bridge Program (HBP) funding. The federal project number is BHLO-5107(033). The Santa Monica Pier Bridge (Pier Bridge) qualifies for replacement under the HBP and is eligible for toll-credit funding. It is also identified as a transportation project in the Southern California Association of Governments 2015 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)[1] as well as in the previous 2016–2040 RTP/SCS.

The project area is in the southwest portion of Los Angeles County, in the city of Santa Monica. The project site, the Pier Bridge, connects the intersection of Ocean Avenue and Colorado Avenue to Santa Monica Pier. The Pier Bridge was constructed in 1939 and is approximately 490 feet long, extending from the bluff at Ocean Avenue and Colorado Avenue, down the bank, over a separated dual carriageway (Moomat Ahiko Way and Appian Way), to the base of Santa Monica Pier. At its west end, the project site is adjacent to Santa Monica State Beach and the Pacific Ocean. Santa Monica Pier opened in 1909, and Pacific Park, an amusement park, opened in 1996. Together, they form a major tourist attraction and are the last of the West Coast's pier amusement parks.

North of the project site, Palisades Park extends from the bluff down to Pacific Coast Highway. At the top of the bluff, residential, commercial, institutional, and recreational uses are located east of the pier, including Santa Monica City Hall, Rand Corporation, Santa Monica Courthouse, and Tongva Park. To the south are commercial and residential uses, including hotels such as Loews Santa Monica Beach and Hotel Casa del Mar. North and south of Pier Bridge are surface parking lots and commercial and residential uses. Figures 1 and 2 show the regional location and project vicinity.

[1] Also known as the SoCal Connect Plan.

Figure 1. Regional Location



Source: ICF 2020.

Figure 2. Project Vicinity



Source: ICF 2020.

Previous Project and Background

A draft environmental impact report/environmental assessment (EIR/EA) for the project was prepared and circulated for an extended public review period from December 11, 2017, to March 15, 2018. The draft EIR/EA analyzed three build alternatives, consisting of:

- *Alternative 1: New, Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue during Construction.* Alternative 1 would demolish the existing bridge entirely; provide a new, wider bridge within the alignment of the existing Pier Bridge; and provide a temporary vehicular bridge on Moss Avenue, connecting Appian Way to pier deck parking during construction. The replacement bridge would be approximately 490 feet long and approximately 64 feet wide, approximately 30 feet wider than the existing bridge. The additional width would accommodate an accessible Americans with Disabilities Act– (ADA-) compliant path, bicycle lanes, and wider sidewalks to serve the volume of pedestrians. During construction, pedestrian access from the Ocean Avenue/Colorado Avenue intersection would be provided from a temporary bridge. Project components would include 12-foot-wide vehicular lanes in each direction, 5-foot-wide bicycle lanes in each direction, a 12-foot-wide sidewalk on the north side, and an ADA-compliant route.
- *Alternative 2: New, Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge during Construction*. Alternative 2 would demolish the existing bridge entirely and provide a new, wider bridge with the same dimensions and lane capacity as the bridge proposed under Alternative 1. Under Alternative 2, however, temporary vehicular access during construction would be provided from a different location—specifically, a temporary ramp from the Lot 1 North parking area. Pedestrian access from the Ocean Avenue/Colorado Avenue intersection during construction would be provided from a temporary bridge. Project components would include 12-foot-wide vehicular lanes in each direction, 5-foot-wide bicycle lanes in each direction, a 12-foot-wide sidewalk on the north side, and an ADA-compliant route.
- *Alternative 3 (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New, Permanent Vehicle-Only Bridge at Moss Avenue*. Under Alternative 3, two new bridges would be constructed. The existing Pier Bridge would be replaced with a new bridge with the same width (i.e., between 32.5 and 40 feet) and the same alignment. The replacement bridge would be designed primarily for pedestrian and bicycle use, as well as ADA-compliant access, but would also provide access for emergency vehicles and possibly limited access for delivery vehicles during off-peak hours. This alternative would include a 22-foot-wide path, primarily for pedestrian and bicycle use, and an ADA-compliant route; the public would not have vehicular access to pier parking or pickup/drop-off areas.

A visual impact assessment (VIA) was prepared by ICF in October 2016 and approved in November 2016. A public meeting regarding the draft EIR/EA was held on January 10, 2018. Substantial comments were received concerning both the range of alternatives under consideration and the perceived impacts associated with the alternatives. Therefore, a re-examination of the alternatives was undertaken, which resulted in the formulation of the eight build alternatives presented in this document. In addition, since preparation of the VIA and release of the draft EIR/EA, there have been several changes to the existing conditions, resulting in new substantial information. For example,

new historical resources have been identified, including a potential new historic district adjacent to the pier. In addition, Carousel Park has been designated as a local City of Santa Monica (City) landmark, and new scenic corridors have been designated as part of the City's Final Draft 2018 Land Use Plan of the Local Coastal Program.

Carousel Park, located just east of Santa Monica Pier, is named for the antique carousel at its entrance. The postmodernist park was part of a waterfront redevelopment plan that resulted in replacement of the pier in the mid-1980s. Designed between 1984 and 1987 by the architectural firm Moore Ruble Yudell and landscape architects Campbell & Campbell, Carousel Park is frequently credited with contributing to the renaissance of Santa Monica Pier in the late 1980s (The Cultural Landscape Foundation 2018.) It features a stepped octagonal entryway with poured-in-place light standards, an enlarged deck around the carousel, a pavilion, and a 5,000-square-foot children's playground on the south edge of the site. The playground includes a custom-made concrete ship and a dragon, which was sculpted from river-washed granite boulders. Two large ramps provide access from Ocean Front Walk to the deck of the pier. To the south, a large wood-plank amphitheater and stairs provide access from the beach to the pier deck. These elements are flanked by two octagonal towers that echo the architectural elements of the carousel building.

Figure 3. Carousel Park, with Santa Monica Pier in the Background



Source: City of Santa Monica, 2020.

The 2018 Land Use Plan of the Local Coastal Program designated seven view corridors (VCs) and five vantage points (VPs). These include:

- Palisades Beach Road from the McClure Tunnel to the Northern City Boundary (VC)
- Adelaide Drive from Ocean Avenue to the Coastal Zone Boundary (VC)
- California Incline from Palisades Beach Road to Ocean Avenue (VC)
- Barnard Way from Ocean Avenue to the Southern City Boundary (VC)
- Ocean Avenue from Barnard Way to the Northern City Boundary (VC)
- Ocean Front Walk from Pico Boulevard to the 1550 Parking Lot (VC)
- Santa Monica Pier from the Santa Monica Pier Deck, West of Ocean Front Walk (VC)
- Colorado Avenue and Fourth Street, Looking West (VP)
- Main Street Bridge Crossing over Interstate 10, Looking West (VP)
- Tongva Park, Looking West (VP)
- Wilshire Boulevard and Third Street, Looking West (VP)
- Fourth Street Bridge over Ocean Park Boulevard, Looking West (VP)

Figure 4. Scenic View Corridors and Vantage Points



Source: City of Santa Monica Land Use Plan of the Local Coastal Program, 2018.

The Land Use Plan of the Local Coastal Program contains numerous policies to protect scenic resources. For example, any project that alters or adds a structure on a property that is designated as a City Landmark is subject to review by the City Landmarks Commission rather than the Architectural Review Board. This includes important coastal visual resources (e.g., Santa Monica Pier and the pier sign).

Scenic and Visual Resource Policy 144 of the Land Use Plan of the Local Coastal Program states that "new development located within the viewshed areas identified for view preservation in connection with a designated scenic corridor or vantage point shall be designed and sited to be visually compatible with the character of the surrounding area, to restore and enhance visual quality in visually degraded areas, and to protect public views to the coast and scenic coastal areas." Furthermore, a site-specific visual assessment shall be required for development that has the potential to affect a designated scenic corridor or vantage point to evaluate the magnitude and significance of the impacts resulting from the proposed development (Scenic and Visual Resource Policy 145). The visual assessment shall include an analysis of all feasible siting or design alternatives to minimize impacts on visual resources. The alternatives analysis shall identify the least environmentally damaging alternative and demonstrate that the development has been designed to avoid or, if avoidance is not feasible, minimize and mitigate adverse impacts on visual resources. Impacts on views from the proposed development as well as the alternatives must be adequately demonstrated through such means as visual simulations, three-dimensional massing models, perspective drawings, rendered streetscape elevations, and/or story poles and flagging.

Methodology

In accordance with Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans) environmental review guidelines, an assessment of visual impacts associated with highway projects is required to satisfy the provisions of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). The FHWA process requires that an area of visual effect be established, the visual quality and its relationship to viewers be described, an assessment be made as to the potential impacts of the project on aesthetic resources, and mitigation and enhancement efforts be included in project design, where necessary. The VIA was prepared in conformance with those provisions and organized according to guidelines found in the publication entitled *Visual Impact Assessment for Highway Projects* (Federal Highway Administration 2015). Further details regarding the criteria used for the VIA may be found in that report.

As part of the updated visual impacts analysis, current site photographs and visual simulations were prepared by T.Y. Lin to reflect changes to the previous project. The visual simulations were compared with the original visual assessment to determine whether new visual impacts or significantly increased impacts would occur as a result of project changes. A review of the 2018 Land Use Plan of the Local Coastal Program was performed to identify new locally designated scenic resources and confirm that the project is compatible with relevant policies.

Alternatives

The proposed project would replace the existing Pier Bridge with a safer multi-modal bridge that would meet current seismic standards.
Some alternatives would enhance access for individuals with limited mobility replacement would also include improvements at the west and east approaches as well as on the pier.

Eight build alternatives are now under consideration, in addition to the No-Build Alternative. Each of the proposed build alternatives would satisfy the project's purpose and need, to varying degrees. All of the build alternatives would correct the structural deficiencies that currently exist and ensure adequate long-term public safety. The alternatives are organized into four pairs, with

each pair having two different configurations for paths, which are proposed to convey vehicles, bicycles, pedestrians, and individuals with limited mobility.

- Alternatives 1 and 2 would provide an in-kind replacement bridge, which would maintain the current access paths from Ocean Avenue to the pier, namely, one path for vehicles and bicycles (20'0" wide) and a second path (sidewalk) that would be used as an ADA-compliant access route (15'0" wide). The bridge would continue to descend at an approximate slope of 10%. Existing routes would remain available for American Disabilities Act (ADA) compliant access and would enhance under these alternatives. The replacement bridge would be approximately 448 feet long and approximately 38 feet wide, 4 feet wider than the existing bridge. The downward slope of the replacement bridge would be approximately 10%, the same as the existing bridge. Two variations for the bridge configuration are being considered, with the pedestrian path on opposite sides of the bridge.
- Alternatives 3 and 4 (defined as the proposed project[2] within the Recirculated EIR/EA) would provide an in-kind replacement bridge that would include an ADA-complaint pedestrian path on a separate structure. The replacement bridge would be approximately 450 feet long, and the total width of the two structures would be between 38 and 49 feet, depending on the alternative and location along the alignment. Both alternatives would provide three paths on two structures. A gentler slope would require the installation of elevators and stairs adjacent to Ocean Front Walk, providing access to the pier deck. At the locations of the elevator landings, the total width of the structures would be as wide as 68 feet.
- Alternatives 5 and 6 would provide enhanced access for pedestrians and individuals with disabilities. The two options would provide one path for vehicles and bicycles (20'0" wide) at a slope of 10% and a second ADA-compliant path (15'0" wide) for pedestrians and individuals with disabilities at a slope of 5%. Elevators and stairs would be located adjacent to Ocean Front Walk, providing access to the pier deck.
- Alternatives 7 and 8 would constitute the widest of the potential bridge replacement options. One path (34'0" wide) would be provided for vehicles and bicycles; a sidewalk (12'0" wide) with a 10% slope would also be provided. A third path (10'0" wide) for pedestrians would be ADA compliant, descending at a slope of 5%. Elevators and stairs for this path would again be located adjacent to Ocean Front Walk, providing access to the pier deck.
- Under the No-Build Alternative, replacement of the seismically deficient Pier Bridge would not occur. Use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The existing bridge would continue to fail to meet current seismic standards, would not adequately and safely accommodate users during periods of peak demand. As time goes on, these compromising conditions would worsen, and replacement of the bridge would eventually become imperative. The No-Build Alternative also serves as a baseline against which to measure the performance and potential environmental impacts of the build alternatives.

[2] CEQA requires the identification of the Proposed Project among the list of proposed build alternatives. Washoe Meadows Community v. Department of Parks and Recreation (1st Dist. 2017) 17 Cal.App.5th 277 held that "the DEIR's failure to provide the public with an accurate, stable and finite" project description "prejudicially impaired the public's ability to participate in the CEQA process by setting forth a range of five very different alternatives and by declining to identify a preferred alternative."

Common Features of All Build Alternatives

Impacts during project construction and operation would be similar under all build alternatives. Therefore, the alternatives are analyzed conjointly throughout this analysis. Project elements and potential impacts that are unique to a particular build alternative are called out as necessary.

Construction

Visible construction activities would include the removal and installation of pavement, the erecting of falsework, other routine construction activities, and deliveries by truck. Construction staging/stockpiling, the storage of road-building materials, the presence of construction equipment, and temporary traffic barricades could result in temporary visual impacts at staging locations. The overall duration of construction for the build alternatives is projected to be 24 months.

Pier Deck Improvements

The pier structure would be partially modified as part of this project. To remove the existing bridge, those portions of the pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. For all build alternatives, in the area where the new bridge would connect to the pier, reconstruction of the deck would be needed to rejoin the two structures. During construction, a temporary pedestrian bridge on the south side would touch down on the pier deck over the aquarium. The pier deck would be modified at that location. Pier areas for alternatives that include stairs would need to be strengthened to support the weight of the stair structure. Portions of the pier deck would be widened or extended under some alternatives. All pier structure modifications would either be reconstructed or replaced in kind to maintain the historic character of the pier.

Utility and Facilities Relocations

The Pier Bridge is in an area that is served by utilities that may be affected during construction and, therefore, may require relocation. The facilities that would be temporarily or permanently relocated during demolition and then reconstructed include restrooms, pier storage rooms, an emergency backup generator for the Heal the Bay Aquarium, an electrical utility room, and a City trash compactor. Relocation of existing utilities within the project limits would be carefully planned with input from the utility owners/operators to maintain essential services to the pier while the bridge is under construction.

Construction Staging

The Pier Bridge is surrounded by a park as well as businesses, local streets, public walkways, and other structures. Some of these are located beneath the bridge. In addition, residences are located on Ocean Front Walk, south of the pier. Providing the contractor with enough working space to safely demolish the existing bridge and construct the new one, while minimizing disruptions in access to public resources, residences, businesses, and operations on the pier, will require careful consideration.

Construction work for this project would involve a variety of equipment types, including backhoes with hydraulic rams, dump trucks, cranes, drilling rigs, concrete trucks, and other items. Staging

space for the contractor's use is proposed within a portion of Lot 1 North. This would cause the temporary loss of approximately 365 parking spaces in the lot and temporary modification of the lot entrance.

Located to the north, across Pacific Coast Highway, are Palisades Park and a City maintenance yard. Located on the southeast side of the Pier Bridge are a variety of businesses on Ocean Front Walk. These include the Heal the Bay Aquarium, the historic Looff's Hippodrome, Carousel Park, and portions of the pier. These uses would not allow adequate space for construction work to proceed safely from the south side. In addition, the temporary pedestrian bridge would further constrain the amount of space for work from the south side of the pier. For these reasons, construction staging for the project is proposed on the north side of the bridge.

Construction activities would occur primarily between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday. Per Section 4.12.110 of the City's Municipal Code, construction work cannot be conducted between 6:00 p.m. and 7:00 a.m. Monday through Friday, before 9:00 a.m. or after 5:00 p.m. on Saturday, or at any time on Sunday or major holidays. However, per Section 4.12.110 (e), a permit could be issued for construction operations performed at night when there is less activity on the pier and fewer vehicles entering the lot. Given these constraints, the Lot 1 North entrance would be temporarily relocated during construction to provide an adequate workspace for construction operations. However, access to facilities would be maintained during construction of the new bridge.

Access During Construction

Temporary Pedestrian Bridge

During demolition of the existing Pier Bridge and construction of the replacement bridge, pedestrian access between the pier and the Ocean Avenue/Colorado Avenue intersection would be maintained through construction of a temporary pedestrian bridge adjacent to and south of the Pier Bridge. The bridge would be set back approximately 5 feet from the existing bridge to allow safe demolition of the existing bridge and construction of the new bridge. The temporary pedestrian bridge would be confined to the area within the City right-of-way and approximately 4 feet from the buildings on Ocean Front Walk to the south. Access to the temporary pedestrian bridge would be from the Ocean Avenue/Colorado Avenue intersection. The temporary pedestrian bridge would have a grade similar to that of the existing bridge (10%) and be approximately 8 feet wide. Given its narrow width, the temporary bridge would accommodate pedestrians only; however, it may not be possible to accommodate peak weekend and holiday pedestrian traffic. Additional signage would be provided to reroute pedestrians to alternative access routes north and south of the pier during peak weekend and holiday periods.

Vehicular Access during Construction

The Pier Bridge passes over split two-lane roadways, Moomat Ahiko Way and Appian Way, as well as a pedestrian path, Ocean Front Walk. Although it would be desirable to maintain access along these routes, it may be necessary to limit such access so as to avoid any compromise in public safety. Temporary closures would be made known with signage, and detour routes would be identified. All of the aforementioned routes would be temporarily closed during demolition of the bridge because of the risk of falling concrete. In addition, foundation construction would involve the use of drilling

rigs and cranes in proximity to the public and the erection and removal of falsework, which would also require closures. For Ocean Front Walk and Appian Way, some temporary closures would be required in the interest of public safety during bridge demolition, foundation construction, and falsework erection/removal.

Temporary Vehicular Ramp

A temporary ramp, enabling vehicles to gain access to the pier parking area, would be provided from Lot 1 North. The purpose of this ramp would be to maintain access to pier parking for regular vehicles but also provide emergency access. This ramp would be no higher than H-20 rated.

Operation

The proposed project would replace the existing, structurally deficient Pier Bridge with a safer multi-modal bridge that would meet current seismic standards and enhance access for individuals with limited mobility. This document considers eight build alternatives, all of which represent in-kind replacement of the existing Pier Bridge to provide similar but safer and more convenient access for motorists, pedestrians, and bicyclists.

Key Viewpoints and Visual Simulations

The 2016 VIA identified seven key viewpoints within four Visual Assessment Units (VAUs), specific vantage points representing the differing sensitivities of those affected by the project. Although minor changes have occurred in the four VAUs since preparation of the prior VIA in late 2016, visual character, quality, viewer groups, viewer exposure, and viewer sensitivity remain essentially the same as previously described. The VAUs identified in the 2016 VIA were as follows:

- Bridge Alignment VAU
- North Pier VAU
- Palisades Park VAU
- South Pier VAU

During the public comment period, additional key viewpoints were identified. T.Y. Lin prepared visual simulations for five new key viewpoints for use in comparing the impacts identified in the 2016 VIA. The five new key viewpoints are within the identified VAUs. The visual simulations are appended to this document as Attachment 2.

Visual Impacts Analysis

The 2016 VIA determined that the visual character of the project would be fully compatible with the existing visual character of the corridor. Under all build alternatives, the visual character of the project would be mostly compatible with surrounding pattern elements and pattern character. The visual quality of the existing corridor would not be altered by the project, and the resource change would be low overall. The VIA determined that the composite viewer group would have moderate sensitivity. The visual impact was considered moderate to low, except for two viewpoints on the South Pier, which would have moderate visual impact.

Impacts from each build alternative would be comparable; therefore, the summary has been condensed into a singular discussion. A detailed comparison is not provided. Under all build alternatives, the existing Pier Bridge would be demolished and a new bridge structure would be built in its place at the same location. All build alternatives would retain the existing pier sign and refurbished light posts. Alternatives 5 through 8 would result in a wider bridge structure compared with Alternatives 1 through 4. Alternatives 5 through 8 vary only by the width of the proposed pathways, with Alternatives 7 and 8 being the widest of the potential bridge replacement options. Alternatives 3 through 8 include the addition of elevators and stairs to allow access to the pier deck.

Given the size and location of the proposed elements with respect to key viewpoints, the resource change under all build alternatives would remain relatively low because of the project's general similarity to the existing alignment, current design elements, and overall visual character. The project elements would not impede sightlines to any other scenic resources, including the beach and ocean. As a result of the project's general similarity to the existing alignment, with design elements that would essentially match the existing design elements, the project would be consistent with the existing visual character. The project would be consistent with the City of Santa Monica General Plan and the Local Coastal Program, particularly policies related to the preservation of scenic corridors designated by the City of Santa Monica that are within the immediate project vicinity. It would not have a substantial adverse effect on a scenic vista, substantially damage a scenic resource (e.g., trees, rock outcroppings, and/or historic buildings within a State Scenic Highway), or substantially degrade the visual character or quality of the site and its surroundings. Similarly, the project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

When factored with resource change and viewer response, the project would result in moderate visual impacts on the project area and corridor; overall, the impacts would be the same as those identified in the 2016 VIA. Visual impacts associated with construction activities would be temporary and minor. The project would add to cumulative visual impacts associated with construction and the presence of built features within the project corridor.

Summary of Visual Impacts by Visual Assessment Unit and Alternative

Impacts from construction and operation of the project are described above. Table 1 summarizes and compares the narrative ratings regarding visual resource change, viewer response, and visual impact between the alternatives for each key view. As noted, these findings remain the same as those identified in the 2016 VIA.

Table 1. Summary of Key View Narrative Ratings

	Alternatives 1–4			Alternatives 5–8		
Visual Assessment Unit	**Resource Change**	**Viewer Response**	**Visual Impact**	**Resource Change**	**Viewer Response**	**Visual Impact**
Bridge Alignment	L	M	ML	L	M	ML
North Pier	L	M	ML	L	M	ML
South Pier	L	M	ML	L	M	ML
Palisades Park	L	M	ML	L	M	ML

L = Low
M = Moderate
ML = Moderate to Low

Avoidance, Minimization, and/or Mitigation Measures

Caltrans and the FHWA mandate that a qualitative/aesthetic approach should be taken to address visual quality loss in a project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality due to a project. This approach also results in avoidance, minimization, and/or mitigation measures to lessen or compensate for a loss in visual quality. The inclusion of aesthetic features in a project design can help generate public acceptance of a project. Because no adverse visual effect or substantial loss of visual quality is anticipated as a result of bridge replacement with the updated alternatives, no avoidance, minimization and/or mitigation measures have been proposed.

Conclusion

The project changes would result in moderate visual changes in the project area but would not result in permanent adverse visual impacts or negatively affect existing viewer groups, the same as for the original project. Under the build alternatives, no changes are proposed as part of the project that would substantially disrupt scenic vistas, remove or destroy character-defining features, alter the City's designated scenic corridors or views from a designated State Scenic Highway, or otherwise substantially compromise visual resources, including the pier sign, Santa Monica Pier, Looff's Hippodrome, Pacific Coast Highway (PCH or State Route 1), Ocean Avenue, the Santa Monica Freeway, Palisades Park, Santa Monica State Beach, and the Pacific Ocean. In addition, views from Ocean Avenue and Pacific Coast Highway would be preserved.

As a result of the project's general similarity with respect to the existing alignment, with design elements that would be similar to existing design elements, the project would be consistent with the existing visual character. The replacement bridge would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area, and visual impacts associated with construction would be temporary and minor. The project changes would not result in substantial cumulative visual impacts. No mitigation measures would be necessary.

Attachments
Attachment 1 – Project Area Photos
Attachment 2 – Visual Simulations

Attachment 1: Project Area Photos
Source: City of Santa Monica, 2020




MOTORCYCLES
PROHIBITED






SANTA MONICA
YACHT HARBOR
SPORT FISHING BOATING
cafes


EXIT TO
10
OCEAN AVE
STOP
STOP

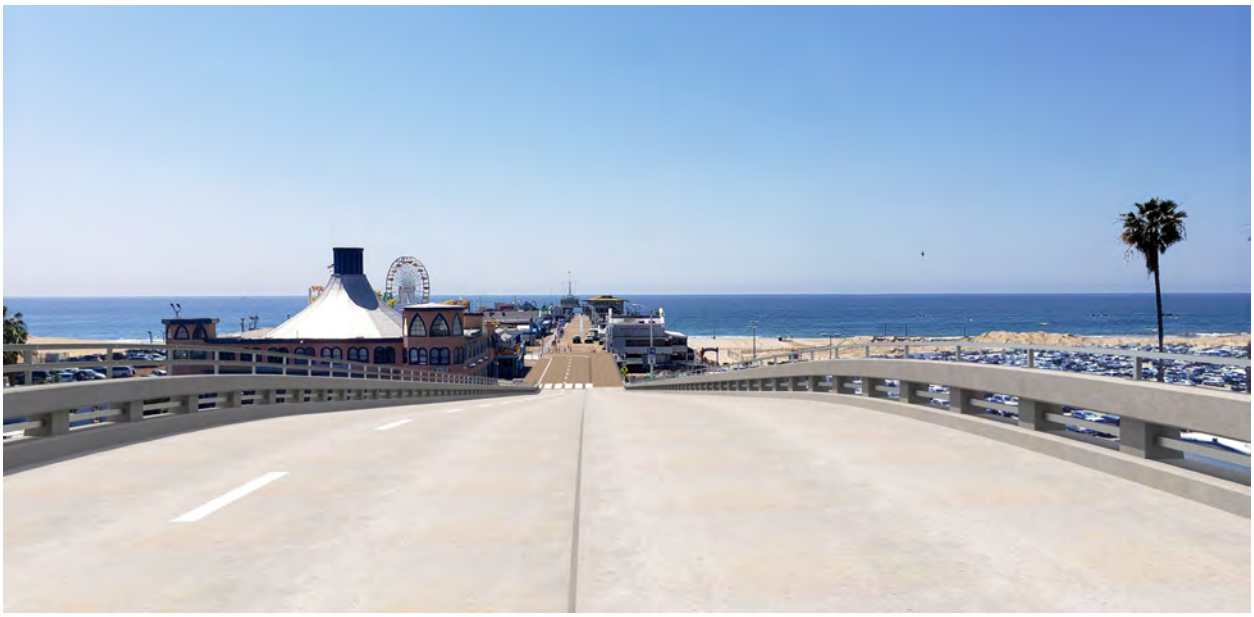




Attachment 2: Visual Simulations

Source: TY Lin, 2020

View 1



VIEWPOINT 1 – Alternative 1



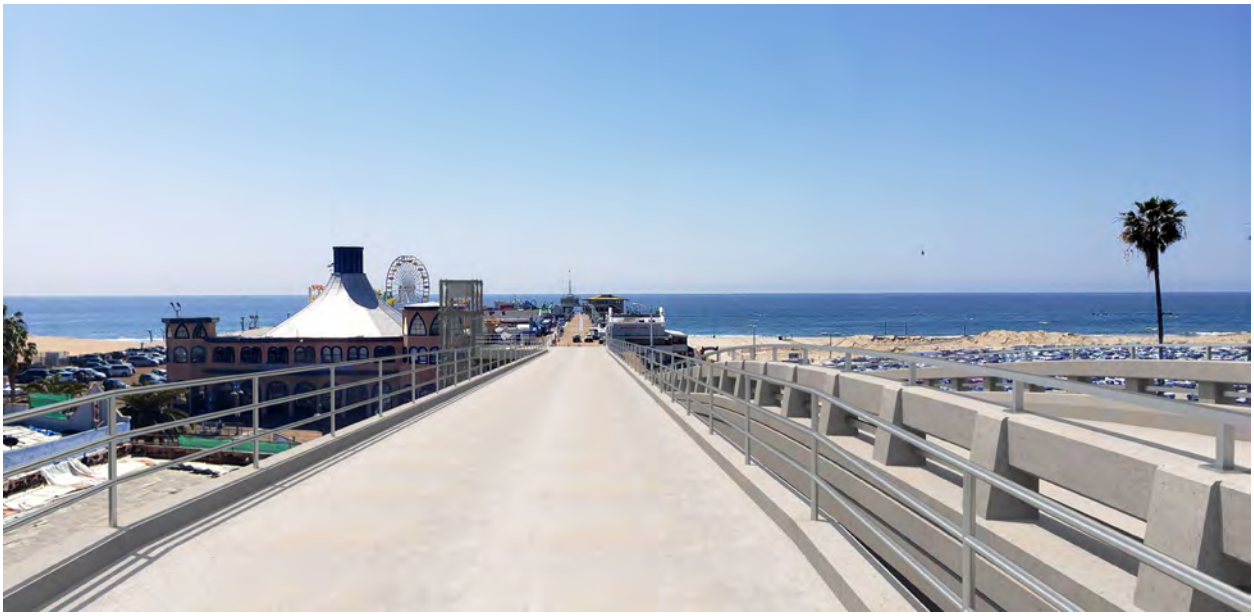
VIEWPOINT 1 – Alternative 2



VIEWPOINT 1 – Alternative 3



VIEWPOINT 1 – Alternative 4



VIEWPOINT 1 – Alternative 5



VIEWPOINT 1 – Alternative 6



VIEWPOINT 1 – Alternative 7



VIEWPOINT 1 – Alternative 8



VIEWPOINT 2 – Alternative 1



VIEWPOINT 2 – Alternative 2



VIEWPOINT 2 – Alternative 3



VIEWPOINT 2 – Alternative 4



VIEWPOINT 2 – Alternative 5



VIEWPOINT 2 – Alternative 6



VIEWPOINT 2 – Alternative 7



VIEWPOINT 2 – Alternative 8



VIEWPOINT 3 – Alternative 1



VIEWPOINT 3 – Alternative 2



VIEWPOINT 3 – Alternative 3



VIEWPOINT 3 – Alternative 4



VIEWPOINT 3 – Alternative 5



VIEWPOINT 3 – Alternative 6



VIEWPOINT 3 – Alternative 7



VIEWPOINT 3 – Alternative 8

View 4



VIEWPOINT 4 – Alternative 1



VIEWPOINT 4 – Alternative 2



VIEWPOINT 4 – Alternative 3



VIEWPOINT 4 – Alternative 4



VIEWPOINT 4 – Alternative 5



VIEWPOINT 4 – Alternative 6



VIEWPOINT 4 – Alternative 7



VIEWPOINT 4 – Alternative 7

View 5



VIEWPOINT 5 – Alternative 1



VIEWPOINT 5 – Alternative 2



VIEWPOINT 5 – Alternative 3



VIEWPOINT 5 – Alternative 4



VIEWPOINT 5 – Alternative 5



VIEWPOINT 5 – Alternative 6



VIEWPOINT 5 – Alternative 7



VIEWPOINT 5 – Alternative 8

VISUAL IMPACT ASSESSMENT

Santa Monica Pier Bridge Replacement Project

October 2016

California Department of Transportation

District 7, Los Angeles County, Route # N/A

BHLO-5107 and EA Number: 965120

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Statement of Compliance: Produced in compliance with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements, as appropriate, to meet the level of analysis and documentation that has been determined necessary for this project.

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Santa Monica
DOT	Department of Transportation
FHWA	Federal Highway Administration
LCP	Local Coastal Plan
LUCE	Land Use and Circulation Element
LUP	Land Use Plan
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
PCH	Pacific Coast Highway
SR	State Route
VAU	visual assessment unit
VIA	visual impact assessment

I. PURPOSE OF STUDY

The purpose of this visual impact assessment (VIA) is to document potential visual impacts caused by the proposed project and propose measures to lessen any detrimental impacts that are identified. Visual impacts are demonstrated by identifying visual resources in the project area, measuring the amount of change that would occur as a result of the project, and predicting how the affected public would respond to or perceive those changes.

II. PROJECT DESCRIPTION

The City of Santa Monica (City) and the California Department of Transportation (Caltrans) are proposing the replacement of the Santa Monica Pier Bridge. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Santa Monica is the lead agency under CEQA and Caltrans is the lead agency under NEPA. Figure 1 and Figure 2 show the regional location and project vicinity, respectively.

No-Build Alternative

Under the No-Build Alternative, replacement of the structurally deficient Pier Bridge would not occur. The use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The existing bridge would continue to fail to meet current seismic standards, would not sufficiently and safely accommodate users during peak demand, and would not meet Americans with Disabilities Act (ADA) standards. The No-Build Alternative serves as a baseline to measure the build alternatives against, in terms of potential environmental impacts.

Build Alternatives

The proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new safer, multi-modal bridge to meet current seismic and ADA standards. Bridge replacement would also include the improvements at the west and east bridge approaches, and on the Pier. This section describes the proposed action and the project alternatives that have been developed to meet the identified purpose and need of the project, while avoiding or minimizing environmental impacts. Three build alternatives are being considered and are:

- Alternative 1: New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue During Construction
- Alternative 2: New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge During Construction
- Alternative 3 (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency and Limited Access at the Existing Alignment and New Permanent Vehicle Only Bridge at Moss Avenue

The build alternatives are further described below. For a much more detailed description of the project, please see the project description chapter of the project EIR/EA document.

Alternative 1: New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue During Construction

Alternative 1 would demolish the existing bridge entirely; provide a new wider bridge located in the same alignment of the existing Pier Bridge, and a temporary vehicular bridge on Moss Avenue connecting Appian Way to the pier deck parking during construction. The replacement bridge would be approximately 490 feet long and approximately 64 feet wide, a total of approximately 30 feet wider than the existing bridge. The additional width is to provide an ADA accessible path, bicycle lanes, and wider sidewalks to safely serve the volume of pedestrians. Pedestrian access from the Ocean Avenue and Colorado Avenue intersection would be provided with a temporary bridge during construction.

The west and east bridge approaches at the Pier and within Colorado Avenue public right-of-way, respectively, would be widened to match the width of the new bridge. The new bridge roadway would be shifted approximately 14 feet north of the existing west and east bridge approaches. The western bridge approach on the Pier deck would be widened by approximately 21 feet for a length of approximately 240 feet. Similarly, the eastern bridge approach would be widened resulting in the reduction of the width of the Colorado Avenue side street adjacent to The Lobster Restaurant coming from Moomat Ahiko Way, to 12 feet and a length of approximately 120 feet from Ocean Avenue.

The new bridge cross section shown in Figure 3 would include the following project features:

- A 12-foot-wide vehicular lanes in each direction
- A 5-foot-wide bicycle lanes in each direction
- A 12-foot-wide sidewalk at the north side
- ADA-compliant route

The following paragraphs describe the various elements of the construction scenario under Alternative 1.

Temporary Vehicular Bridge to the Pier Deck on Moss Avenue during Construction

Access to the Pier deck for public parking, delivery vehicles, and emergency vehicles would be maintained during construction with a temporary bridge constructed on Moss Avenue from the intersection of Appian Way to the Pier. The bridge would span over Ocean Front Walk and connect to the Pier where there are parking spaces next to an ADA ramp on the southeast end of the pier. California Fire Code Title 24 Part 9 Section 503.2.1 requires a minimum vertical clearance of 13 feet, 6 inches over Ocean Front Walk for emergency vehicles.

The temporary bridge width would be less than 29 feet (the width of Moss Avenue public-right-of-way) so that it would not extend beyond City right-of-way and encroach onto the adjacent properties north and south of Moss Avenue. Shallow excavations would occur on Moss Avenue for the construction of the temporary foundations.

Adjacent to the southeastern portion of the Pier, there are two existing ADA ramps on both sides of an octagonal stairway and a retaining wall with bench seating. The construction of the bridge would include removal of portions of the retaining wall and bench seating. The ADA ramp south of the stairs would be closed during construction of the project; however the north ADA ramp would be available to access the Pier from Ocean Front Walk. A concrete pylon lamppost on Ocean Front Walk is also in the alignment of the bridge and would be removed for construction.

Alternative 2: New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge During Construction

Alternative 2 would demolish the existing bridge entirely and provide a new wider bridge with the same size and lane capacity as Alternative 1. The replacement bridge for Alternative 2 is the same as Alternative 1, but with a different location for temporary vehicular access during construction. Vehicle access during the construction would be provided with a temporary vehicle ramp from Parking Lot 1 North. Pedestrian access from the Ocean Avenue / Colorado Avenue intersection during the construction would be provided with a temporary bridge.

The new bridge cross section shown in Figure 4 would include the following project features:

- A 12-foot-wide vehicular lane in each direction
- A 5-foot-wide bicycle lane in each direction
- A 12-foot-wide sidewalk at the north side
- ADA-compliant route

Temporary Vehicle Ramp to the Pier Deck from Parking Lot 1 North during Construction

Under Alternative 2, vehicle access to the Pier during construction would occur via a temporary vehicular ramp in Lot 1 North, on the north side of the Pier and to the west of the existing bridge alignment.

Alternative 3 (Locally Preferred Alternative): Two New Bridges- New Replacement Bridge for Pedestrian, Bicycle, Emergency and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue

Under Alternative 3, two new bridges would be constructed. The existing Pier Bridge would be replaced with a new bridge that has the same width between 32.5 feet and 40 feet, in the same location as the existing alignment. The replacement bridge would be designed primarily for

pedestrian and bicycle use and ADA access, but would also serve the purpose of providing access for emergency vehicles and possibly limited access for delivery vehicles during off-peak hours.

The new replacement bridge cross section shown in Figure 5 would include the following project features:

- A 22-foot-wide path primarily for pedestrian and bicycle use,
- An ADA-compliant route
- No public vehicle access for pier public parking and pickups/dropoffs

Permanent Public Vehicle Access to the Pier at New Moss Avenue Bridge

Under Alternative 3 a second bridge would be constructed at Moss Avenue for public vehicular access to the Pier deck parking lot and the Pier. The bridge would be designed for vehicular use, be approximately 150 feet long, and be within the 29 feet width of the existing City right-of-way to accommodate two vehicle lanes and barriers. The bridge would span over Ocean Front Walk and provide a minimum vertical clearance of 13 feet 6 inches per California Fire Code Title 24 Part 9 Section 503.2.1. The construction of the Moss Avenue Bridge would be staged with the Pier Bridge construction to provide continuous vehicular access to the Pier during construction of the project, eliminating the need for a temporary vehicular bridge.

Lot 1 South has two exiting driveways and the new bridge would require the permanent closure of the Moss Avenue exit. To construct this bridge, the retaining walls along Moss Avenue adjacent to the private property on the north and adjacent to Lot 1 South would need to be removed and reconstructed. This would require temporary construction easements on these properties.

At the southeast end of the Pier, the ADA ramp, portions of the retaining wall, and bench seating would be permanently removed. Due to limited vertical clearance the ADA ramp cannot be reconstructed at this location, however there is an ADA ramp north of this location that provides access to the Pier. The pylon lamppost on Ocean Front Walk would be in the alignment of the bridge and would be removed.

The Pier deck at the connection of the Moss Avenue Bridge would need to be reconstructed to accommodate the bridge. As previously discussed for the Moss Avenue Temporary Bridge, the pier deck would be strengthened for a new fire lane, requiring temporary loss of parking.

Common Features of the Build Alternatives

The overall duration of construction for the build alternatives is projected to be 24 months. The following features are common to all of the build alternatives, and are described in detail below.

ADA Compliant Route

The Pier Bridge replacement structure will be located in the same alignment and be approximately the same length as the existing bridge, therefore it will have the same slope of approximately 10% and not be compliant the ADA, as discussed in the earlier Section 1.2.2 Project Need, under the subheading. For ADA compliance a route will be located on the south side of and parallel to the Pier Bridge and on the south side of the Pier Sign. Two options are considered to provide ADA access, Option A includes a 5% sloped straight path with an elevator, and Option B has a fixed structural walkway that consists of a series of curved ramps and landings.

Option A proposes a third ADA compliant pedestrian-only bridge with a combination of either one or two elevators, and an escalator and/or stairs. The ADA compliant path would be approximately 10 feet wide with a 5% grade leading to an elevated landing next to the pier deck. The landing will connect to an elevator(s) that provides access to the pier deck and down to Ocean Front Walk as well. The landing will also connect to either escalators or stairs, or both, that lead to the pier deck. The escalator(s) and stairs are provided to accommodate pedestrian crowds that are expected to use the pedestrian-only bridge. The elevator would require a machine room to accommodate equipment for its operation, and is proposed to be located under the Pier Bridge.

Option B proposes an approximate 5.3 feet wide walkway cantilevered from the side of the Pier Bridge that is comprised of a series of sloped ramps with a maximum grade of 8.33% and landings as per ADA code. Each individual ramp is approximately30 feet long and is followed by a landing that is a minimum 5 feet long. The entire length of the ADA path is approximately 936 feet long from the bridge abutment to the Pier level, approximately and 450 feet longer than the pier bridge replacement structure. In order to match the same length, the ADA ramps are shaped as semicircles.

The walkway would extend the full length of the Pier Bridge and be approximately 5.3' wide. For Alternatives 1 and 2, to provide space for the route, a retaining wall will be constructed in Colorado Avenue, adjacent to the Lobster Restaurant, reducing the street width from 17 feet to 12 feet.

The Pier Sign

The Pier Sign, located at the eastern end of the Pier Bridge just west of the Ocean Avenue/Colorado Avenue intersection, is a historically significant structure and an iconic feature of the City. It is a State Historic Landmark. The Pier Sign and its foundations will be protected in place during construction of this project. The replacement bridge structure will be designed to preserve the Pier Sign in its existing location.

Temporary Pedestrian Bridge

During the demolition of the existing Pier Bridge and construction of the new replacement bridge, general public pedestrian access between the Pier and the Ocean Avenue / Colorado Avenue intersection would be maintained through construction of a temporary pedestrian bridge adjacent to the south of the Pier Bridge.

The temporary pedestrian bridge would be set back approximately 5 feet south from the existing bridge to allow for safe demolition and construction of the new bridge. The temporary bridge would stay within City right-of-way and be approximately 4 feet from existing buildings to the south and be accessed via the Ocean Avenue / Colorado Avenue Intersection. The temporary pedestrian bridge would have a similar 10% grade as the existing bridge and would be 8 feet in width.

Construction Staging

The project site is surrounded by existing residential properties, businesses, roads, public walkways, a park, and structures on all sides and underneath the bridge. Given the constraints around the bridge, construction access for the project is proposed on the north side of the bridge. Construction access on the south side is limited by private residences, businesses, and structures. These constraints would not provide sufficient space for construction work to safely proceed from the south. In addition, the temporary pedestrian bridge would further constrain the amount of space to work south of the pier.

Pier Structural Modifications

The Pier structure would be affected by the construction of this project. To remove the existing bridge, portions of the Pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. For all the alternatives where the new bridge connects with the Pier, deck reconstruction of the Pier would be needed to facilitate joining of the two structures. The temporary pedestrian bridge located on the south side will touch down on the Pier deck over the aquarium and the Pier deck would be modified at this location. Portions of the Pier deck under the escalators will be removed to accommodate the escalator trusses and their structural supports. The Pier under the stairs will be strengthened to support the weight of the stair structure.

All of the modifications to the Pier that are visible would be reconstructed and replaced in kind so as to maintain the historic character of the Pier.

III. PROJECT LOCATION AND SETTING

The project location and setting provides the context for determining the type and severity of changes to the existing visual environment. The terms visual character and visual quality are defined below and are used to further describe the visual environment. The project setting is also referred to as the corridor or project corridor which is defined as the area of land that is visible from, adjacent to, and outside the highway right-of-way, and is determined by topography, vegetation, and viewing distance.

The proposed project is located in the City of Santa Monica, and lies on the western edge of Los Angeles County abutting the Pacific Ocean. The region is characterized by the Greater Los Angeles Metropolitan area and generally consists of a sprawling core of existing cities that are highly urbanized. The region primarily supports developed, residential, commercial, industrial, and open space land uses. Major water bodies include the Pacific Ocean and Los Angeles River.

The landscape of the project corridor is characterized by the low-lying beach that gently slopes up from the ocean to the urban edge of Santa Monica, which ranges from being at the same elevation as the beach (south of the pier) to being slightly higher and on atop a small coastal bluff that is between 50 and 150 feet above sea level (north of the pier). The bridge provides pedestrian and vehicular access to and from Ocean Avenue from the Santa Monica Pier and

beach. The project corridor and nearby uses are popular tourist destinations. Nearby uses include recreational uses associated with the Santa Monica Pier and beach as well as Palisades Park. Other recreational uses include portions of Tongva Park, an approximately 6-acre park located on the southeast corner of Colorado and Ocean Avenues. Commercial uses that support tourism include hotels, restaurants, shops, and office buildings that are located along the east side of Ocean Avenue and south of the pier along Ocean Front Walk, adjacent to the bridge. Other uses along Ocean Avenue and Ocean Front Walk include multifamily residential uses.

As mentioned, the Pier Bridge, constructed in 1939, is approximately 490 feet long and extends west from the intersection of Ocean Avenue and Colorado Avenue to the Santa Monica Pier. There are several visual resources in the project corridor that are listed or eligible for listing in the National Register, which include Looff's Hippodrome, the Santa Monica Pier Sign, and Palisades Park. Looff's Hippodrome, located at 276 Santa Monica Pier, Santa Monica, was listed in the National Register in 1987. The property was made eligible for its association with early twentieth century amusement activities and the amusement piers along the Pacific Ocean. Its contributing elements include its massing, setback on the pier, arched windows, octagonal towers, decorative finials, exposed wood beams, and roof. The Santa Monica Pier Sign, located near the intersection of Colorado and Ocean Avenues in Santa Monica, was determined eligible for listing for its strong association with the Santa Monica Pier. Its elements include its massing, metal arch, neon tubing, lettering, lattice frame posts, and stylized crown. Palisades Park was also determined eligible for listing in the National Register. It is the oldest park in Santa Monica and extends 15 blocks from the intersection of Colorado and Ocean Avenues to the northern boundary of the City, near San Vicente Boulevard and Adelaide Drive. Contributing features identified in the Historic Resources Evaluation Report conducted by ICF International in 2015 include mature trees of various species, colonnades of date palms, a cast concrete border fence, field stone gateways, wood pergola, multiple monuments and markers, two cannons, a sundial, a totem pole, and Moderne statue of Saint Monica, the Camera Obscura, and the California Avenue Incline.

Other visual resources identified within the project corridor that are used for the purposes of this analysis include the Santa Monica Municipal Pier, State Route (SR) 1 (Pacific Coast Highway or PCH), Ocean Avenue, the Santa Monica Freeway, Santa Monica State Beach and the Pacific Ocean. SR-1 is a designated State Scenic Highway.

IV. ASSESSMENT METHOD

In accordance with the Federal Highway Administration (FHWA) and Caltrans environmental review guidelines, an assessment of visual impacts associated with highway projects is required to satisfy the provisions of NEPA and CEQA. The FHWA process requires that an area of visual effect be established, the visual quality and its relationship to viewers be described, an assessment be made as to the potential impacts of the proposed project on aesthetic resources, and that mitigation and enhancement efforts be included in project design, where necessary. This visual impact assessment was prepared in conformance with those provisions and organized according to guidelines found in the publication entitled Visual Impact Assessment for Highway Projects, 2015 (Federal Highway Administration 2015).

The following steps were followed to assess the potential visual impacts of the proposed project:

A. Define the project location and setting.
B. Identify visual assessment units and key views.
C. Analyze existing visual resources, resource change and viewer response.
D. Depict *(or describe)* the visual appearance of project alternatives.
E. Assess the visual impacts of project alternatives.
F. Propose measures to offset visual impacts.

Using the concepts and terminology mentioned above, and the criteria for determining significance (see Section VI, Visual Resources and Resource Change below), analysis of the visual effects of the proposed project is based on the following methods:

A. Observation from vantage points, including neighboring buildings, property, and roadways (conducted June 4, 2013).
B. Photographic documentation of key views of and from the project site, as well as the regional visual context.
C. A review of project construction drawings.
D. A review of the project in regard to compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.
E. Evaluation and analysis of photographic simulations.

V. VISUAL ASSESSMENT UNITS AND KEY VIEWS

The project corridor was divided into a series of "outdoor rooms" or visual assessment units (VAUs). Each visual assessment unit has its own visual character and visual quality. It is typically defined by the limits of a particular viewshed.

The Santa Monica Pier Bridge provides a boundary between PL1N and SR-1 (PCH) as it becomes the Santa Monica Freeway (Interstate 10) and the clustered businesses, residences, and recreational facilities south of the pier on either side of Ocean Front Walk. Therefore, for this analysis, the area surrounding the project corridor has been subdivided into four VAUs based on specific vantage points and differing sensitivities of those affected by the proposed project. The VAUs are shown in Figure 1 and are designated as Sacramento VAU, West Sacramento VAU, and River VAU. Key views, shown in Section XIII (Visual Impact), have been chosen for their representation of the VAU within which they are located and those viewers affected.

For this project, the following four visual assessment units and their associated key views (shown in Figure 6) have been identified, based on specific vantage points and differing sensitivities of those affected by the proposed project:

- **Bridge Alignment VAU:** The Santa Monica Pier Sign, Santa Monica Municipal Pier, the existing and proposed bridge location, and a portion of the intersection of Colorado and Ocean Avenues comprise the developed areas within the Bridge Alignment VAU. There are no undeveloped areas. Prominent views of several visual resources within the project corridor can be had throughout this VAU. The most prominent views relevant to the proposed project are represented by Key Views 1, 3 and 6 in Section VIII. These viewsheds, depending on the direction and angle of the viewer, include views of portions of Palisades Park, the Pier Bridge itself, the Santa Monica Pier Sign, Looff's Hippodrome, the Santa Monica Pier (amusement park, Carousel Park, businesses situated on the pier), the adjacent PL1N, portions of the parking deck on the south end of the pier, and views of Santa Monica State Beach, the shoreline, and the Pacific Ocean. This VAU is well-lit; lighting is primarily associated with the bridge, pier, highway, local roadways and bikeways, vehicles, parking areas, Palisades Park, and adjacent businesses.
- **North Pier VAU:** Municipal PL1N, staging areas, Marvin Braude Bike Trail, Ocean Front Walk and SR-1 comprise the developed areas in the North Pier VAU north of the existing and proposed bridge location. The undeveloped area includes stretches of the Santa Monica State Beach. Prominent views of the project site from PL1N, Marvin Braude Bike Trail, Ocean Front Walk, SR-1 and Santa Monica State Beach are shared throughout this VAU. The viewshed's foreground is generally dominated by PL1N, which will be a temporary construction staging, work area, and truck delivery aisle under the build alternatives. Under Alternative 2, it may also include a temporary auxiliary ramp to provide limited pier access during construction activities, which are expected to last approximately 24 months. The viewshed is backdropped by views of the Hippodrome, Pier Bridge, and Pier Sign, in addition to the upper portions of several commercial businesses and residences along both Ocean Avenue and Appian Way as far south as Pacific Terrace, depending on the angle of the viewer. These views are represented by Key View 5 in Section VIII. This VAU is fairly well-lit; lighting is primarily associated with the highway, local roadways and bikeways, vehicles, parking areas, and the pier.
- **Palisades Park VAU:** The Palisades Park VAU is comprised of Palisades Park that, as mentioned, is the oldest park in Santa Monica and extends north 15 blocks from the intersection of Colorado and Ocean Avenues to the northern boundary of the City. Prominent views of the project site are shared along the parts of the bluffs at the edge of Palisades Park, north of the Pier Bridge. Southwest-facing views from these locations allow viewers, depending on their angle, sightlines to the Pier Bridge, Looff's Hippodrome, the Santa Monica Pier, Santa Monica State Beach, the shoreline, the Pacific Ocean, SR-1 (PCH), PL1N, and portions of Appian Way and Ocean Front Walk. These views are represented by Key View 2 in Section VIII. This VAU is well-lit; lighting is primarily associated with the park, highway, Ocean Avenue, vehicles, parking areas, and the pier.
- **South Pier VAU:** The South Pier VAU is comprised of Municipal Parking Lot 1 South, businesses along Ocean Front Walk and Moomat Ahiko Way, residences along Appian Way and Seaside Terrace, and the local network of roadways comprise the areas south of the existing and proposed bridge location. Prominent views are located throughout this VAU,

especially along Appian Way and Ocean Front Walk south of Moss Avenue. This viewshed provides several unobstructed views to some of the visual resources located throughout the project corridor. This VAU is represented by Key Views 4 and 7 in Section VIII and consist of views up and down Ocean Front Walk, businesses, restaurants and retailers situated adjacent to the pier, common areas south and east of the Hippodrome, Looff's Hippodrome, the Pier Bridge, the pier, the beach and the ocean, depending on the angle of the viewer. This VAU is fairly well-lit; lighting is primarily associated with the pier, Ocean Front Walk, businesses, parking areas, local roadways and vehicles.

VI. VISUAL RESOURCES AND RESOURCE CHANGE

Resource change is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the proposed project. Resource change is one of the two major variables in the equation that determine visual impacts (the other is viewer response, discussed below in Section VII Viewers and Viewer Response).

With an establishment of the baseline (existing) conditions, a proposed project or other change to the landscape can be systematically evaluated for its degree of impact. The degree of impact depends both on the magnitude of change in the visual resource (i.e., the visual character and quality) and on viewers' responses to and concern about those changes. This general process is similar for all established federal procedures of visual assessment and represents a suitable methodology of visual assessment for other projects and areas.

The approach for this visual assessment is adapted from FHWA's visual impact assessment system (Federal Highway Administration 1988), in combination with other established visual assessment systems. The visual impact assessment process involves identification of the following.

- Relevant policies and concerns for the protection of visual resources.
- Visual resources (i.e., the visual character and quality) of the region, the immediate project area, project site, and project corridor.
- Important viewing locations (e.g., roads) and the general visibility of the project area, site, and corridor using descriptions, photographs, and simulations.
- Viewer groups and their sensitivity.
- Potential impacts.

Visual Resources

Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor.

Visual Character

Visual character includes attributes such as form, line, color, texture, and is used to describe, not evaluate; that is these attributes are neither considered good nor bad. However, a change in visual character can be evaluated when it is compared with the viewer response to that change. Changes in visual character can be identified by how visually compatible a proposed project would be with the existing condition by using visual character attributes as an indicator. For this project the following attributes were considered:

Form—visual mass or shape.

Line—edges or linear definition.

Color—reflective brightness (light, dark) and hue (red, green).

Texture—surface coarseness.

Dominance—position, size, or contrast.

Scale—apparent size as it relates to the surroundings.

Diversity—a variety of visual patterns.

Continuity—uninterrupted flow of form, line, color, or textural pattern.

The visual character of the proposed project will be fully compatible with the existing visual character of the corridor. Under all of the build alternatives, the visual character of the proposed project is mostly compatible with the surrounding pattern elements and pattern character.

The topography varies throughout the VAUs. In the North Pier VAU and South Pier VAU, it is relatively flat. The Palisades Park VAU is also relatively flat, though, it provides a vantage point different from the bluffs at the park's edge, which are raised anywhere between 50 and 150 feet above sea level. The Bridge Alignment VAU is dominated by the pier and bridge, and its high visual quality can be attributed to the features that define the pier and bridge, with its sloping gradient, the visibility of the Hippodrome, and the expansive, panoramic views of the beach and Pacific Ocean. These elements dominate most of the viewsheds throughout the VAU areas and the project corridor. Relative to these, other elements are smaller in form and scale. The Pier Bridge, Hippodrome, pier, pier businesses, amusement park and ferris wheel are prominent features. Beach areas in all VAUs have a fine-textured appearance. Trees and shrubs along SR-1, Ocean Front Walk, Palisades Park, and those associated with residential and commercial landscaping provide natural diversity against the built environment. Due to temperate seasonal changes, the color of the scenery is relatively consistent. At night, the pier and ferris wheel provide the primary visual interest of viewers, due to their form, color of the structures and associated lighting, dominance, and diversity.

Visual Quality

Visual quality refers to the aesthetics of the view and is evaluated by identifying the vividness, intactness, and unity present in the project corridor. Public attitudes validate the assessed level of quality and predict how changes to the project corridor can affect these attitudes. This process helps identify specific methods for addressing each visual impact that may occur as a result of the project. The three criteria for evaluating visual quality are defined below:

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

The visual quality of the existing corridor will not be altered by the proposed project. *Section* VIII*, Visual Impact*, describes changes to the visual quality. The existing visual quality for each VAU is as follows. The FHWA guidelines explain that all three criteria (i.e., vividness, intactness, and unity) must be high to indicate high quality.

- **Bridge Alignment VAU:** The vividness of this VAU is high because of the assortment of visual resources within the area, which includes panoramic views of portions of Palisades Park, the Pier Bridge itself, the Santa Monica Pier Sign, Looff's Hippodrome, the Santa Monica Pier (amusement park, Carousel Park, businesses situated on the pier), the adjacent PL1N, portions of the parking deck on the south end of the pier, and views of Santa Monica State Beach, the shoreline, and the Pacific Ocean. The presence of these visual resources creates a memorable landscape with unique and diverse visual elements. The intactness is moderate due to its relative freedom from non-typical visual intrusions. However, manmade intrusions do exist in viewsheds throughout the Bridge Alignment VAU. Typical intrusions include elements such as lampposts along the Pier Bridge and PL1N and signage throughout the Pier and on/for nearby structures/facilities. The unity is high because of the smooth transition between pier adjacent land uses, the pier itself, and the shoreline. The resulting visual quality of the Bridge Alignment VAU is moderate-high to high.
- **North Pier VAU:** The vividness of this VAU is moderate because while surrounding visual resources provide for a memorable landscape with distinctive, contrasting, and diverse visual elements, this VAU primarily serves as a large parking lot and, as such, is a common visual element along this portion of the coastline. Intactness and unity are also moderate due to the relative dominance of PL1N and its supporting structures. Otherwise, this VAU is relatively free of typical visual intrusion and manmade encroachment, providing scenic relief for its viewer groups. The resulting visual quality of the North Pier VAU is moderate to moderate-high.
- **Palisades Park VAU:** The vividness of this VAU is high because of the assortment of visual resources within the area, which provides topographic relief, a variety of vegetation, rich

colors, impressive scenery, and unique natural and built features. The high vividness can also be attributed to the features that define the Pier Bridge and Pier, with its sloping gradient, the visibility of the Hippodrome, and the expansive, panoramic views of the beach and Pacific Ocean. The intactness is moderate due to its relative freedom from non-typical visual intrusions. However, as in the Bridge Alignment VAU, manmade intrusions do exist in viewsheds throughout the Palisades Park VAU. Typical intrusions include elements such as lampposts along the Pier Bridge and Palisades Park and signage throughout the Pier, PL1N and on/for nearby structures/facilities. This VAU is also highly unified as the juxtaposition of the pier, Pier Bridge, and SR-1 with the Santa Monica State Beach and Pacific Ocean creates a harmonious visual pattern. The resulting visual quality of the Palisades Park VAU is moderate-high.

- **South Pier VAU:** The vividness of this VAU is moderate-high because its visual resources provide for a memorable landscape with distinctive, contrasting, and diverse visual elements, such as the Pier Bridge, Hippodrome, pier (amusement park and Carousel Park), Santa Monica State Beach, the shoreline, and the Pacific Ocean. The presence of these visual resources creates a memorable landscape with unique and diverse visual elements. The intactness is moderate-high due to its relative freedom from typical visual intrusions. The unity is moderate-high because of the smooth transition between pier adjacent land uses, the pier itself, and the shoreline. The resulting visual quality of the South Pier VAU is moderate-high.

Resource Change

Overall, resource change will be low. Changes to visual quality as a result of the proposed project would be similar to the expected changes to visual character as described above. As mentioned, primary potential [non-temporary] aesthetic changes to the visual quality under the proposed project's build alternatives include the widening of the bridge at the existing alignment and the addition of an elevator tower at the base of the bridge on the south side. However, under Alternative 3, a new permanent vehicle-only bridge would be constructed at Moss Avenue, which would also result in potential [non-temporary] aesthetic changes to the visual quality. Thus, resource change for all VAUs under Alternatives 1 and 2 will be low. Under Alternative 3, resource change for the South Pier VAU will be moderate-low due to the addition of the vehicle-only bridge, which could be seen from Key Views 4 and 7. Under the same alternative, resource change for the Bridge Alignment VAU, North Pier VAU, and Palisades Park VAU will be low.

VII. VIEWERS AND VIEWER RESPONSE

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.

Viewers, or more specifically the response viewers have to changes in their visual environment, are one of two variables that determine the extent of visual impacts that will be caused by the

construction and operation of the proposed project. The other variable is the change to visual resources discussed earlier in Section VII Visual Resources and Resource Change.

Types of Viewers

There are two major types of viewer groups for highway projects: highway neighbors and highway users. Each viewer group has their own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group which help to predict their responses to visual changes.

Santa Monica Pier Bridge Neighbors (Views to the Bridge)

Santa Monica Pier Bridge neighbors are people who have views to the bridge. 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 neighbors or viewer groups with distinct reasons for being in the corridor and therefore having distinct responses to changes in visual resources. For this project the following highway neighbors were considered:

- Recreationists, including beachgoers, pedestrians, joggers, sightseers, and cyclists within the North Pier VAU, South Pier VAU, and Palisades Park VAU
- Motorists and passengers within the North Pier VAU and South Pier VAU
- Local commuters within the North Pier VAU [primarily those travelling SB on SR-1] and the eastern edge of the Bridge Alignment VAU [primarily those travelling NB/SB through the intersection of Colorado & Ocean Avenues; WB on Colorado Avenue at the same intersection]
- Haulers within North Pier VAU and South Pier VAU
- Residents within the South Pier VAU
- Business employees and patrons within the South Pier VAU

Santa Monica Pier Bridge Users (Views from the Bridge)

Santa Monica Pier Bridge users are people who have views from the bridge. In this case, these people are within the Bridge Alignment VAU. They can be subdivided into different viewer groups in two different ways—by mode of travel or by reason for travel. For example, subdividing highway users by mode of travel may yield pedestrians, bicyclists, transit riders, car drivers and passengers, and truck drivers. Dividing highway users or viewer groups by reason for travel creates categories like tourists, commuters, and haulers. It is also possible to use both mode and reason for travel simultaneously, creating a category like bicycling tourists, for example. For this project the following highway users were considered:

- Recreationists, including beachgoers, pedestrians, joggers, sightseers, and cyclists
- Motorists and passengers

- Local commuters
- Haulers
- Business employees and patrons

Composite Viewer Group

For analytical purposes, a composite viewer group was created for this project. A composite viewer group is made up of all bridge neighbors and bridge users affected by the project. It is a proportional representation of the affected population. It not only represents a typical viewer but also includes the most critical attributes and concerns of the individual viewer groups from which it was assembled.

For this project, the viewer groups that most typify the composite viewer group as listed above include recreationists, motorists and passengers, haulers, local commuters, residents, and business employees and patrons. These groups represent the largest viewer groups in direct visual contact with the proposed project.

Viewer Response

Viewer response is a measure or prediction of the viewer's reaction to changes in the visual environment and has two dimensions as previously mentioned, viewer exposure and viewer sensitivity.

Viewer Exposure

Viewer exposure is a measure of the viewer's ability to see a particular object. Viewer exposure has three attributes: location, quantity, and duration. Location relates to the position of the viewer in relationship to the object being viewed. The closer the viewer is to the object, the more exposure. Quantity refers to how many people see the object. The more people who can see an object or the greater frequency an object is seen, the more exposure the object has to viewers. Duration refers to how long a viewer is able to keep an object in view. The longer an object can be kept in view, the more exposure. High viewer exposure helps predict that viewers will have a response to a visual change.

Generally, viewer exposure throughout the project corridor and VAUs is considered to be high. Bridge neighbors [residents] and business employees constitute viewers who would have long-term, stationary views of the proposed project. As a result, they have high exposure. Views of the project by these viewer groups, primarily located throughout the Bridge Alignment VAU and in the South Pier VAU, vary based on their location within the landscape and distance from the project site. The largest number of viewers who come into direct contact with the proposed project are the users of the bridge, which consist of recreationists. Over 6 million recreational viewers come into contact with the bridge on an annual basis, which translates to over 16,000 viewers a day, and while they cross the bridge in short period of time, they are often using the surrounding amenities so have a longer duration of views of the bridge and thus, also have high exposure (City of Santa Monica 2015). Many of these viewers are attracted to the project

corridor due to its high visual quality and presence of historic, scenic, and visual resources. Motorists' and passengers', haulers', and local commuters' views are of a shorter duration than the preceding groups and fewer vehicles cross over the bridge on a daily basis[1] and, therefore, are considered to have moderately high exposure. SR-1 is an officially designated State Scenic Highway and Ocean Avenue (and its intersections) is designated by the City of Santa Monica as a scenic corridor. As a result, a composite viewer group, with high exposure, has been created to represent these viewer groups.

Viewer Sensitivity

Viewer sensitivity is a measure of the viewer's recognition of a particular object. It has three attributes: activity, awareness, and local values. Activity relates to the preoccupation of viewers—are they preoccupied, thinking of something else, or are they truly engaged in observing their surroundings. The more they are actually observing their surroundings, the more sensitivity viewers will have of changes to visual resources. Awareness relates to the focus of view—the focus is wide and the view general or the focus is narrow and the view specific. The more specific the awareness, the more sensitive a viewer is to change. Local values and attitudes also affect viewer sensitivity. If the viewer group values aesthetics in general or if a specific visual resource has been protected by local, state, or national designation, it is likely that viewers will be more sensitive to visible changes. High viewer sensitivity helps predict that viewers will have a high concern for any visual change.

Generally, viewer sensitivity throughout the project corridor and VAUs is considered to be high. Bridge neighbors [residents] and business employees are engaged in observing their surroundings, have highly focused views, and imbue local values. As a result, they have high sensitivity. Users of the bridge, many of whom are attracted to the project corridor due to its high visual quality and presence of historic, scenic and visual resources, are also engaged in observing their surroundings and have highly focused, panoramic views. Thus, they too have high sensitivity with respect to the proposed project changes. Motorists and passengers, haulers, and local commuters have less activity and awareness than the preceding groups, though, due to the designation of SR-1 as a State Scenic Highway and Ocean Avenue as a scenic corridor, these viewer groups are also considered to be highly sensitive. However, public meetings for the proposed project have established that users and neighbors are in support of the proposed project. Therefore, this would substantially lower viewer sensitivity. As a result, the composite viewer group would have moderate sensitivity.

[1] Table 5 of the Traffic Analysis indicates that over 2,300 weekday and over 3,600 weekend trips would be shifted because of the proposed project and, therefore, is an indication of existing trips occurring over the bridge (Fehr & Peers 2015). Note, many vehicles are likely to have more than one person in the vehicle, so there may be one to multiple viewers per vehicle.

VIII. REGULATIONS

Federal, state, and local policies require that aesthetics and potential impacts to visual resources be considered in the design of the proposed project. This chapter provides an overview of the pertinent federal, state, and local policies governing aesthetics.

Federal Policies

Department of Transportation (DOT) Act of 1966, Section 4(f)

Section 4(f) of the DOT Act of 1966 established the requirement for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development. The law stipulates that the FHWA and other DOT agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no feasible and prudent avoidance alternative to the use of land and the action includes all possible planning to minimize harm to the property resulting from such use; or the Administration determines that the use of the property will have a de minimis impact. A constructive use could occur where the proximity of the proposed project substantially impairs aesthetic features or attributes of a property protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the property.

Historic Preservation Act of 1966

The Historic Preservation Act of 1966 is a national policy of historic preservation to protect, rehabilitate, restore, and reuse districts, sites, buildings, structures, and objects significant in American architecture, history, archaeology and culture. Section 106 mandates that federal agencies take into account the effect of an undertaking on a property which is included in, or eligible for inclusion in, the National Register of Historic Places. The National Historic Preservation Act (NHPA) establishes the National Register of Historic Places, State Historic Preservation Offices and programs, and the Advisory Council on Historic Preservation (ACHP). This includes a proposed project's potential impacts to visual resources of those buildings, structures, and/or objects listed or deemed eligible for listing in the National Register.

State Policies

Streets and Highways Code, Sections 260 – 263 (State Scenic Highways)

SR-1 has been designated by state legislation as a scenic highway. The scenic corridor, defined as the area generally adjacent to and visible from the highway, is subject to protection under Sections 260 -263 of the California Streets and Highways Code designates certain portions of the state highway system as state scenic highways in order to establish the State's responsibility for the protection and enhancement of California's natural scenic beauty by identifying those portions of the state highway system which, together with the adjacent scenic corridors, require special scenic conservation treatment. The intent of the Legislature in designating such

scenic highways is to assign responsibility for the establishment and application of specific planning and design standards and procedures that indicate the location and extent of routes and areas and require continuing and careful coordination of planning, design, construction, and regulation of land use and development, by state and local agencies as appropriate, to protect the social and economic values provided by the State's scenic resources.

Local Plans and Policies

City of Santa Monica General Plan

The City of Santa Monica Comprehensive General Plan is the principal local plan and policy document guiding development (City of Santa Monica, 2010). The Land Use & Circulation Element, Historic Preservation Element, Scenic Corridor Element and Open Space Element of the general plan contain relevant policies related to aesthetics. These policies are discussed below.

Land Use & Circulation Element (LUCE). The LUCE is designed to maintain the City's character, protect its neighborhoods, manage its transportation systems, and encourage additional housing in a sustainable manner that ensures a high quality of life in the City of Santa Monica. Building Height Standards and Land Use Parameters govern the Beach and Oceanfront District, which act to preserves the area as a scenic resource that enhances the beach going experience with visitor-serving uses that support it as a regional, national, and international tourist destination. The Beach and Oceanfront District has four defined areas: Palisades Park running from the northern city limits to Colorado Avenue, the Santa Monica Pier, the area north of the Santa Monica Pier, and the area south of the Pier. Linkages between the Oceanfront and the City are strengthened through enhancement of east-west streets leading from the beach to Ocean Avenue, maintaining public view corridors to the beach and ocean, and adding pedestrian access paths to the beach. New beach parks are created north of the Pier to create flexible, open green spaces that are oriented to the water where residential neighborhoods are conserved and maintained.

> **Policy LU1.5 Design Compatibility**: Require that new infill development be compatible with the existing scale, mass and character of the residential neighborhood. New buildings should transition in size, height and scale toward adjacent residential structures.
>
> **Policy LU4.4 Pedestrian-Oriented Design:** Engage pedestrians with ground floor uses, building design, site planning, massing and signage that promote vibrant street life and emphasize transit and bicycle access.
>
> **Policy LU12.3 Rehabilitation of Historic Resources:** Promote adaptive reuse of historic structures and sensitive alterations where changes are proposed. New construction or additions to historic structures shall be respectful of the existing historic resource.
>
> **Policy LU13.1 Maintain Character:** Reinforce the City's distinctive natural, social, and environmental characteristics including its beachfront and connections to the water, civic and cultural institutions, terrain and climate, and the geographic fabric of neighborhoods and boulevards.

Policy LU15.3 Context-Sensitive Design: Require site and building design that is context sensitive and contributes to the City's rich urban character.

Policy LU15.8 Building Articulation: Building façades should be well designed with appropriate articulation in the form of setbacks, offsets, projections and a mix of architectural materials and elements to establish an aesthetically pleasing pattern. Large areas of glass above the ground floor require special design consideration. Highly reflective materials are to be avoided, and dark or reflective glass is prohibited.

Policy HP1.3: Ensure that new development, alterations or remodeling on, or adjacent to, historic properties are sensitive to historic resources and are compatible with the surrounding historic context.

Policy HP1.10: Review proposed developments for potential impacts on unique archaeological resources, paleontological resources, and incorporate appropriate mitigation measures to protect or document the resource.

Policy D18.2: Respect the scale and character of the [Beach and Oceanfront] District's existing residential areas in the design and construction of new buildings.

Policy D18.7: Preserve and enhance the Santa Monica Pier as a key component of Santa Monica's history and character.

Policy D19.5: Protect the public views and pedestrian access on existing walk streets.

Policy D19.6: Preserve the public view corridors, including western views to the ocean from the east-west streets and boulevards, views to the ocean and the Pier from Palisades Park, and views from the Pier to the City.

Historic Preservation Element. The Historic Preservation Element was adopted by the city council in 2002. The goals are organized around areas of preservation policy: funding, coordination, implementation, and evaluation programs and policies; the identification and evaluation of historic resources; public awareness; protection of historic resources; incentives; and integration with community development programs. The Santa Monica Pier and the Santa Monica Looff Hippodrome ((Carousel) Building) are designated as historical resources in the City of Santa Monica, and land use policies related to the protection of significant historical resources are identified above.

Policy 4.1.1: Ensure the protection of historic resources through the continued enforcement of existing codes.

Policy 4.3.4: Review all new development for potential impacts on historic resources as required by the California Environmental Quality Act (CEQA).

Policy 4.5.1: Maintain and protect streetscapes that establish a context for historic buildings, structures, objects, sites, and districts.

Policy 4.5.2: Encourage urban design plans for parks, sidewalks, and other public areas to include historic considerations, protect historic views and landscapes, encourage public access, and promote awareness of the history of the City.

Open Space Element. The Open Space Element of the city's general plan was prepared in 1997. The purpose of the element is to establish a long-range vision for the future development of parks and open space within the City of Santa Monica. The element inventories existing open space amenities within the city and recommends objectives and policies to improve the character and quality of the city's existing open spaces.

Policy 1.1: Preserve existing public open space.

Policy 5.1: Reconnect the City and the beach.

Policy 9.1: Increase physical access to parks and open spaces, in particular for youth and persons with disabilities.

The City of Santa Monica prepared a Parks and Recreation Master Plan (Master Plan) in March 1997. The Master Plan is based upon the Open Space Element, which was prepared simultaneously, and it sets forth specific actions to help implement Open Space objectives and policies. Policies and goals relevant to the project are cited therein, and the beach is referred as the city's most valuable natural recreational resource. The Master Plan proposes improvements pertaining to access to beach facilities from inland areas, bike lanes and walkways as well as several streetscape improvements.

Local Coastal Plan

The project site is located within Subarea 2 (The Santa Monica Pier) of the Coastal Zone, as described in the Local Coastal Plan's (LCP's) Land Use Plan (LUP) (City of Santa Monica, 1992). The LCP of the City of Santa Monica was formulated to implement, at the local level, the California Coastal Act of 1976. In August 1992, the California Coastal Commission certified the city's LCP of the Local Coastal Program. The LCP has two components, the LUP and the Implementation Plan. The LUP contains a description of the conditions and issues which exist in Santa Monica's Coastal Zone and presents land use and development policies designed to fulfill the intent of the Coastal Act. Should conflicts arise between the LUP and other local planning documents, such as the General Plan, the policies and regulations of the LCP shall take precedence within the Coastal Zone. The Implementation Plan for Santa Monica's LCP will be submitted for certification to the California coastal Commission at a later date.

The LCP guides future development within the Coastal Zone. Policies within the LCP are grouped according to access, recreational and visitor-serving facilities, environmental quality, scenic and visual resources, and new development. The LCP identifies scenic and visual resources as those associated with the beach and bay, the pier, and the Palisades bluffs.

Scenic Corridor Element. The Scenic Corridor Element establishes seven scenic corridors in the city:

1. Santa Monica Freeway from the city boundary to Ocean Avenue,
2. Ocean Avenue from the northern city boundary to Barnard Way,
3. SR-1 within the city limits,
4. Barnard Way from Ocean Avenue to the southern city boundary,
5. Wilshire Boulevard from the city boundary to Ocean Avenue,
6. Santa Monica Mall (now known as the Third Street Promenade), and
7. Santa Monica Municipal Pier.

Of the seven corridors, the Santa Monica Freeway, Ocean Avenue, SR-1 and the Santa Monica Municipal Pier are adjacent to the proposed project. Scenic corridors within the Coastal Zone that are visible to and from the project site include the following:

- Santa Monica Freeway from the city boundary to Ocean Avenue
- Ocean Avenue from the northern city boundary to Barnard Way
- SR-1 from the northern city boundary to the Santa Monica Freeway, and
- Santa Monica Municipal Pier

In addition, the LCP also acknowledges the existence of designated viewing areas from all major east-west streets intersecting Ocean Avenue and Barnard Way.

Policies in the LCP are directed toward preserving and enhancing public views associated with these resources as well as improving the visual quality of the inland urbanized area of the Coastal Zone. LCP policies related to scenic and visual resources include the following:

> **Policy 46:** The scenic and visual qualities of the Coastal Zone shall be considered and protected as an important public resource. Public views of, from, and along the ocean, pier, Inspiration Point, and Palisades Park shall be protected. Permitted development shall be cited and designed to protect views, minimize alteration of natural landforms, be visually compatible with the character of surrounding areas, and restore and enhance visual quality in visually degraded areas;
>
> **Policy 47:** All new development shall provide underground utilities; and
>
> **Policy 49:** Standards shall ensure that new development along scenic corridors is designed and cited [sic] to be visually compatible with the character of the surrounding area, thereby restoring and enhancing visual quality in visually degraded areas and protecting public views of the coast and scenic coastal areas.

The widened bridge to be provided as part of the proposed project would accommodate bicyclists and larger volumes of pedestrians as well. One of the policies within the LCP encourages the creation of bikeways:

Policy 25: Additional bikeways on city streets shall be developed to provide an alternative means to access the Coastal Zone.

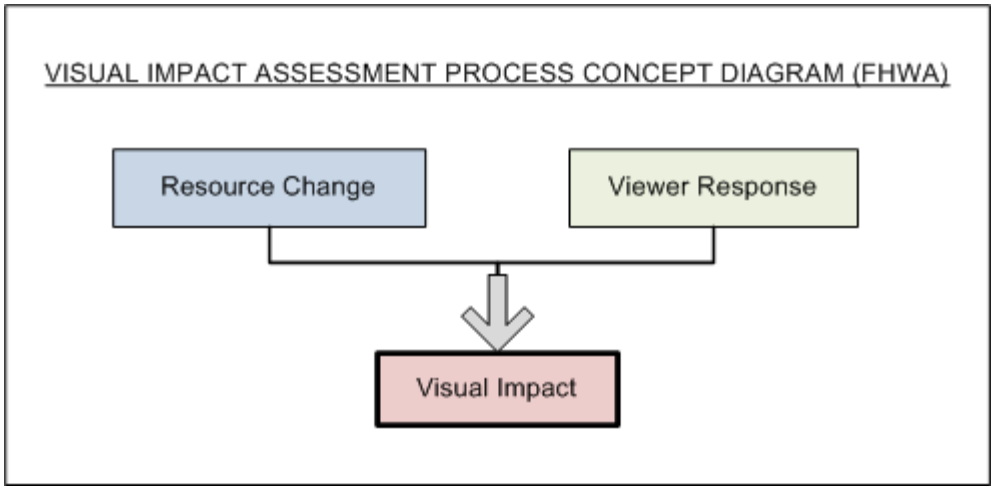
Group Viewer Response

The narrative descriptions of viewer exposure and viewer sensitivity for each viewer group were merged to establish the overall viewer response of each group.

As stated above, the composite viewer group is deemed to have generally high exposure to the proposed project. Similarly, the composite viewer group is also deemed to have generally high sensitivity to visual changes resulting from the project. However, public meetings for the proposed project have established that users and neighbors are in support of the proposed project, lowering viewer sensitivity. As a result, the composite group viewer response would generally be moderate-high.

IX. VISUAL IMPACT

Visual impacts are determined by assessing changes to the visual resources and predicting viewer response to those changes. These impacts can be beneficial or detrimental. Cumulative impacts and temporary impacts due to the contractor's operations are also considered. A generalized visual impact assessment process is illustrated in the following diagram:



The table below provides a reference for determining levels of visual impact by combining resource change and viewer response.

Table 1: Visual Impact Ratings Using Viewer Response and Resource Change

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

Visual Impacts by Visual Assessment Unit and Alternative

Because it is not feasible to analyze all the views in which the proposed project would be seen, it is necessary to select a number of key views associated with visual assessment units that would most clearly demonstrate the change in the project's visual resources. Key views also represent the viewer groups that have the highest potential to be affected by the project considering exposure and sensitivity. In addition, these key views will be analyzed for each proposed alternative.

This VIA also considers the potential impacts of a No-Build Alternative. Under the No Build Alternative, the project would not be constructed and there would be no visual impacts on the existing visual character, visual quality, or affected viewer groups as a result of the proposed project.

The following section describes and illustrates visual impacts by visual assessment unit, compares existing conditions to the proposed alternatives, and includes the predicted viewer response.

Bridge Alignment Visual Assessment Unit

Construction and operation impacts throughout the Bridge Alignment VAU would be similar under all the Build Alternatives. Therefore, they are analyzed conjointly throughout this section of the analysis. Project elements and potential impacts that are unique to a particular build alternative are called out as necessary.

Construction

Construction activities under the proposed project's build alternatives would involve backhoes with hydraulic rams, dump trucks, cranes, drilling rigs, concrete trucks, and other construction equipment. Visible activities would include the removal and installation of pavement, the erecting of falsework, other routine construction activities, and deliveries by truck. Construction staging/stockpiling, the storage of road-building materials, the presence of

construction equipment, and temporary traffic barricades would result in minor temporary potential visual impacts at both staging locations. The overall duration of construction for the build alternatives is projected to be 24 months. Nighttime construction would not occur.

The proposed bridge replacements would all be built along the same alignment as the existing Pier Bridge under all build alternatives of the proposed project, removing access to much of the Bridge Alignment VAU during construction. Most views from within this VAU would be available from near the Ocean/Colorado Avenue intersection (Key View 6) and at the alignment terminus on the Pier (Key View 3) and elements of the pier structure and viewsheds within the Bridge Alignment VAU [represented by Key Views 1, 3, and 6] would be altered during construction. All build alternatives would also share the same locations and temporary visual changes associated with the staging area in PL1N, pedestrian bridge south of the Pier Bridge, and road closures for Ocean Front Walk, Appian Way, and MAW. Under Alternative 1, bridge users would be redirected to a temporary vehicular bridge on Moss Avenue (refer to Figure 1). However, under Alternative 2, bridge users would be redirected to a temporary vehicular ramp in PL1N. Like Alternative 1, vehicular access during construction would be provided by a new bridge on Moss Avenue for Alternative 3; however, this bridge would become a permanent feature, unlike Alternative 1. Construction signaling and signage would be required to facilitate detours and safety during construction and would be a visible element during construction.

To remove the existing bridge, portions of the pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. After demolition is complete, viewers would see the new bridge structure being constructed in the same location as the existing bridge. The proposed replacement bridge structures would be the same for Alternatives 1 and 2 and the difference between Alternatives 1 and 2 is the location of temporary vehicular access during construction, described above. The proposed bridges would be approximately 64 feet wide, a total of approximately 30 feet wider than the existing bridge, for Alternatives 1 and 2. Construction of a new, wider bridge would bring construction activities in close proximity to existing buildings. Under Alternative 3, the proposed bridge would be narrower than Alternatives 1 and 2 and would be approximately 40 feet wide, approximately 6 feet wider than the existing bridge. Therefore, construction activities would not be located as close to existing buildings as under Alternatives 2 and 3.

While access to the existing Pier Bridge would altered, vehicular traffic would be redirected under all alternatives and pedestrian access would retained in the same area via the temporary pedestrian bridge. Although the amount of parking would be temporarily diminished, parking would still be available in the same general area within unaffected portions of PL1N. Therefore, in general and while somewhat disrupted, physical and visual access would be retained to all the places that the existing Pier Bridge provides access to (e.g., parking and the beach). Therefore, there would only be temporary access changes to the existing bridge and access to other areas would not be affected.

Modifications to the pier during construction include removal of the existing bridge, deck reconstruction, temporary pedestrian bridge construction and other minor design elements.

However, these features would be reconstructed and replaced in kind so as to maintain its existing visual quality and character.

Thus, all construction activity under the build alternatives would result in minor and temporary construction impacts throughout the Bridge Alignment VAU, there would be no substantial noticeable long-term effect on the visual surroundings, and temporary visual changes due to construction are not considered to be substantial.

Operation

As mentioned, the proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new safer, multi-modal bridge to meet current seismic and ADA standards. The proposed project currently considers three separate Build Alternatives. As described under Construction, above, Build Alternatives 1 and 2 would provide a new, wider bridge located in the same alignment as the existing Pier Bridge, as depicted in KV-1A Proposed Condition and KV-1B Proposed Condition below. The replacement bridge would be approximately 490 feet long and approximately 64 feet wide, a total of approximately 30 feet wider than the existing bridge. The new bridge cross section would include a 12-ft-wide vehicular lane in each direction, a 5-ft-wide bicycle lane in each direction, a 12-ft-wide sidewalk at the north side, and a 5.3-ft-wide undulating ADA compliant pathway. Under Alternative 3, the existing Pier Bridge would be replaced with a bridge that has a width of approximately 40 feet, in the same location as the existing alignment. Therefore, visual simulations for Alternatives 1 and 2 were created so as to represent the maximum extent of visual changes that would be introduced by the proposed project. This bridge would be for pedestrian, bicycle, emergency, and limited access, and would be approximately 6 feet wider than the existing bridge. Additionally, all three build alternatives consider the possibility of the construction of an elevator tower at the base of the bridge on the south side under ADA Option A. The elevator tower would have an approximate height of 63 feet, when measured from its base (at grade with Ocean Front Walk). At its highest point, the tower would exceed the existing profile of the Pier bridge deck by approximately 30 feet. As discussed above in Section II, ADA Option A would include a combination of either one or two elevators, and an escalator and/or stairs. Option A includes a 5% sloped straight path with an elevator, and Option B has a fixed structural walk-way that consists of a series of curved ramps and landings. Under Option A, the ADA compliant path would be approximately 10 feet wide with a 5% grade leading to an elevated landing next to the pier deck. Option B proposes an approximate 5.3 feet wide walkway cantilevered from the side of the Pier Bridge that is comprised of a series of sloped ramps with a maximum grade of 8.33%. Comparatively, ADA Option A represents the maximum extent of visual changes that would be introduced by the proposed project and is therefore the focal point of the impact analyses concerning ADA compliance and overall bridge design.

As stated above, Alternatives 1 and 2 propose to widen the existing bridge by 30 feet, whereas Alternative 3 proposes to widen the existing bridge by 6 feet. Since the vehicle-only bridge at Moss Avenue under Alternative 3 cannot be seen throughout this VAU, the build alternatives are analyzed together due to the similarity of their proposed project elements within the

viewshed. Under the proposed project's build alternatives, the largest potential aesthetic changes to this VAU include the widening of the bridge at the existing alignment to the north and south (up to 30 feet) and the potential addition of an elevator tower at the base of the bridge on the south side under ADA Option A, which can be seen from various locations throughout the Bridge Alignment. The bridge widening would not impede views of the existing scenic resources depicted in Key Views 1, 3 and 6 (below). Modifications to the pier during construction would be reconstructed and replaced in kind and these features would retain their existing visual quality and character.

The view from Key View 1 would be slightly altered from existing visual conditions, yet the vantage would still be retained. As depicted in the visual simulation for ADA Option A, features associated with the existing Pier Bridge would no longer be visible, such as the façade of Looff's Hippodrome, but would be replaced with new features associated with the proposed bridge. However, views to visual resources, such as the Hippodrome, can be had from a variety of angles throughout this VAU. As such, the proposed project is not expected to substantially alter the overall visual quality in the project area. This view would also be improved because safer pedestrian conditions would allow for better viewing conditions of the newer structure, which would include aesthetic design treatments and appear better-maintained than the existing, worn structure. In addition, the existing lamp posts would be retained, repainted, and reinstalled, maintaining this visual element.

As depicted in KV-1A Proposed Condition, the upper portion of the elevator tower would partially obstruct views of the northeast corner of the Hippodrome's façade (refer to Key View 1), though its placement would not interfere with sightlines to the Pier Sign or the remainder of the Hippodrome. Other built elements that would be introduced under Alternatives 1 and 2, as depicted in both KV-1A Proposed Condition and KV-1B Proposed Condition, include the widened bridge deck, east and westbound vehicle traffic lanes, bike lanes, sidewalk, bridge barriers and hand railings. Though the look of the bridge would differ slightly due to its widening, it would create additional visual interest in the project corridor and would not detract from views because it would be very similar to the existing bridge alignment and would be designed to be context-sensitive in accordance with the Santa Monica General Plan. Therefore, it wouldn't substantially deteriorate views throughout the Bridge Alignment VAU.

Changes to Key View 6 would be difficult to detect, but would include, depending on the position and angle of the viewer, the upper portion of the elevator tower (if ADA Option A is selected), which would be minimally apparent and near the top of the Hippodrome. Due to the grade of both the existing and proposed bridge, its deck and associated improvements (as mentioned above) would not be visible. Views to the historic Santa Monica Pier sign would be preserved.

SR 1, designated a scenic corridor by the City of Santa Monica, is not located within this VAU. The proposed project elements would not impede sightlines to any other scenic resources from this VAU and would maintain available scenic vistas, including views to the beach and ocean. As a result of the proposed project's general similarity to the existing alignment, with design

elements that would essentially match the existing design elements, the project would be consistent with the existing visual character.

As mentioned, this VAU is well-lit. Ambient illumination levels are fairly high and lighting, as previously discussed, is primarily associated with lampposts on and under the bridge/pier, vehicle traffic and signage on SR-1 and adjacent local roadways, lighting within parking areas and pedestrian paths, and signage for nearby businesses. Bridge lighting that is removed would be replaced at or near their existing locations. The project is not expected to introduce other elements that would contribute to substantial new light when compared to existing conditions. Similarly, the bridge itself, under the build alternatives, would be constructed using similar materials and coloring. Though it would introduce slightly more surface area, it is not expected to introduce substantial glare. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. No mitigation measures are necessary because the project is already designed to minimize impacts through compliance with the Santa Monica General Plan, which requires context-sensitive design, maintenance of local character, appropriate articulation in the form of setbacks, offsets, projections and a mix of architectural materials and elements to establish an aesthetically pleasing pattern, sensitivity to historic resources, and the overall protection of public views.

Viewer Response

As described under *Group Viewer Response*, the composite viewer response would be moderate. Viewers within the project area are familiar with the existing bridge, and the proposed bridge is in keeping with the existing visual environment. In addition, the elevators (if ADA Option A is selected), widened bridge deck, and associated elements such as vehicle lanes, bike lanes, sidewalks, barriers, and hand railings, would not greatly alter visual resources in the project area. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the Bridge Alignment VAU.

Resource Change

The vividness of the Bridge Alignment VAU would not be greatly affected by the proposed project elements under the build alternatives, and the rating would remain high. Views of visual resources would be preserved, though the views would be partially obstructed by the elevator, if built, in the case of the Hippodrome. Although the proposed bridge and elevator tower would introduce new structures, the intactness would remain moderate-high, because these changes would be in keeping with the appearance of the VAU's composition and overall project corridor. Similarly, its unity would still be high, as the project changes would not substantially compromise the smooth transition between existing visual elements within the viewshed. The resulting visual quality would remain moderate-high to high. Operation would result in a resource change throughout this VAU that is low; and the resulting visual impacts in the Bridge Alignment VAU would be moderately low, due to the moderate viewer response (refer to

Table 1, above ,and Table 2 under Summary of Visual Impacts by Visual Assessment Unit, below).

KEY VIEW (KV) 1 – From Pier Bridge apex looking west.

KV-1 Existing Condition



Source: ICF International, 2015.

KV-1A Proposed Condition – Alternative(s) 1 & 2 with ADA Option A



Source: ICF International, 2016.

KEY VIEW (KV) 1 – From Pier Bridge apex looking west.

KV-1 Existing Condition



Source: ICF International, 2015.

KV-1B Proposed Condition – Alternative(s) 1 & 2 with ADA Option B



Source: ICF International, 2016.

KEY VIEW (KV) 3 – From pier looking east.

KV-3 Existing Condition



Source: ICF International, 2015.

KEY VIEW (KV) 6 – From northwest corner of Ocean Avenue & Colorado Avenue intersection looking southwest.

KV-6 Existing Condition



Source: ICF International, 2015.

North Pier Visual Assessment Unit

Construction and operation impacts throughout the North Pier VAU would be similar under all the Build Alternatives. Therefore, they are analyzed conjointly throughout this section of the analysis. Project elements and potential impacts that are unique to a particular build alternative are called out as necessary.

Construction

As mentioned, construction activities under the proposed project's build alternatives would last for 24 months and involve backhoes with hydraulic rams, dump trucks, cranes, drilling rigs, concrete trucks, and other construction equipment. The Moss Avenue access bridge would not be visible from this VAU due to intervening development and infrastructure. Visible activities within this VAU would include the removal and installation of pavement, the erecting of falsework, other routine construction activities, and deliveries by truck. PL1N is one of the proposed construction staging spaces for contractor use. Construction staging/stockpiling, the storage of road-building materials, the presence of construction equipment, and temporary

traffic barricades would result in construction impacts. Under Alternative 2, the pier entrance would also be temporarily shifted to PL1N, resulting in an increase in the volume of truck deliveries and other pier-bound vehicle traffic. Access to the Pier for vehicles during construction would occur by way of a temporary vehicular ramp in PL1N, on the north side of the Pier and west of the existing bridge alignment. Temporary visual changes would also include signaling and signage, which would be required to facilitate detours and safety during construction. Though these would be a visible element during construction, these changes are not considered to be substantial as they would be a smaller detail of construction activities. Though these impacts would be more severe in the North Pier VAU than in the Bridge Alignment VAU due to the location and dominance of PL1N within the existing viewshed, these impacts would still be both minor and temporary. Views of construction activities would also be seen from SR-1, roughly between the pedestrian bridge over SR-1 to the Ocean Avenue exist, before SR-1 enters the tunnel. Visible construction activities seen from SR-1 would include the PL1N staging area and work on the demolishing and constructing elevated bridge structures. However, an existing City maintenence yard area is already visible immediately adjacent the existing Pier Bridge and SR-1 that would screen some views of construction. Views of construction along this portion of SR-1 would be very brief and in passing, and due to the existing presence of construction staging, views would not be greatly affected.

Under all build alternatives of the proposed project, the Pier Bridge, elements of the pier structure and viewsheds within the North Pier VAU [represented by Key View 5] would be altered during construction. Removal of portions of the existing bridge would be required, though all of the modifications to the pier that are visible will be reconstructed and replaced in kind so as to maintain its visual quality and character. Thus, all construction activity under the build alternatives would result in minor and temporary construction impacts throughout the North Pier VAU and there would be no substantial noticeable long-term effect on the visual surroundings.

Operation

As mentioned, Alternatives 1 and 2 propose to widen the existing bridge by 30 feet, whereas Alternative 3 proposes to widen the existing bridge by 6 feet. Since the vehicle-only bridge at Moss Avenue under Alternative 3 cannot be seen throughout this VAU, the build alternatives are analyzed together due to the similarity of their proposed project elements within the viewshed. Due to the scale of the proposed changes, the availability of views to visual resources (i.e. beach, Pacific ocean, etc.), and the fleeting nature of views, there would be no substantial changes to views from SR-1 or any of the scenic corridors identified in the Local Coastal Plan's Scenic Corridor Element. Similarly, the build alternatives would not affect scenic vistas of the beach and ocean from this VAU because such views are located in a different direction than the proposed project.

Under the proposed project's build alternatives, the largest potential aesthetic changes to this VAU include the widening of the bridge at the existing alignment (up to 30 feet) and the potential addition of an elevator tower at the base of the bridge on the south side, which can

be seen from various locations throughout the North Pier. The bridge widening would not impede views of the existing scenic resources depicted in KV-5 Existing Conditions (below), which include the sloping gradient of the Pier Bridge and unobstructed sightlines to Looff's Hippodrome and the Pier Sign. Again, though the look of the bridge would differ slightly due to its widening, it would not detract from views because it would be very similar to the existing bridge alignment and would be designed to be context-sensitive in accordance with the Santa Monica General Plan. Therefore, it wouldn't substantially deteriorate views throughout the North Pier VAU. The upper portion of the elevator tower would be visible near the north-east corner of the Hippodrome's façade, similar to Key View 1. However, its placement would not interfere with sightlines to the Pier Sign or Hippodrome, and views to and from those, and other visual resources, are widely available throughout this VAU.

As discussed, this VAU is fairly well-lit. Ambient illumination levels are fairly high and lighting, as previously discussed, is primarily associated with lampposts on and under the bridge/pier, vehicle traffic and signage on local roadways and bikeways, and lighting within parking areas and pedestrian paths. Bridge lighting that is removed would be replaced at or near their existing locations. The project is not expected to introduce other elements that would contribute to substantial new light when compared to existing conditions. Similarly, the bridge itself, under the build alternatives, would be constructed using similar materials and coloring. Though it would introduce slightly more surface area, it is not expected to introduce substantial glare. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

The proposed project elements would not impede sightlines to any other visual resources within the project corridor available from this VAU. As a result of the proposed project's general similarity to the existing alignment, with design elements that would be comparable to the existing design elements, the project would be consistent with the existing visual character. As mentioned, the proposed project would also be consistent with the City of Santa Monica General Plan and the Local Coastal Plan, particularly as it relates to the preservation of scenic corridors designated by the City of Santa Monica that are within this VAU. It would not have a substantial adverse effect on a scenic vista, substantially damage a scenic resource (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or substantially de-grade the visual character or quality of the site and its surroundings. Similarly, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. No mitigation measures are necessary because the project is already designed to minimize impacts through compliance with the Santa Monica General Plan, which requires context-sensitive design, maintenance of local character, appropriate articulation in the form of setbacks, offsets, projections and a mix of architectural materials and elements to establish an aesthetically pleasing pattern, sensitivity to historic resources, and the overall protection of public views.

Viewer Response

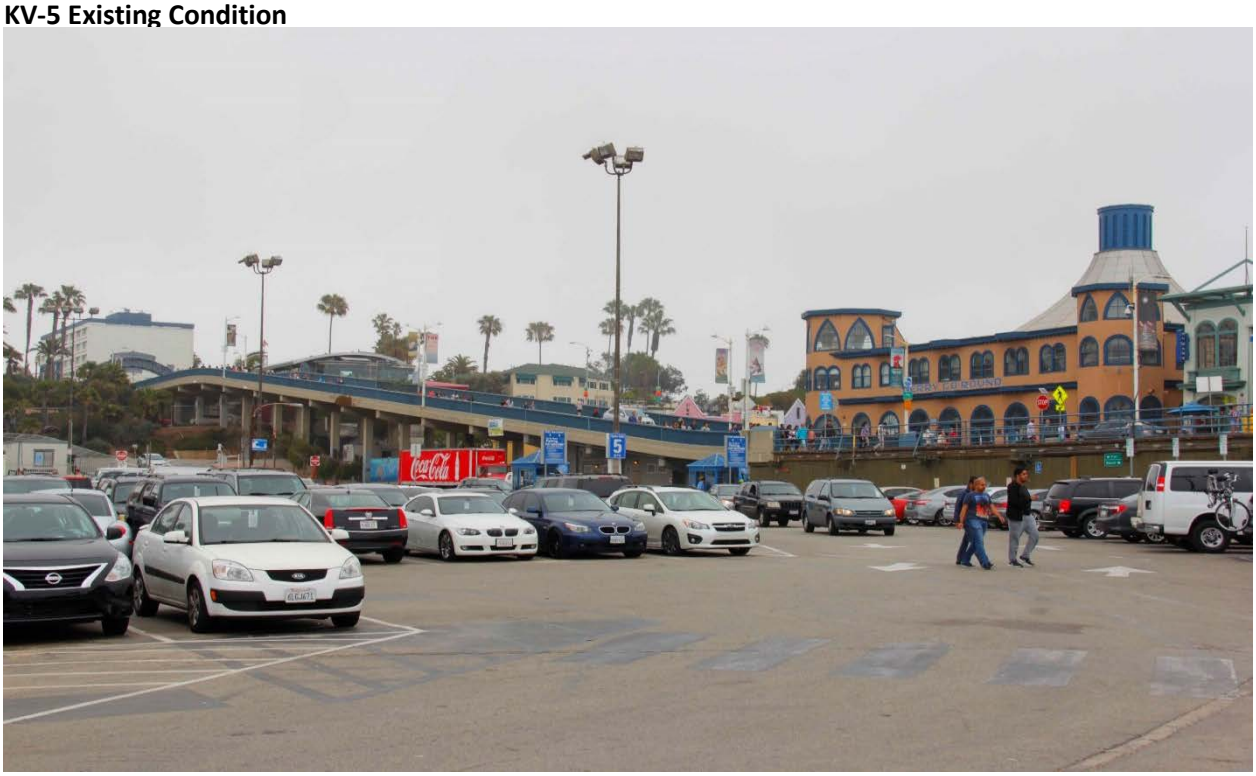
As described under Group Viewer Response, the composite viewer response would be moderate. Viewers within the project area are familiar with the existing bridge, and the proposed bridge is in keeping with the existing visual environment. In addition, the elevators (if ADA Option A is selected), widened bridge deck, and associated elements such as vehicle lanes, bike lanes, sidewalks, barriers, and hand railings, would not greatly alter visual resources in the project area. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the North Pier VAU.

Resource Change

The vividness of the North Pier VAU would not be greatly affected by the proposed project elements under the build alternatives, and the rating would remain moderate-high. As mentioned, scenic views of visual resources would be preserved throughout this VAU. Although the proposed bridge and elevator tower would introduce new structures, the intactness would remain moderate, because these changes would be in keeping with the appearance of the VAU's composition and overall project corridor. Similarly, its unity would still be moderate, as the project changes would not substantially compromise its distinctive, contrasting, and diverse visual elements and the composition of the viewshed as a whole. The resulting visual quality would remain moderate to moderate-high. Operation would result in a resource change throughout this VAU that is low; and the resulting visual impacts within the North Pier would be moderately low, due to the moderate viewer response (refer to Table 1 above and Table 2 under Summary of Visual Impacts by Visual Assessment Unit below).

KEY VIEW (KV) 5 – From Parking Lot 1 North looking southeast.

KV-5 Existing Condition



Source: ICF International, 2015.

Palisades Park Visual Assessment Unit

Construction and operation impacts throughout the Palisades Park VAU would be similar under all the Build Alternatives. Therefore, they are analyzed conjointly throughout this section of the analysis. Project elements and potential impacts that are unique to a particular build alternative are called out as necessary.

Construction

General construction activities, construction staging/stockpiling, the storage of road-building materials, the presence of construction equipment, and temporary traffic barricades would result in construction impacts, as in the previous analyzed VAUs. However, due to vegetation within the park and along the slope down to MAW and SR-1, views of construction would mostly be limited to the portions of the project located northeast of SR-1 and MAW, between Key Views 1 and 6. Some views toward the PL1N staging area could also be present along the bike trail where gaps in trailside vegetation are present. Impacts to views from this VAU would be both minor and temporary. Temporary visual changes due to construction signaling and signage also would occur to redirect pedestrian access and for construction safety, though they are not considered to be adverse. Under all build alternatives of the proposed project, the Pier Bridge, elements of the pier structure and viewsheds within the Palisades Park VAU

[represented by Key View 2] would be altered during construction. Removal of portions of the existing bridge would be required, though all of the modifications to the pier that are visible will be reconstructed and replaced in kind so as to maintain its visual quality and character. Thus, all construction activity under the build alternatives would result in minor and temporary construction impacts throughout the Palisades Park VAU and there would be no substantial noticeable long-term effects on the visual surroundings.

Operation

As with the previously analyzed VAUs, the build alternatives are analyzed together in this section due to the similarity of their proposed project elements within the viewshed. Under the proposed project's build alternatives, the largest potential aesthetic changes to this VAU are also the widening of the bridge at the existing alignment (up to 30 feet) and the potential addition of an elevator tower at the base of the bridge on the south side, which would be seen from various locations throughout Palisades Park.

The bridge widening would not impede views of the existing scenic resources depicted in KV-2 Existing Conditions (below), including the Pier Bridge and Pier, with its sloping gradient, the visibility of the Hippodrome and ferris wheel, and the views of the beach and Pacific Ocean. Again, though the look of the bridge would differ slightly due to its widening, it would not detract from views because it would be very similar to the existing bridge alignment, would be designed to be context-sensitive in accordance with the Santa Monica General Plan, and, from this VAU, visual changes introduced by the project would be relatively small in scale and form. Therefore, it wouldn't substantially deteriorate views throughout the Palisades Park VAU. The upper portion of the elevator tower would partially obstruct views of the northeast corner of the Hippodrome's façade, similar to Key Views 1 and 2. However, its placement would not interfere with sightlines to and from the aforementioned visual resources, which are widely available throughout this VAU.

The proposed project elements would not impede sightlines to any other visual resources available from this VAU. As a result of the proposed project's general similarity to the existing alignment, with design elements that would essentially be comparable to the existing design elements, the project would be consistent with the existing visual character. The proposed project would be consistent with the City of Santa Monica General Plan and the Local Coastal Plan, particularly as it relates to the preservation of scenic corridors designated by the City of Santa Monica that are within the immediate project vicinity. It would not have a substantial adverse effect on a scenic vista, substantially damage a scenic resource (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or substantially degrade the visual character or quality of the site and its surroundings. Similarly, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. No mitigation measures are necessary because the project is already designed to minimize impacts through compliance with the Santa Monica General Plan, which requires context-sensitive design, maintenance of local character, appropriate articulation in the form of setbacks, offsets, projections and a mix of architectural materials and

elements to establish an aesthetically pleasing pattern, sensitivity to historic resources, and the overall protection of public views.

Viewer Response

As described under Group Viewer Response, the composite viewer response would be moderate. Viewers within the project area are familiar with the existing bridge, and the proposed bridge is in keeping with the existing visual environment. In addition, the elevators (if ADA Option A is selected), widened bridge deck, and associated elements such as vehicle lanes, bike lanes, sidewalks, barriers, and hand railings, would not greatly alter visual resources in the project area. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the Palisades Park VAU.

Resource Change

The vividness of the Palisades Park VAU would not be greatly affected by the proposed project elements under the build alternatives, and the rating would remain high, due in part to the relative distance of this VAU to the project site. As it is further from the proposed alignment, the potential visual changes are smaller in scale and form. Thus, it would maintain a variety of vegetation, rich colors, impressive scenery, and unique natural and built features. Views of visual resources would be preserved, though partially obstructed in the case of the Hippodrome. Although the proposed bridge and elevator tower would introduce new structures, the intactness would remain moderate-high to high, because these changes would be in keeping with the appearance of the VAU's composition and overall project corridor, in addition to the relative scale and form of the visual changes as mentioned previously. Similarly, its unity would still be high, as the project changes would not substantially compromise the harmonious visual pattern created by the juxtaposition of the pier, Pier Bridge, and SR-1 with the Santa Monica State Beach and Pacific Ocean. The resulting visual quality would remain moderate-high. Operation would result in a resource change throughout this VAU that is low; and the resulting visual impacts within the Palisades Park would be moderately low, due to the moderate viewer response (refer to Table 1 above and Table 2 under Summary of Visual Impacts by Visual Assessment Unit below).

KEY VIEW (KV) 2 – From Palisades Park looking southwest.

KV-2 Existing Condition



Source: ICF International, 2015.

South Pier Visual Assessment Unit

Build Alternative 3 is the focus of the analysis for this VAU because of the proposed permanent Moss Avenue Bridge. Under Build Alternatives 1 and 2, the anticipated visual changes associated with the new Pier Bridge and potential elevators would be somewhat difficult to detect, due in large part to obstructed views to the north side of the pier throughout the South Pier VAU because of intervening development, such as palm trees and local businesses. In addition, development within the South Pier VAU would limit views toward the proposed permanent Moss Avenue Bridge from the Bridge Alignment, North Pier, and Palisades Park VAUs. Therefore, the proposed permanent Moss Avenue Bridge under Alternative 3 encapsulates the largest potential for visual change within this VAU, due to the limited and focused views to and within this VAU. Project elements and potential impacts that are unique to a particular build alternative are called out as necessary.

Construction

General construction activities, construction staging/stockpiling, the storage of road-building materials, the presence of construction equipment, and temporary traffic barricades would result in construction impacts, as in the previous analyzed VAUs. However, Parking Lot 1 South (PL1S) is one of the proposed construction staging spaces for contractor use, which is located in the South Pier VAU. Visual impacts from a staging area in the South Pier VAU would result in a greater visual intrusion in the South Pier VAU because of the construction staging located directly adjacent in Parking Lot 1 South. However, these impacts would still be both minor and temporary. Temporary visual changes due to construction would also include signaling and signage, which would be required to facilitate detours and safety during construction. Though these would be a visible element during construction, these changes are not considered to be substantial as they would be a smaller detail of construction activities.

Under Alternative 1, a temporary vehicle access bridge would also be constructed on Moss Avenue. As a result, the composition of the viewsheds within the South Pier VAU, represented by Key Views 4 and 7 below, would be altered during construction. Removal of portions of the existing elements on the south side of the pier would be required, though, once modifications to the pier and bridge are complete, the bridge will be deconstructed so as to maintain the visual quality and character of the existing corridor. Due to the temporary nature of construction activity, impacts would be considered to be minor.

Operation

Under all build alternatives, aesthetic changes associated with the widening of the Pier Bridge at the existing alignment and the potential addition of an elevator tower at the base of the bridge would partially seen from the South Pier VAU. However, given the angle and the slope of the bridge alignment, its widening would be difficult to detect. The elevator tower would be partially visible rising above the pier deck (approximately 30 feet), though its placement would not interfere with sightlines to the Hippodrome, which are already partially obstructed by palm trees, the common areas south and east of the Hippodrome, and other intervening development, such as local businesses.

The most visible project feature would be a new permanent vehicle-only bridge that would be constructed at Moss Avenue to provide public vehicular access to the Pier deck parking lot and the Pier that is proposed under Alternative 3. The bridge would be designed for vehicular use, be approximately 150 feet long, and be within the 29 feet wide existing City right-of-way to accommodate two vehicle lanes and barriers. The bridge would span over Ocean Front Walk and provide a minimum vertical clearance of 13 feet 6 inches per California Fire Code Title 24 Part 9 Section 503.2.1. To construct this bridge, the retaining walls along Moss Avenue adjacent to the private property on the north and adjacent to PL1S would need to be removed and reconstructed. At the southeast end of the Pier, the ADA ramp, portions of the retaining wall, and bench seating would be permanently removed, as would the pylon lamppost on Ocean

Front Walk. The Moss Avenue Bridge alignment encroaches into Carousel Park and construction would occur in the park that would require modification of some of the park features. As a result of the proposed project under Build Alternative 3, the scale, contiguity and composition of the current viewsheds represented by Key Views 4 and 7 would be altered. As depicted in KV-4 Proposed Condition, visual elements in the foreground (as seen from Key View 4) would be removed and replaced, whereupon the permanent, vehicle-only bridge at Moss Avenue would dominate, creating a linear pattern across the viewshed that would be large in form and scale. The scale, contiguity and composition of the current viewshed at Key View 7 would also be altered. However, the project are would still retain its unique character and sightlines to all visual resources within this VAU, including the Santa Monica Municipal Pier, Looff's Hippodrome, Santa Monica State Beach, and the Pacific Ocean, would continue to be unobstructed.

The proposed project elements under the build alternatives would not impede sightlines to any of the other visual resources within this VAU. Though the proposed project may alter the visual composition of views within the South Pier VIA, it would still be consistent with the City of Santa Monica General Plan and the Local Coastal Plan, particularly as it relates to the preservation of scenic corridors designated by the City of Santa Monica that are within the immediate project vicinity. It would not have a substantial adverse effect on a scenic vista, substantially damage a scenic resource (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or substantially degrade the visual character or quality of the site and its surroundings. Similarly, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. No mitigation measures are necessary because the project is already designed to minimize impacts through compliance with the Santa Monica General Plan, which requires context-sensitive design, maintenance of local character, appropriate articulation in the form of setbacks, offsets, projections and a mix of architectural materials and elements to establish an aesthetically pleasing pattern, sensitivity to historic resources, and the overall protection of public views.

Viewer Response

As described under Group Viewer Response, the composite viewer response would be moderate. Viewers within the project area are familiar with existing bridge, and the proposed bridge is in keeping with the existing visual environment. In addition, the elevators (if ADA Option A is selected), widened bridge deck, and associated elements such as vehicle lanes, bike lanes, sidewalks, barriers, and hand railings, would not greatly alter visual resources in the project area. Therefore, the proposed bridge would not be an eyesore and would not greatly alter the existing visual character of the project area, as seen from the South Pier VAU.

Resource Change

The vividness of the South Pier VAU would be slightly affected by the proposed project elements under the build alternatives. However, the rating would remain moderate-high throughout the VAU because the project would maintain a memorable landscape with

distinctive, contrasting, and diverse visual elements, such as the Pier Bridge, Hippodrome, pier (amusement park and Carousel Park), Santa Monica State Beach, the shoreline, and the Pacific Ocean. Views to the visual resources would be preserved, though partially obstructed in the case of the Hippodrome (which itself is already partially obstructed). Since the proposed project would introduce new structures, the intactness would be reduced from moderate-high to moderate because these changes would introduce manmade elements. However, they would be in keeping with the appearance of the VAU's existing composition and the overall project corridor. Its unity would remain moderate-high. Although the project changes would alter the viewsheds represented by Key Views 4 and 7, the proposed build alternatives would not substantially compromise the harmonious visual pattern created by the smooth transition between pier adjacent land uses, the pier itself, and the shoreline. The resulting visual quality would remain moderate-high. Operation would result in a resource change throughout this VAU that is moderate; and the resulting visual impacts within the Palisades Park would be moderate, due to the moderate viewer response (refer to Table 1 above and Table 2 under Summary of Visual Impacts by Visual Assessment Unit below).

KEY VIEW (KV) 4 – From Ocean Front Walk (south of Moss Avenue) apex looking north.

KV-4 Existing Condition



Source: Google Earth, 2016.

KV-4 Proposed Condition – Alternative 3 with ADA Option A



Source: ICF International, 2016.

KEY VIEW (KV) 7 – From southwest corner of Moss Avenue & Appian Way intersection looking west.

KV-7 Existing Condition



Source: ICF International, 2015.

Summary of Visual Impacts by Visual Assessment Unit and Alternative

Construction and operation impacts for the project are described above. Table 2 summarizes and compares the narrative ratings for visual resource change, viewer response, and visual impacts between alternatives for each key view.

Table 2. Summary of Key View Narrative Ratings

Visual Assessment Unit	Key View	ALTS. 1 & 2			ALT. 3		
		Resource Change	Viewer Response	Visual Impact	Resource Change	Viewer Response	Visual Impact
Bridge Alignment	1	L	M	ML	L	M	ML
	3	L	M	ML	L	M	ML
	6	L	M	ML	L	M	ML
North Pier	5	L	M	ML	L	M	ML
Palisades Park	2	L	M	ML	L	M	ML
South Pier	4	L	M	ML	M	M	M
	7	L	M	ML	M	M	M

Impacts from each build alternative would be comparable; therefore, the summary has been condensed into a singular discussion, and a detailed comparison is not provided. Under all build alternatives, the existing Pier Bridge would be removed and a new bridge structure would be built in its place at the same location. All build alternatives would retain the existing Pier Sign and refurbished light posts. Alternatives 1 and 2 would result in a wider bridge structure while Alternative 3 would be narrower. In addition, Alternative 3 would introduce the new Moss Avenue Bridge. All build alternative also have the potential to include the addition of an elevator tower at the base of the bridge on the south side. Therefore, impacts to the Bridge Alignment, North Pier and Palisades Park VAUs under all build alternatives are all similar while the South Pier VAU would be affected by the addition of a new vehicle-only bridge location would alter the viewsheds represented in Key Views 4 and 7 under Alternative 3. In addition, removal of pier-adjacent elements and modifications to Carousel Park would be required under Alternative 3; however, the overall visual quality and character of Key Views 4 and 7 would not be substantially diminished as a result. Given the size and location of the proposed elements with respect to the Key Views, the resource change under all build alternatives would be relatively low as a result of the proposed project's general similarity to the existing alignment, current design elements, and overall visual character.

The proposed project elements would not impede sightlines to any other scenic resources, including the beach and ocean. As a result of the proposed project's general similarity to the existing alignment, with design elements that would essentially match the existing design elements, the project would be consistent with the existing visual character. The proposed project would be consistent with the City of Santa Monica General Plan and the Local Coastal Plan, particularly as it relates to the preservation of scenic corridors designated by the City of

Santa Monica that are within the immediate project vicinity. It would not have a substantial adverse effect on a scenic vista, substantially damage a scenic resource (trees, rock outcroppings, and/or historic buildings within a state scenic highway), or substantially degrade the visual character or quality of the site and its surroundings. Similarly, the proposed project would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

When factored with resource change and viewer response, the proposed project would result in moderate visual impacts to the project area and corridor, overall. Visual impacts associated with construction activities and would be temporary and minor. The proposed project would add to the cumulative visual impacts associated with construction and presence of built features within the project corridor. Due to the permanent vehicle-only bridge at Moss Avenue, these impacts would be slightly more detrimental under Alternative 3 than it would under Alternatives 1 and 2.

X. PROJECT VISUAL IMPACT SUMMARY

The project visual impact summary is provided under Summary of Visual Impacts by Visual Assessment Unit and Alternative, above.

Temporary Construction Visual Impacts

Temporary visual impacts resulting from construction were described earlier in the VIA (Section IX, Visual Impact). Please refer to discussions in that section for more detail.

XI. CUMULATIVE VISUAL IMPACT

Cumulative impacts are those resulting from past, present and reasonably foreseeable future actions, combined with the potential visual impacts of this project. For this project, it has been determined that the following cumulative visual impacts may occur.

The area of effect for cumulative visual effects would extend along the length of the Pier Bridge and include views to and from the proposed project site. At the time of the preparation of this analysis, there are no other known projects within the area of cumulative effect. As stated, existing visual quality within the area of effect is high. The proposed project is driven by implementation of the City of Santa Monica General Plan and the Local Coastal Plan, described above, to provide access and to support land uses in the vicinity. All proposed build alternatives would result in the same cumulative visual impacts. Temporary construction impacts associated with the proposed project would not result in cumulative visual impacts because they would be temporary in nature. No new sources of light and glare would be introduced and scenic vistas and views from SR-1 would not be affected. The existing Pier Bridge would be replicated, in large part, under the build alternatives. While the new bridge would be wider, it would maintain the current Pier Bridge's height, alignment, and location. The look of the bridge would differ slightly, but would create visual interested in the project corridor and would not detract

from views. As a result, the proposed project would be generally similar to the existing structure and would be consistent with the existing visual character. . Due to the permanent vehicle-only bridge at Moss Avenue, these impacts would be slightly more detrimental under Alternative 3 than it would under Alternatives 1 and 2. Overall, the proposed project and its build alternatives would have only an incremental contribution to cumulative impacts related to visual changes in the area because it would not substantially alter the existing visual landscape or degrade the visual quality of the project vicinity. Therefore, the project's incremental impact on visual resources is less than cumulatively considerable.

XII. AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

Caltrans and the FHWA mandate that a qualitative/aesthetic approach should be taken to address visual quality loss in the project area. This approach fulfills the letter and the spirit of FHWA requirements because it addresses the actual cumulative loss of visual quality due to a project. This approach also results in avoidance, minimization, and/or mitigation measures that can lessen or compensate for a loss in visual quality. The inclusion of aesthetic features in the project design, discussed in *Section II*, can help generate public acceptance of a project. As discussed above, because no adverse visual effects or substantial losses to visual quality throughout the project area are anticipated as a result of the bridge replacement, no avoidance, minimization and/or mitigation measures have been proposed.

XIII. CONCLUSIONS

The proposed project would result in moderate visual changes to the project area and corridor that would not result in permanent adverse visual impacts or negatively affect existing viewer groups. Under the build alternatives, no changes are proposed as part of the project that would substantially disrupt scenic vistas, remove or destroy character-defining features, alter the City's designated scenic corridors or views from the State's designated scenic highways, or otherwise substantially compromise the visual resources discussed above, including the Santa Monica Pier Sign, Santa Monica Municipal Pier, Looff's Hippodrome, SR-1 (Pacific Coast Highway or PCH), Ocean Avenue, the Santa Monica Freeway, Palisades Park, Santa Monica State Beach and the Pacific Ocean. In addition, views from Ocean Avenue and SR-1 would be preserved. Although views within the South Pier VAU under Build Alternative 3 would be changed as a result of a permanent, vehicle-only bridge at Moss Avenue, these visual impacts would not be substantial. As a result of the proposed project's general similarity to the existing alignment, with design elements that would essentially similar to the existing design elements, the project would be consistent with the existing visual character. The bridge replacement would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area and visual impacts associated with construction would be temporary and minor. The proposed project would not result in substantial cumulative visual impacts. No mitigation measures would be necessary.

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Appendix L

Air Quality Study Report

Memorandum

To:	Michael Enwedo, Senior Environmental Planner California Department of Transportation
From:	Rusty Whisman, Senior Environmental Planner ICF
Date:	May 26, 2020
Re:	**Addendum to the Air Quality Study Report for the Santa Monica Pier Bridge Replacement Project**

Setting and Project Description

The Santa Monica Pier Bridge Replacement Project is included in the 2017 Federal Transportation Improvement Program (FTIP) and programmed for Highway Bridge Program (HBP) funding. The federal project number is BHLO-5107(033). The Santa Monica Pier Bridge (Pier Bridge) qualifies for replacement under the HBP and is eligible for toll-credit funding. It is also identified as a transportation project in the Southern California Association of Governments (SCAG) 2015 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) as well as in the previous 2016–2040 RTP/SCS.

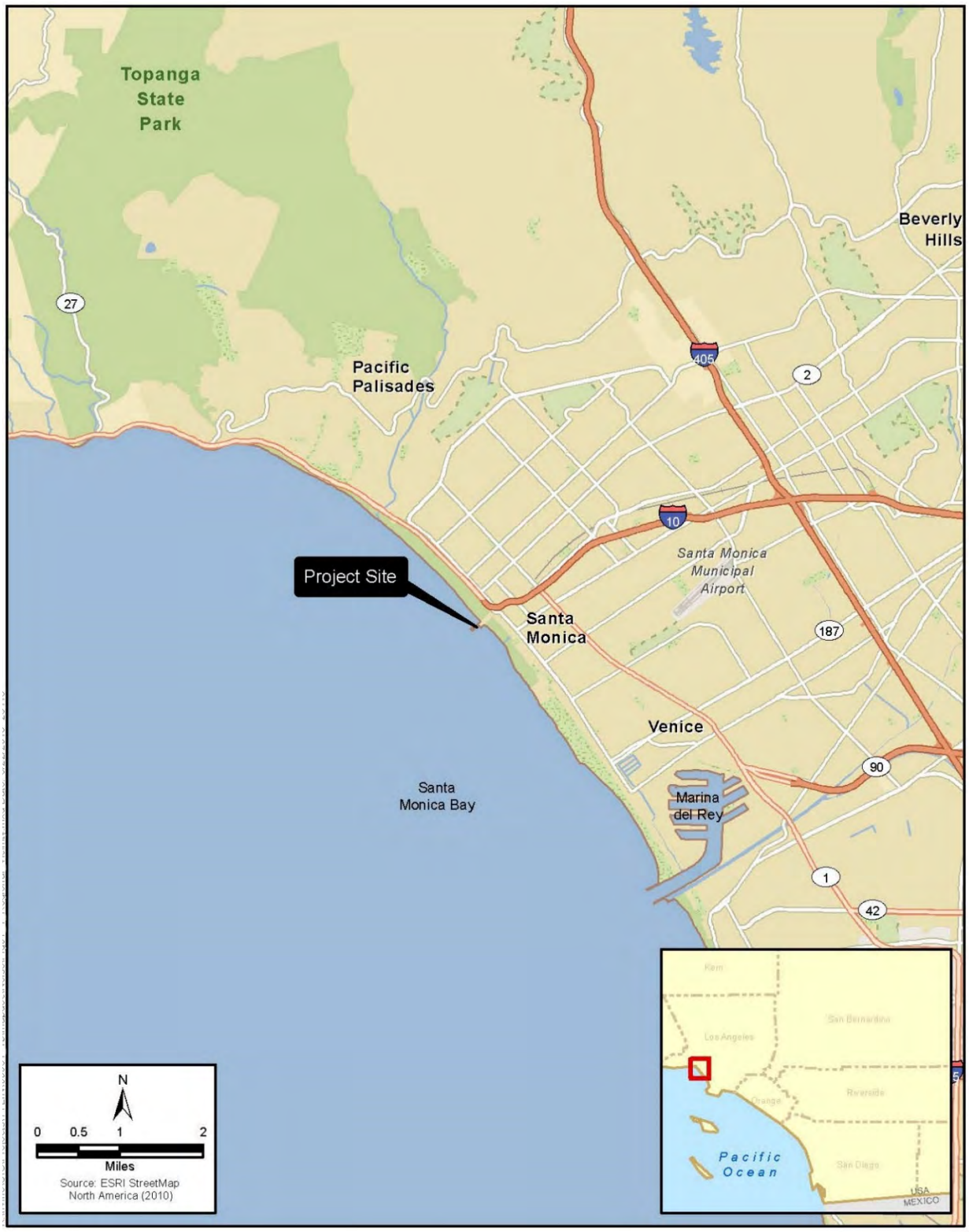
The project area is in the southwest portion of Los Angeles County, in the city of Santa Monica. The project site, the Pier Bridge, connects the intersection of Ocean Avenue and Colorado Avenue to Santa Monica Pier. The Pier Bridge was constructed in 1939 and is approximately 490 feet long, extending from the bluff at Ocean Avenue and Colorado Avenue, down the bank, over a separated dual carriageway (Moomat Ahiko Way and Appian Way), to the easterly edge of the Santa Monica Pier. At its west end, the project site is adjacent to Santa Monica State Beach and the Pacific Ocean. Santa Monica Pier opened in 1909, and Pacific Park, an amusement park, opened in 1996. Together, they form a major tourist attraction and the last of the West Coast's pier amusement parks.

North of the project site, Palisades Park extends from the bluff down to Pacific Coast Highway. At the top of the bluff, residential, commercial, institutional, and recreational uses are located east of the pier, including Santa Monica City Hall, Rand Corporation, Santa Monica Courthouse, and Tongva Park. To the south are commercial and residential uses, including hotels such as Loews Santa Monica Beach and Hotel Casa del Mar. North and south of Pier Bridge are surface parking lots and commercial and residential uses. Figures 1 and 2 show the regional location and project location

The proposed project would replace the existing Pier Bridge with a modern multi-modal bridge that would meet current seismic standards. Some alternatives would enhance access for individuals with limited mobility.

Bridge replacement would also include improvements at the west and east approaches as well as on the pier.

Figure 1. Regional Location



Source: ICF 2020.

Figure 2. Project Vicinity



Source: ICF 2020.

An air quality study report (AQSR) was prepared by ICF and approved by the California Department of Transportation (Caltrans) in October 2016. In addition, a draft environmental impact report/ environmental assessment (EIR/EA) for the proposed project was circulated for an extended 94-day public review period from December 11, 2017, to March 15, 2018, and a public meeting was held on January 10, 2018. Substantial comments were received concerning both the range of alternatives under consideration and the perceived impacts associated with those alternatives. Therefore, a re-examination of the alternatives was undertaken, which resulted in the formulation of the eight build alternatives presented in this document.

In compliance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), the 2016 AQSR was prepared to evaluate the potential for impacts related to air quality resulting from construction and operation of the project. In addition, the 2016 AQSR documented regional and project-level transportation conformity, as identified in the federal Clean Air Act. The 2016 AQSR also addressed the potential for the project to result in impacts related to greenhouse gas (GHG) emissions and climate change.

2016 Air Quality Study Report Findings

The 2016 AQSR evaluated three build alternatives, two of which involved no permanent increases in vehicular capacity (the former Build Alternatives 1 and 2); the third (the former Build Alternative 3) involved a replacement bridge at the existing alignment as well as a new permanent vehicle-only bridge at Moss Avenue. Because former Build Alternatives 1 and 2 would neither add vehicular capacity on the pier bridge nor add parking capacity, it was determined that they would not result in an increase in trip generation relative to the No-Build Alternative. Therefore, these alternatives were exempt from transportation conformity requirements. It was determined that they would have a negligible long-term effect on air quality. Former Build Alternative 3, however, would result in an increase in vehicular capacity from the introduction of the new vehicle-only bridge. Therefore, a discussion of regional and localized emissions was conducted using project traffic data. Overall, it was determined that former Build Alternative 3 would result in negligible increases in regional pollutant emissions and mobile-source air toxics (MSATs). It would not generate localized carbon monoxide (CO) and particulate matter hot spots. The SCAG Transportation Conformity Working Group reviewed traffic data associated with the former Build Alternative 3 on February 23, 2016, and determined that the project would not be a project of air quality concern, as defined by 40 Code of Federal Regulations (CFR) 93.123(b)(1).

It was determined that each of the former build alternatives evaluated in the 2016 AQSR would result in the generation of criteria and ozone precursor pollutants over the 24-month construction period. Furthermore, it was determined that emissions would not exceed South Coast Air Quality Management District (SCAQMD) regional thresholds but would exceed localized significance thresholds. With the use of construction equipment that complies with U.S. Environmental Protection Agency (EPA) Tier 4 standards, as identified in measure AQ-1, temporary construction-period emissions would not exceed any SCAQMD threshold.

The 2016 AQSR also quantified GHG emissions resulting from project construction activities.

Alternatives

Eight build alternatives are now under consideration, in addition to the No-Build Alternative. Each of the proposed build alternatives would satisfy the project's purpose and need, to varying degrees. All build alternatives would correct the structural deficiencies that currently exist and ensure adequate long-term public safety. The alternatives are organized into four pairs, with each pair having two different configurations for paths, which are proposed to convey vehicles, bicycles, pedestrians, and individuals with limited mobility.

Alternatives 1 and 2 would provide an in-kind replacement bridge, which would maintain the current access paths from Ocean Avenue to the pier, namely, one path for vehicles and bicycles (20'0" wide) and a second path (sidewalk) that would be used as an ADA-compliant access route (15'0" wide). The bridge would continue to descend at an approximate slope of 10%. Existing routes would remain available for ADA-compliant access and would be enhanced under these alternatives. The replacement bridge would be approximately 448 feet long and approximately 38 feet wide, 4 feet wider than the existing bridge. The downward slope of the replacement bridge would be approximately 10%, the same as the existing bridge. Two variations for the bridge configuration are being considered, with the pedestrian path on opposite sides of the bridge.

Alternatives 3 and 4 (defined as the proposed project[1] within the Recirculated EIR/EA) would provide an in-kind replacement bridge that would include an ADA-complaint pedestrian path on a separate structure. The replacement bridge would be approximately 450 feet long, and the total width of the two structures would be between 38 and 49 feet, depending on the alternative and location along the alignment. Both alternatives would provide three paths on two structures. A gentler slope would require the installation of elevators and stairs adjacent to Ocean Front Walk, providing access to the pier deck. At the locations of the elevator landings, the total width of the structures would be as wide as 68 feet.

Alternatives 5 and 6 would provide enhanced access for pedestrians and individuals with disabilities. The two options would provide one path for vehicles and bicycles (20'0" wide) at a slope of 10% and a second ADA-compliant path (15'0" wide) for pedestrians and individuals with disabilities at a slope of 5%. Elevators and stairs would be located adjacent to Ocean Front Walk, providing access to the pier deck.

Alternatives 7 and 8 would constitute the widest of the potential bridge replacement options. One path (34'0" wide) would be provided for vehicles and bicycles; a sidewalk (12'0" wide) with a 10% slope would also be provided. A third path (10'0" wide) for pedestrians would be ADA compliant, descending at a slope of 5%. Elevators and stairs for this path would again be located adjacent to Ocean Front Walk, providing access to the pier deck.

Under the No-Build Alternative, replacement of the seismically deficient Pier Bridge would not occur. Use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The existing bridge would continue to fail to meet current seismic

[1] CEQA requires the identification of the Proposed Project among the list of proposed build alternatives. Washoe Meadows Community v. Department of Parks and Recreation (1st Dist. 2017) 17 Cal.App.5th 277 held that "the DEIR's failure to provide the public with an accurate, stable and finite" project description "prejudicially impaired the public's ability to participate in the CEQA process by setting forth a range of five very different alternatives and by declining to identify a preferred alternative."

standards, would not adequately and safely accommodate users during periods of peak demand. As time goes on, these compromising conditions would worsen, and replacement of the bridge would eventually become imperative. The No-Build Alternative also serves as a baseline against which to measure the performance and potential environmental impacts of the build alternatives.

Common Features of All Build Alternatives

Pier Deck Improvements

The pier structure would be partially modified as part of this project. To remove the existing bridge, those portions of the pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. For all build alternatives, in the area where the new bridge would connect to the pier, reconstruction of the deck would be needed to rejoin the two structures. During construction, a temporary pedestrian bridge on the south side would touch down on the pier deck over the Heal the Bay aquarium. The pier deck would be modified at that location. Pier areas for alternatives that include stairs would need to be strengthened to support the weight of the stair structure. Portions of the pier deck would be widened or extended under some alternatives. All pier structure modifications would either be reconstructed or replaced in kind to maintain the historic character of the pier.

Utility and Facilities Relocations

The Pier Bridge is in an area that is served by utilities that may be affected during construction and, therefore, may require relocation. The facilities that would be temporarily or permanently relocated during demolition and then reconstructed include restrooms, pier storage rooms, an emergency backup generator for the aquarium, an electrical utility room, and a City of Santa Monica (City) trash compactor. Relocation of existing utilities within the project limits would be carefully planned with input from the utility owners/operators to maintain essential services to the pier while the bridge is under construction.

Construction Staging

The Pier Bridge is surrounded by a park as well as businesses, local streets, public walkways, and other structures. Some of these are located beneath the bridge. In addition, residences are located on Ocean Front Walk, south of the pier. Providing the contractor with enough working space to safely demolish the existing bridge and construct the new one, while minimizing disruptions in access to public resources, residences, businesses, and operations on the pier, will require careful consideration.

Construction work for this project would involve a variety of equipment types, including backhoes with hydraulic rams, dump trucks, cranes, drilling rigs, concrete trucks, and other items. Staging space for the contractor's use is proposed within a portion of Lot 1 North. This would cause the temporary loss of approximately 365 parking spaces in the lot and temporary modification of the lot entrance.

Located to the north, across Pacific Coast Highway, are Palisades Park and a City maintenance yard. Located on the southeast side of the Pier Bridge are a variety of businesses on Ocean Front Walk. These include Santa Monica Pier Aquarium, the historic Looff's Hippodrome, Carousel Park, and portions of the pier. These uses would not allow adequate space for construction work to proceed safely from the south side. In addition, the temporary pedestrian bridge would further constrain the amount of space for work from the south side of the pier. For these reasons, construction staging for the project is proposed on the north side of the bridge.

Construction activities would occur primarily between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday. Per Section 4.12.110 of the City's Municipal Code, construction work cannot be conducted between 6:00 p.m. and 7:00 a.m. Monday through Friday, before 9:00 a.m. or after 5:00 p.m. on Saturday, or at any time on Sunday or major holidays. However, per Section 4.12.110 (e), a permit could be issued for construction operations performed at night when there is less activity on the pier and fewer vehicles entering the lot. Given these constraints, the Lot 1 North entrance would be temporarily relocated during construction to provide an adequate workspace for construction operations. However, access to facilities would be maintained during construction of the new bridge.

Access During Construction

Temporary Pedestrian Bridge

During demolition of the existing Pier Bridge and construction of the replacement bridge, pedestrian access between the pier and the Ocean Avenue/Colorado Avenue intersection would be maintained through construction of a temporary pedestrian bridge adjacent to and south of the Pier Bridge. The bridge would be set back approximately 5 feet from the existing bridge to allow safe demolition of the existing bridge and construction of the new bridge. The temporary pedestrian bridge would be confined to the area within the City right-of-way and approximately 4 feet from the buildings on Ocean Front Walk to the south. Access to the temporary pedestrian bridge would be from the Ocean Avenue/Colorado Avenue intersection. The temporary pedestrian bridge would have a grade similar to that of the existing bridge (10%) and be 8 feet wide. Given its narrow width, the temporary bridge would accommodate pedestrians only; however, it may not be possible to accommodate peak weekend and holiday pedestrian traffic. Additional signage would be provided to reroute pedestrians to alternative access routes north and south of the pier during peak weekend and holiday periods.

Vehicular Access During Construction

The Pier Bridge passes over split two-lane roadways, Moomat Ahiko Way and Appian Way, as well as a pedestrian path, Ocean Front Walk. Although it would be desirable to maintain access along these routes, it may be necessary to limit such access so as to avoid any compromise in public safety. Temporary closures would be made known with signage, and detour routes would be identified. All of the aforementioned routes would be temporarily closed during demolition of the bridge because of the risk of falling concrete. In addition, foundation construction would involve the use of drilling rigs and cranes in proximity to the public and the erection and removal of falsework, which would also require closures. For Ocean Front Walk and Appian Way, some temporary closures would be

required in the interest of public safety during bridge demolition, foundation construction, and falsework erection/removal.

Temporary Vehicular Ramp

A temporary ramp, enabling vehicles to gain access to the pier parking area, would be provided from Lot 1 North. The purpose of this ramp would be to maintain access to pier parking for regular vehicles but also provide emergency access. This ramp would be no higher than H-20 rated.

Air Quality Impacts Analysis

Construction-Period Effects

Estimates of construction-period emissions were updated using the most recent version of the Roadway Construction Emissions Model (version 9.0.0), which the SCAQMD considers adequate for estimating road construction emissions in its CEQA guidance and is used for that purpose in this analysis.

Regional Criteria Pollutant Emissions

Table 1 shows the revised estimates of construction-period emissions that would occur during construction of the currently proposed build alternatives. Emissions during the construction period would be generated as a result of the use of construction equipment, material hauling and delivery, and workers commuting to the project site. Although fugitive dust emissions would also result from project construction, they would be controlled through implementation of SCAQMD Rule 403. As shown in Table 1, no exceedances of the SCAQMD regional significance thresholds are anticipated.

Table 1. Estimate of Regional Criteria Pollutant Emissions during Construction (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing	1	9	9	< 1	5	1
Grading/Excavation	8	80	65	< 1	8	4
Construction/Drainage/Utilities/ Sub-Grade	5	51	46	< 1	7	3
Paving	1	8	13	< 1	< 1	< 1
Maximum Daily Emissions (Regional)	**8**	**80**	**65**	**< 1**	**8**	**4**
SCAQMD Regional Emissions Thresholds	75	100	550	150	150	55

Note: SCAQMD thresholds are provided as the basis for the City's determination, as part of its responsibilities as the CEQA lead agency, of impacts under CEQA. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Source: ICF 2020. Assumptions provided in attachment.

ROG = reactive organic gas; NO_X = nitrogen oxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter

Table 2 shows the estimate of construction-period emissions with implementation of measure AQ-1, which is required to reduce localized on-site emissions. As shown therein, no exceedances of the SCAQMD regional significance thresholds would occur.

Table 2. Estimate of Regional Criteria Pollutant Emissions during Construction with Control Measures (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing	1	2	13	< 1	5	1
Grading/Excavation	5	11	90	< 1	6	2
Construction/Drainage/Utilities/ Sub-Grade	3	7	59	< 1	5	1
Paving	1	1	14	< 1	< 1	< 1
Maximum Daily Emissions (Regional)	**5**	**11**	**90**	**< 1**	**6**	**2**
SCAQMD Regional Emissions Thresholds	75	100	550	150	150	55

Note: SCAQMD thresholds are provided as the basis for the City's determination, as part of its responsibilities as the CEQA lead agency, of impacts under CEQA. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Source: ICF 2020. Assumptions provided in attachment.

ROG = reactive organic gas; NO_X = nitrogen oxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter

Localized Criteria Pollutant Emissions

As documented in the 2016 AQSR, there are several sensitive receptors in the immediate vicinity of the current build alternatives. The build alternatives would generate localized emissions of pollutants associated with the use of construction equipment, with a small portion from workers commuting to the project site, haul/delivery trips, and fugitive dust. Table 3 shows the maximum on-site daily emissions from each phase of construction. As shown therein, emissions would exceed the SCAQMD localized significance threshold (LST) for particulate matter less than 10 microns in diameter (PM10) and be equal to the LST for particulate matter less than 2.5 microns in diameter (PM2.5). However, with implementation of measure AQ-1, emissions would be reduced, and no exceedances of the LSTs would occur, as shown in Table 4.

Mobile-Source Air Toxics/Toxic Air Contaminant Emissions

As discussed in the 2016 AQSR, construction activities associated with the project would generate MSATs/toxic air contaminant emissions resulting from the use of heavy equipment. However, given that construction activities associated with the project would be sporadic, transitory, and short term, adverse effects are not anticipated. The current build alternatives would not change these findings.

Odors

As discussed in the 2016 AQSR, the only potential source of odors during the construction period would be equipment exhaust. Such odors would be localized and generally confined to the

immediate area surrounding the project site. The current build alternatives would not change these findings.

Table 3. Estimate of Localized Criteria Pollutant Emissions during Construction (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing	1	8	9	< 1	2	1
Grading/Excavation	7	75	60	< 1	5	3
Construction/Drainage/Utilities/ Sub-Grade	5	50	44	< 1	4	2
Paving	1	8	12	< 1	< 1	< 1
On-site Maximum Daily Emissions	**7**	**75**	**60**	**< 1**	**5**	**3**
SCAQMD Localized Significance Thresholds[a]	--	103	562	--	4	3

[a] A 1-acre project site and an 80-foot receptor distance were assumed for Source Receptor Area 2 (Northwest Coastal Los Angeles County). This is the smallest distance between source and receptor analyzed under the SCAQMD LST methodology. There are no LSTs for ROG or SO_2.

Note: SCAQMD thresholds are provided as the basis for the City's determination, as part of its responsibilities as the CEQA lead agency, of impacts under CEQA. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Source: ICF 2020. Assumptions provided in attachment.

ROG = reactive organic gas; NO_X = nitrogen oxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter

Table 4. Estimate of Localized Criteria Pollutant Emissions during Construction with Control Measures (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing	1	1	12	< 1	2	< 1
Grading/Excavation	4	9	84	< 1	2	1
Construction/Drainage/Utilities/ Sub-Grade	3	6	58	< 1	2	1
Paving	1	1	13	< 1	< 1	< 1
On-site Maximum Daily Emissions	**4**	**9**	**84**	**< 1**	**2**	**1**
SCAQMD Localized Significance Thresholds[a]	--	103	562	--	4	3

[a] A 1-acre project site and an 80-foot receptor distance were assumed for Source Receptor Area 2 (Northwest Coastal Los Angeles County). This is the smallest distance between source and receptor analyzed under the SCAQMD LST methodology. There are no LSTs for ROG or SO_2.

Note: SCAQMD thresholds are provided as the basis for the City's determination, as part of its responsibilities as the CEQA lead agency, of impacts under CEQA. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Source: ICF 2020. Assumptions provided in attachment.

ROG = reactive organic gas; NO_X = nitrogen oxide; CO = carbon monoxide; SO_2 = sulfur dioxide; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter

Greenhouse Gases

Estimates of construction-period emissions of GHGs were also updated, using the most recent version of the Roadway Construction Emissions Model (version 9.0.0). As shown in Table 5, project construction activities would generate an estimated 2,539 metric tons of carbon dioxide equivalent ($MTCO_2e$), which is equivalent to 85 $MTCO_2e$ when amortized over a standard 30-year project life,[2] as prescribed by SCAQMD's methodology. Although GHG emissions would be greater than the level identified in the 2016 AQSR due to updates in the model's emission factors, the increase would be minor. The analysis approach to the current build alternatives did not change, and therefore the project updates would not change the findings of the 2016 AQSR related to GHG emissions.

Table 5. Construction-Period GHG Emissions

	CO_2e (metric tons)
Construction Emissions	2,539
Amortization of Construction Emissions over 30 Years	85
Source: ICF 2020. Assumptions provided in attachment.	

Operational Effects

Regional and Project-Level Conformity

The current build alternatives are exempt from both regional and project-level conformity requirements, per 40 CFR 93.126. The current build alternatives are included in SCAG's 2016–2040 RTP/SCS[3] and grouped with other projects under ID LA000800 in SCAG's 2019 FTIP under project ID LA0G1296. The current build alternatives are also included in the 2019 Federal Statewide Transportation Improvement Program (FSTIP) and proposed for funding from HBP, with individual project number BHLO-5107(033). The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) determined on December 17, 2018, that SCAG's 2016–2040 RTP/SCS met all air quality conformity requirements. FHWA and FTA also determined on December 17, 2018, that SCAG's 2019 FTIP met air quality conformity requirements. The 2019 FSTIP was approved by FHWA and FTA on December 17, 2018.

As discussed in the 2016 AQSR, the previous build alternatives would not increase vehicular capacity. The current build alternatives would be exempt from federal transportation conformity requirements. A CO or particulate matter hot-spot analysis is not required. Furthermore, because trip redistribution would not occur under the current build alternatives compared with the No-Build Alternative, there would be no significant change in localized CO or particulate matter emissions or concentrations at any intersection in the project vicinity.

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2 Although a standard project life of 30 years was used to amortize construction-period GHG emissions per SCAQMD's recommended methodology, the replacement bridge would be designed to last 75 years or greater.

3 The project is also listed in SCAG's 2020–2045 RTP/SCS, which was approved by the SCAG Regional Council on May 7, 2020. As of May 27, 2020, the Federal Highway Administration and Federal Transit Administration have not made a conformity determination related to the 2020–2045 RTP/SCS.

Criteria Pollutant and Greenhouse Gas Emissions

As discussed in the 2016 AQSR, the previous build alternatives would not increase vehicular capacity. The current build alternatives would involve reconstruction of the Pier Bridge at its existing location or in the immediate vicinity. Vehicles would access the pier in the same fashion as under the No-Build Alternative. There would be no difference in operational traffic characteristics between the No-Build Alternative and the current build alternatives. In addition, the current build alternatives would not result in additional vehicular capacity on the bridge or add parking capacity on the pier or elsewhere in the project area. No increase in trip generation would occur under the current build alternatives, and therefore, air pollutant and GHG emissions under the current build alternatives would be indistinguishable from those under the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

The proposed project would be subject to SCAQMD Rule 403, the purpose of which is to reduce the amount of particulate matter entrained in the ambient air. In addition, implementation of mitigation measure AQ-1 would reduce emissions of criteria pollutants as well as localized effects during the construction period. AQ-1 has been revised to specify that Tier 4 equipment would be required for diesel engines rated at 50 brake horsepower and greater.

AQ-1: To reduce particulate matter exhaust emissions, the City (or its contractors) shall ensure that all off-road diesel-powered equipment rated at 50 brake horsepower and greater used during construction shall meet EPA Tier 4 emissions standards, or better, except construction equipment for which such emissions control technology is not available.

Conclusion

The proposed project would not add vehicular capacity and would be exempt from regional and project-level conformity requirements, per 40 CFR 93.126. Because no capacity would be added, no changes in trip generation or traffic operations would occur under the build alternatives. In addition, there would be no change in operational emissions relative to the No-Build Alternative. Updated construction emissions estimates were generated, which demonstrated that emissions would be similar to those identified in the 2016 AQSR. Measure AQ-1, requiring the use of EPA Tier 4 construction equipment, would be implemented, and the project would comply with SCAQMD Rule 403 to minimize emissions for fugitive dust.

Attachments

Site Photos, Location Map, Update of Construction Emissions Estimates, Project Documentation in SCAG Regional Transportation Plan/Sustainable Communities Strategy and Federal Transportation Improvement Program

TABLE 2 Financially-Constrained RTP/SCS Projects - Continued

System	Lead Agency	RTP ID	Route #	Route Name	From	To	Description	Completion Year	Project Cost ($1,000's)
County: Los Angeles									
LOCAL HIGHWAY	VARIOUS AGENCIES	LA000800-LA000800	0	A	A	A	GROUPED PROJECTS FOR BRIDGE REHABILITATION AND RECONSTRUCTION – HBP PROGRAM PROJECTS ARE CONSISTENT WITH 40 CFP PART 93.126 EXEMPT TABLES 2 CATEGORIES – WIDENING NARROW PAVEMENTS OR RECONSTRUCTION BRIDGES (NO ADDITIONAL TRAVEL LANES)	2019	$363,153
LOCAL HIGHWAY	VERNON	LA0D279	0	ATLANTIC BLVD.	BANDINI	DISTRICT	ATLANTIC BLVD. BRIDGE OVER THE L.A RIVER 5/8 MILE N SLAUSON AVE, WIDEN 6 LANE BRIDGE TO ADD RIGHT TURN LANE (BRIDGE #53C0252)	2018	$20,838
LOCAL HIGHWAY	WHITTIER	LAE1610	0	WHITTIER BOULEVARD	PHILADELPHIA STREET	WASHINGTON BOULEVARD	RECONSTRUCT WHITTIER BLVD AND IMPROVE PARKWAY DRAINAGE FROM PHILADELPHIA STREET TO FIVE POINTS (WASHINGTON BOULEVARD) IN WHITTIER	2015	$1,530
LOCAL HIGHWAY	PORT OF LOS ANGELES	1120007	47		SR-47 @ FRONT STREET		SR 47-V. THOMAS BRIDGE/FRONT ST INTERCHANGE: NEW WESTBOUND SR 47 ON- AND OFF-RAMPS AT FRONT STREET JUST WEST OF THE VINCENT THOMAS BRIDGE AND ELIMINATE THE EXISTING NON-STANDARD RAMP CONNECTION TO THE HARBOR BOULEVARD OFF-RAMP; FRONT STREET IS AN NHS CONNECTOR ROUTE; V.THOMAS BRIDGE IS A STATE-OWNED BRIDGE; ON THE USDOT PFN.	2035	$37,285
LOCAL HIGHWAY	PORT OF LOS ANGELES	1160002					PROJECT ENTAILS REALIGNMENT OF TWO MAJOR ARTERIALS IN SAN PEDRO, RESULTING IN NEW/IMPROVED INTERSECTIONS OF EAST-WEST COLLECTOR STREETS SERVING DOWNTOWN SAN PEDRO, THE U.S.S IOWA, THE WORLD CRUISE CENTER, AND THE PORTS 'O CALL. THE PROJECT INCLUDES A RECONFIGURED INTERSECTION AT THE JUNCTION OF HARBOR BLVD, SAMPSON WAY, AND 7TH STREET. WORK INCLUDES RETAINING WALL, STREET WORK, GRADING, PAVING, LIGHTING, RESTRIPING AND A NEW SIGNALIZED INTERSECTION.	2018	$13,600

U.S. Department of Transportation
Federal Highway Administration

California Division

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(916) 498-5008 (FAX)

June 1, 2016

In Reply Refer To:
HDA-CA

Mr. Hasan Ikhrata,
Executive Director
Southern California Association of Governments
818 West 7th Street, 12th Floor
Los Angeles, CA 90017

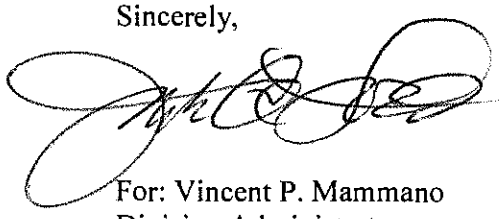
SUBJECT: CONFORMITY DETERMINATION FOR SCAG 2016 RTP/SCS

Dear Mr. Ikhrata:

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have completed our review of the conformity determination for the Southern California Association of Governments' (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) – *A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life*. A FTA/FHWA air quality conformity determination is required for the new 2016 RTP/SCS pursuant to the Environmental Protection Agency's (EPA) *Transportation Conformity Rule*, 40 Code of Regulations (CFR) Parts 51 and 93, and the United States Department of Transportation's *Final Rule on Statewide and Metropolitan Planning*, 23 CFR Part 450.

On April 7, 2016 SCAG adopted the 2016 RTP/SCS via Resolution 16-578-2. The conformity analysis given by SCAG indicates all air quality conformity requirements have been met. Based on our review, and after consultation with the EPA Region 9 office, we find that SCAG's 2016 RTP/SCS conforms to the applicable State Implementation Plan (SIP) in accordance with the provisions of 40 CFR Parts 51 and 93. This conformity determination will remain in effect for four (4) years from the date of this letter and replaces the previous determination made on June 4, 2012. In accordance with the December 15, 2014, *Memorandum of Understanding (MOU) between the Federal Highway Administration, California Division, and the Federal Transit Administration, Region IX*, the FTA has agreed with this conformity determination, and a single signature constitutes FHWA and FTA's joint air quality conformity determination for SCAG's 2016 RTP/SCS. If you have questions on this conformity finding, please contact Michael Morris of the FHWA California Division's Cal-South office at (213) 894-4014, or by email at michael.morris@dot.gov..

Sincerely,



For: Vincent P. Mammano
Division Administrator

TABLE 2 Financially-Constrained RTP/SCS Projects - Continued

System	Lead Agency	RTP ID	Route #	Route Name	From	To	Description	Completion Year	Project Cost ($1,000's)
County: Los Angeles									
LOCAL HIGHWAY	SANTA MONICA	1AL04-LA0G1296	0		OCEAN AVE.	PIER	BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. REPLACE EXISTING 2 LANE BRIDGE WITH NEW 2 LANE BRIDGE. 3/14/2011: TOLL CREDITS UTILIZED. (LUMP SUM BRIDGE PROJECT 53C1900 (5107-(033)).	2021	$17,081
LOCAL HIGHWAY	SANTA MONICA	1AL04-LAF7807	0		COLORADO AVE	OLYMPIC DRIVE	EXPO STATION 4TH STREET LINKAGES TO DOWNTOWN AND CIVIC CENTER. IMPROVES PEDESTRIAN AND BICYCLIST LINKAGES ON A 0.2-MILE SEGMENT OF 4TH STREET TO SUPPORT SAFER FIRST- AND LAST-MILE ACCESS AND CONNECTIVITY TO THE FUTURE EXPO TERMINUS STATION, CENTRAL BUSINESS DISTRICT, CIVIC CENTER AND OTHER LOCAL DESTINATIONS.	2022	$2,016
LOCAL HIGHWAY	SANTA MONICA	1ITS04-LAF7320	0		CITY	WIDE	THIS PROJECT WILL ENHANCE THE EXISTING TRAFFIC MANAGEMENT SYSTEM WITH THE INSTALLATION OF VIDEO DETECTION SYSTEMS. THE NEW EQUIPMENT WILL FACILITATE DETECTION OF BICYCLES AT INTERSECTIONS RESULTING IN ENHANCED MULTI-MODAL SIGNAL TIMING. THE DETECTION OF BICYCLES AT INTERSECTIONS WOULD OPTIMIZE SIGNAL TIMING AND CREATE SHORTER CALL TIMES FOR THE TRANSIT CORRIDORS. NEW TRAFFIC SIGNAL POLES MAY BE REQUIRED TO INSTALL THE VIDEO EQUIPMENT.	2021	$676
LOCAL HIGHWAY	SANTA MONICA	1NL04-LAF3505	0		NA	NA	BIKE NETWORK LINKAGES TO EXPOSITION LIGHT RAIL PROJECT. BIKE NETWORK ENHANCEMENTS TO SUPPORT EXPOSITION LINE. INCREASED SAFETY AND CONVENIENCE WITH SIGNAL DETECTION, HIGHLY VISIBLE LANE MARKINGS AND NEW BIKE RACKS. THE PROJECT AREA IS LOCATED THROUGHOUT THE CITY OF SANTA MONICA AND NO MORE THAN TWO MILES FROM THE PROPOSED EXPOSITION LIGHT RAIL LINE STATIONS.	2019	$3,429
LOCAL HIGHWAY	SANTA MONICA	1O1007-LAF9533	0		BEACH BIKE PATH	PIER	NEW BICYCLE CONNECTOR RAMP FROM THE REGIONAL BEACH BIKE PATH TO THE SANTA MONICA PIER LINKING THE CITY'S BICYCLE NETWORK AS WELL AS THE SANTA MONICA DOWNTOWN/4TH STREET EXPO STATION.	2021	$1,312
LOCAL HIGHWAY	SANTA MONICA	1O1007-LAF9625	0		WILSHIRE BLVD	PICO BLVD	THE PROJECT IS LOCATED ON 17TH ST AND EXTENDS FROM THE NORTH SIDE OF WILSHIRE BLVD TO THE SOUTH SIDE OF PICO. THE PROJECT WILL IMPROVE PEDESTRIAN SCALE LIGHTING, CURB BULB-OUTS, LANDSCAPING PRIMARILY ON ONE SIDE OF THE STREET, PROVIDE TRAFFIC CALMING, WAYFINDING, AND ROADWAY RECONFIGURATION. THE PROJECT WILL CONSTRUCT A 0.6 MILE SEPARATED CYCLE TRACK ALONG 17TH ST AND THE CONSTRUCTION OF 0.8 MILE BIKE BLVD ALONG MICHIGAN AVE BETWEEN LINCOLN BLVD AND 19TH.	2022	$4,301
LOCAL HIGHWAY	SANTA MONICA	1O1008-LA0G1055	0		20TH ST	22ND ST	CONSTRUCT EASTERN MICHIGAN AVE NEIGHBORHOOD GREENWAY IN VICINITY OF EDISON LANGUAGE ACADEMY - CROSSWALK STRIPING AT CRITICAL INTERSECTIONS, CURB EXTENSIONS AND DUAL CURB RAMPS, AND WAYFINDING AND SHARED LANE MARKINGS. EDUCATE STUDENTS AND PARENTS. CREATE DROP-OFF AND PICK-UP PLAN.	2019	$411

2019 Federal Transportation Improvement Program
Los Angeles County
Local Highway - Project Listing
Including Amendments 1-11 and 13-18
(In $000`s)

FTIP ID	LA0G1296	*FTIP Amendment*	LA County (METRO) 19-05	*Conform Category*	EXEMPT - 93.126	*Total Project Cost*	$17,081
Lead Agency	SANTA MONICA			*Modeling*	NO		
County	Los Angeles	Primary Program Code	NCR36 - BRIDGE RESTORATION & REPLC (NO LN ADD)	Air Basin	SCAB	RTP ID	1AL04
System	Local Hwy						

Project Limits At Colorado Ave. Over Appian Way/Promenade, 0.6 MI W/O Lincoln Blvd. Ocean Ave. to Pier

Description BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2 lane bridge with new 2 lane bridge. 3/14/2011: Toll Credits utilized in FY19/20 for $808 ($580 in PE and $228 in RW and FY20/21 for $6,456 in construction phase. High Cost project agreement must be signed. (Lump Sum bridge project 53C1900 (5107-(033)).

Phase	**Fund Source**	**(in $000s)**	**Prior**	**18/19**	**19/20**	**20/21**	**21/22**	**22/23**	**23/24**	**Future**	**Total**
PE	HBRR-L - Bridge- Local		$1,250	-	$1,262	-	-	-	-	-	$2,512
		Total Preliminary Engineering	$1,250	-	$1,262	-	-	-	-	-	$2,512
ROW	HBRR-L - Bridge- Local		-	-	$500	-	-	-	-	-	$500
		Total Right of Way	-	-	$500	-	-	-	-	-	$500
CON	HBRR-L - Bridge- Local		-	-	-	$14,069	-	-	-	-	$14,069
		Total Construction	-	-	-	$14,069	-	-	-	-	$14,069
		Total Programmed	**$1,250**	**-**	**$1,762**	**$14,069**	**-**	**-**	**-**	**-**	**$17,081**

*Toll Credits used $9,795,000

U.S. Department of Transportation
Federal Highway Administration

California Division

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December 17, 2018

In Reply Refer To:
HDA-CA

Mr. Darin Chidsey
Interim Executive Director, Southern California Association of Governments
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017

Attention: Mr. Naresh Amatya

SUBJECT: Conformity Determination for SCAG's 2019 FTIP, 2019 FTIP Amendment No. 19-01, and SCAG's 2016-2040 RTP/SCS through Amendment No. 3

Dear Mr. Chidsey:

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have completed our reviews of the conformity determination for the Southern California Association of Governments' (SCAG) 2019-22 Federal Transportation Improvement Program (FTIP), including FTIP Amendment No. 19-01, and 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Amendment No. 3. A FHWA/FTA air quality conformity determination is required for SCAG's new 2019-22 FTIP, including FTIP Amendment No. 19-01, and 2016-2040 RTP/SCS Amendment No. 3 pursuant the Environmental Protection Agency's (EPA) *Transportation Conformity Rule*, 40 Code of Federal Regulations (CFR) Parts 51 and 93, and the United States Department of Transportation's *Final Rule on Statewide and Metropolitan Planning*, 23 CFR Part 450.

On September 6, 2018 SCAG adopted the 2019-22 FTIP, including FTIP Amendment No. 19-01, and 2016-2040 RTP/SCS Amendment No. 3. SCAG made the corresponding conformity determinations via Resolutions No. 18-603-4 and 18-603-3, respectively. The conformity analysis submitted indicates that all air quality conformity requirements have been met. Based on our review and after consultation with the EPA Region 9 Office we find that SCAG's 2019-22 FTIP, including FTIP Amendment No. 19-01, and 2016-2040 RTP/SCS Amendment No. 3 conform to the applicable state implementation plan in accordance with the provisions of 40 CFR Parts 51 and 93. In correlation with the February 14, 2018 *Memorandum of Agreement (MOA) between the FHWA California Division and the FTA Region 9*, FTA has concurred with this conformity determination.

Also, as associated with the above MOA, the FHWA's single signature constitutes the FHWA and the FTA's joint air quality conformity determination for SCAG's 2019-22 FTIP, including FTIP Amendment No. 19-01, and 2016-2040 RTP/SCS Amendment No. 3.

If you have questions pertaining to this conformity finding, contact Michael Morris (michael.morris@dot.gov) of the FHWA California Division's Cal-South Office at (213) 894-4014.

Sincerely,

Tashia J. Clemons
Director, Planning and Environment
Federal Highway Administration

2018/19-2023/24 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing provides the backup project information to support the lump sum amounts programmed in the FTIP.

District: 07 County: Los Angeles

Responsible Agency	HBP-ID	Project Description
Santa Monica	3811	BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2 lane bridge with new 2 lane bridge. 3/14/2011: Toll Credits programmed for PE & CON. 10/25/2016: Toll credits used for R/W. High Cost project agreement must be signed.

Project #: 5107(033)

Phase Summary:	Prior	18/19	19/20	20/21	21/22	22/23	23/24	Beyond	Total
PE	1,250,000		750,000		1,850,000				3,850,000
R/W								750,000	750,000
CON								23,000,000	23,000,000
Total	1,250,000		750,000		1,850,000			23,750,000	27,600,000

Fund Source Summary:	Prior	18/19	19/20	20/21	21/22	22/23	23/24	Beyond	Total
Fed $	1,250,000		750,000		1,850,000			23,750,000	27,600,000
Local Match									
LSSRP Bond									
Local AC									
Total	1,250,000		750,000		1,850,000			23,750,000	27,600,000

PE Summary:	Prior	18/19	19/20	20/21	21/22	22/23	23/24	Beyond	Total
Fed $	1,250,000		750,000		1,850,000				3,850,000
Local Match									
LSSRP Bond									
Local AC									
Total	1,250,000		750,000		1,850,000				3,850,000

R/W Summary:	Prior	18/19	19/20	20/21	21/22	22/23	23/24	Beyond	Total
Fed $								750,000	750,000
Local Match									
LSSRP Bond									
Local AC									
Total								750,000	750,000

CON Summary:	Prior	18/19	19/20	20/21	21/22	22/23	23/24	Beyond	Total
Fed $								23,000,000	23,000,000
Local Match									
LSSRP Bond									
Local AC									
Total								23,000,000	23,000,000

U.S. Department of Transportation

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California Division
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Federal Transit Administration
Region 9
90 7th Street, Suite 15-300
San Francisco, CA 94103
(415) 734-9490 – Main

December 17, 2018

In Reply Refer To:
HDA-CA

Mr. Bruce de Terra
Chief, Division of Transportation Programming
California Department of Transportation, MS 82
1120 N Street
Sacramento, CA 95814

SUBJECT: APPROVAL OF 2019 FSTIP AND PLANNING FINDING

Dear Mr. De Terra:

The Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have determined that the State of California's 2019-22 Federal Statewide Transportation Improvement Program (FSTIP) and incorporated Federal Transportation Improvement Programs (FTIP) for the following metropolitan planning organization (MPO) planning areas are based on a continuing, cooperative and comprehensive transportation planning process in accordance with 23 U.S.C. 134 and 135, and 49 U.S.C. 5303 and 5304. The approval of the FSTIP includes the following metropolitan FTIPs that have been incorporated by reference:

1. Association of Monterey Bay Governments,
2. Butte County Association of Governments,
3. Fresno Council of Governments,
4. Kern Council of Governments,
5. Kings County Association of Governments,
6. Madera County Transportation Commission,
7. Merced County Association of Governments,
8. Metropolitan Transportation Commission,
9. Sacramento Area Council of Governments,
10. San Diego Association of Governments,
11. San Joaquin Council of Governments,
12. San Luis Obispo Council of Governments,
13. Santa Barbara County Association of Governments,
14. Shasta Regional Transportation Agency,
15. Southern California Association of Governments,
16. Stanislaus Council of Governments,
17. Tahoe Regional Planning Agency, and
18. Tulare County Association of Governments.

The following are recommendations for transportation planning process improvements that remain outstanding from the December 16, 2016 or earlier Statewide Planning Findings that warrant continued attention in the statewide and metropolitan planning processes in the State of California:

I. Core MPO Planning Functions: Progress has been made by MPOs in identifying Core Planning Functions within their Overall Work Programs (OWP). However, we encourage Caltrans to continue working closely with the MPOs in their OWP development processes to ensure that the draft and final OWPs include, at a minimum, the following work elements: Overall Work Program, Public Participation Activities, Metropolitan/Regional Transportation Plan, Federal Transportation Improvement Program; Congestion Management Process (required for Transportation Management Areas (TMA) – MPOs over 200,000 in population), Performance-Based Transportation Planning and Programming (Performance Measures), Air Quality Planning and Conformity (in all non-attainment areas for the National Ambient Air Quality Standards as defined by the 1990 Clean Air Act and subsequent changes to those standards) and the Annual Listing of Obligated Projects.

II. Implementation of Performance-Based Transportation Planning and Programming: Sections 1201 and 1202 of MAP-21 require that the metropolitan and statewide transportation planning processes provide for the establishment and use of a performance-based approach to transportation decision making to support the national goals described in 23 U.S.C. 1509(b) and 49 U.S.C. 5301(c). Each State and each MPO is required to establish performance targets that address the Performance Measures described in 23 U.S.C 150(c) [MAP-21 section 1203].

    USDOT issued the schedules for compliance with Performance-Based Transportation Planning since the December 16, 2016 Statewide Planning Finding. We find that in the State of California, compliance with the schedules for PM-1, PM-2 and PM-3 is proceeding satisfactorily. We applaud the diligent efforts of Caltrans and the MPOs in establishing master agreements for conducting the process, the training workshops and outreach, establishing targets for the Performance Measures, and submitting all required data and reports in compliance with the established schedules.

    FHWA and FTA recognize that the implementation and full integration of Performance-Based Planning and Programming into the planning and programming processes in California will be a complex task likely to consume a number of upcoming FSTIP and Regional Transportation Plan (RTP) cycles. We will continue during this transition period and after full implementation to work closely with the State, MPOs and transit operators in providing technical assistance and best practices.

III. Consultation with Indian Tribal Governments and Federal Land Management Agencies: MPOs are required to develop a documented procedure that outlines the roles, responsibilities, and key decision points for consulting with Indian Tribal governments (ITG) and Federal land management agencies (FLMA) pursuant to 23 C.F.R. 450.316(c). The need for MPOs to develop documented procedures for consulting with Indian Tribal

governments and Federal land management agencies continues to be a Federal emphasis area for the MPOs within California.

Progress has been made since the December 16, 2016 Statewide Planning Finding in this area in California, and FHWA and FTA commend Caltrans and the MPOs in the work that has been done to meet requirements. However, to ensure that progress continues in a positive direction, compliance with the requirement for documented consultation procedures will continue to be evaluated by FHWA and FTA as part of the Quadrennial Planning Certification Reviews that are conducted in the TMA MPOs.

IV. Outstanding Corrective Actions from Quadrennial TMA Planning Certification Reviews: There is one outstanding Corrective Action identified through the MPO/TMA Planning Certification Reviews since the December 16, 2016 Statewide Planning Finding. Specifically, the Planning Certification Review for one TMA MPO cited the need to update and develop an integrated Congestion Management Process (CMP), including: Definition of the CMP network, measures of congestion, collection of data, and the development of a continuous monitoring process to maintain the CMP and to ensure that the output of the CMP is used in the MPO planning and programming processes.

Accordingly, the Federal Highway Administration California Division and the Federal Transit Administration Region IX offices find that California's 2019-22 Statewide Transportation Improvement Program (FSTIP) is based on a transportation planning process that meets the requirements of 23 U.S.C. Sections 134 and 135 and 49 U.S.C. Section 5303-5306.

Sincerely,

Edward Carranza, Jr.
Acting Regional Administrator
Region IX
Federal Transit Administration

For
Vincent P. Mammano
Division Administrator
California Division
Federal Highway Administration

cc: (e-mail)
Ted Matley, FTA Region IX
Darin Allan, FTA Region IX
Katrina O'Connor, EPA
Enos Han, FHWA Nevada Division
Morgan Malley, FHWA CFL
Fardad Falakfarsa, Caltrans
Muhaned Aljabiry, Caltrans

cc: (other)
2019 FSTIP I: Drive Folder
I:\Program Development Unit\Planning and Air Quality (2005-Present)\2019 FSTIP Approval
MPO Statewide FTIPs

Santa Monica Pier Bridge

Construction Emissions Summary

Unmitigated

Regional Emissions

Daily Emission Estimates for -> Santa Monica Pier Bridge				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	0.85	9.26	8.57	5.38	0.38	5.00	1.38	0.34	1.04	0.02	2,051.29	0.57	0.04	2,078.48
Grading/Excavation	7.66	64.57	79.92	8.30	3.30	5.00	4.00	2.96	1.04	0.16	15,817.91	4.68	0.25	16,008.08
Drainage/Utilities/Sub-Grade	5.11	45.53	50.78	7.06	2.06	5.00	2.92	1.88	1.04	0.11	10,391.92	2.71	0.12	10,495.56
Paving	0.83	12.51	8.03	0.41	0.41	0.00	0.36	0.36	0.00	0.02	2,075.35	0.56	0.04	2,102.42
Maximum (pounds/day)	7.66	64.57	79.92	8.30	3.30	5.00	4.00	2.96	1.04	0.16	15,817.91	4.68	0.25	16,008.08
Total (tons/construction project)	1.34	11.77	13.68	1.69	0.57	1.12	0.74	0.51	0.23	0.03	2,766.92	0.78	0.04	2,798.37
Regional Significance Threshold	75	550	100	150			55			150				
Exceeds Threshold?	No	No	No	No			No			No				

On-Site Emissions

Project Phases	**Pieces of Equipment**	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**
Grubbing/Land Clearing		**0.82**	**8.81**	**8.26**	**2.30**	**0.73**	**0.02**
Crawler Tractors	1	0.44	2.24	5.12	0.20	0.18	0.01
Excavators	2	0.38	6.52	3.10	0.15	0.14	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.00	0.05	0.04	0.00	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.03	0.46	0.04	0.02	0.01	0.00
Water Truck	-	0.00	0.04	0.31	0.01	0.00	0.00
Grading/Excavation		**7.15**	**60.27**	**74.88**	**4.95**	**3.16**	**0.15**
Cranes	1	0.35	1.83	3.82	0.16	0.15	0.01
Crawler Tractors	2	0.89	4.49	10.25	0.40	0.37	0.02
Excavators	4	0.75	13.03	6.19	0.30	0.28	0.02
Graders	2	0.77	3.39	9.31	0.30	0.28	0.01
Rollers	3	0.46	5.56	4.83	0.27	0.24	0.01
Rubber Tired Loaders	3	0.81	4.53	7.96	0.27	0.25	0.02
Scrapers	4	3.15	24.55	33.13	1.30	1.20	0.06
Tractors/Loaders/Backhoes	2	0.30	4.46	3.07	0.15	0.14	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.02	0.27	0.14	0.02	0.01	0.00
Soil Hauling	-	0.01	0.11	0.83	0.03	0.01	0.00
Worker Commute	-	0.17	2.59	0.22	0.11	0.05	0.01
Water Truck	-	0.00	0.04	0.31	0.01	0.00	0.00
Drainage/Utilities/Sub-Grade		**5.02**	**44.11**	**50.38**	**3.93**	**2.25**	**0.10**
Air Compressors	1	0.24	2.41	1.63	0.08	0.08	0.00
Generator Sets	1	0.29	3.66	2.54	0.11	0.11	0.01
Graders	2	0.71	3.31	8.31	0.27	0.25	0.01
Plate Compactors	1	0.04	0.21	0.25	0.01	0.01	0.00
Pumps	1	0.31	3.72	2.58	0.12	0.12	0.01
Rough Terrain Forklifts	1	0.10	2.29	1.35	0.04	0.04	0.00
Scrapers	4	3.04	23.87	30.78	1.22	1.12	0.06
Tractors/Loaders/Backhoes	2	0.29	4.47	2.90	0.13	0.12	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.01	0.16	0.04	0.01	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.10	1.54	0.12	0.07	0.03	0.00
Water Truck	-	0.00	0.04	0.32	0.01	0.00	0.00
Paving		**0.79**	**11.86**	**7.70**	**0.37**	**0.34**	**0.02**
Pavers	1	0.18	2.89	1.74	0.08	0.07	0.00
Paving Equipment	1	0.16	2.57	1.50	0.07	0.07	0.00
Rollers	1	0.15	1.85	1.52	0.08	0.07	0.00
Tractors/Loaders/Backhoes	2	0.29	4.47	2.90	0.13	0.12	0.01
On-Site On-Road Emissions (10% of total)	-	0.00	0.07	0.04	0.00	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.04	0.69	0.05	0.03	0.01	0.00
Water Truck	-	0.00	0.04	0.32	0.01	0.00	0.00
Maximum (pounds/day)		**7**	**60**	**75**	**5**	**3**	**0**
Localized Significance Threshold (SRA 2, 1-acre site with 25-m receptor distance)		N/A	103	562	4	3	N/A
Exceeds LST?		N/A	No	No	Yes	No	N/A

Greenhouse Gas Emissions

2539 metric tons CO2e

85 metric tons CO2e amortized over 30 years

Mitigated (Tier 4 Equipment)

Regional Emissions

Daily Emission Estimates for -> Santa Monica Pier Bridge				Total	Exhaust	Fugitive Dust	Total	Exhaust	Fugitive Dust					
Project Phases (Pounds)	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**	**CO2 (lbs/day)**	**CH4 (lbs/day)**	**N2O (lbs/day)**	**CO2e (lbs/day)**
Grubbing/Land Clearing	0.59	12.52	1.52	5.09	0.09	5.00	1.10	0.06	1.04	0.02	2,052.33	0.57	0.04	2,079.56
Grading/Excavation	4.75	89.88	10.70	5.61	0.61	5.00	1.53	0.49	1.04	0.16	15,822.06	4.68	0.25	16,012.43
Drainage/Utilities/Sub-Grade	3.11	59.14	6.79	5.40	0.40	5.00	1.37	0.33	1.04	0.11	10,392.85	2.71	0.12	10,496.53
Paving	0.59	14.06	1.49	0.10	0.10	0.00	0.07	0.07	0.00	0.02	2,076.29	0.56	0.04	2,103.40
Maximum (pounds/day)	4.75	89.88	10.70	5.61	0.61	5.00	1.53	0.49	1.04	0.16	15,822.06	4.68	0.25	16,012.43
Total (tons/construction project)	0.83	15.84	1.86	1.23	0.11	1.12	0.32	0.09	0.23	0.03	2,767.51	0.78	0.04	2,798.99
Regional Significance Threshold	75	550	100	150			55			150				
Exceeds Threshold?	No	No	No	No			No			No				

On-Site Emissions

Project Phases	**Pieces of Equipment**	**ROG (lbs/day)**	**CO (lbs/day)**	**NOx (lbs/day)**	**PM10 (lbs/day)**	**PM2.5 (lbs/day)**	**SOx (lbs/day)**
Grubbing/Land Clearing		**0.56**	**12.07**	**1.16**	**2.01**	**0.46**	**0.02**
Crawler Tractors	1	0.24	4.18	0.48	0.02	0.02	0.01
Excavators	2	0.32	7.84	0.64	0.03	0.03	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.00	0.05	0.04	0.00	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.03	0.46	0.04	0.02	0.01	0.00
Water Truck	-	0.00	0.04	0.36	0.01	0.00	0.00
Grading/Excavation		**4.41**	**84.34**	**8.95**	**2.41**	**0.82**	**0.15**
Cranes	1	0.18	3.07	0.35	0.02	0.02	0.01
Crawler Tractors	2	0.48	8.36	0.96	0.05	0.04	0.02
Excavators	4	0.63	15.67	1.27	0.06	0.06	0.02
Graders	2	0.41	7.03	0.81	0.04	0.04	0.01
Rollers	3	0.24	5.95	0.48	0.02	0.02	0.01
Rubber Tired Loaders	3	0.58	10.05	1.16	0.06	0.05	0.02
Scrapers	4	1.86	32.31	3.73	0.19	0.17	0.06
Tractors/Loaders/Backhoes	2	0.19	4.68	0.38	0.02	0.02	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.02	0.27	0.16	0.02	0.01	0.00
Soil Hauling	-	0.01	0.11	0.97	0.03	0.01	0.00
Worker Commute	-	0.17	2.59	0.22	0.11	0.05	0.01
Water Truck	-	0.00	0.04	0.36	0.01	0.00	0.00
Drainage/Utilities/Sub-Grade		**3.02**	**57.72**	**6.36**	**2.28**	**0.70**	**0.10**
Air Compressors	1	0.10	2.44	0.20	0.01	0.01	0.00
Generator Sets	1	0.16	4.06	0.33	0.02	0.02	0.01
Graders	2	0.41	7.03	0.81	0.04	0.04	0.01
Plate Compactors	1	0.02	0.36	0.32	0.02	0.02	0.00
Pumps	1	0.16	4.06	0.33	0.02	0.02	0.01
Rough Terrain Forklifts	1	0.11	2.61	0.21	0.01	0.01	0.00
Scrapers	4	1.86	32.31	3.73	0.19	0.17	0.06
Tractors/Loaders/Backhoes	2	0.19	4.68	0.38	0.02	0.02	0.01
Fugitive Dust (61% Reduction - Rule 403)	-				1.95	0.41	
On-Site On-Road Emissions (10% of total)	-	0.01	0.16	0.05	0.01	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.10	1.54	0.12	0.07	0.03	0.00
Water Truck	-	0.00	0.04	0.36	0.01	0.00	0.00
Paving		**0.54**	**13.40**	**1.12**	**0.06**	**0.05**	**0.02**
Pavers	1	0.14	3.56	0.29	0.01	0.01	0.00
Paving Equipment	1	0.13	3.10	0.25	0.01	0.01	0.00
Rollers	1	0.08	1.98	0.16	0.01	0.01	0.00
Tractors/Loaders/Backhoes	2	0.19	4.68	0.38	0.02	0.02	0.01
On-Site On-Road Emissions (10% of total)	-	0.00	0.07	0.04	0.00	0.00	0.00
Soil Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Hauling	-	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	-	0.04	0.69	0.05	0.03	0.01	0.00
Water Truck	-	0.00	0.04	0.36	0.01	0.00	0.00
Maximum (pounds/day)		**4**	**84**	**9**	**2**	**1**	**0**
Localized Significance Threshold (SRA 2, 1-acre site with 25-m receptor distance)		N/A	103	562	4	3	N/A
Exceeds LST?		N/A	No	No	No	No	N/A

Greenhouse Gas Emissions

2539 metric tons CO2e

85 metric tons CO2e amortized over 30 years.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Santa Monica Pier Bridge

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.85	9.26	8.57	5.38	0.38	5.00	1.38	0.34	1.04	0.02	2,051.29	0.57	0.04	2,078.48
Grading/Excavation	7.66	64.57	79.92	8.30	3.30	5.00	4.00	2.96	1.04	0.16	15,817.91	4.68	0.25	16,008.08
Drainage/Utilities/Sub-Grade	5.11	45.53	50.78	7.06	2.06	5.00	2.92	1.88	1.04	0.11	10,391.92	2.71	0.12	10,495.56
Paving	0.83	12.51	8.03	0.41	0.41	0.00	0.36	0.36	0.00	0.02	2,075.35	0.56	0.04	2,102.42
Maximum (pounds/day)	7.66	64.57	79.92	8.30	3.30	5.00	4.00	2.96	1.04	0.16	15,817.91	4.68	0.25	16,008.08
Total (tons/construction project)	1.34	11.77	13.68	1.69	0.57	1.12	0.74	0.51	0.23	0.03	2,766.92	0.78	0.04	2,798.37

Notes:

Project Start Year ->	2023
Project Length (months) ->	24
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	40
Grading/Excavation	80	0	120	0	1,120	40
Drainage/Utilities/Sub-Grade	0	0	0	0	720	40
Paving	0	0	0	0	320	40

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

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

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

Total Emission Estimates by Phase for -> Santa Monica Pier Bridge

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.02	0.24	0.23	0.14	0.01	0.13	0.04	0.01	0.03	0.00	54.15	0.02	0.00	49.78
Grading/Excavation	0.81	6.82	8.44	0.88	0.35	0.53	0.42	0.31	0.11	0.02	1,670.37	0.49	0.03	1,533.57
Drainage/Utilities/Sub-Grade	0.47	4.21	4.69	0.65	0.19	0.46	0.27	0.17	0.10	0.01	960.21	0.25	0.01	879.79
Paving	0.03	0.50	0.32	0.02	0.02	0.00	0.01	0.01	0.00	0.00	82.18	0.02	0.00	75.53
Maximum (tons/phase)	0.81	6.82	8.44	0.88	0.35	0.53	0.42	0.31	0.11	0.02	1670.37	0.49	0.03	1,533.57
Total (tons/construction project)	1.34	11.77	13.68	1.69	0.57	1.12	0.74	0.51	0.23	0.03	2766.92	0.78	0.04	2,538.66

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

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

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

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Santa Monica Pier Bridge	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	24.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.09	miles
Total Project Area	1.50	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00	40.00	40.00
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		2.40		1/1/2023
Grading/Excavation		9.60		3/15/2023
Drainage/Utilities/Sub-Grade		8.40		1/1/2024
Paving		3.60		9/13/2024
Totals (Months)		24		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		4	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.01	0.11	0.83	0.03	0.01	0.00	453.71	0.00	0.07	474.97
Tons per const. Period - Grading/Excavation	0.00	0.01	0.09	0.00	0.00	0.00	47.91	0.00	0.01	50.16
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.09	0.00	0.00	0.00	47.91	0.00	0.01	50.16

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20		
One-way trips/day		2	Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		28	56	1,120.00
No. of employees: Drainage/Utilities/Sub-Grade		18	36	720.00
No. of employees: Paving		8	16	320.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.46	0.04	0.02	0.01	0.00	141.57	0.00	0.00	142.71
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	3.74	0.00	0.00	3.77
Pounds per day - Grading/Excavation	0.17	2.59	0.22	0.11	0.05	0.01	792.79	0.02	0.02	799.17
Tons per const. Period - Grading/Excavation	0.02	0.27	0.02	0.01	0.01	0.00	83.72	0.00	0.00	84.39
Pounds per day - Drainage/Utilities/Sub-Grade	0.10	1.54	0.12	0.07	0.03	0.00	492.07	0.01	0.01	495.84
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.14	0.01	0.01	0.00	0.00	45.47	0.00	0.00	45.82
Pounds per day - Paving	0.04	0.69	0.05	0.03	0.01	0.00	218.70	0.00	0.01	220.37
Tons per const. Period - Paving	0.00	0.03	0.00	0.00	0.00	0.00	8.66	0.00	0.00	8.73
Total tons per construction project	0.03	0.46	0.04	0.02	0.01	0.00	141.58	0.00	0.00	142.70

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Grading/Excavation (grams/mile)	0.03	0.40	2.98	0.11	0.05	0.02	1,714.99	0.00	0.27	1,795.36
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Paving (grams/mile)	0.03	0.41	3.02	0.11	0.05	0.02	1,693.55	0.00	0.27	1,772.92
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.99	0.00	0.00	4.18
Pounds per day - Grading/Excavation	0.00	0.04	0.31	0.01	0.00	0.00	151.24	0.00	0.02	158.32
Tons per const. Period - Grading/Excavation	0.00	0.00	0.03	0.00	0.00	0.00	15.97	0.00	0.00	16.72
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	13.80	0.00	0.00	14.45
Pounds per day - Paving	0.00	0.04	0.32	0.01	0.00	0.00	149.35	0.00	0.02	156.34
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.91	0.00	0.00	6.19
Total tons per construction project	0.00	0.01	0.08	0.00	0.00	0.00	39.68	0.00	0.01	41.54

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.13	1.04	0.03
Fugitive Dust - Grading/Excavation		0.50	5.00	0.53	1.04	0.11
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.46	1.04	0.10

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Override of Mitigation Option	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.44	2.24	5.12	0.20	0.18	0.01	758.27	0.25	0.01	766.45
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Excavators	0.38	6.52	3.10	0.15	0.14	0.01	1,000.21	0.32	0.01	1,010.99
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grubbing/Land Clearing	pounds per day	0.82	8.76	8.22	0.35	0.32	0.02	1,758.48	0.57	0.02	1,777.44
	Grubbing/Land Clearing	tons per phase	0.02	0.23	0.22	0.01	0.01	0.00	46.42	0.02	0.00	46.92

Grading/Excavation	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option Default Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Cranes	0.35	1.83	3.82	0.16	0.15	0.01	558.82	0.18	0.01	564.84
	2		Model Default Tier	Crawler Tractors	0.89	4.49	10.25	0.40	0.37	0.02	1,516.54	0.49	0.01	1,532.90
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Excavators	0.75	13.03	6.19	0.30	0.28	0.02	2,000.42	0.65	0.02	2,021.99
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	0.77	3.39	9.31	0.30	0.28	0.01	1,281.71	0.41	0.01	1,295.52
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rollers	0.46	5.56	4.83	0.27	0.24	0.01	762.32	0.25	0.01	770.54
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Rubber Tired Loaders	0.81	4.53	7.96	0.27	0.25	0.02	1,816.68	0.59	0.02	1,836.30
	4		Model Default Tier	Scrapers	3.15	24.55	33.13	1.30	1.20	0.06	5,880.52	1.90	0.05	5,943.88
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.30	4.46	3.07	0.15	0.14	0.01	603.15	0.20	0.01	609.64
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grading/Excavation	pounds per day	7.48	61.83	78.56	3.14	2.89	0.15	14,420.18	4.66	0.13	14,575.62
	Grading/Excavation	tons per phase	0.79	6.53	8.30	0.33	0.31	0.02	1,522.77	0.49	0.01	1,539.19

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.24	2.41	1.63	0.08	0.08	0.00	375.26	0.02	0.00	376.63
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.29	3.66	2.54	0.11	0.11	0.01	623.04	0.03	0.00	625.06
	2		Model Default Tier	Graders	0.71	3.31	8.31	0.27	0.25	0.01	1,281.02	0.41	0.01	1,294.82
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.31	3.72	2.58	0.12	0.12	0.01	623.04	0.03	0.00	625.12
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.10	2.29	1.35	0.04	0.04	0.00	333.74	0.11	0.00	337.33
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Scrapers	3.04	23.87	30.78	1.22	1.12	0.06	5,876.40	1.90	0.05	5,939.73
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.29	4.47	2.90	0.13	0.12	0.01	603.53	0.20	0.01	610.03
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day		5.01	43.95	50.34	1.98	1.85	0.10	9,750.50	2.70	0.09	9,843.38
Drainage/Utilities/Sub-Grade	tons per phase		0.46	4.06	4.65	0.18	0.17	0.01	900.95	0.25	0.01	909.53

Paving	Default Number of Vehicles	Mitigation Option Override of Default			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.18	2.89	1.74	0.08	0.07	0.00	455.16	0.15	0.00	460.07
	1		Model Default Tier	Paving Equipment	0.16	2.57	1.50	0.07	0.07	0.00	394.47	0.13	0.00	398.72
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rollers	0.15	1.85	1.52	0.08	0.07	0.00	254.15	0.08	0.00	256.88
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Tractors/Loaders/Backhoes	0.29	4.47	2.90	0.13	0.12	0.01	603.53	0.20	0.01	610.03
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Paving	pounds per day	0.78	11.78	7.66	0.37	0.34	0.02	1,707.31	0.55	0.02	1,725.70
	Paving	tons per phase	0.03	0.47	0.30	0.01	0.01	0.00	67.61	0.02	0.00	68.34
Total Emissions all Phases (tons per construction period) =>			1.31	11.29	13.47	0.54	0.50	0.03	2,537.75	0.78	0.02	2,563.98

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Santa Monica Pier Bridge (Mitigated)

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.59	12.52	1.52	5.09	0.09	5.00	1.10	0.06	1.04	0.02	2,052.33	0.57	0.04	2,079.56
Grading/Excavation	4.75	89.88	10.70	5.61	0.61	5.00	1.53	0.49	1.04	0.16	15,822.06	4.68	0.25	16,012.43
Drainage/Utilities/Sub-Grade	3.11	59.14	6.79	5.40	0.40	5.00	1.37	0.33	1.04	0.11	10,392.85	2.71	0.12	10,496.53
Paving	0.59	14.06	1.49	0.10	0.10	0.00	0.07	0.07	0.00	0.02	2,076.29	0.56	0.04	2,103.40
Maximum (pounds/day)	4.75	89.88	10.70	5.61	0.61	5.00	1.53	0.49	1.04	0.16	15,822.06	4.68	0.25	16,012.43
Total (tons/construction project)	0.83	15.84	1.86	1.23	0.11	1.12	0.32	0.09	0.23	0.03	2,767.51	0.78	0.04	2,798.99

Notes:

Project Start Year ->	2023
Project Length (months) ->	24
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	200	40
Grading/Excavation	80	0	120	0	1,120	40
Drainage/Utilities/Sub-Grade	0	0	0	0	720	40
Paving	0	0	0	0	320	40

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

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

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

Total Emission Estimates by Phase for -> Santa Monica Pier Bridge (Mitigated)

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.02	0.33	0.04	0.13	0.00	0.13	0.03	0.00	0.03	0.00	54.18	0.02	0.00	49.81
Grading/Excavation	0.50	9.49	1.13	0.59	0.06	0.53	0.16	0.05	0.11	0.02	1,670.81	0.49	0.03	1,533.99
Drainage/Utilities/Sub-Grade	0.29	5.46	0.63	0.50	0.04	0.46	0.13	0.03	0.10	0.01	960.30	0.25	0.01	879.87
Paving	0.02	0.56	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.22	0.02	0.00	75.56
Maximum (tons/phase)	0.50	9.49	1.13	0.59	0.06	0.53	0.16	0.05	0.11	0.02	1670.81	0.49	0.03	1,533.99
Total (tons/construction project)	0.83	15.84	1.86	1.23	0.11	1.12	0.32	0.09	0.23	0.03	2767.51	0.78	0.04	2,539.22

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

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

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

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model **Version 9.0.0**
Data Entry Worksheet

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a
yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Santa Monica Pier Bridge (Mitigated)	
Construction Start Year	2023	Enter a Year between 2014 and 2040 (inclusive)
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	24.00	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.09	miles
Total Project Area	1.50	acres
Maximum Area Disturbed/Day	0.50	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00	40.00	40.00
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving			

Mitigation Options

On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation	Tier 4 Equipment	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation).
Will all off-road equipment be tier 4?	All Tier 4 Equipment	Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		2.40		1/1/2023
Grading/Excavation		9.60		3/15/2023
Drainage/Utilities/Sub-Grade		8.40		1/1/2024
Paving		3.60		9/13/2024
Totals (Months)	24			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		4	120.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grading/Excavation (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Paving (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.01	0.11	0.97	0.03	0.01	0.00	456.82	0.00	0.07	478.23
Tons per const. Period - Grading/Excavation	0.00	0.01	0.10	0.00	0.00	0.00	48.24	0.00	0.01	50.50
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.01	0.10	0.00	0.00	0.00	48.24	0.00	0.01	50.50

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grading/Excavation (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Paving (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20		
One-way trips/day		2	Calculated Daily Trips	Calculated Daily VMT
No. of employees: Grubbing/Land Clearing		5	10	200.00
No. of employees: Grading/Excavation		28	56	1,120.00
No. of employees: Drainage/Utilities/Sub-Grade		18	36	720.00
No. of employees: Paving		8	16	320.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Grading/Excavation (grams/mile)	0.02	0.91	0.07	0.05	0.02	0.00	317.66	0.00	0.01	319.68
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Paving (grams/mile)	0.01	0.84	0.06	0.05	0.02	0.00	306.70	0.00	0.01	308.54
Grubbing/Land Clearing (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Grading/Excavation (grams/trip)	1.04	2.75	0.29	0.00	0.00	0.00	68.26	0.07	0.03	79.50
Draining/Utilities/Sub-Grade (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Paving (grams/trip)	0.98	2.66	0.27	0.00	0.00	0.00	65.99	0.07	0.03	76.61
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.03	0.46	0.04	0.02	0.01	0.00	141.57	0.00	0.00	142.71
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.00	0.00	0.00	0.00	3.74	0.00	0.00	3.77
Pounds per day - Grading/Excavation	0.17	2.59	0.22	0.11	0.05	0.01	792.79	0.02	0.02	799.17
Tons per const. Period - Grading/Excavation	0.02	0.27	0.02	0.01	0.01	0.00	83.72	0.00	0.00	84.39
Pounds per day - Drainage/Utilities/Sub-Grade	0.10	1.54	0.12	0.07	0.03	0.00	492.07	0.01	0.01	495.84
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.14	0.01	0.01	0.00	0.00	45.47	0.00	0.00	45.82
Pounds per day - Paving	0.04	0.69	0.05	0.03	0.01	0.00	218.70	0.00	0.01	220.37
Tons per const. Period - Paving	0.00	0.03	0.00	0.00	0.00	0.00	8.66	0.00	0.00	8.73
Total tons per construction project	0.03	0.46	0.04	0.02	0.01	0.00	141.58	0.00	0.00	142.70

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Grading/Excavation (grams/mile)	0.04	0.43	3.54	0.12	0.05	0.02	1,726.74	0.00	0.27	1,807.67
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Paving (grams/mile)	0.04	0.43	3.49	0.12	0.05	0.02	1,704.13	0.00	0.27	1,784.00
Grubbing/Land Clearing (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	4.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	4.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.36	0.01	0.00	0.00	152.27	0.00	0.02	159.41
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	4.02	0.00	0.00	4.21
Pounds per day - Grading/Excavation	0.00	0.04	0.36	0.01	0.00	0.00	152.27	0.00	0.02	159.41
Tons per const. Period - Grading/Excavation	0.00	0.00	0.04	0.00	0.00	0.00	16.08	0.00	0.00	16.83
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.36	0.01	0.00	0.00	150.28	0.00	0.02	157.32
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	13.89	0.00	0.00	14.54
Pounds per day - Paving	0.00	0.04	0.36	0.01	0.00	0.00	150.28	0.00	0.02	157.32
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.95	0.00	0.00	6.23
Total tons per construction project	0.00	0.01	0.09	0.00	0.00	0.00	39.94	0.00	0.01	41.81

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.50	5.00	0.13	1.04	0.03
Fugitive Dust - Grading/Excavation		0.50	5.00	0.53	1.04	0.11
Fugitive Dust - Drainage/Utilities/Subgrade		0.50	5.00	0.46	1.04	0.10

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Override of Mitigation Option	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Crawler Tractors	0.24	4.18	0.48	0.02	0.02	0.01	758.27	0.25	0.01	766.45
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Tier 4	Excavators	0.32	7.84	0.64	0.03	0.03	0.01	1,000.21	0.32	0.01	1,010.99
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Grubbing/Land Clearing	pounds per day	0.56	12.02	1.12	0.06	0.05	0.02	1,758.48	0.57	0.02	1,777.44
	Grubbing/Land Clearing	tons per phase	0.01	0.32	0.03	0.00	0.00	0.00	46.42	0.02	0.00	46.92

Grading/Excavation	Default Number of Vehicles	Mitigation Option: Override of Default			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Cranes	0.18	3.07	0.35	0.02	0.02	0.01	558.82	0.18	0.01	564.84
	2		Tier 4	Crawler Tractors	0.48	8.36	0.96	0.05	0.04	0.02	1,516.54	0.49	0.01	1,532.90
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Tier 4	Excavators	0.63	15.67	1.27	0.06	0.06	0.02	2,000.42	0.65	0.02	2,021.99
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Tier 4	Graders	0.41	7.03	0.81	0.04	0.04	0.01	1,281.71	0.41	0.01	1,295.52
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Tier 4	Rollers	0.24	5.95	0.48	0.02	0.02	0.01	762.32	0.25	0.01	770.54
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Tier 4	Rubber Tired Loaders	0.58	10.05	1.16	0.06	0.05	0.02	1,816.68	0.59	0.02	1,836.30
	4		Tier 4	Scrapers	1.86	32.31	3.73	0.19	0.17	0.06	5,880.52	1.90	0.05	5,943.88
0.00	1		Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Tier 4	Tractors/Loaders/Backhoes	0.19	4.68	0.38	0.02	0.02	0.01	603.15	0.20	0.01	609.64
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	4.57	87.14	9.15	0.46	0.42	0.15	14,420.18	4.66	0.13	14,575.62
Grading/Excavation	tons per phase	0.48	9.20	0.97	0.05	0.04	0.02	1,522.77	0.49	0.01	1,539.19

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option: Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Air Compressors	0.10	2.44	0.20	0.01	0.01	0.00	375.26	0.02	0.00	376.63
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Generator Sets	0.16	4.06	0.33	0.02	0.02	0.01	623.04	0.03	0.00	625.06
	2		Tier 4	Graders	0.41	7.03	0.81	0.04	0.04	0.01	1,281.02	0.41	0.01	1,294.82
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Plate Compactors	0.02	0.36	0.32	0.02	0.02	0.00	34.48	0.00	0.00	34.65
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Pumps	0.16	4.06	0.33	0.02	0.02	0.01	623.04	0.03	0.00	625.12
			Tier 4	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Rough Terrain Forklifts	0.11	2.61	0.21	0.01	0.01	0.00	333.74	0.11	0.00	337.33
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Tier 4	Scrapers	1.86	32.31	3.73	0.19	0.17	0.06	5,876.40	1.90	0.05	5,939.73
0.00	1		Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Tier 4	Tractors/Loaders/Backhoes	0.19	4.68	0.38	0.02	0.02	0.01	603.53	0.20	0.01	610.03
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day		3.01	57.56	6.31	0.32	0.29	0.10	9,750.50	2.70	0.09	9,843.38
Drainage/Utilities/Sub-Grade	tons per phase		0.28	5.32	0.58	0.03	0.03	0.01	900.95	0.25	0.01	909.53

Paving	Default Number of Vehicles	Mitigation Option Override of Default			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Tier 4	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Pavers	0.14	3.56	0.29	0.01	0.01	0.00	455.16	0.15	0.00	460.07
	1		Tier 4	Paving Equipment	0.13	3.10	0.25	0.01	0.01	0.00	394.47	0.13	0.00	398.72
			Tier 4	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Tier 4	Rollers	0.08	1.98	0.16	0.01	0.01	0.00	254.15	0.08	0.00	256.88
			Tier 4	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Tier 4	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Tier 4	Tractors/Loaders/Backhoes	0.19	4.68	0.38	0.02	0.02	0.01	603.53	0.20	0.01	610.03
			Tier 4	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Tier 4	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

	Paving	pounds per day	0.54	13.33	1.08	0.05	0.05	0.02	1,707.31	0.55	0.02	1,725.70
	Paving	tons per phase	0.02	0.53	0.04	0.00	0.00	0.00	67.61	0.02	0.00	68.34
Total Emissions all Phases (tons per construction period) =>			0.80	15.37	1.62	0.08	0.07	0.03	2,537.75	0.78	0.02	2,563.98

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
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Air Quality Study Report

Santa Monica Pier Bridge Replacement Project

CITY OF SANTA MONICA, CALIFORNIA
DISTRICT 7 – Los Angeles County
EA BHLO-5107(033)

Prepared for:

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As agent for the Federal Highway Administration as Federal Lead Agency pursuant to the National Environmental Policy Act of 1969

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September 2016

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Acronyms and Abbreviations

$\mu g/m^3$	micrograms per cubic meter
AAQS	ambient air quality standards
AB	Assembly Bill
ADA	Americans with Disabilities Act
AQMP	Air Quality Management Plan
ATCMs	Airborne Toxic Control Measures
Basin	South Coast Air Basin
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
CalEEMod	California Emission Estimator Model
California CAA	California Clean Air Act
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
City	City of Santa Monica
CO	carbon monoxide
CO Protocol	Transportation Project-Level Carbon Monoxide Protocol
CO_2	carbon dioxide
CO_2e	CO2 equivalent
CO-CAT	Coastal Ocean Climate Action Team
CTP	California Transportation Plan
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FR	Federal Regulations
FSTIP	Federal Statewide Transportation Improvement Program
FTA	Federal Transit Administration
FTIP	Federal Transportation Improvement Program
GHG	greenhouse gas
HAPs	hazardous air pollutants
HBP	Highway Bridge Program
HFC-134a	s, s, s, 2-tetrafluoroethane
HFC-152a	difluoroethane
HFC-23	fluoroform
I-10	Interstate 10
IPCC	Intergovernmental Panel on Climate Change
IRIS	Integrated Risk Information System
LOS	level of service
LSTs	localized significance thresholds
MAW	Moomat Ahiko Way
Metro	Los Angeles County Metropolitan Transportation Authority

mph	miles per hour
MPO	metropolitan planning organization
MSAT	mobile-source air toxics
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOA	naturally occurring asbestos
NOAA	National Oceanic and Atmospheric Administration
NO_X	oxides of nitrogen
O_3	ozone
OPR	Office of Planning and Research
OSTP	Office of Science and Technology Policy
Pb	lead
PCH	Pacific Coast Highway
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter 2.5 microns or less in diameter
POAQC	Project of Air Quality Concern
POM	polycyclic organic matter
ppm	part per million
proposed project	Santa Monica Pier Bridge Replacement Project
Resources Agency	California Natural Resources Agency
RTP	Regional Transportation Plan
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SB	Senate Bill
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SO_2	sulfur dioxide
SRA	Source Receptor Area
TACs	toxic air contaminants
TCMs	Transportation Control Measures
TCWG	Transportation Conformity Working Group
TIP	transportation improvement program
V/C	volume-to-capacity ratio
VMT	vehicle-miles travelled

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Executive Summary

The City of Santa Monica and the California Department of Transportation (Caltrans) are proposing the replacement of the Santa Monica Pier Bridge. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Santa Monica is the lead agency under CEQA and Caltrans is the lead agency under NEPA. **Figure 1-1** and **Figure 1-2** show the regional location and project vicinity, respectively.

The Pier Bridge, constructed in 1939, is approximately 490 feet long and extends west from the intersection of Ocean Avenue and Colorado Avenue to the Santa Monica Pier in the City of Santa Monica. The proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new multi-modal bridge to meet current seismic and Americans with Disabilities Act (ADA) standards. Three build alternatives are being considered:

- **Alternative 1:** New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue during Construction (see **Figure 1-3**).
- **Alternative 2:** New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge during Construction (see **Figure 1-3**).
- **Alternative 3** (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue (see **Figure 1-4**).

The Pier Bridge qualifies for replacement under the federal Highway Bridge Program (HBP) and is eligible for Toll-Credit funding. As such, the project is included in the 2015 Federal Statewide Transportation Improvement Program (FSTIP) and is proposed for funding under the HBP, under the individual project ID of BHLO-5107(033). This project is also included in the Southern California Association of Governments (SCAG) 2015 Federal Transportation Improvement Program (FTIP) as a project grouped with others under project ID LA000800.[1] The SCAG 2015 FTIP was determined to have met air quality conformity requirements by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on December 15, 2014. The 2015 FSTIP was also approved by FHWA and FTA on December 15, 2014.

Build Alternatives 1 and 2 would involve reconstructing a bridge without introducing additional travel lanes. As such, Build Alternatives 1 and 2 are not subject to regional- or project-level transportation conformity determination requirements per Code of Federal Regulations, Title 40, Section 93.126. Build Alternative 3 (Locally Preferred Alternative), however, replaces the existing bridge at its existing location with a pedestrian, bicycle, emergency, and limited access bridge at its existing location; and constructs a new bridge (with no change in number of travel

[1] The project's FTIP description is in the process of being revised to accommodate Build Alternative 3 (Locally Preferred Alternative). See discussion in Section 3.2.2.1, *Regional and Project-Level Conformity,* starting on page 3-5.

lanes) that would extend from Moss Avenue, instead of from Colorado Avenue (as is the case with the existing bridge). As such, Build Alternative 3 (Locally Preferred Alternative) is not exempt from the requirement to demonstrate transportation conformity. For this reason, the project-level carbon monoxide (CO) and particulate matter (PM) conformity analyses provided herein focuses on Build Alternative 3 (Locally Preferred Alternative), shown in **Figure 1-4**.

In addition to analysis for transportation conformity determination requirements, potential air quality impacts from project construction and operation were also evaluated pursuant to CEQA. During construction, the proposed project would be subject to South Coast Air Quality Management District (SCAQMD) Rule 403 (Fugitive Dust), which requires that best available fugitive dust control measures be incorporated into construction practices.

With respect to long-term project operations, Caltrans' CO protocol screening procedure demonstrated that the proposed project would not cause or contribute to violations of the state or federal CO ambient air quality standards (AAQS). The quantitative hot-spot analysis for particulate matter 2.5 microns or less in diameter (PM2.5) and particulate matter 10 microns or less in diameter (PM10) demonstrated that this project is not a Project of Air Quality Concern (POAQC) that requires a quantitative PM2.5 and PM10 hot spot analysis. And finally, project-related mobile-source air toxic (MSAT) emissions were evaluated using the December 2012 FHWA/Environmental Protection Agency guidance publication, *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*.

Chapter 1 Introduction

The City of Santa Monica (City) and the California Department of Transportation (Caltrans) are proposing the replacement of the Santa Monica Pier Bridge. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Santa Monica is the lead agency under CEQA and Caltrans is the lead agency under NEPA. **Figure 1-1** and **Figure 1-2** show the regional location and project vicinity, respectively.

The Pier Bridge, constructed in 1939, is approximately 490 feet long and extends west from the intersection of Ocean Avenue and Colorado Avenue to the Santa Monica Pier (the Pier) in the City of Santa Monica. The proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new multi-modal bridge to meet current seismic and Americans with Disabilities Act (ADA) standards.

The primary purposes and objectives of the proposed project are to provide a bridge that would be structurally sound and seismically resistant, and to provide adequate and safe access to the Pier by all users, including pedestrians, bicyclists, motorists, and emergency vehicles. The proposed project seeks to achieve those objectives while preserving the historic character of the Pier and adjacent historic structures, such as the Pier entrance sign, as well as maintaining continuous access to the Pier for all users, including maintaining City and Pier business operations during construction.

This project is included in the 2015 Federal Statewide Transportation Improvement Program (FSTIP) and is proposed for funding from the Highway Bridge Program (HBP) under individual project ID of BHLO-5107(033). The project is also included in the Southern California Association of Governments (SCAG) 2015 Federal Transportation Improvement Program (FTIP) and the SCAG 2012–2035 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) documents under project number LA000800.[2]

This report evaluates the potential effects of the proposed Santa Monica Pier Bridge Replacement Project (proposed project) related to air quality and climate change.

1.1 Project Description

The proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new safer, multi-modal bridge to meet current seismic and ADA standards. Bridge replacement would also include the improvements at the west and east bridge approaches and on the Pier. This section describes the proposed action and the project alternatives that have been developed to meet the identified purpose and need of the project, while avoiding or minimizing environmental impacts. The four alternatives are described below.

[2] The project's FTIP description is in the process of being revised to accommodate Build Alternative 3 (Locally Preferred Alternative). See discussion in Section 3.2.2.1, *Regional and Project-Level Conformity*, starting on page 3-5.

1.1.1 No-Build Alternative

Under the No-Build Alternative, replacement of the structurally deficient Pier Bridge would not occur. The use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The No-Build Alternative serves as a baseline to measure the build alternatives against in terms of potential environmental impacts.

1.1.2 Build Alternatives

Three build alternatives are being considered.

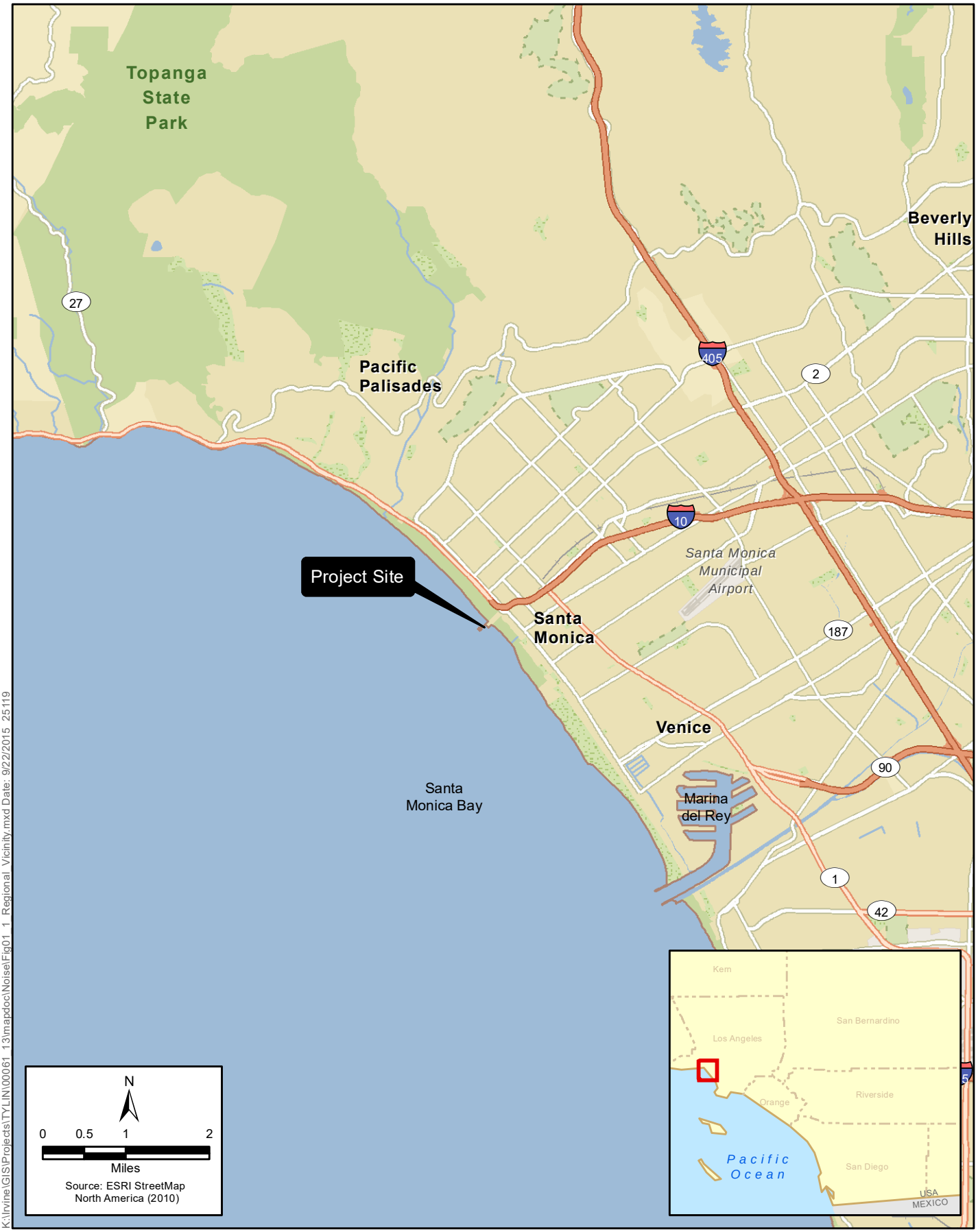
- Alternative 1: New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue During Construction.
- Alternative 2: New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge During Construction.
- Alternative 3 (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue.

The build alternatives are described in detail below.

1.1.2.1 Alternative 1: New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue During Construction

Alternative 1 (see **Figure 1-3**) would provide a new wider bridge located in the same alignment of the existing Pier Bridge and a temporary vehicular bridge on Moss Avenue connecting Appian Way to the Pier deck parking during construction. The replacement bridge would be approximately 490 feet long and approximately 64 feet wide, a total of approximately 30 feet wider than the existing bridge. The additional width is to provide an ADA accessible path, bicycle lanes, and wider sidewalks to safely serve the volume of pedestrians.

The west and east bridge approaches at the Pier and within Colorado Avenue public right-of-way, respectively, would be widened to match the width of the new bridge. The new bridge roadway would be shifted approximately 14 feet north of the existing west and east bridge approaches. The western bridge approach on the Pier deck would be widened by approximately 21 feet for a length of approximately 240 feet. Similarly, the eastern bridge approach would be widened, resulting in the reduction of Colorado Alley's width to 12 feet and a length of approximately 120 feet from Ocean Avenue.



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Figure 1-1
Regional Vicinity Map
Santa Monica Pier Bridge Replacement Project

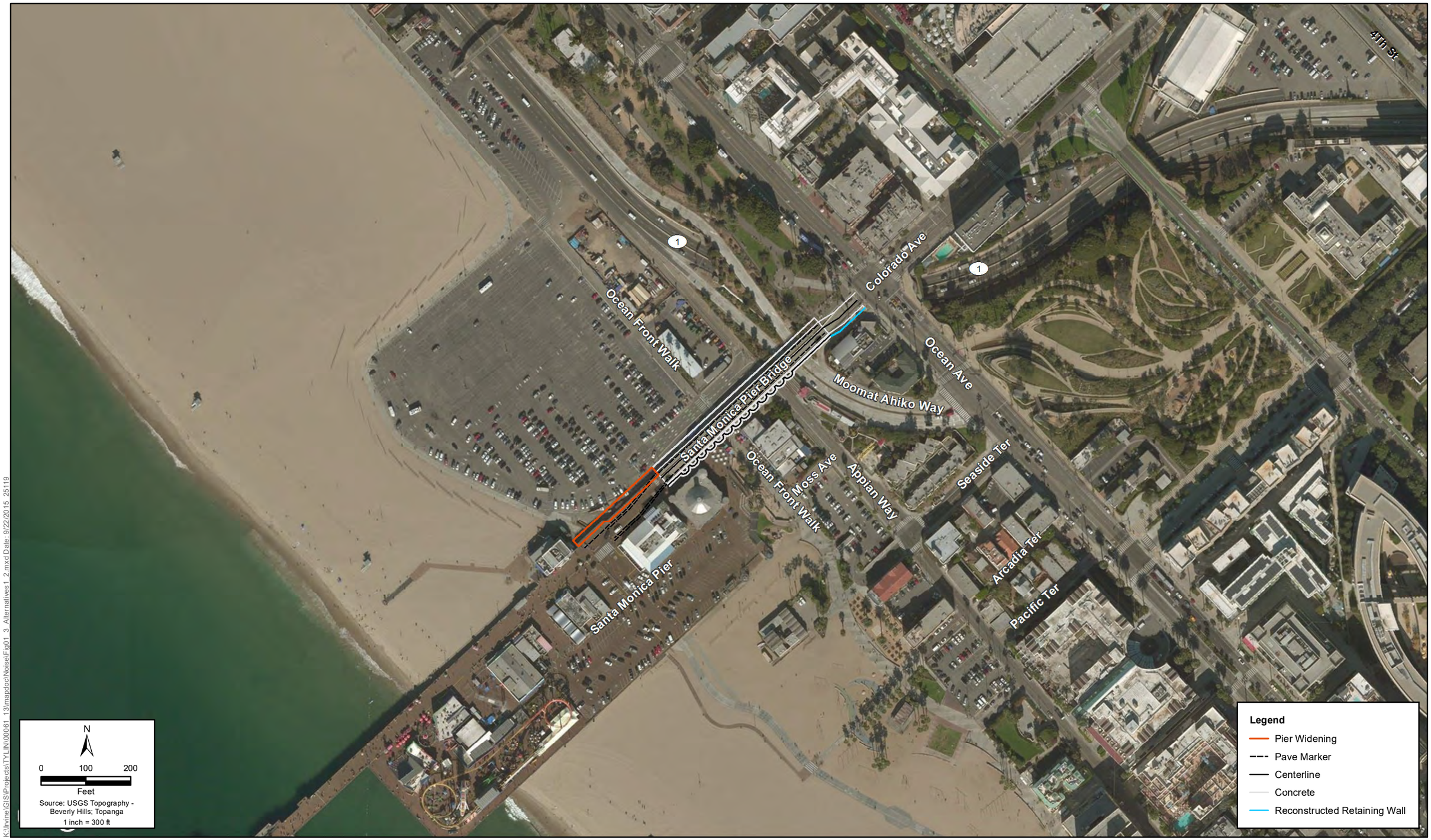
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Figure 1-2
Project Location Map
Santa Monica Pier Bridge Replacement Project

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Figure 1-3
Build Alternative 1 & 2 Location Map
Santa Monica Pier Bridge Replacement Project

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The new bridge cross-section would include the following project features.

- A 12-foot-wide vehicular lane in each direction.
- A 5-foot-wide bicycle lane in each direction.
- A 12-foot-wide sidewalk at the north side.
- A 5.3-foot-wide undulating ADA-compliant pathway.

Temporary Shift of Entrance to Lot 1 North

The entrance to parking Lot 1 North provides critical access, as it is the primary location for deliveries that serve the many businesses and attractions on the Pier. During peak times, the lot entrance can back up with cars waiting to pay the parking fee. A challenge under this alternative would be to maintain access for deliveries and the public to the lot, without the disruption to the Pier and State Beach. Alternative 1 would widen the bridge 23 feet to the north toward the lot entrance, leaving only the three public traffic lanes available to enter the lot. The width between the edge of the new bridge and north edge of the entrance is 40 feet, which is insufficient to provide adequate space for both construction operations and vehicles entering the lot.

To provide safe access to the general public during the demolition of the existing bridge and construction of the new bridge, the existing entrance adjacent to the existing bridge would be closed because there is not enough safety zone space for construction work between the entrance lanes and the bridge. Per Section 4.12.110 of the City's Municipal Code, construction work cannot be conducted between 6 p.m. and 7 a.m. Monday through Friday, between 5 p.m. and 9 a.m. on Saturday, or at any time on Sunday or major holidays. However, per Section 4.12.110 (e), a permit can be issued for construction operations to be performed during night work shifts when there is less activity on the Pier and vehicles entering the lot, and when allowing construction activities outside the normally established hours is found to be in the public interest. Given these constraints, under Alternative 1 the Lot 1 North entrance would be temporarily relocated during construction to provide sufficient work space for construction operations.

Permanent Shift of Entrance to Lot 1 North

The entrance to Lot 1 North comprises five vehicle lanes: three entry lanes for the public to park in the lot, one lane for emergency vehicle entry, and a parking lane for delivery vehicles. Alternative 1 would replace the existing bridge with a new bridge that would extend 23 feet wider than the existing bridge on the north side toward the entrance to Lot 1 North. This widening encroaches over onto the delivery parking and emergency entry lanes. As the bridge meets the Pier, the overhead clearance becomes 10 feet, which is less than the required 13.5 feet for driving lanes. The low overhead clearance makes these lanes unavailable for use under this alternative. Options to address this change are either to have a reduced number of lanes at the entrance to the lot or to shift the lot entrance north to maintain the current number of lanes.

The first option would reduce the number of lanes entering the lot to the three public lanes that are not affected by the wider bridge. One of those lanes could be designated for delivery, maintenance, and emergency vehicle entry, while the remaining two lanes would provide access for the public entering the lot.

The second option to maintain the current number of lanes entering the lot is to shift the entrance north approximately 21 feet. This would require taking space in the City's maintenance yard and reconstructing a retaining wall in the yard. The mobile office and other equipment in the yard would need to be relocated, but the maintenance shed is anticipated to remain in its current location. The shift of the entrance is expected to require the permanent removal of approximately 30 parking spaces in Lot 1 North.

It is anticipated the second option would be preferred by the City to maintain the current operations to the Pier and not reduce the number of public lanes into the parking lot.

Temporary Vehicular Bridge

Access to the Pier deck for public parking, delivery vehicles, and emergency vehicles would be maintained during construction, with a temporary bridge constructed on Moss Avenue from the intersection of Appian Way to the Pier. The bridge would span over Ocean Front Walk and connect to the Pier where there are parking spaces next to an ADA ramp on the southeast end of the Pier. The City Fire Department requires a minimum vertical clearance of 13 feet, 6 inches over Ocean Front Walk for emergency vehicles.

Parking Lot 1 South currently has two exits. During the construction period, the Moss Avenue exit would be closed due to temporary bridge construction at this location, and the existing exit on Seaside Terrace would be used. To provide a construction staging area, 35 parking spaces in Lot 1 South would be unavailable for approximately 3 months during construction of the bridge and for approximately 1 month during removal of the bridge.

The temporary bridge width would be less than 29 feet (the width of Moss Avenue) so that it would not extend beyond City right-of-way and encroach onto the adjacent properties north and south of Moss Avenue. Shallow excavations would be needed in Moss Avenue for construction of temporary foundations. Carousel Park is adjacent to the Pier, and the alignment of the temporary bridge would encroach into the park. Construction of the temporary bridge would occur in Carousel Park, requiring modification of some park features. Adjacent to Carousel Park, there are two existing ADA ramps on both sides of an octagonal stairway and a retaining wall with bench seating. Bridge construction would include removal of portions of the retaining wall and bench seating. The ADA ramp south of the stairs would need to be closed during project construction; however, the north ADA ramp would be available to access the Pier from Ocean Front Walk. A concrete pylon lamppost on Ocean Front Walk is also in the alignment of the bridge and would be removed for construction.

Approximately 40 parking spaces on the Pier deck would be temporarily removed at the temporary bridge location. The layout of the Pier deck parking would be reconfigured to accommodate the new circulation with the temporary bridge. Part of the Pier structure at the connection of the temporary bridge would need to be reconstructed to support additional loading. This portion of the Pier deck parking lot would be strengthened to create a fire lane to accommodate the weight of delivery trucks or the City's fire trucks. This new fire lane would extend between the temporary bridge and the existing fire lane on the Pier and be approximately 280 feet long and 20 feet wide. The strengthening of the Pier deck is estimated to take 3 months and would progress in phases to minimize disruption to Pier parking. The deck strengthening

would occur prior to the temporary bridge construction. The parking spaces on the Pier deck and striping would be restored after completion of the project.

1.1.2.2 Alternative 2: New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge During Construction

The replacement bridge for Alternative 2 is the same as Alternative 1 (see Figure 1-3), but with a different location for the temporary vehicular access during construction. Under Alternative 2, access to the Pier for vehicles during construction would occur by way of a temporary vehicular ramp in Lot 1 North, on the north side of the Pier and west of the existing bridge alignment. This alternative would have pedestrian access from the Ocean Avenue/Colorado Avenue intersection provided with a temporary bridge during construction, similar to Alternative 1.

The layout and number of available parking spaces in the Pier deck parking lot would remain as is, except the entrance would be via the temporary ramp through Lot 1 North. However, the circulation and layout of the Lot 1 North would be rearranged to accommodate the temporary ramp, which would result in an additional temporary loss of approximately 35 parking spaces during construction. Most parking spaces would be restored after construction; however, 30 spaces would be permanently lost due to the shift of the lot entrance after construction of the new wider bridge.

1.1.2.3 Alternative 3 (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue

Under Alternative 3 (see Figure 1-4), two new bridges would be constructed. The existing Pier Bridge would be replaced with a bridge that has a width of approximately 40 feet, in the same location as the existing alignment. The replacement bridge would be designed primarily for pedestrian and bicycle use, but would also provide access for emergency vehicles and possibly limited access for delivery vehicles during off-peak hours. The replacement bridge would have an approximate 5-foot-wide walkway for ADA access, the same as Build Alternatives 1 and 2.

Temporary Reduced Width of Lot 1 North Entrance

Alternative 3 would replace the existing Pier Bridge with a new bridge of approximately the same width. With this alternative a minimum 40 feet of clear space can be provided for construction operations, as well as lane width for public entrance to the lot and for delivery trucks access to the Pier. This can be accomplished by reducing the width of the entrance to the lot and moving the toll booths into the lot to provide queuing storage space for cars and a dedicated entrance lane for delivery, maintenance, and emergency vehicles. The circulation, layout, and striping in Lot 1 North would be rearranged to accommodate the reduced width entrance and temporarily relocated toll booths. The rearrangement of the lot would result in the temporary loss of parking as described in Section 1.1.3.3, *Construction Staging* in. The reduced width entrance would allow continuous access to the lot from the Pacific Highway (PCH) exit. During some construction operations Appian Way under the bridge would be closed to traffic as described in Section 1.1.3, *Common Features of the Build Alternatives*. Following

construction activities, the entrance and toll booths would be restored to their original location, the parking spaces would be restored, and the lot would be repaired and restriped according to the preconstruction layout.

Moss Avenue Bridge

Under Alternative 3 a second bridge would be constructed at Moss Avenue for public vehicular access to the Pier deck parking lot and the Pier. The bridge would be designed for vehicular use, be approximately 150 feet long, and be within the 29-foot-wide existing City right-of-way to accommodate two vehicle lanes and barriers. The bridge would span over Ocean Front Walk and provide a minimum vertical clearance of 13 feet, 6 inches per California Fire Code Title 24 Part 9 Section 503.2.1. The construction of the Moss Avenue Bridge would be staged with the Pier Bridge construction to provide continuous vehicular access to the Pier during project construction, eliminating the need for a temporary vehicular bridge.

Lot 1 South has two exiting driveways, and the new bridge would require the permanent closure of the Moss Avenue exit. To construct this bridge, the retaining walls along Moss Avenue adjacent to the private property on the north and adjacent to Lot 1 South would need to be removed and reconstructed. This would require temporary construction easements on these properties. In Lot 1 South, approximately 35 parking spaces would be needed as a construction staging area during bridge construction. The parking spaces would be unavailable for 9 months but would be restored after construction is complete.

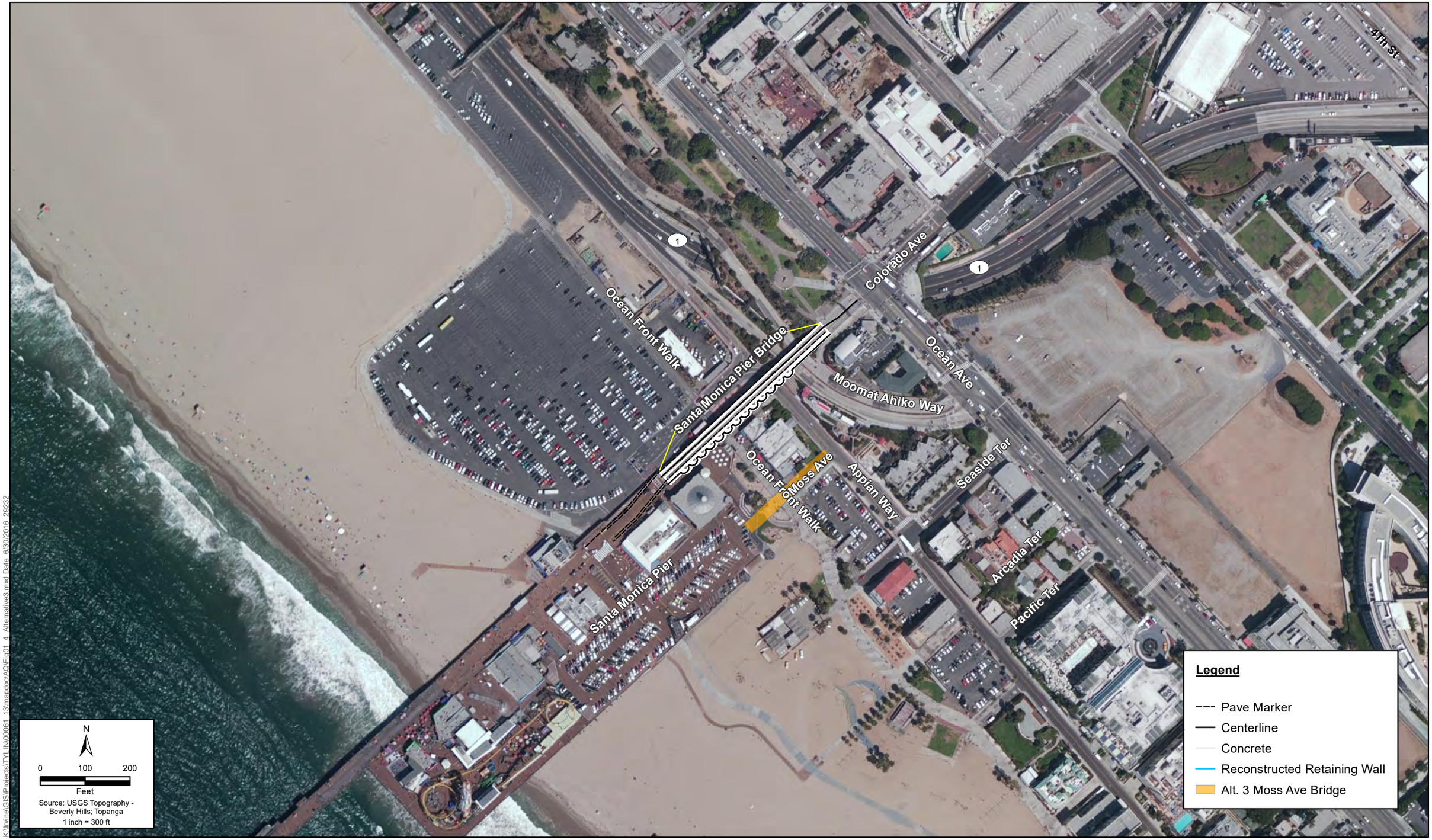
At the southeast end of the Pier, the ADA ramp, portions of the retaining wall, and bench seating would be permanently removed. Due to limited vertical clearance, the ADA ramp cannot be reconstructed at this location; however, there is an ADA ramp north of this location that provides access to the Pier. The pylon lamppost on Ocean Front Walk would be in the alignment of the bridge and would be removed.

This bridge would require the permanent removal of approximately 40 parking spaces on the Pier deck where it connects with the Pier. The layout of the Pier deck parking would be reconfigured to accommodate the new vehicle entrance from the Moss Avenue Bridge and relocation of the existing toll booth. The Pier deck at the connection of the Moss Avenue Bridge would need to be reconstructed to accommodate the bridge. As previously discussed for the Moss Avenue temporary vehicle access bridge, the Pier deck would be strengthened for a new fire lane, requiring temporary loss of parking.

The Moss Avenue Bridge alignment encroaches into Carousel Park, and construction would occur in the park that would require modification of some of the park features.

1.1.3 Common Features of the Build Alternatives

The overall duration of construction for the build alternatives is projected to be 24 months. The following features are common to all of the build alternatives.



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Figure 1.4
Alternative 3
Santa Monica Pier Bridge Replacement

1.1.3.1 The Pier Sign

The Pier Sign at the eastern end of the Pier Bridge just west of the Ocean Avenue/Colorado Avenue intersection is a historically significant structure and an iconic feature of the City. It is a State Historic Landmark. Because of its importance as both a historic and visual resource, the Pier Sign and its foundations would be protected in place during project construction. The replacement bridge structure would be designed to preserve the Pier Sign in its existing location.

1.1.3.2 Temporary Pedestrian Bridge

During the demolition of the existing Pier Bridge and construction of the new replacement bridge, general public pedestrian access between the Pier and the Ocean Avenue /Colorado Avenue Intersection would be maintained through construction of a temporary pedestrian bridge adjacent to the south of the Pier Bridge. The temporary bridge would be set back 5 feet south from the existing bridge to allow for safe demolition and construction of the new bridge. The temporary bridge would stay within City right-of-way and be approximately 4 feet from existing buildings to the south and be accessed via the Ocean Avenue /Colorado Avenue Intersection.

The temporary pedestrian bridge would have a similar 10% grade as the existing bridge and would be 8 feet in width. Given its narrow width, the temporary bridge would accommodate pedestrians only and may not be able to accommodate the peak weekend and holiday pedestrian attendance at the Pier. Additional signage would be provided to re-route pedestrians to use alternative access routes north and south of the Pier during peak weekend and holiday pedestrian presence at the Pier. Given the temporary bridge will have a steep grade and a narrow width, it is not intended for ADA or bicycle access during project construction. Those with disabilities will need to arrive at the Pier in a vehicle, park in designated spots, and access the Pier through existing access points at the Lot 1 North, Ocean Front Walk, or Pier deck. Bicycles will be able to access the Pier along alternative street routes south of the Pier such as Seaside Terrace or along Ocean Front Walk.

Due to the proximity of the pedestrian bridge to construction operations, the bridge would need to have a roof and solid wall on the side adjacent to the Pier Bridge for public safety. The cover and wall would be constructed of plywood similar to the walkways that are commonly constructed next to building projects in urban areas. During some construction operations, such as bridge demolition and lifting of large reinforcing steel pile cages, the pedestrian bridge would need to be temporarily closed to the public. During those closures the public would be routed to Seaside Terrace or the pedestrian overcrossing north of Broadway. Another option to limit public inconvenience is to perform these construction operations during the evening hours with a special permit when there are fewer visitors to the Pier.

1.1.3.3 Construction Staging

The project site is surrounded by existing residential properties, businesses, roads, public walkways, a park, and structures on all sides and underneath the bridge. Providing the contractor with enough working space to safely demolish the existing bridge and to construct a new bridge—while minimizing disruptions for access to public resources or to residences, businesses, and operations on the Pier—needs to be considered. Construction work on this project would involve backhoes with hydraulic rams, dump trucks, cranes, drilling rigs, concrete trucks, and

other construction equipment. Construction staging space for the contractor's use is proposed at Lot 1 North. This will cause the temporary loss of use of approximately 365 parking spaces in the lot, which includes the loss of parking resulting from temporary relocation of the lot entrance discussed below.

Located on the south side of the Pier Bridge are the Lobster Restaurant, Carousel Café with apartments upstairs, Santa Monica Pier Aquarium, historic Hippodrome, and portions of the Pier structure. Located on the north side are Palisades Park, the entrance to Lot 1 North, and a City maintenance yard. Given the constraints around the bridge, construction access for the project is proposed on the north side of the bridge. Construction access on the south side is limited by private residences, businesses, and structures. These constraints would not provide sufficient space for construction work to safely proceed from the south. In addition, the temporary pedestrian bridge would further constrain the amount of space to work south of the Pier.

1.1.3.4 Public Access Under the Pier Bridge During Demolition and Construction

The Pier Bridge passes over the two bifurcated two-lane roadways of Momma Ahiko Way (MAW), two-lane Appian Way, and the pedestrian path Ocean Front Walk. Maintaining access on these routes, as much as possible, will be essential to the project but will be limited when it would compromise public safety. Temporary closure of these routes would require mitigation with signage and detour routes.

All of these routes would be closed during demolition of the bridge due to the risk of falling concrete, construction of foundations that will involve drilling rigs and cranes to be operating in proximity to the public, and erection and removal of falsework beams used to construct the new bridge.

The closure of Ocean Front Walk and Appian Way is estimated to last 2 months, starting with bridge demolition and falsework erection and ending 1 week following bridge completion to allow removal of falsework. The closure of MAW is estimated to last 6 months, starting with bridge demolition and ending with completion of the bridge and removal of falsework. MAW will be closed for the full duration of bridge construction because there is not enough space to provide 15 feet of vertical clearance under the falsework. During this time traffic that was diverted to MAW will be detoured on PCH to Lincoln Boulevard and on local City streets to Ocean Avenue. A possible solution to reduce the closure duration of MAW is to allow a reduced temporary vertical clearance of 13 feet under falsework with an opening width of only one traffic lane. This would reduce the closure to 2 months for demolition and foundation work and a second closure of 1 week to allow for removal of falsework. The roadway would need to be closed to all truck traffic, and sufficient signage would be needed to divert trucks to alternate routes. The reduced temporary vertical clearance would require approval from the City and Caltrans.

Due to the closure of Appian Way for 2 months, careful planning of the construction operations would be needed so that access from PCH into Lot 1 North would be provided.

1.1.3.5 Utility and Facility Relocations

The Pier Bridge and the proposed Moss Avenue Bridge are located in an area that is served by utilities, which may be impacted during construction and therefore may require relocation.

The following facilities under the Pier Bridge would be temporarily relocated during demolition and reconstruction of the bridge.

- Restrooms.
- Pier storage rooms.
- An emergency backup generator for the aquarium.
- Electrical utility room.
- City trash compactor.

Relocation of existing utility facilities would require careful planning with the utility owners to maintain essential services to the Pier during project construction.

1.1.3.6 Pier Structural Modifications

The Pier structure would be impacted by project construction. To remove the existing bridge, portions of the Pier that connect to the bridge would be partially removed to facilitate the use of demolition equipment. For all alternatives, where the new bridge connects with the Pier, deck reconstruction of the Pier would be needed to facilitate joining of the two structures. The temporary pedestrian bridge located on the south side would touch down on the Pier deck over the aquarium, and the Pier deck would need to be modified at this location.

All of the modifications to the Pier that are visible would be reconstructed and replaced in kind so as to maintain the historic character of the Pier.

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Chapter 2 Affected Environment

2.1 Regulatory Setting

The proposed project is located in the South Coast Air Basin (Basin) in Los Angeles County. The South Coast Air Quality Management District (SCAQMD) has jurisdiction over air quality issues in the Basin. SCAQMD administers air quality regulations developed at the federal, state, and local levels. Federal, state, and local air quality regulations applicable to the proposed project are described below.

2.1.1 Federal Requirements

The federal Clean Air Act (CAA), enacted in 1963 and amended several times thereafter (including the 1990 amendments, known as CAAA 1990, which are the current governing regulations for air quality), establishes the framework for modern air pollution control. In addition, the U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) for criteria pollutants (see **Figure 2-1**), which include carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), ozone (O_3), particulates (10 microns or less in diameter [PM10] and 2.5 microns or less in diameter [PM2.5]), and lead (Pb). Most standards have been set to protect public health. For some pollutants, standards have been based on values such as protection of crops, protection of materials, or avoidance of nuisance conditions. Attainment status designations are provided in **Table 2-1**.

2.1.1.1 Transportation Conformity

The concept of *transportation conformity* was introduced in the 1977 federal CAA. However, the conformity requirements were made substantially more rigorous with CAAA 1990. Transportation conformity prohibits the use of federal dollars to fund a transportation project unless it can be clearly demonstrated that the project would not cause or contribute to violations of the NAAQS. The U.S. Department of Transportation (DOT) and EPA developed the Transportation Conformity Rule (Code of Federal Regulations [CFR], Title 40, Section 51 and 40 CFR 93) in November 1993. This transportation conformity regulation details implementation of the new requirements for determining conformity of transportation plans, programs, and projects.

Under CAAA 1990, DOT cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to an EPA-approved State Implementation Plan (SIP) for achieving NAAQS goals. CAAA 1990 requires states to address in the SIP how federal standards will be achieved for areas designated as nonattainment areas for the NAAQS. Failing to submit a SIP that addresses nonattainment or to secure approval could lead to denial of federal funding and permits (in cases where a state-submitted SIP fails to demonstrate achievement of the federal standards, EPA prepares a federal implementation plan).

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Figure 2-1 Ambient Air Quality Standards



Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page ...

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California Air Resources Board (5/4/16)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

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

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

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

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

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

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

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

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

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

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

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

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

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

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

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Source: California Air Resources Board (2016).

Table 2-1. Attainment Status of Los Angeles County Portion of South Coast Air Basin

Pollutant	Federal Classification	State Classification
O_3 (1-hour standard)	--	Nonattainment
O_3 (8-hour standard)	Nonattainment, Extreme	Nonattainment
PM10	Attainment/Maintenance	Nonattainment
PM2.5	Nonattainment	Nonattainment
CO	Attainment/Maintenance	Attainment
NO_2	Attainment/Maintenance	Attainment
SO_2	Attainment	Attainment
Pb	Nonattainment	Attainment
Note that only the Los Angeles County portion of the South Coast Air Basin is nonattainment for NAAQS Pb. The remainder of the Basin is attainment. Sources: CARB 2014a; EPA 2015; Compiled by ICF International 2016.		

In addition to the SIP, Section 93.114 of the EPA transportation conformity regulations requires a currently conforming Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) to be in place at the time of project approval.[3] The RTP and TIP are listings of all transportation projects planned for a region over a period of years, usually about 20, that will receive federal funds or be subject to a federally required action, such as a review for effects on air quality. The TIP also lists non-federal, regionally significant projects for information and air quality modeling purposes. The RTP and TIP include projects whose emissions are within the budget planned in the SIP, with the goal of attaining the NAAQS.

Using the projects included in the RTP, an air quality model is run to determine whether the implementation of those projects would conform to emission budgets or other tests showing that federal CAA attainment requirements would be met. If the conformity analysis is successful, regional planning organizations and the appropriate federal agencies, such as the Federal Highway Administration (FHWA), make the determination that the RTP is in conformity with the SIP for achieving the goals of the NAAQS. Otherwise, the projects in the RTP must be modified until conformity is attained.

If the design and scope of the proposed transportation project are the same as the design and scope described in the RTP, the proposed project is deemed to be a project that meets the regional conformity requirements for purposes of regional analysis. Conformity with the NAAQS goals of the federal CAA is determined at both the regional level and at the project level. The proposed project must conform at both the regional and project levels to be approved.

Typically, a regional transportation conformity determination is made by evaluating whether a project is included in a conforming RTP and/or TIP. Any project listed in an RTP and/or TIP must demonstrate conformity with the SIP because the SIP demonstrates how federal standards will be achieved for the region. The design and scope of the project being evaluated must match the design and scope of the project listed in the RTP and/or TIP. Regional-level conformity in California is concerned with how well the region is meeting the standards set for CO, NO_2,

[3] For the project vicinity, the currently conforming RTP and TIP are the SCAG 2012–2035 RTP/SCS and SCAG 2015 FTIP, respectively.

ozone, and particulate matter. Project-level conformity determinations for CO, PM10, and PM2.5 are made to verify that a project would not exacerbate an existing NAAQS violation or create a new exceedance and trigger the requirement for a hot-spot analysis.

Conformity at the project level requires hot-spot analysis if a region is designated a nonattainment or maintenance area for CO and/or particulate matter. Hot-spot analysis is essentially the same, for technical purposes, as a CO or particulate matter analysis performed for NEPA purposes. In general, projects must not cause the CO standard to be violated, and, in nonattainment regions, the project must not cause any increase in the number and severity of violations. If known CO or particulate matter violations are located in the project vicinity, the project must include measures to reduce or eliminate the existing violations as well.

In California, the federal EPA has delegated authority to prepare SIPs to the California Air Resources Board (CARB), which, in turn, has delegated that authority to individual air districts and planning entities. SCAG is the designated metropolitan planning organization (MPO) and the Los Angeles County Metropolitan Transportation Authority (Metro) is the Regional Transportation Planning Agency for Los Angeles County. As such, SCAG and Metro coordinate the county's major transportation projects and programs that are included in the RTP and FTIP produced by SCAG. The FTIP sets forth SCAG's investment priorities for transit and transit-related improvements, highways and roadways, and other surface transportation improvements in the six-county SCAG region, which includes Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. The 2015 FTIP is in accordance with EPA's Transportation Conformity Rule as it pertains to attainment of air quality standards in the SCAG region.

2.1.2 State Requirements

Responsibility for achieving the California Ambient Air Quality Standards (CAAQS), which for certain pollutants and averaging periods are more stringent than federal standards, is placed on CARB and local air management districts (see **Figure 2-1**). State standards are to be achieved through district-level air quality management plans that are incorporated into the SIP. Traditionally, CARB has established state air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emissions inventories, collected air quality and meteorological data, and approved SIPs developed by the individual air districts. Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required under CEQA.

The California Clean Air Act (California CAA) of 1988 substantially added to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures.

The California CAA focuses on attainment of the CAAQS and requires designation of attainment and nonattainment areas with respect to these standards. The act also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan (Clean Air Plan) if the district violates state air quality standards for ozone, CO, SO_2, or NO_2. These plans are specifically

designed to attain state standards and must be designed to achieve an annual 5% reduction in district-wide emissions of each nonattainment pollutant or its precursors. No locally prepared attainment plans are required for areas that violate the state PM10 standards; CARB is responsible for developing plans and projects that achieve compliance with the state PM10 standards.

The California CAA requires the CAAQS to be met as expeditiously as practicable but, unlike the federal CAA, does not set precise attainment deadlines. Instead, the act establishes increasingly stringent requirements for areas that will require more time to achieve the standards.

The California CAA emphasizes the control of *indirect* and *area-wide sources* of air pollutant emissions. The act gives local Air Pollution Control Districts explicit authority to regulate indirect sources of air pollution and establish Transportation Control Measures (TCMs). The California CAA does not define the terms *indirect [sources]* and *area-wide sources*. However, Section 110 of the federal CAA defines an indirect source as a facility, building, structure, installation, real property, road, or highway that attracts, or may attract, mobile sources of pollution. Such terms include parking lots, parking garages, and other facilities subject to any measure for management of parking supply. TCMs are defined in the California CAA as "any strategy to reduce trips, vehicle use, vehicle miles traveled, vehicle idling, or traffic congestion for the purpose of reducing vehicle emissions."

2.1.3 Local and Regional Requirements

The air quality management agencies of direct importance for projects in Los Angeles County and the City of Santa Monica include EPA, CARB, and SCAQMD. EPA has established federal standards for which CARB and SCAQMD have primary implementation responsibility. CARB and SCAQMD are responsible for ensuring that CAAQS are met. SCAQMD is responsible for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development. At the local level, air quality is managed through land use and development planning practices, which are implemented through the municipal general planning process. SCAQMD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. SCAQMD requires compliance with Rule 403 to control fugitive dust emissions. Rule 403 is intended to reduce the amount of particulate matter in the ambient air resulting from anthropogenic fugitive dust sources by requiring projects to prevent, reduce, or mitigate fugitive dust emissions.

2.2 Physical Setting

Ambient air quality is affected by climatological conditions, topography, and the types and amounts of pollutants emitted. The following discussion describes relevant characteristics of the Basin and offers an overview of conditions affecting pollutant ambient air concentrations in the Basin.

2.2.1 Topography and Climate

The proposed project is within the South Coast Air Basin, which covers the non-desert portions of Los Angeles, San Bernardino, and Riverside counties, as well as all of Orange County. The Basin is bordered by the Pacific Ocean to the west, the South Central Coast Air Basin to the

north, the Mojave Desert Air Basin and San Joaquin Valley Air Basin to the north and east, and the San Diego County Air Basin to the south.

The regional climate within the Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The Santa Monica Pier Weather Monitoring Station (ID 047953) is 0.3 mile to the southwest of the project site. Given its proximity to the project site, historic climatic conditions at the Santa Monica Pier Weather Monitoring Station are representative of the prevailing climatic conditions at the project site. The annual average high and low temperatures at the Santa Monica Pier are 67°F and 55°F, respectively. Total annual precipitation averages 13 inches. Precipitation occurs mostly during the winter and infrequently during the summer (Western Regional Climate Center 2015) (see Appendix B). Wind monitoring data recorded at the Santa Monica Station indicate that the predominant wind direction in the project vicinity is from the southwest, with an average wind speed of 6 miles per hour (mph) (Western Regional Climate Center 2015) (see Appendix B).

The Basin frequently experiences weather conditions that trap air pollutants, which occurs as a result of two primary phenomena. The first is that the Basin has persistent temperature inversions formed by warmer air in the upper layer and cooler air in the lower layer. Temperature inversions limit the vertical dispersion of air contaminants, holding them relatively close to the ground. These inversions break when the sun heats the lower layer, allowing the two layers to mix and the previously trapped air to leave the Basin. The second phenomenon that traps air pollutants in the Basin occurs during periods of stagnant wind conditions, which limit the movement of air pollutants. The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. Conversely, on days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest.

2.2.2 Description of Pollutants

The following is a general description of the pollutants for which there are standards (criteria pollutants) and ambient measurements. A description of toxic air contaminants (TACs) and naturally occurring asbestos (NOA), for which there are no standards, is also included. Ozone, and its precursors, reactive organic gases (ROG) and oxides of nitrogen (NO_X), sulfates, visibility reducing particles, NO_2, and PM10 and PM2.5 are considered to be regional pollutants because they or their precursors affect air quality on a regional scale. NO_2 reacts photochemically with ROGs to form ozone, while PM10 and PM2.5 can form from the chemical reaction of atmospheric chemicals, including NO_X, sulfates, nitrates, and ammonia. These processes can occur at some distance downwind of the source of pollutants. Pollutants such as CO, SO_2, lead, and particulate matter are considered to be local pollutants because they tend to disperse rapidly with distance from the source. Although PM10 and PM2.5 are considered to be regional pollutants, they can also be localized pollutants because direct emissions of particulate matter from automobile exhaust can accumulate in the air locally near the emission source.

Figure 2-1 provides the state and federal standards, and **Table 2-1** presents the Basin's attainment status for pollutants. Although NOA is common in certain counties of California, it is not likely to be found in the City of Santa Monica (California Department of Conservation 2000).

2.2.2.1 Ozone

O_3 is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

O_3, which is a regional pollutant, is generally not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. O_3 precursors, which include ROG and NO_X, react in the atmosphere in the presence of sunlight to form O_3. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, O_3 is primarily a summer air pollution problem. In addition, photochemical reactions take time to occur, so high O_3 levels often occur downwind of the emission source.

The EPA revoked the federal 1-hour O_3 standard on June 15, 2005; however, the new federal 8-hour O_3 standard was promulgated effective from that same date. A state standard for O_3 has been established for the 1-hour and 8-hour averaging periods. The state 1-hour and 8-hour O_3 standards are 0.09 part per million (ppm) and 0.070 ppm, respectively, not to be exceeded. The federal 8-hour O_3 standard is 0.075 ppm and is not to be exceeded more than three times in any 3-year period.

On April 15, 2004, EPA released its list of 8-hour O_3 nonattainment areas, together with the deadline for each nonattainment area to attain the standard. Areas with the highest 8-hour concentrations and the greatest number of days exceeding the new standard were given the longest time to reach attainment.

2.2.2.2 Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when a period of light winds combines with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, whereas the federal 1-hour standard is 35 ppm. Both the state and federal standard for the 8-hour averaging period is 9 ppm.

2.2.2.3 Nitrogen Oxides

Nitrogen oxides are a family of highly reactive gases that are primary precursors to the formation of ground-level O_3, reacting in the atmosphere to form acid rain. NO_X is emitted from combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO_2 is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates.

NO_X can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. The effects of short-term exposure are still unclear, but continued or frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness in children. Health effects associated with NO_X are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucous membrane aggravation along with pulmonary dysfunction. NO_X can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals as a result of production of particulate nitrates. Airborne NO_X also can impair visibility. NO_X is a major component of acid deposition in California. NO_X may affect both terrestrial and aquatic ecosystems. NO_X in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduces the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

The state NO_2 standards are 0.18 ppm as a 1-hour average and 0.030 ppm as an annual arithmetic mean. The federal NO_2 standards are 0.100 ppm as a 1-hour average and 0.053 ppm as an annual arithmetic mean.

2.2.2.4 Sulfur Oxides

SO_X gases are a family of colorless, pungent gases, including SO_2, and are formed primarily by combustion of sulfur-containing fossil fuels (mainly coal and oil), metal smelting, and other industrial processes. SO_X can react to form sulfates, which significantly reduce visibility. SO_X is a precursor to particulate matter formation, which is in nonattainment in the project area.

The major health concerns associated with exposure to high concentrations of SO_X include effects related to breathing, respiratory illness, alterations in pulmonary defenses, and aggravation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SO_X are individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), children, and the elderly. Emissions of SO_X also can damage the foliage of trees and agricultural crops. Together, SO_X, and NO_X are the major precursors to acid rain, which is associated with the acidification of lakes and streams and accelerated corrosion of buildings and monuments.

The state standards are 0.25 ppm for the 1-hour averaging period and 0.04 ppm for the 24-hour averaging period. The federal standards are 0.075 ppm for the 1-hour averaging period (*Federal Regulations* [FR], Volume 75, Page 35520).

2.2.2.5 Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials. The federal and state ambient air quality standard for particulate matter applies to two classes of particulates: PM2.5 and PM10. The state PM10 standards are 50 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average and 20 $\mu g/m^3$ as an annual arithmetic mean. The federal PM10 standard is 150 $\mu g/m^3$ as a 24-hour average. For PM2.5,

the state has adopted a standard of 12 μg/m^3 for the annual arithmetic mean. The federal PM2.5 standards are 35 μg/m^3 for the 24-hour average and 12 μg/m^3 for the annual arithmetic mean.

2.2.2.6 Lead

Lead is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Automobiles were once a major source of airborne lead because, prior to being phased out, lead was used as a gasoline additive to increase the octane rating. However, in recent years, ambient concentrations of lead have dropped dramatically.

Short-term exposure to high levels of lead can cause vomiting, diarrhea, convulsions, coma, or even death. However, even small amounts of lead can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower levels of lead may be less noticeable but still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Lead exposure is most serious for young children because they absorb lead more easily than adults and are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, and especially in the last trimester, lead can cross the placenta and affect the fetus. Female workers exposed to high lead levels have more miscarriages and stillbirths.

The state lead standard is 1.5 μg/m^3 over a 30-day average; the federal lead standards are 1.5 μg/m^3 averaged over a calendar quarter and 0.15 μg/m^3 as a rolling 3-month average.

2.2.2.7 Mobile-Source Air Toxics/Toxic Air Contaminants

TAC pollutants are those that may cause an increase in mortality or serious illness, or pose a present or potential hazard to human health. Health effects of TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. In 1998, following a 10-year scientific assessment process, CARB identified particulate matter from diesel-fueled engines as a TAC. Compared with other air toxics CARB has identified and controlled, diesel particulate matter (DPM) emissions are estimated to be responsible for about 70% of the total ambient air toxics risk (California Air Resources Board 2000).

Through the CAAA 1990, Congress mandated EPA to regulate 188 air toxics, which are also known as hazardous air pollutants (HAPs). In EPA's latest final rule (2007) on the control of hazardous air pollutants from mobile sources (72 FR 8430), the agency identified 93 compounds that are emitted from mobile sources, which are listed in EPA's Integrated Risk Information System (IRIS). From this list of 93 compounds, EPA has identified 7 as priority mobile-source air toxics (MSAT) emissions. The high regulation priority of these 7 MSATs was based on EPA's 1999 National Air Toxics Assessment (NATA) (Federal Highway Administration and U.S. Environmental Protection Agency 2012).

The seven priority MSATs include the following: acrolein, benzene, 1,3-butadiene, diesel particulate matter/diesel exhaust organic gases, formaldehyde, naphthalene and polycyclic organic matter (POM).

The 2007 EPA rule requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOVES2010b model, even if vehicle activity (e.g., vehicle miles traveled [VMT]) increases by 102%, as assumed from 2010 to 2050, a combined reduction of 83% in the total annual emission rate for the priority MSATs is projected for the same time period (Federal Highway Administration and U.S. Environmental Protection Agency 2012).

2.2.2.8 Naturally Occurring Asbestos

NOA is a fibrous material found in certain types of rock formations. It is the result of natural geologic processes and commonly found near earthquake faults in California. Some rock types known to produce asbestos fibers are varieties of chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite.

Asbestos is harmless when it is left undisturbed under the soil, but if it becomes airborne, it can cause serious health problems. Human disturbance, or natural weathering, can break down asbestos into microscopic fibers that are easily inhaled. Inhalation of asbestos fibers can cause lung cancer, mesothelioma (a rare form of cancer found in the lining of internal organs), and asbestosis (a progressive, non-cancer disease of the lungs involving a buildup of scar tissue, which inhibits breathing) (U.S. Environmental Protection Agency 2008a, 2008b).

Both EPA and CARB have issued guidance for reducing exposure to NOA. EPA's suggested measures include leaving NOA material undisturbed, covering or capping NOA material, limiting dust-generating activities, or excavating and disposing of NOA material (U.S. Environmental Protection Agency 2008c). CARB has adopted Airborne Toxic Control Measures (ATCMs), which are required for road construction and maintenance projects, unless the project is found to be exempt. These ATCMs include stabilizing unpaved surfaces subject to vehicle traffic, reducing vehicle speeds, wetting or chemically stabilizing storage piles, and eliminating track-out material from equipment (California Air Resources Board 2008).

2.2.3 Existing Air Quality Conditions

SCAQMD operates and maintains a network of ambient air monitoring stations throughout the Basin. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and NAAQS. The ambient monitoring station closest to the proposed project is the Los Angeles-Westchester Parkway station (CARB #70111), approximately 6 miles to the southeast.

Monitoring data show pollutant concentrations and exceedances of state and federal standards recorded at the Los Angeles-Westchester Parkway monitoring station (see **Table 2-2**). For O_3, the state 1-hour standard was exceeded one time per year in 2012, 2013, and 2014, and federal 8-hour exceedances were recorded from once in 2013 and three times in 2014. In addition, no exceedances of the federal 1-hour NO_2 standard, SO_2 state or federal standards, CO concentration thresholds, or federal or state PM10 standards were recorded in the 3-year

monitoring period at the Los Angeles-Westchester Parkway monitoring station (see Appendix B). The Los Angeles-Westchester Parkway monitoring station does not collect PM2.5 concentration data; therefore, the next closest station location that collects these data was used to approximate the existing conditions of the project site with respect to PM2.5. The Compton-700 N Bullis Road monitoring station (CARB #70112), located 18 miles southeast of the project site, recorded one exceedance of the PM2.5 24-hour federal standard per year in 2012, 2013, and 2014.

2.2.4 Sensitive Receptor Locations

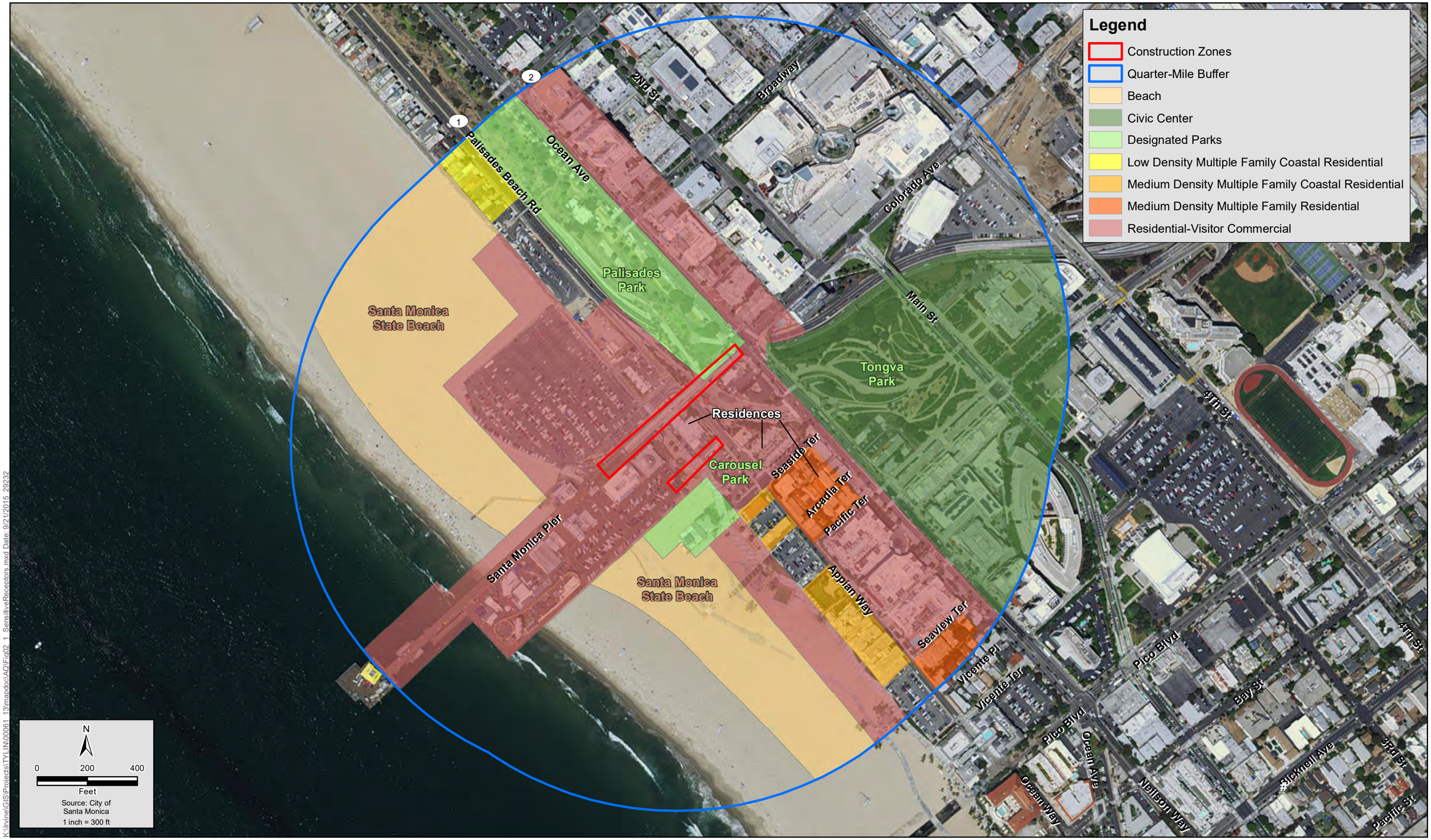
Some locations are considered more susceptible to adverse impacts from air pollution than others. These locations are commonly referred to as *sensitive receptors* and include schools, playgrounds, childcare centers, long-term healthcare facilities, rehabilitation centers, convalescent centers, hospitals, retirement homes, and residences. As shown in **Figure 2-1**, there are several sensitive receptors within 0.25 mile of the areas in which most of the construction work would occur.

The closest sensitive receptors to the project site are the residences above the restaurants and shops on Ocean Front Walk, which are immediately south of the existing Pier alignment. Other sensitive receptors include the 25-unit New Hope Apartments residential complex on the northwest corner of Appian Way and Seaside Terrace at 1637 Appian Way. From the northern limits of the Moss Avenue Bridge near the Moss Avenue/Appian Way intersection, the housing complex is approximately 100 feet southeast of the project work limits. Recreational uses within 0.25 mile of the project limits include Tongva Park to the southeast of the Pier Bridge/Ocean Avenue intersection, Palisades Park to the north, Carousel Park immediately south of the Moss Avenue bridge proposed under Alternatives 1 and 3, Pacific Park at the end of the Pier, and the Santa Monica State Beach to the north and south of the project site.

Table 2-2. Air Quality Data from Los Angeles-Westchester Parkway Monitoring Station (CARB 70111) and Compton-700 N Bullis Road Monitoring Station (CARB 70112)

Pollutant Standards	2013	2014	2015
Ozone (O_3) – Los Angeles-Westchester Parkway Monitoring Station (CARB #70111)			
Maximum 1-hour concentration (ppm)	0.105	0.114	0.096
Maximum 8-hour concentration (ppm)	0.081	0.080	0.077
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	1	1	1
NAAQS 8-hour (>0.075 ppm)	1	3	1
Sulfur Dioxide (SO_2) – Los Angeles-Westchester Parkway Monitoring Station (CARB #70111)			
Maximum 24-hour concentration (ppm)	0.002	NA	NA
Number of Days Standard Exceeded			
NAAQS 24-hour (>0.075 ppm, 99th percentile)	0	NA	NA
CAAQS 24-hour (>0.25 ppm)	0	NA	NA
Carbon Monoxide (CO) – Los Angeles-Westchester Parkway Monitoring Station (CARB #70111)			
Maximum 8-hour concentration (ppm)	NA	NA	NA
Number of Days Standard Exceeded			
NAAQS/CAAQS 8-hour (>9 ppm)	NA	NA	NA
Nitrogen Dioxide (NO_2) – Los Angeles-Westchester Parkway Monitoring Station (CARB #70111)			
Maximum 1-hour concentration (ppm)	0.0778	0.0873	0.0870
Annual average concentration (ppm); CAAQS = 0.030 ppm	NA	0.0120	0.0110
Number of Days Standard Exceeded			
NAAQS 1-hour (>0.100 ppm)	0	0	0
Particulate Matter (PM10) – Los Angeles-Westchester Parkway Monitoring Station (CARB #70111)			
National maximum 24-hour concentration ($\mu g/m^3$)	38.0	46.0	42.0
National second-highest 24-hour concentration ($\mu g/m^3$)	35.0	40.0	39.0
State maximum 24-hour concentration ($\mu g/m^3$)	37.0	45.0	42.0
State second-highest 24-hour concentration ($\mu g/m^3$)	34.0	40.0	39.0
National annual average concentration ($\mu g/m^3$)	20.8	22.1	21.2
State annual average concentration ($\mu g/m^3$)	NA	21.9	NA
Number of Days Standard Exceeded			
CAAQS 24-hour (>50 $\mu g/m^3$)	0	0	0
NAAQS 24-hour (>150 $\mu g/m^3$) (estimated days)	0	0	0
Particulate Matter (PM2.5) – Compton-700 N Bullis Road Monitoring Station (CARB #70112)			
National maximum 24-hour concentration ($\mu g/m^3$)	52.1	35.8	41.3
National second-highest 24-hour concentration ($\mu g/m^3$)	28.5	33.5	40.0
National third-highest 24-hour concentration ($\mu g/m^3$)	24.3	30.9	37.2
National fourth-highest 24-hour concentration ($\mu g/m^3$)	24.1	30.8	34.0
National annual average concentration ($\mu g/m^3$)	11.9	NA	11.7
State annual average concentration ($\mu g/m^3$)	NA	NA	NA
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 $\mu g/m^3$)	1	1	3

Notes:
CAAQS = California Ambient Air Quality Standards.
NAAQS = National Ambient Air Quality Standards.
NA = Insufficient data available to determine the value/data not available.
Sources: California Air Resources Board; compiled by ICF International, June 2016.



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Figure 2-2
Sensitive Receptor Locations
Santa Monica Pier Bridge Replacement

Chapter 3 Environmental Consequences

3.1 Assessment Methodology

The proposed project would generate new emissions during construction and redistribute existing emissions during the operational period (i.e., post-construction). The methodology used to evaluate construction and operational effects is described below.

3.1.1 Construction Period Impact Assessment Methodology

Build Alternative 3 (Preferred Alternative), which would involve the construction of a new permanent vehicle bridge at Moss Avenue, would require the most extensive construction effort, and is therefore used for the purposes of estimating worst-case emissions during construction. However, as each of the three build alternatives would involve the replacement and widening of the Pier Bridge at the existing location as well as construction-period or permanent access to the Pier at a nearby location, construction-period emissions would be similar for each of the build alternatives.

Construction activities are a source of fugitive dust and exhaust emissions that can have substantial temporary impacts on local air quality (i.e., exceed state air quality standards for PM2.5 and PM10). Such emissions would result from earthmoving and use of heavy equipment, as well as land clearing, ground excavation, cut-and-fill operations, and the construction of roadways and bridge structural supports. Dust emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather. A major portion of dust emissions for the proposed project would likely result from construction traffic.

Construction-period emissions estimates have been included in this report for regional emissions and localized emissions. Emissions were estimated using the Roadway Construction Emissions Model (Version 7.1.5.1) and the California Emission Estimator Model (CalEEMod) Version 2013.2.2.

3.1.2 Operational Period Impact Assessment Methodology

Build Alternatives 1 and 2 are not subject to regional- or project-level transportation conformity requirements per 40 CFR 93.126, and fit under the definition of exempt project types responsible for “widening narrow pavements or reconstructing bridges (no additional travel lanes).” Build Alternative 3 (Locally Preferred Alternative) is not exempt from the requirement to demonstrate transportation conformity.

In addition to analysis for transportation conformity determination requirements, the operational impacts of the proposed project are subject to CEQA and NEPA requirements to address project impacts. The project would not increase bridge capacity nor would it increase parking capacity on or around the Pier. There would be no change in trip generation associated with this project,

and therefore, regional pollutant operational emissions associated with the proposed project have been evaluated in a qualitative manner.

In addition to regional pollutants, potential impacts stemming from the generation of pollutants with localized effects have been addressed. The potential impacts related to localized CO hot-spot emissions were evaluated following the methodology prescribed in the *Transportation Project-level Carbon Monoxide Protocol* (CO Protocol) developed for Caltrans by the Institute of Transportation Studies at the University of California, Davis (Garza et al. 1997). The potential impacts related to localized particulate matter were evaluated using the FHWA guidance manual, *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (U.S. Environmental Protection Agency 2015). MSAT emissions were evaluated using FHWA's *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* (Federal Highway Administration and U.S. Environmental Protection Agency 2012) and California-specific guidance from Caltrans (Brady pers. comm.; California Air Resources Board 2005).

3.1.2.1 Carbon Monoxide Modeling Protocol

Caltrans, in coordination with the University of California, Davis Institute of Transportation Studies, has developed a transportation project-level CO protocol (Garza et al. 1997). This CO protocol details a qualitative step-by-step screening procedure to determine whether project-related CO concentrations have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for CO. If the screening procedure reveals that such a potential may exist, then the CO protocol details a quantitative method to ascertain project-related CO impacts.

3.1.2.2 PM10 and PM2.5 Evaluation Protocol

In November 2015, EPA issued a guidance document titled *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (U.S. Environmental Protection Agency 2015). This guidance details a step-by-step screening procedure to determine whether project-related particulate emissions have a potential to generate new air quality violations, worsen existing violations, or delay attainment of NAAQS for PM2.5 or PM10.

3.1.2.3 Mobile-Source Air Toxics Evaluation Procedure

FHWA has issued interim guidance on how MSATs should be addressed in NEPA documents for highway projects and has developed a tiered approach for analyzing MSATs in NEPA documents. Depending on the specific project circumstances, FHWA has identified three levels of analysis.

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

This study includes a qualitative analysis of MSAT emissions for a project with a low potential for MSAT effects. Per the FHWA guidance, a qualitative assessment should compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. It should also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations promulgated by EPA.

3.2 Project Effects

3.2.1 Construction Period Effects

3.2.1.1 Regional Criteria Pollutant Emissions

Construction is anticipated to begin in early 2023 and last approximately 24 months. Temporary construction emissions would result from onsite activities such as grubbing/land clearing, grading/excavation, drainage/subgrade and bridge construction and paving, as well as offsite activities such as haul truck and construction worker commute trips. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather conditions (for fugitive dust).

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne fugitive dust) generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment would include CO, NO_X, ROG, directly emitted particulate matter (PM10 and PM2.5), and toxic air contaminants (aka: MSATs), such as diesel exhaust particulate matter.

Site preparation and bridge construction would involve clearing, cut-and-fill activities, grading, and paving of roadway surfaces. Construction-related effects on air quality from most roadway projects are typically greatest during the site preparation phases because most heavy construction equipment emissions are associated with the excavation, handling, and transport of soils to and from the site. An estimate of project construction emissions is presented below in **Table 3-1**. The greatest regional emissions would occur during the grading/excavation period, resulting in 8 pounds per day of ROG, 76 pounds per day of CO, 85 pounds per day of NO_X, 8 pounds per day of PM10, and 5 pounds per day of PM2.5.

SCAQMD regional emissions thresholds are provided as the basis for the determination of CEQA impacts for the City of Santa Monica, as part of its responsibilities as the CEQA lead agency. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Table 3-1. Estimate of Regional Criteria Pollutant Emissions during Construction (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing (2023)	2	20	21	< 1	3	2
Onsite	2	20	20	< 1	3	2
Offsite	< 1	< 1	< 1	< 1	< 1	< 1

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grading/Excavation (2023)	8	85	76	< 1	6	4
Onsite	8	84	72	< 1	5	4
Offsite	< 1	1	4	< 1	< 1	< 1
Grading/Excavation (2024)	8	78	74	< 1	8	5
Onsite	8	77	71	< 1	5	4
Offsite	< 1	1	3	< 1	3	1
Construction/Drainage/Utilities/Sub-Grade (2024)	7	58	52	< 1	3	3
Onsite	6	57	50	< 1	3	2
Offsite	< 1	< 1	2	< 1	< 1	< 1
Paving (2024)	1	6	10	< 1	< 1	< 1
Onsite	1	6	9	< 1	< 1	< 1
Offsite	< 1	< 1	1	< 1	< 1	< 1
Maximum Daily Emissions (Regional)	**8**	**85**	**76**	**< 1**	**8**	**5**
SCAQMD Regional Emissions Thresholds	75	100	550	150	150	55
Source: ICF International 2015. Detailed calculation assumptions provided in Appendix C.						

The estimate of construction-period emissions with implementation of SCAQMD Rule 403 fugitive dust control measures and mitigation measure AQ-1 (see Section 3.3, *Avoidance, Minimization, and/or Mitigation Measures*) is provided in **Table 3-2**. Shown therein, the estimate of maximum daily emissions would be 2 pounds of ROG, 9 pounds of NO_X, 84 pounds of CO, less than 1 pound of SO_2, 8 pounds of PM10, and 5 pounds of PM2.5.

Table 3-2. Estimate of Regional Criteria Pollutant Emissions during Construction with Control Measures (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing (2023)	1	2	23	< 1	2	1
Onsite	< 1	2	23	< 1	2	1
Offsite	< 1	< 1	< 1	< 1	< 1	< 1
Grading/Excavation (2023)	2	9	84	< 1	2	1
Onsite	2	8	80	< 1	2	1
Offsite	< 1	1	4	< 1	< 1	< 1
Grading/Excavation (2024)	2	9	84	< 1	5	2
Onsite	2	8	80	< 1	2	1
Offsite	< 1	1	3	< 1	3	1
Construction/Drainage/Utilities/Sub-Grade (2024)	1	9	57	< 1	< 1	< 1
Onsite	1	9	55	< 1	< 1	< 1
Offsite	< 1	< 1	2	< 1	< 1	< 1
Paving (2024)	< 1	1	10	< 1	< 1	< 1
Onsite	< 1	1	10	< 1	< 1	< 1
Offsite	< 1	< 1	1	< 1	< 1	< 1
Maximum Daily Emissions (Regional)	**2**	**9**	**84**	**< 1**	**5**	**2**
SCAQMD Regional Emissions Thresholds	75	100	550	150	150	55
Source: ICF International 2015. Detailed calculation assumptions provided in Appendix C.						

3.2.1.2 Localized Criteria Pollutant Emissions

SCAQMD has developed localized significance thresholds (LSTs) to help public agencies analyze the project-related effects of pollutants on nearby receptors. The LSTs are based on the size or total area of the emissions source, the ambient air quality in each Source Receptor Area (SRA) where the emissions sources are located, and the distance to nearby sensitive receptor locations. The project site encompasses approximately 1.5 acres within the Northwest Coastal Los Angeles County SRA (SRA 2). Because LSTs are based on the potential area disturbed on any given day, the LST analysis for construction assumes the worst-case scenario and is based on a 1-acre area disturbed per day and a 82-foot distance to receptors. Table 3-3 shows the onsite emissions associated with project construction.

SCAQMD LSTs are provided as the basis for the determination of CEQA impacts for the City of Santa Monica, as part of its responsibilities as the CEQA lead agency. Such thresholds are not the basis for NEPA impact determinations, for which Caltrans is responsible as the NEPA lead agency.

Table 3-3. Estimate of Localized Criteria Pollutant Emissions during Construction with Control Measures (pounds per day)

Construction Phase	ROG	NO_X	CO	SO_2	PM10	PM2.5
Grubbing and Clearing (2023)	< 1	2	23	< 1	2.1	1.2
Grading/Excavation (2023)	2	8	80	< 1	2	1.2
Grading/Excavation (2024)	2	8	80	< 1	2	1.2
Construction/Drainage/Utilities/Sub-Grade (2024)	1	9	55	< 1	0.2	0.2
Paving (2024)	< 1	1	10	< 1	< 1	< 1
Onsite Maximum Daily Emission	**2**	**9**	**80**	**< 1**	**2.1**	**1.2**
SCAQMD Localized Significance Thresholds[a]	--	103	562	--	4	3

[a] A 1-acre project site and an 80-foot receptor distance was assumed for Source Receptor Area 2 (Northwest Coastal Los Angeles County). This is the smallest distance between source and receptor to be analyzed under the SCAQMD LST methodology. There are no LSTs for ROG or SO_2.
Source: ICF International 2015. Detailed calculation assumptions provided in Appendix C.

3.2.1.3 Mobile-Source Air Toxics/Toxic Air Contaminant Emissions

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to DPM emissions associated with heavy equipment operations during project construction. Construction activities associated with the project would be sporadic, transitory, and short term in nature. The assessment of cancer risk is typically based on a 9- to 70-year exposure period; however, each of the three build alternatives is anticipated to have a duration of approximately 24 months. Because exposure to diesel exhaust would be well below the 70-year exposure period, project construction is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term and transitory nature of construction activity.

3.2.1.4 Odors

Potential sources that may emit odors during construction activities under each of the build alternatives include equipment exhaust. Odors from that source would be localized and generally confined to the immediate area surrounding the project site. The build alternatives would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. No construction activities under the build alternatives would cause an odor nuisance.

3.2.2 Operational Period Effects

3.2.2.1 Regional and Project-Level Conformity

CAAA 1990 require that projects conform to the SIP and that direct and indirect emissions resulting from federal actions or funding do not produce new air quality violations or worsen existing violations. The federal CAA specifically instructs EPA to develop guidelines for identifying when vehicle-related projects can increase local concentrations of CO, PM10, and PM2.5 by altering traffic patterns. Conformity requirements apply only to emissions after completion of a project; they do not apply to construction impacts. Build Alternatives 1 and 2 are exempt from federal transportation conformity requirements per 40 CFR 93.126, captured by the definition of exempt project types responsible for "widening narrow pavements or reconstructing bridges (no additional travel lanes)."

Build Alternatives 1 and 2 are included in the SCAG 2012–2035 RTP/SCS and SCAG 2015 FTIP as projects grouped with others under ID LA000800. Build Alternatives 1 and 2 are also included in the 2015 FSTIP and are proposed for funding from HBP, with the individual project ID of BHLO-5107(033). The Pier Bridge qualifies for replacement under the HBP and is eligible for Toll-Credit funding. The SCAG 2012–2035 RTP/SCS was determined to have met all air quality conformity requirements by the FHWA and Federal Transit Administration (FTA) on June 4, 2012. The SCAG 2015 FTIP was determined to have met air quality conformity requirements by FHWA and FTA on December 15, 2014. The 2015 FSTIP was also approved by FHWA and FTA on December 15, 2014.

With regard to Build Alternative 3 (Preferred Alternative), the project's FTIP description is currently being revised as necessary. This alternative will appear in the 2016-2040 RTP/SCS and 2017 FTIP under project number LA0G1296 (see Appendix A, Metro FTIP Update Programming Page) described as "Replace existing vehicle between Ocean Ave. and Santa

Monica Pier over Appian Way for pedestrian, bicycle, emergency and limited access at the existing alignment. New two-lane vehicle bridge at Moss Avenue between Apian Way and Santa Monica Pier over Ocean Front Walk." Build Alternative 3 (Preferred Alternative) will be described in the "then currently conforming" RTP and FTIP prior to final project approval and preparation of the project Air Quality Conformity Analysis Report. The project-level CO and PM2.5/PM10 hot-spot analyses provided below evaluates Build Alternative 3 (Preferred Alternative).

3.2.2.2 Regional Criteria Pollutant Emissions

During project operation, criteria pollutant emissions would result from the use of vehicles within the study area. As stated in the Traffic Impact Analysis prepared for the proposed project, none of the proposed project alternatives would generate additional trips on the regional roadway network, as they would not introduce new land uses.

Build Alternatives 1 and 2 would involve the reconstruction of the Pier Bridge at its existing location, and vehicles would access the Pier in the same fashion as under the No-Build condition. There would be no difference in operational traffic characteristics between the No-Build Alternative, Build Alternative 1, and Build Alternative 2. Build Alternatives 1 and 2 would not create additional vehicular capacity on the bridge, nor would they add parking capacity on the Pier or elsewhere in the project areas. No increase in trip generation would occur under either Build Alternative when compared to the No-Build Alternative. Consequently, localized criteria pollutant emissions under Build Alternatives 1 and 2 would be indistinguishable from the No-Build Alternative.

The Traffic Impact Analysis identified two different operational traffic scenarios under Build Alternative 3 (Preferred Alternative). The first scenario, Access Scenario 1, assumes that traffic exiting over the new Moss Avenue Bridge from the Pier Deck Lot would be unconstrained and would use the existing roadway network. The intersection volume-to-capacity ratio (V/C), delay, and level of service (LOS) for the study area for Access Scenario 1 weekday PM and weekend midday peak hours is shown in **Table 3-4** compared to the No-Build Alternative conditions. Although at some intersections the V/C ratio or delay would increase under Build Alternative 3, Access Scenario 1 relative to the No-Build Alternative, increases would be negligible or would be offset by increased operational efficiency at other study area intersections. Consequently, operation of Build Alternative 3, Access Scenario 1 would result in a negligible change in regional emissions.

Build Alternative 3 (Preferred Alternative), Access Scenario 2 assumes that a semi-diverter would be installed at the Appian Way and Seaside Terrace intersection to direct exiting traffic traveling south on Appian Way to turn east onto Seaside Avenue. The intersection V/C, delay, and LOS for the study area for Access Scenario 2 weekday PM and weekend midday peak hours is shown in **Table 3-5** compared to the No-Build Alternative conditions. Intersection V/C or delay under Build Alternative 3, Access Scenario 2 would increase at some intersections, but would be negligible or offset by improved efficiency at others such that little or no increase in regional emissions would occur. The localized effects of increased delays at intersections is discussed below.

Table 3-4. Opening Year (2025) Intersection Level of Service (Alternative 3, Access Scenario 1)

No.	Intersection	Control Type	Peak Hour	Future No Project (Alt 1 and Alt 2)			Future + Project (Alt 3-Access 1)			V/C or Delay Change
				V/C	Delay	LOS	V/C	Delay	LOS	
1	Pacific Coast Highway & California Incline	Signal	PM WKND	1.107 1.014	** 87	F F	1.109 1.011	** 86	F F	0.002 -1
2	Pacific Coast Highway & The Lot Exit	TWSC	PM WKND	0.211 0.284	9 10	A A	0.211 0.285	9 10	A A	0 0
3	Appian Way & Moss Avenue	TWSC	PM WKND	0.000 0.000	7 8	A A	0.000 0.000	8 9	A A	1 1
4	Appian Way & Seaside Terrace	AWSC	PM WKND	NA NA	8 10	A A	NA NA	9 11	A B	1 1
5	Appian Way & Pico Boulevard	AWSC	PM WKND	NA NA	9 9	A A	NA NA	9 10	A A	0 1
6	Ocean Avenue & Broadway	Signal	PM WKND	0.394 0.436	11 10	B B	0.393 0.437	11 10	B B	0 0
7	Ocean Avenue & Colorado Avenue	Signal	PM WKND	0.447 0.559	45 55	D D	0.350 0.437	33 33	C C	-12 -22
8	Ocean Avenue & Moomat Ahiko Way	Signal	PM WKND	0.638 0.640	22 29	C C	0.625 0.623	22 30	C C	0 1
9	Ocean Avenue & Seaside Terrace	TWSC	PM WKND	0.276 0.950	37 121	E F	0.570 1.324	54 240	F F	17 0.374
10	Ocean Avenue & Olympic Boulevard	Signal	PM WKND	0.654 0.652	32 20	C B	0.670 0.648	33 20	C C	1 0
11	Ocean Avenue & Pico Boulevard	Signal	PM WKND	0.619 0.520	24 32	C C	0.628 0.517	25 32	C C	1 0
12/13	2nd Street & Colorado Avenue	Signal	PM WKND	0.447 0.366	35 32	D C	0.434 0.351	35 33	D C	0 1
14	Main Street & Olympic Boulevard	Signal	PM WKND	0.324 0.362	20 14	B B	0.389 0.401	20 14	C B	0 0
15	Main Street & Pico Boulevard	Signal	PM WKND	0.487 0.519	31 31	C C	0.494 0.528	32 31	C C	1 0
16	Mazatlan Drive & Olympic Boulevard	Signal	PM WKND	0.247 0.226	7 6	A A	0.269 0.240	7 6	A A	0 0
17	4th Street & Colorado Avenue	Signal	PM WKND	0.527 0.504	23 25	C C	0.515 0.484	23 24	C C	0 -1
18	4th Street & I-10 Westbound Off-Ramp	Signal	PM WKND	0.965 0.665	55 25	D C	0.937 0.625	47 23	D C	-8 -2
19	4th Street & I-10 Eastbound On-Ramp	Signal	PM WKND	0.763 1.084	42 100	D F	0.788 1.108	47 **	D F	5 0.024
20	4th Street & Pico Boulevard	Signal	PM WKND	0.605 0.605	29 30	C C	0.616 0.633	29 31	C C	0 1

* = Average stopped delay per vehicle, in seconds; ** = Indicates oversaturated conditions. Delay cannot be calculated; AWSC = All Way Stop Control; TWSC = Two Way Stop Control; I-10 = Interstate 10; WKND = weekend.

Table 3-5. Opening Year (2025) Intersection Level of Service (Alternative 3, Access Scenario 2)

No.	Intersection	Control Type	Peak Hour	Future No Project (Alt 1 and Alt 2)			Future + Project (Alt 3-Access 2)			V/C or Delay Change
				V/C	Delay	LOS	V/C	Delay	LOS	
1	Pacific Coast Highway & California Incline	Signal	PM WKND	1.107 1.014	** 87	F F	1.109 1.011	** 86	F F	0.002 -1
2	Pacific Coast Highway & The Lot Exit	TWSC	PM WKND	0.211 0.284	9 10	A A	0.211 0.285	9 10	A A	0 0
3	Appian Way & Moss Avenue	TWSC	PM WKND	0.000 0.000	7 8	A A	0.000 0.000	10 13	B B	3 5
4	Appian Way & Seaside Terrace	AWSC	PM WKND	NA NA	8 10	A A	NA NA	9 11	A B	1 1
5	Appian Way & Pico Boulevard	AWSC	PM WKND	NA NA	9 9	A A	NA NA	9 10	A A	0 1
6	Ocean Avenue & Broadway	Signal	PM WKND	0.394 0.436	11 10	B B	0.393 0.437	11 10	B B	0 0
7	Ocean Avenue & Colorado Avenue	Signal	PM WKND	0.447 0.559	45 55	D D	0.350 0.437	33 33	C C	-12 -22
8	Ocean Avenue & Moomat Ahiko Way	Signal	PM WKND	0.638 0.640	22 29	C C	0.625 0.623	22 30	C C	0 1
9	Ocean Avenue & Seaside Terrace	TWSC	PM WKND	0.276 0.950	37 121	E F	0.772 1.596	79 **	F F	42 0.646
10	Ocean Avenue & Olympic Boulevard	Signal	PM WKND	0.654 0.652	32 20	C B	0.672 0.672	40 22	D C	8 2
11	Ocean Avenue & Pico Boulevard	Signal	PM WKND	0.619 0.520	24 32	C C	0.619 0.518	24 32	C C	0 0
12/13	2nd Street & Colorado Avenue	Signal	PM WKND	0.447 0.366	35 32	D C	0.434 0.351	35 33	D C	0 1
14	Main Street & Olympic Boulevard	Signal	PM WKND	0.324 0.362	20 14	B B	0.391 0.408	20 15	C B	0 1
15	Main Street & Pico Boulevard	Signal	PM WKND	0.487 0.519	31 31	C C	0.487 0.525	31 31	C C	0 0
16	Mazatlan Drive & Olympic Boulevard	Signal	PM WKND	0.247 0.226	7 6	A A	0.270 0.240	7 6	A A	0 0
17	4th Street & Colorado Avenue	Signal	PM WKND	0.527 0.504	23 25	C C	0.515 0.484	23 24	C C	0 -1
18	4th Street & I-10 Westbound Off-Ramp	Signal	PM WKND	0.965 0.665	55 25	D C	0.937 0.625	47 23	D C	-8 -2
19	4th Street & I-10 Eastbound On-Ramp	Signal	PM WKND	0.763 1.084	42 100	D F	0.763 1.086	42 98	D F	0 -2
20	4th Street & Pico Boulevard	Signal	PM WKND	0.605 0.605	29 30	C C	0.606 0.621	29 30	C C	0 0

* = Average stopped delay per vehicle, in seconds; ** = Indicates oversaturated conditions. Delay cannot be calculated. AWSC = All Way Stop Control; TWSC = Two-Way Stop Control; I-10 = Interstate 10.

3.2.2.3 Localized Criteria Pollutant Emissions

Carbon Monoxide Hot-Spot Evaluation

Because Build Alternatives 1 and 2 are exempt from federal transportation conformity requirements, no formal CO hot-spot analysis is required. As there would be no change in trip redistribution occurring under Build Alternatives 1 and 2 when compared to the No-Build Alternative, there would be no change in local CO emissions or concentrations at any intersection location.

Build Alternative 3 (Preferred Alternative) is not exempt from the requirement to demonstrate project-level transportation conformity, and was evaluated using the CO Protocol described above. The CO Protocol includes two flowcharts that illustrate when a detailed CO analysis needs to be prepared. The first flowchart, Figure 1 of the CO Protocol (provided in Appendix D), is used to ascertain the CO modeling requirements for new projects. The questions (shown in the first flowchart) relevant to the project, and the answers to those questions are as follows:

3.1.1: Is the project exempt from all emissions analyses?

Response: No, the project does not qualify for an exemption. As shown in Table 1 of the CO protocol (provided in Appendix D), the proposed project does not fall into a project category that is exempt from all emissions analysis (proceed to 3.1.2).

3.1.2: Is the project exempt from regional emissions analyses?

Response: No, the project is not exempt from a regional emissions analysis. As shown in Table 2 of the CO Protocol (provided in Appendix D), the proposed project does not meet the criteria of any of the project categories identified as exempt from regional emissions analysis (proceed to 3.1.3).

3.1.3: Is the project locally defined as regionally significant?

Response: Yes, the proposed project is considered a regionally significant transportation project according to 40 CFR 93.101 (proceed to 3.1.4).

3.1.4: Is the project in a federal attainment area?

Response: No, the proposed project is located in the South Coast Air Basin, which is a federal extreme nonattainment area for ozone and a nonattainment area for PM2.5 (see Table 2-1). If a project area is not classified as an attainment area for all transportation-related criteria pollutants, the project is subject to a regional conformity determination (proceed to 3.1.5).

3.1.5: Is there a currently conforming RTP and TIP?

Response: Yes, the 2012–2035 RTP and 2015 FTIP (proceed to 3.1.6).

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

Response: With regard to Build Alternative 3 (Preferred Alternative), the project's FTIP description is currently being revised as necessary. This alternative will appear in the 2016 RTP and 2017 FTIP under project number LA0G1296 (see Appendix A, Metro FTIP Update Programming Page) described as "Replace existing vehicle between Ocean Ave. and Santa Monica Pier over Appian Way for pedestrian, bicycle, emergency and limited access at the existing alignment. New two-lane vehicle bridge at Moss Avenue between Apian Way and Santa Monica Pier over Ocean Front Walk." Build Alternative 3 (Preferred Alternative) will be described in the "then currently conforming" RTP and FTIP prior to final project approval and preparation of the project Air Quality Conformity Analysis Report (proceed to 3.1.7).

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

Response: No, the project will appear in the 2016 RTP and 2017 FTIP under project number LA0G1296 (see Appendix A, Metro FTIP Update Programming Page) described as "Replace existing vehicle between Ocean Ave. and Santa Monica Pier over Appian Way for pedestrian, bicycle, emergency and limited access at the existing alignment. New two-lane vehicle bridge at Moss Avenue between Apian Way and Santa Monica Pier over Ocean Front Walk." Build Alternative 3 (Preferred Alternative) will be described in the "then currently conforming" RTP and FTIP prior to final project approval and preparation of the project Air Quality Conformity Analysis Report. The project as currently proposed is consistent with this description (proceed to 3.1.9).

3.1.9: The conclusion from this series of questions and answers is that the project needs to be examined for its local air impacts (proceed to Section 4, Figure 3 of the CO Protocol).

On the basis of the answers to the first flowchart, a second flowchart, Figure 3 of the CO Protocol (see Appendix D), is used to determine the level of local CO effect analysis required for the project.

The questions applicable to the project in the second flowchart (provided in Appendix D) and the answers to those questions are as follows:

Level 1: Is the project in a CO nonattainment area?

Response: No, the South Coast Air Basin is classified as an attainment/maintenance area for the federal CO standards (Table 2-1).

Level 1: Was the area redesignated as an attainment area after the 1990 Clean Air Act?

Response: Yes, the South Coast Air Basin was reclassified to attainment/maintenance status from serious nonattainment, effective June 11, 2007.

Level 1: Has "continued attainment" been verified with the local air district, if appropriate?

Response: Yes, based on ambient air monitoring data collected by SCAQMD, the South Coast Air Basin has continually met the federal ambient air quality standards for CO since 2003 (California Air Resources Board 2006) (Proceed to Level 7).

Level 7: Does project worsen air quality?

Response: Yes. According to Section 4.7.1 of the CO Protocol, the following criteria provide a basis for determining if a project has potential to worsen localized air quality:

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

  Given the nature of Build Alternative 3 (Preferred Alternative), which is to relocate an existing pier access bridge, there would be no effect on the percentage of vehicles operating in the cold-start mode.

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

  Because of local traffic redistribution, traffic volumes along Moss Avenue would increase by more than 5 percent under Build Alternative 3 (Preferred Alternative) when compared to the No-Build Alternative.

- *The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered a worsening of traffic flow.*

  Shown previously in Table 3-4 and Table 3-5, increases in average delay are expected to occur at multiple intersection locations under Build Alternative 3 (Preferred Alternative) Access Scenarios 1 and 2, when compared to the No-Build Alternative.

Level 7: Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of attainment demonstration?

Note: The *Final 2012 Air Quality Management Plan* (AQMP) is the most recent AQMP, but no additional regional or hot-spot CO modeling was conducted to demonstrate further attainment of the 8-hour average ozone standard. This is because SCAQMD submitted a request to EPA to redesignate the South Coast Air Basin as

an attainment area for the 8-hour federal CO standard (South Coast Air Quality Management District 2007). Therefore, the 2003 AQMP is used as the basis for the following analysis. In addition, the 2003 AQMP did not provide model input assumptions. Instead, it refers to the 1992 CO Plan where a general description of input assumptions was provided (South Coast Air Quality Management District 2003).

Response: No. According to Section 4.7.2 of the CO Protocol, project sponsors are encouraged to use the following criteria to determine the potential for the project to result in higher CO concentrations than those existing within the region at the time of attainment demonstration:

a. *The receptors at the location under study are at the same distance or farther from the traveled roadway than the receptors at the location where attainment has been demonstrated.*

   A receptor distance of 10 feet from the traveled roadway was used in the CO attainment demonstration prepared for the 2003 AQMP. With respect to the proposed project, all sensitive receptors are located more than 10 feet from the traveled roadway.

b. *The roadway geometry of the two locations is not significantly different. An example of a significant difference would be a larger number of lanes at the location under study compared with the location where attainment has been demonstrated*.

   In the CO attainment demonstration prepared for the 2003 AQMP, four approach lanes in all directions were used to model the intersections at Wilshire/Veteran and La Cienega/Century, while three approach lanes in all directions were used to model the intersections at Sunset/Highland and Long Beach/Imperial. Therefore, if the total number of intersection approach lanes associated with any of the proposed project alternatives exceeds 16 lanes, the intersection could result in a potentially adverse effect.

   Because local CO concentrations are a function of (1) intersection traffic volumes, (2) peak-hour intersection LOS, (3) CO emissions factors (idle and grams/mile), and (4) the ambient CO background concentration, it is possible to identify which, if any, of the most congested intersection locations anticipated to exist under Build Alternative 3, Access Scenarios 1 and 2, have a potential to violate state or federal CO standards. The intersections selected for comparison to attainment demonstration intersections and presented below in **Table 3-6** meet the following criteria: (1) intersection LOS would deteriorate and/or delay would increase in one or both peak hours under Build Alternative 3 (Access Scenario 1 or 2) when compared to the No-Build Alternative, and (2) the intersection would operate at LOS C or worse. **Table 3-6** shows the number of approach lanes associated with Build Alternative 3 (Preferred Alternative). As shown therein, the maximum number of approach lanes at any intersection location is 8, which is less than the 16 lanes used in the attainment demonstration.

Table 3-6. Approach Lanes for the Proposed Project Build Alternative 3

Intersection	Number of Approach Lanes			
	Eastbound	Westbound	Southbound	Northbound
Palisades Beach Road (PCH) & California Incline	1	1	3	3
Ocean Avenue & Moomat Ahiko Way/Pacific Coast Highway ramps (former State Route 187)	3	--	2	2
Ocean Avenue & Seaside Terrace (stop-controlled)	1	--	2	2
Ocean Avenue & Olympic Drive	--	1	2	2
Ocean Avenue/Neilson Way & Pico Boulevard	2	1	2	2
Second Street & Colorado Avenue	--	2	1	1
Main Street & Pico Boulevard	1	1	1	1
4th Street & Olympic Drive/ I-10 Eastbound On-Ramp	3	--	2	1
4th Street & Pico Boulevard	2	2	1	2

c. *Expected worse-case meteorology at the location under study is the same or better than the worst-case meteorology at the location where attainment has been demonstrated. Relevant meteorological variables include wind speed, wind direction, temperature, and stability class*.

In the CO attainment demonstration prepared for the 2003 AQMP, a wind speed of 3 feet per second, stability class D, and worst-case wind angle were used as modeling assumptions. These assumptions are considered worst-case; as such, the expected worst-case meteorology at the location under study would be the same or better. In addition, there is no meaningful difference in temperature between the attainment demonstration intersection locations and the proposed project intersection location.

d. *Traffic lane volumes at the location under study are the same or lower than those at the location where attainment has been demonstrated.*

A comparison of the traffic volumes per lane used for modeling in the attainment plan demonstration and volumes per lane projected to occur at the studied intersection location is provided in **Table 3-7** and **Table 3-8**. As shown therein, overall per-lane volumes would be lower than the approach lane volumes of the attainment demonstration intersections at future year 2025. Traffic volumes at the pier would be greatest on weekdays during the PM peak hour and midday on weekends, and projected volumes were compared to those recorded for the PM peak hour attainment demonstration. Projected volumes for the midday weekend peak hour were compared to the PM peak hour attainment demonstration intersection volumes because ambient conditions were assumed to more closely resemble midday conditions than the AM peak hour.

Table 3-7. Alternative 3, Access Scenario 1 Comparison of Intersection Year 2025 Total Approach Volumes

Alternative 3, Access Scenario 1 Intersections	Weekday PM Peak Hour Approach Volumes					Weekend Midday Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Palisades Beach Road (PCH) & California Incline	770	10	852	10	1,643	994	20	699	30	1,742
Ocean Avenue & Moomat Ahiko Way/ Pacific Coast Highway ramps (former State Route 187)	473	0	311	0	783	503	0	456	0	959
Ocean Avenue & Seaside Terrace (stop-controlled)	779	0	491	0	1,270	686	0	641	0	1,326
Ocean Avenue & Neilson Way & Pico Boulevard	635	163	345	70	1,212	545	322	350	110	1,326
Second Street & Colorado Avenue	560	124	332	0	1,016	210	157	353	0	720
Main Street & Pico Boulevard	340	539	240	425	1,544	130	758	351	596	1,835
4th Street & Olympic Drive/I-10 Eastbound On-Ramp	665	0	339	122	1,126	409	0	389	155	953
4th Street & Pico Boulevard	589	275	140	220	1,224	249	396	185	300	1,130
Maximum Volumes					**1,643**					**1,835**
	PM Peak Hour					PM Peak Hour				
Attainment Demonstration Intersection										
Wilshire Boulevard/Veteran Avenue	350	829	233	517	1,929	350	829	233	517	1,929
Sunset Boulevard/Highland Avenue	611	513	746	588	2,458	611	513	746	588	2,458
La Cienega Boulevard/Century Boulevard	507	682	419	561	2,169	507	682	419	561	2,169
Long Beach Boulevard/Imperial Highway	315	467	383	673	1,838	315	467	383	673	1,838
Maximum Volumes					**2,458**					**2,458**
Percent Difference: Maximum Alternative 3, Access Scenario 1 vs. Sunset/Highland PM Peak Per-Lane Approach Volume Total					-33%					-25%

Note: The sum of the per-lane approach volumes for study area intersections is compared to the sum of the per-lane approach volumes for the Sunset/Highland PM peak hour because it was the intersections with greatest approach volume for which CO attainment was demonstrated.
SB = southbound; WB = westbound; NB = northbound; EB = eastbound; I-10 = Interstate 10.

Table 3-8. Alternative 3, Access Scenario 2 Comparison of Intersection Year 2025 Total Approach Volumes

Alternative 3, Access Scenario 2 Intersections	Weekday PM Peak Hour Approach Volumes					Weekend Midday Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Palisades Beach Road (PCH) & California Incline	1,156	10	852	10	2,028	1,491	20	699	30	2,239
Ocean Avenue & Moomat Ahiko Way/ Pacific Coast Highway ramps (former State Route 187)	473	0	311	0	783	503	0	456	0	959
Ocean Avenue & Seaside Terrace (stop-controlled)	1,558	0	491	0	2,049	1,351	0	641	0	1,992
Ocean Avenue & Olympic Boulevard	776	0	477	0	1,253	671	0	537	0	1,208
Second Street & Colorado Avenue	560	124	332	0	1,016	210	157	353	0	720
Maximum Volumes					**2,049**					**2,239**
	PM Peak Hour					PM Peak Hour				
Attainment Demonstration Intersection										
Wilshire Boulevard/Veteran Avenue	350	829	233	517	1,929	350	829	233	517	1,929
Sunset Boulevard/Highland Avenue	611	513	746	588	2,458	611	513	746	588	2,458
La Cienega Boulevard/Century Boulevard	507	682	419	561	2,169	507	682	419	561	2,169
Long Beach Boulevard/Imperial Highway	315	467	383	673	1,838	315	467	383	673	1,838
Maximum Volumes					**2,458**					**2,458**
Percent Difference: Maximum Alternative 3, Access Scenario 2 vs Sunset/Highland PM Peak Per-Lane Approach Volume Total					-17%					-9%

Note: The sum of the per-lane approach volumes for study area intersections is compared to the sum of the per-lane approach volumes for the Sunset/Highland PM peak hour because it was the intersections with greatest approach volume for which CO attainment was demonstrated.
SB = southbound; WB = westbound; NB = northbound; EB = eastbound

e. *Percentage of vehicles operating in cold-start mode at the location under study is the same or lower than the percentage at the location where attainment has been demonstrated.*

The proposed project would not increase the percentage of vehicles operating in cold-start mode in the project area because no parking facilities would be constructed as part of the proposed project.

f. *Percentage of heavy-duty gas trucks at the location under study is the same or lower than the percentage at the location where attainment has been demonstrated.*

The attainment area demonstration intersections are located along urban arterial roadways with a commercial and residential mix of land uses within the South Coast Air Basin, and the project area intersection is an urban arterial near industrial, commercial, and residential land uses. Therefore, the project area is anticipated to have a similar percentage of heavy-duty trucks to the attainment demonstration intersections.

g. *For projects involving intersections, average delay and queue length figures for each approach are the same or smaller for the intersection under study compared with those found in the intersection where attainment has been demonstrated.*

As shown in **Table 3-7** and **Table 3-8**, the overall horizon year (2025) approach lane traffic volumes would be lower than approach lane traffic volumes for the attainment demonstration intersections; therefore, overall average delay and queue length figures for the proposed project alternatives are anticipated to be less than those at the attainment demonstration intersections.

h. *Background concentration at the location under study is the same or lower than the background concentration at the location where attainment has been demonstrated*.

As shown earlier in **Table 2-2**, the maximum recorded background CO concentration in the project in the past 3 years is 1.51 ppm for the 8-hour averaging period. This value compares with the 8-hour average maximum background concentration of 7.8 ppm (2005) used for the 2003 AQMP attainment demonstration. Because the answer to the second Level 7 question is "no," per the CO Protocol, the project is satisfactory and no further analysis is needed. Because project implementation would not result in CO concentrations that exceed the 1-hour or 8-hour ambient air quality standards, on the basis of CO Protocol analysis methodology, the build alternatives are not expected to result in a new or more severe exceedance of either the NAAQS or CAAQS.

As previously indicated, the proposed project was evaluated using Figure 1 and Figure 3 of the CO Protocol (provided in Appendix D). Through this process, it was determined the build alternatives are not expected to result in a new or more severe exceedance of either the NAAQS or CAAQS.

Localized PM2.5 and PM10 Hot-Spot Evaluation

Because Build Alternatives 1 and 2 are exempt from federal transportation conformity requirements, no formal PM hot-spot analysis is required. As there would be no change in trip redistribution occurring under Build Alternatives 1 and 2 when compared to the No-Build Alternative, there would be no change in local PM emissions or concentrations at any intersection location.

Build Alternative 3 (Preferred Alternative) is not exempt from the requirement to demonstrate project-level transportation conformity. EPA specified a quantitative method for analyzing localized PM2.5 or PM10 concentrations from operational traffic titled *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (November 2015).

EPA specifies in 40 CFR 93.123(b)(1) that only Projects of Air Quality Concern (POAQCs) are required to undergo a PM2.5 and PM10 hot-spot analysis. EPA defines POAQCs as certain highway and transit projects that involve significant levels of diesel traffic or any other project that is identified by the PM2.5 SIP as a localized air quality concern. A discussion of Build Alternative 3 (Preferred Alternative) compared to POAQCs, as defined by 40 CFR 93.123(b)(1), is provided below:

New or expanded highway projects that have a significant number of or significant increase in diesel vehicles. Build Alternative 3 (Preferred Alternative) would involve reconstruction of the Pier Bridge for primarily pedestrian and bicycle use as well as the construction of a new vehicular bridge at Moss Avenue. Build Alternative 3 would not increase the parking capacity on the Pier or elsewhere in the project area, nor would it involve land use changes such that trip generation would increase. Diesel vehicle use would not change as a result of project implementation.

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. Under Build Alternative 3, Access Scenario 1 conditions in 2025, two of the five intersections operating at LOS D or worse—Ocean Avenue/Seaside Terrace and 4th Street/Interstate 10 (I-10) Eastbound On-Ramp—would experience significant traffic impacts relative to the No-Build conditions. Under Build Alternative 3, Access Scenario 2 conditions in 2025, one of the six intersections operating at LOS D or worse—Ocean Avenue/Seaside Terrace—would experience significant traffic impacts relative to the No-Build conditions. Although the operational efficiency of intersections would deteriorate, this would result from trip redistribution to access the new Moss Avenue vehicle bridge rather than as a result of the generation of new trips. Because there would be no increase in parking capacity or land use changes adjacent to the Pier, no new trips would occur. Further, the lack of change to Pier-adjacent land uses would preclude the need for new delivery and other diesel vehicle use in the area. Therefore, although there would

be some deterioration of operational traffic conditions, implementation of Alternative 3 would not increase the number of diesel vehicles operating in the area.

New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location. The proposed project would be located near bus stops on Ocean Avenue, but no major congregation of buses occurs in the area. Furthermore, both the Santa Monica Big Blue Bus and Metro fleets use liquefied or compressed natural gas fuels rather than diesel fuels.

Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location. The proposed project would not expand any bus terminal, rail terminal, or related transfer point that would increase the number of diesel vehicles congregating at any single location.

Projects in or affecting locations, areas, or categories of sites that are identified in the PM2.5- or PM10-applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation. The project site is not in or affecting an area or location identified in any PM10 or PM2.5 implementation plan. The immediate project area is not considered to be a site of violation or possible violation.

The discussion provided above indicates that the proposed project would not be considered a POAQC, as defined by 40 CFR 93.123(b)(1). Therefore, it is unlikely that the proposed project would generate new air quality violations, worsen existing violations, or delay attainment of national AAQS for PM2.5 and PM10. The SCAG Transportation Conformity Working Group (TCWG) reviewed this project on February 23, 2016, as part interagency consultation and concurred with this determination. Interagency consultation documentation for project-level PM conformity is provided in Appendix D.

3.2.2.4 Mobile-Source Air Toxics/Toxic Air Contaminant Emissions

For each alternative, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for Alternative 3 may be slightly higher than that for the No Build Alternative because operation of Alternative 3 would require vehicles to access the pier via Appian Way and Moss Avenue, which is not as direct as accessing the pier via the existing pier bridge. Operational VMT under Alternatives 1 and 2 would be identical to that which would occur under the No Build Alternative because Alternatives 1 and 2 would reconstruct the pier bridge immediately adjacent to its current location and would not increase parking capacity.

Because the estimated VMT under each of the Alternatives are nearly the same, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent 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 EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

3.2.2.5 Odors

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment facilities, food processing plants, chemical plants, composting areas, refineries, landfills, dairies, and fiberglass molding facilities. The proposed project would not involve any of the aforementioned odor-causing activities.

3.3 Avoidance, Minimization, and/or Mitigation Measures

The proposed project is subject to SCAQMD Rule 403, the purpose of which is to reduce the amount of particulate matter entrained in the ambient air. In addition, the implementation of mitigation measure **AQ-1** would reduce the emission of criteria pollutant and localized effects during the construction period.

> **AQ-1**: To reduce particulate matter exhaust emissions, the City (or its contractors) shall ensure that all off-road diesel-powered equipment used during construction shall meet EPA Tier 4 emissions standards or cleaner, except for construction equipment for which such emissions control technology is not available.

Chapter 4 Greenhouse Gas Emissions and 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 greenhouse gas (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 has 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), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: *Greenhouse Gas Mitigation* and *Adaptation*. Greenhouse Gas Mitigation is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. Adaptation refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). (American Association of State Highway and Transportation Officials n.d.)

There are four primary strategies for reducing GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively. (Federal Highway Administration n.d.)

4.1 Regulatory Setting

This section outlines state and federal efforts to comprehensively reduce GHG emissions from transportation sources.

4.1.1 Federal Regulatory Environment

Although climate change and GHG reduction are a concern at the federal level; currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither EPA nor FHWA has issued explicit guidance or

methods to conduct project-level GHG analysis.[4] FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

Climate change and its associated effects are being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and Executive Order 13514[5] – *Federal Leadership in Environmental, Energy and Economic Performance*.

EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six greenhouse gases constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010 (Center for Climate and Energy Solutions n.d.).

EPA and NHTSA are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG

[4] To date, no national standards have been established regarding mobile source GHGs, nor has EPA established any ambient standards, criteria, or thresholds for GHGs resulting from mobile sources.

[5] Executive Order 13514 (October 5, 2009): This order is focused on reducing greenhouse gases internally in federal agency missions, programs, and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016).

On August 28, 2012, EPA and NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model year 2017–2025 standards this program is projected to save approximately 4 billion barrels of oil and 2 billion metric tons of GHG emissions.

The complementary EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut greenhouse gas emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish greenhouse gas emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

4.1.2 State Regulatory Environment

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate.

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires CARB to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order (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 the 2020, and (3) 80% below the year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 (AB 32), Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that CARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10% by 2020.

Senate Bill 97 (SB 97), Chapter 185, 2007, Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the

State CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires CARB to set regional emissions reduction targets from 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 for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

4.1.3 Project Analysis

An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[6] In assessing cumulative impacts, it must be determined if a project's incremental effect is *cumulatively considerable* (State CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

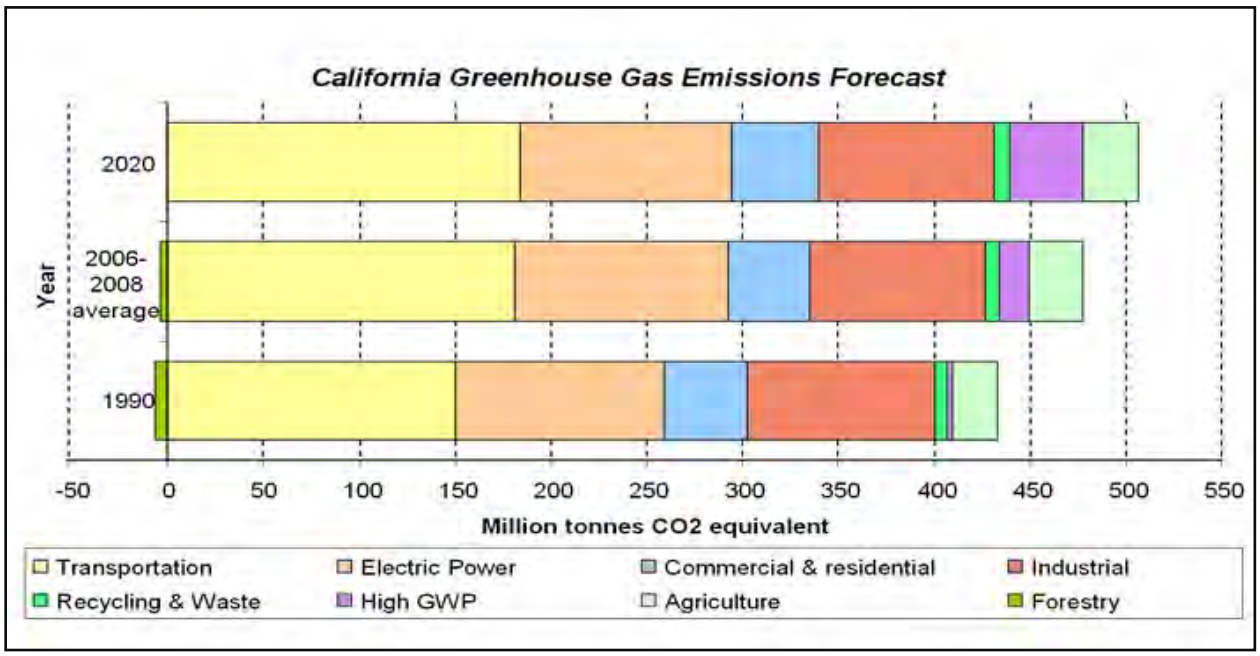
The Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, CARB released the GHG inventory for California (**Figure 4-1;** forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

Caltrans and its parent agency, the Transportation Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98% of California's GHG emissions are from the burning of fossil fuels and 40% of all human-made GHG emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006.[7]

[6] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: *The CEQA Guide*, April 2011) and the U.S. Forest Service (*Climate Change Considerations in Project Level NEPA Analysis*, July 13, 2009).

[7] Caltrans' Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf.

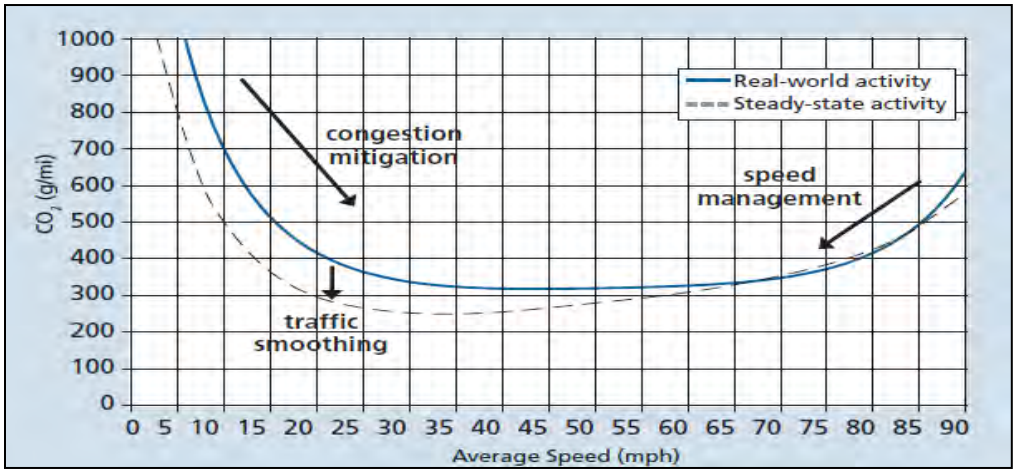
Figure 4-1. California Greenhouse Gas Forecast



Source: California Air Resources Board 2014b.

One of the main strategies in the Caltrans' Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. As shown in **Figure 4-2**, the highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 mph) and speeds over 55 mph; the most severe emissions occur from 0–25 mph (see **Figure 4-2**). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

Figure 4-2. Possible Effect of Traffic Operation Strategies in Reducing On-Road CO_2 Emission



Source: Barth and Boriboonsomsin 2010.

The proposed project is designed to create a structurally sound bridge connecting pedestrians, bicyclists, and motorists to the Santa Monica Pier. As discussed in Section 3.2.1, *Construction Period Effects*, the 24-month construction period would result in emissions generated from grubbing/land clearing, grading/excavation, drainage/subgrade and bridge construction, paving, and the commuting patterns of construction workers. **Table 4-1** shows GHG emissions during the construction period for Alternative 3, which would involve the most extensive construction activities and result in the amortized emission rate of 83 metric tons per year. CO_2 equivalent [8] (CO_2e) emissions under Build Alternatives 1 and 2 would be less than those under Build Alternative 3 because Build Alternatives 1 and 2 would require less construction activity (and related GHG emissions).

Table 4-1. Alternative 3 Construction-Period GHG Emissions

	CO_2e (metric tons)
Construction Emissions	2,504
Amortization of Construction Emissions over 30 Years	83
Source: Emissions modeling by ICF International 2015.	

Project operations under Build Alternatives 1 and 2 would be indistinguishable from the No-Build Alternative and would not appreciably change VMT or GHG emissions in the study area. Build Alternative 3 would involve the redistribution of vehicular traffic accessing the Pier deck to the new Moss Avenue bridge location. Although there may be some change in VMT, the change would not be substantial, and any change in GHG emissions relative to the No-Build Alternative would be negligible.

4.1.4 Greenhouse Gas Reduction Strategies

Caltrans continues to be involved on the Governor's Climate Action Team as CARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from Former Governor Arnold Schwarzenegger's Strategic Growth Plan for California, which targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in **Figure 4-3**.

[8] CO_2 equivalent is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 that would have the equivalent global warming impact.

Figure 4-3. The Mobility Pyramid.



Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities but does not have local land use planning authority. Caltrans also assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, and light and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, that control of fuel economy standards is held by EPA and CARB.

Caltrans is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under SB 375 (Steinberg 2008), SB 391 (Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet the state's future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve a collective vision for California's future, statewide, integrated, multimodal transportation system. The purpose of the CTP is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the CTP 2040 will identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs.

Table 4-2 summarizes Caltrans and statewide efforts being implemented to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

In addition, *Caltrans Director's Policy 30 (DP-30) Climate Change* (June 22, 2012) is intended to establish a policy that will ensure coordinated efforts to incorporate climate change into decisions and activities; and *Caltrans Activities to Address Climate Change* (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

4.1.5 Adaptation Strategies

Adaptation strategies refer to how Caltrans and others can 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 intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts on the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011,[9] outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks.

[9] http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation

Table 4-2. Climate Change/CO_2 Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings Million Metric Tons	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, Cal/EPA, CARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal/EPA, CARB, Business, Transportation, and Housing, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					**2.72**	**18.18**

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts on habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state, and federal public and private entities to develop The California Climate Adaptation Strategy (December 2009), which summarizes the best-known science on climate change impacts on California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency (California Natural Resources Agency 2009).

The strategy outline is in direct response to EO S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include Public Health, Biodiversity and Habitat, Ocean and Coastal Resources, Water Management, Agriculture, Forestry, and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report (2012) to recommend how California should plan for future sea level rise. The report was released in June 2012 and included the following.

- Relative sea level rise projections for California, Oregon, and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts on state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise.

In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the state's infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the sea level rise guidance to include information presented in the National Academy's study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge, and storm wave data.

All projects that have filed a Notice of Preparation as of the date of the EO S-13-08, and/or are programmed for construction funding through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. As the proposed project does not fall into this category of projects, it must, and will follow all relevant planning guidelines.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance, and operational improvements of the system, and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change effects, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able to review its current design standards to determine what changes, if any, may be needed to protect the transportation system from sea level rise.

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 an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science's sea level rise assessment report (2012).

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Chapter 5 Conclusions

As demonstrated above, the proposed project would have no meaningful impacts on local or regional air quality. This determination is based on the following.

- During project construction, the implementation of exhaust and fugitive dust emission control measures would avoid and/or minimize impacts on air quality.
- Project Build Alternatives 1 and 2 are included in the SCAG 2012–2035 RTP/SCS, SCAG 2015 FTIP, and 2015 FSTIP planning documents that were found to be conforming by the FHWA.
- Project Build Alternative 3 (Preferred Alternative) will appear in the 2016 RTP and 2017 FTIP under project number LA0G1296 (see Appendix A, Metro FTIP Update Programming Page) described as "Replace existing 2 lane bridge with new 2 lane bridge." Build Alternative 3 (Preferred Alternative) will be the "then currently conforming" RTP and FTIP prior to final project approval and preparation of the project Air Quality Conformity Analysis Report.
- Caltrans' CO Protocol screening procedure demonstrated that the project would not have a material effect on localized CO concentrations.
- This evaluation finds that the proposed project is not considered a POAQC, as defined by 40 CFR 93.123(b)(1), and as such, a quantitative PM2.5/PM10 hot-spot evaluation is not required. It is unlikely that the proposed project would generate new air quality violations for PM2.5 or PM10.
- The proposed project was found to have a low potential (based on FHWA's screening category) for significant MSAT emissions (using FHWA guidance) and is not linked with any special MSAT concern.
- The project's incremental contribution to local and regional air quality with respect to project criteria pollutant, GHG, and MSAT emissions would not be cumulatively considerable.

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Chapter 7 Preparers

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Appendix A

Regional Conformity Documentation

- SCAG 2012–2035 RTP Amendment 2 and SCAG 2015 FTIP Sheets Referencing Project
- Metro FTIP Update Programming Page

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PROJECT LIST APPENDIX









REGIONAL TRANSPORTATION PLAN
2012–2035
SUSTAINABLE COMMUNITIES STRATEGY
Towards a Sustainable Future
RTP











Southern California Association of Governments

ADOPTED APRIL 2012

FTIP Projects					
County	System	FTIP ID	Route	Description	Project Cost ($1,000's)
LOS ANGELES	LOCAL HIGHWAY	LA11G3	0	GROUP PROJECTS FOR SAFETY AND OPERATING IMPROVEMENTS ON THE LOCAL HIGHWAY SYSTEM THROUGHOUT THE COUNTY. PROJECTS ARE CONSISTENT WITH 40CFR PART 93.126,127,128, EXEMPT TABLES 2 & 3 CATEGORIES. RAILROAD/HIGHWAY CROSSING, SAFER FEDERAL-AID SYSTEM ROADS, SHOULDER IMPROVEMENTS, PROJECTS THAT CORRECT, IMPROVE, OR ELIMINATE A HAZARDOUS LOCATION OR FEATURE, TRAFFIC CONTROL DEVICES AND OPERATING ASSISTANCE, SIGNALIZATION PROJECTS (INDIVIDUAL INTERSECTIONS), PAVEMENT MARKING DEMONSTRATION PROJECTS, TRUCK CLIMBING LA	$356,811
LOS ANGELES	LOCAL HIGHWAY	LA000800	0	GROUPED PROJECTS FOR BRIDGE REHABILITATION AND RECONSTRUCTION – HBP PROGRAM PROJECTS ARE CONSISTENT WITH 40 CFP PART 93.126 EXEMPT TABLES 2 CATEGORIES – WIDENING NARROW PAVEMENTS OR RECONSTRUCTION BRIDGES (NO ADDITIONAL TRAVEL LANES)	$304,330
LOS ANGELES	LOCAL HIGHWAY	LA0C8126	0	HARBOR-GATEWAY ATSAC/ATCS PROJECT; IMPROVEMENTS TO 109 SIGNALIZED INTERSECTIONS THROUGH IMPLEMENTATION OF A COMPUTER-BASED REAL TIME TRAFFIC SIGNAL MONITORING & CONTROL SYSTEM.	$11,142
LOS ANGELES	LOCAL HIGHWAY	LA960176	0	HARRY S BRIDGES BLVD RELOCATION/CONSOLIDATION OF STREETS, STREET INTERSECTIONS, TRAFFIC CHANNELIZATION AND SIGNALIZATION (TEA21-#978)	$51,813
LOS ANGELES	LOCAL HIGHWAY	LAF3109	0	HAWTHORNE BOULEVARD MOBILITY IMPROVEMENT PROJECT. IMPROVE CIRCULATION, INCREASING EFFICIENCY FOR VEHICULAR, PEDESTRIAN, PUBLIC TRANSIT AND BICYCLE MOVEMENT ON HAWTHORNE BLVD.. THE PROJECT LIMIT IS FROM EL SEGUNDO BOULEVARD TO THE NORTH AND TO THE SOUTHERN CITY LIMIT AT ROSECRANS AVENUE. FROM I-105/120 STREET TO EL SEGUNDO BOULEVARD.	$8,200
LOS ANGELES	LOCAL HIGHWAY	LAF3146	0	HIGHLAND AVENUE WIDENING-ODIN STREET TO FRANKLIN AVENUE. WIDEN THE EXISTING ROADWAY FROM 75 FT TO 87 FT TO ADD ADDITIONAL TURNING TRAFFIC LANE ALONG HIGHLAND AVE & UPGRADE THE HIGHWAY TO MAJOR HIGHWAY STANDARDS.	$5,804
LOS ANGELES	LOCAL HIGHWAY	LA0G686	0	HIGHLAND PARK PEDESTRIAN IMPROVEMENTS ALONG FIGUEROA BETWEEN AVENUE 50 AND AVENUE 60	$250,000
LOS ANGELES	LOCAL HIGHWAY	LAF1708	0	HOLLYWOOD INTEGRATED MODAL INFORMATION SYSTEM. INSTALLATION OF ELECTRONIC, DIRECTION AND PARKING AVAILABILITY SIGNS WITH INTERNET CONNECTIVITY TO PROVIDE ADVANCE AND REAL-TIME INFORMATION INTENDED TO INCREASE TRANSIT RIDERSHIP	$3,130
LOS ANGELES	LOCAL HIGHWAY	LA0C8209	0	HOLLYWOOD MEDIA DISTRICT-PED IMPRV. STREETSCAPE ELEMNTS: LANDSCAPE MEDIAN ISLANDS, PED LIGHTING,STAMPED XWALK, ON SANTA MONICA BL- VINE ST TO HIGHLAND & HIGHLAND – MELROSE TO FOUNTAIN	$810
LOS ANGELES	LOCAL HIGHWAY	LAF1617	0	HOLLYWOOD PEDESTRIAN/TRANSIT CROSSROADS PHASE II. DESIGN AND INSTALL PEDESTRIAN AND TRANSIT USER ENHANCEMENTS, EXTENDING THE ORIGINAL HOLLYWOOD PEDESTRIAN/TRANSIT IMPROVEMENT PROJECT TO INCLUDE HIGHLAND AVENUE AND VINE STREET.	$860
LOS ANGELES	LOCAL HIGHWAY	LAF1197	0	HUNTINGTON DR CAPACITY IMPROVEMENTS. MITIGATION COSTS EXCLUDED [PROJECT INVOLVES TRAFFIC FLOW AND CAPACITY IMPRMENTS INCL THE ADDITION OF A THROUGH LANE, TURN LANES & RECONSTRUCTION OF MEDIAN & CHANNELIZING ISLANDS]	$2,925
LOS ANGELES	LOCAL HIGHWAY	LA0C8036	0	HYPERION AV UNDR WAVERLY DR BRDGE, RE-COFIGURE SIDEWKS ALONG HYPERION. RE-ALLIGN I-5 NB OFF-RAMP AT GLENDALE BLVD. PROVIDE ALTERNATIVE BIKEWAY ACCESS TO LA RIVER. PPNO 3092.	$14,422
LOS ANGELES	LOCAL HIGHWAY	LAF1326	0	I-5/SR-134 CONGESTION MANAGEMENT PROJECT. MONITOR AND CONTROL TRAFFIC USING SURFACE STREETS IN GLENDALE AND BURBANK TO TRAVEL BETWEEN I-5 AND SR-134. THE SYSTEM WILL PROVIDE SEAMLESS TRAFFIC MONITORING AND CONTROL.	$1,931
LOS ANGELES	LOCAL HIGHWAY	LAF1178	0	I-710 EARLY ACTION PLAN – INTERSECTION IMPROVEMENTS AT FIRESTONE BLVD/ATLANTIC AVENUE INTERSECTION. FIRESTONE BLVD IS EXISTING 2 LANES IN EACH DIRECTION, AFTER THE PROJECT WILL BE 3 LANES IN EACH DIRECTION. THE LENGTH OF THE PROJECT IS .75 MILES. PRIMARILY IT WILL WIDEN FIRESTONE BLVD AND ATLANTIC AVENUE AND REALIGN THEIR INTERSECTION.	$50,360

2015 Federal Transportation Improvement Program

Los Angeles County
Local Highway
Including Amendments 1-8 and 10
(In $000`s)

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
LAF3624	Los Angeles	SCAB		1NL04	NCR27				L	EXEMPT - 93.126	6
Description:							PTC	1,118	Agency	TORRANCE	

Downtown Torrance Pedestrian Improvement Project to increase connectivity, improve pedestrian safety, and reduce automobile dependency. Scope includes chokers/bulb-outs, landscaping, pavers and/or stamped pavement crossings. The streets bordering the project area serve three different Torrance Transit bus routes (Lines 1, 3, and 5). These routes intersect at three points in the downtown area, making this a prime location to improve the connections to the South Bay and Downtown Los Angeles.

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
STP LOCAL - REGIONAL			793	793			793					793
CITY FUNDS			325	325			325					325
LAF3624 Total			1,118	1,118			1,118					1,118

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
LA000800	Los Angeles	SCAB		LA000800	LUM02				L	EXEMPT - 93.126	4
Description:							PTC	363,153	Agency	VARIOUS AGENCIES	

Grouped Projects for Bridge Rehabilitation and Reconstruction – HBP Program Projects are consistent with 40 CFP Part 93.126 Exempt Tables 2 categories – Widening narrow pavements or reconstruction bridges (no additional travel lanes)

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
BRIDGE - LOCAL			324,076	324,076	83,681	35,003	5,410	28,053	14,169	157,760		324,076
CITY FUNDS			37,242	37,242	11,716	3,858	286	2,666	1,589	17,127		37,242
LOCAL ADVANCE CONSTRUCTION					3,630	-3,630						
LOCAL BRIDGE SEISMIC RETROFIT ACCOUNT			1,835	1,835	443	140		849		403		1,835
LA000800 Total			363,153	363,153	99,470	35,371	5,696	31,568	15,758	175,290		363,153

ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
LA0G1133	Los Angeles	SCAB		7120004	NCN25				L	EXEMPT - 93.126	1
Description:							PTC	9,038	Agency	VARIOUS AGENCIES	

Construct a bridge (La Cretz crossing) over the LA River in the North Atwater Village area. La Cretz crossing is a non-motorized multimodal bridge project providing safe, year-round access from the North Atwater community to pedestrian hiking and equestrian bridle paths in Griffith Park and LA River bike path. The bridge is a Class 1 Bikeway and the total length of the bridge is 390 feet.

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
AGENCY			5,378	5,378		5,378						5,378
ACTIVE TRANSPORTATION PROGRAM			3,660	3,660		3,660						3,660
LA0G1133 Total			9,038	9,038		9,038						9,038

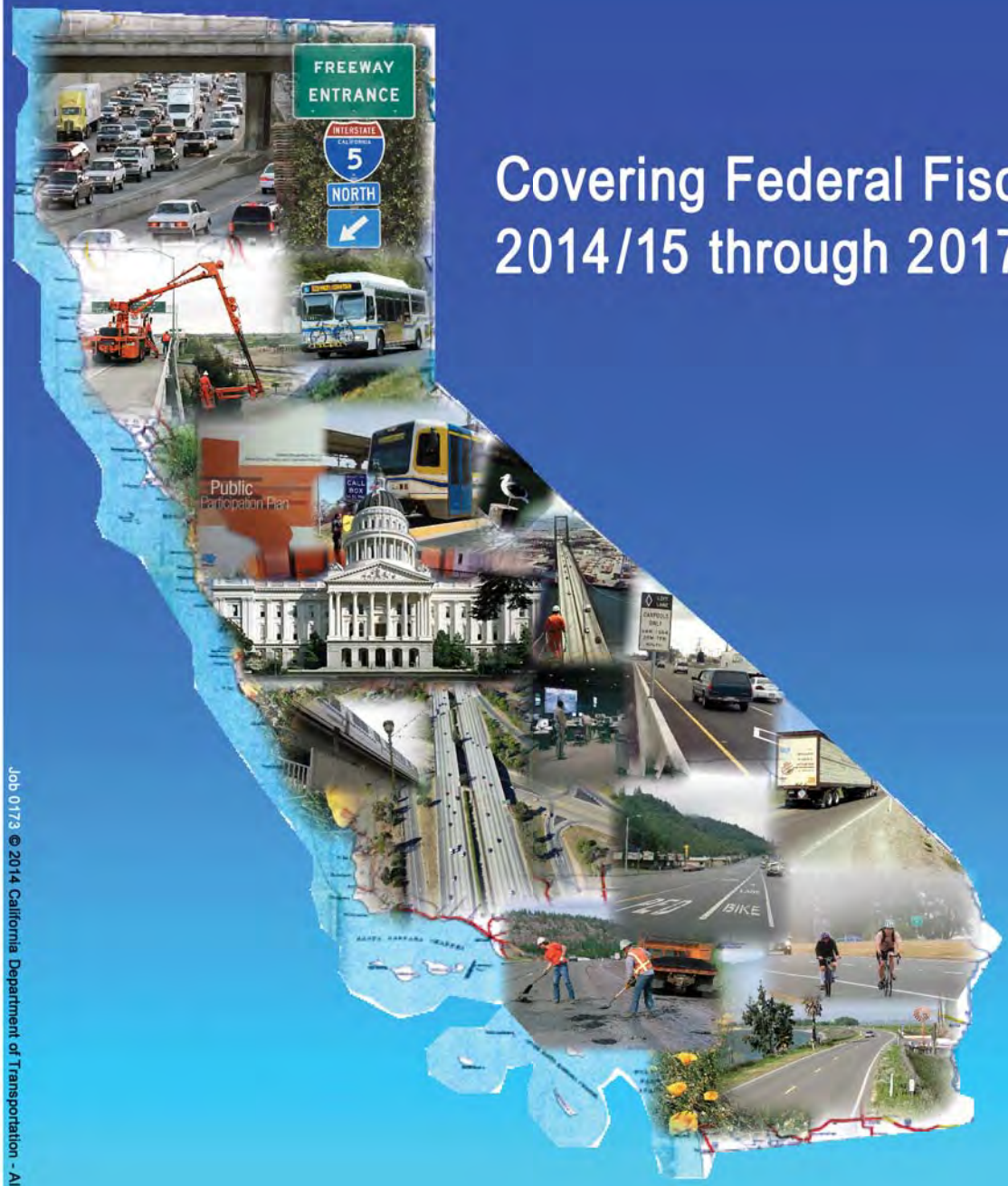
ProjectID	County	Air Basin	Model	RTP ID	Program	Route	Begin	End	System	Conformity Category	Amendment
LA11G1	Los Angeles	SCAB		1AL04	NCR31				L	EXEMPT - 93.126	5
Description:							PTC	408,140	Agency	VARIOUS AGENCIES	

Group projects for pavement resurfacing and or rehabilitation on local roads throughout County. Projects are consistent with 40 CFR part 93.126,127,128, exempt tables 2 & 3 categories. Pavement resurfacing, rehabilitation, reconstruction, AC overlays, road maintenance to prevent and eliminate hazards, no lane additions. There are projects in the grouped project listing that contain projects with toll credits.

Fund	ENG	R/W	CON	Total	Prior	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	Total
CMAQ	609	130	44	783	783							783

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

2015 Federal Statewide Transportation Improvement Program (FSTIP)



Covering Federal Fiscal Years 2014/15 through 2017/18

http://www.dot.ca.gov/hq/transprog/oftmp.htm

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TABLE 1: REVENUE

LG: 7/11/2014

Southern California Association of Governments (SCAG)
2014/15-2017/18 Federal Transportation Improvement Program
($'s in 1,000)

		4 YEAR (FSTIP Cycle)				
		2014/15	2015/16	2016/17	2017/18	TOTAL
LOCAL	Sales Tax	$1,835,168	$2,018,084	$891,710	$830,358	$5,575,320
	-- City					
	-- County	$1,835,168	$2,018,084	$891,710	$830,358	$5,575,320
	Gas Tax					
	-- Gas Tax (Subventions to Cities)					
	-- Gas Tax (Subventions to Counties)					
	Other Local Funds	$851,991	$662,654	$534,905	$813,246	$2,862,796
	-- County General Funds	$83,008	$7,148	$44,083	$68,029	$202,268
	-- City General Funds	$680,416	$491,998	$331,715	$486,213	$1,990,342
	-- Street Taxes and Developer Fees	$88,567	$163,508	$159,107	$259,004	$670,186
	-- RSTP Exchange funds					
	Transit	$84,077	$70,427	$72,467	$77,122	$304,093
	-- Transit Fares	$84,077	$70,427	$72,467	$77,122	$304,093
	Tolls (e.g. non-state owned bridges)					
	Other (See Appendix 1)	$1,197,494	$1,403,780	$1,758,514	$2,301,971	$6,661,759
	Local Total	$3,968,730	$4,154,945	$3,257,596	$4,022,697	$15,403,968
REGIONAL	Tolls					
	-- Bridge					
	-- Corridor					
	Regional Transit Fares/Measures					
	Regional Sales Tax					
	Regional Bond Revenue					
	Regional Gas Tax					
	Vehicle Registration Fees (CARB Fees, SAFE)					
	Other (See Appendix 2)					
	Regional Total					
STATE	State Highway Operations and Protection Program	$2,021,002	$522,072	$616,081	$760,404	$3,919,559
	SHOPP	$1,504,700	$522,072	$616,081	$760,404	$3,403,257
	SHOPP Prior	$516,302				$516,302
	State Minor Program					
	State Transportation Improvement Program	$411,914	$178,096	$323,473	$228,382	$1,141,865
	STIP	$410,275	$177,525	$323,473	$228,382	$1,139,655
	STIP Prior	$1,639	$571			$2,210
	Transportation Enhancement Prior					
	Proposition 1 A		$78,925			$78,925
	Proposition 1 B	$83,317	$127,323	$28,242	$2,885	$241,767
	GARVEE Bonds (Includes Debt Service Payments)	$35,272				$35,272
	Highway Maintenance (HM)	$37,340				$37,340
	Traffic Congestion Relief Program (TCRP)	$47,666	$30,140			$77,806
	State Transit Assistance (STA)(e.g., population/revenue based, Prop 42)	$33,993	$23,954	$24,035	$23,503	$105,485
	Active Transportation Program	$53,898	$123,081	$1,120		$178,099
	Other (See Appendix 3)	$1,933	$18,320		$10,000	$30,253
	State Total	$2,726,335	$1,101,911	$992,951	$1,025,174	$5,846,371
FEDERAL TRANSIT	5307 - Urbanized Area Formula Grants	$444,037	$373,386	$290,787	$247,943	$1,356,153
	5308 - Clean Fuel Formula Program	$3,002		$100		$3,102
	5309 - Fixed Guideway Capital Investment Grants	$1,392				$1,392
	5309b - New and Small Starts (Capital Investment Grants)	$200,000	$267,983	$300,000	$300,000	$1,067,983
	5309c - Bus and Bus Related Grants	$10,174	$12,815			$22,989
	5310 - Mobility of Seniors and Individuals with Disabilities	$1,797				$1,797
	5311 - Formula Grants for Rural Areas	$3,312	$1,043	$635	$635	$5,625
	5311f - Intercity Bus					
	5316 - Job Access and Reverse Commute Program	$1,648				$1,648
	5317 - New Freedom	$897				$897
	5320 - Transit in the Parks					
	5324 - Emergency Relief Program					
	5329 - Public Transportation Safety Program					
	5337 - State of Good Repair Grants	$110,472	$70,302	$60,227	$75,911	$316,912
	5339 - Bus and Bus Facilities Formula Grants	$27,914	$7,308	$6,837	$6,837	$48,896
	FTA Transfer from Prior FTIP					
	Other (See Appendix 4)					
	Federal Transit Total	$804,645	$732,837	$658,586	$631,326	$2,827,394
FEDERAL HIGHWAY	Congestion Mitigation and Air Quality (CMAQ) Improvement Program	$249,735	$249,735	$249,735	$249,735	$998,940
	Construction of Ferry Boats and Ferry Terminal Facilities					
	Coordinated Border Infrastructure					
	Corridor Infrastructure Improvement Program					
	Federal Lands Access Program					
	Federal Lands Transportation Program					
	High Priority Projects (HPP) and Demo	$108,501	$23,375	$5,441	$1,440	$138,757
	Highway Bridge Program (HBP)	$105,059	$112,355	$84,492	$61,523	$363,429
	Highway Safety Improvement Program (HSIP)	$43,557	$45,830	$30,253		$119,640
	Projects of National/Regional Significance	$10,764	$1,836			$12,600
	Public Lands Highway	$585				$585
	Railway Highway Crossings	$3,386				$3,386
	Recreational Trails	$431	$154			$585
	Safe Routes to School (SRTS)	$7,001	$648	$11,705	$6,649	$26,003
	Surface Transportation Program (RSTP)	$215,646	$215,646	$215,646	$215,646	$862,584
	Tribal High Priority Projects (THPP)					
	Tribal Transportation Program					
	Other (see Appendix 5)	$26,014	$4,323	$3,525	$3,948	$37,810
	Federal Highway Total	$770,679	$653,902	$600,797	$538,941	$2,564,319
	Other Federal Railroad Administration (see Appendix 6)	$41				$41
	Federal Railroad Administration Total	$41				$41
	Federal Total	$1,575,365	$1,386,739	$1,259,383	$1,170,267	$5,391,754
INNOVATIVE FINANCE	TIFIA (Transportation Infrastructure Finance and Innovation Act)	$385,562	$337,400	$208,500	$396,646	$1,328,108
	Other (See Appendix 7)					
	Innovative Financing Total	$385,562	$337,400	$208,500	$396,646	$1,328,108
REVENUE TOTAL		$8,655,992	$6,980,995	$5,718,430	$6,614,784	$27,970,201

MPO Financial Summary Notes:
This financial summary table includes Amendment 1.

2012/13-2017/18 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing provides the backup project information to support the lump sum amounts programmed in the FTIP.

3/25/2015, 11:47 AM

Notes:

1) This is the FTIP lump sum “backup” list for HBP funded projects. Please see the Local Assistance web site for the most current listings:

   http://www.dot.ca.gov/hq/LocalPrograms/hbrr99/HBP_FSTIP.html

2) The purpose of this list is to show which projects being advanced by local agencies have met the eligibility requirements of the federal Highway Bridge Program and have been prioritized for funding by the Department in cooperation with local agencies for funding.

3) Contractual funding levels are determined at time of federal authorization/obligation for given phase of work. For details see Chapter 3 of the Local Assistance Procedures Manual.

4) For FTIP/FSTIP purposes, Federal Highway Bridge Program (HBP) funding constraint is managed by Caltrans.

5) Prop 1B bond funds for the Local Seismic Safety Retrofit Program (LSSRP) used for matching federal funds are also managed by Caltrans.

6) Financial constraint of LOCAL matching funds (including regional STIP funds) and LOCAL Advance Construction (AC) is the responsibility of the MPOs and their local agencies.

7) Some projects show that they are programmed using State STP funds. These funds are HBP funds transferred to the STP for bridge work that is not ordinarily eligible for HBP funds. See the HB Program Guidelines for details. Do not confuse these STP funds with Regional STP funds.

8) Corrections to this report should be addressed to the District Local Assistance Engineer:

   http://www.dot.ca.gov/hq/LocalPrograms/dlae.htm

Note id: 24

2014/15-2019/20 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing includes projects that should be individually listed in the FTIP/FSTIP. (Line item projects only)

District: 07 County: Los Angeles

Responsible Agency	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total

Santa Monica

BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2 lane bridge with new 2 lane bridge. 3/14/2011: Toll Credits programmed for PE & CON. **Change!**

Fed Proj: BHLO-5107(033)

Phase Summary:	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
PE	1,250,000			2,132,000					3,382,000
R/W					1,000,000				1,000,000
CON						16,910,000			16,910,000
Total	1,250,000			2,132,000	1,000,000	16,910,000			21,292,000

Fund Source Summary:	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
Fed $	1,250,000			2,132,000	885,300	16,910,000			21,177,300
Local Match					114,700				114,700
LSSRP Bond									
Local AC									
Total	1,250,000			2,132,000	1,000,000	16,910,000			21,292,000

PE Summary:	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
Fed $	1,250,000			2,132,000					3,382,000
Local Match									
LSSRP Bond									
Local AC									
Total	1,250,000			2,132,000					3,382,000

Phase Funding Details:

Proj id	Funds Src	Phase	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
3811	HBP	PE				1,210,000					1,210,000
	Local Match										
Fed. Reimb. Rate: 100.00%		9/30/2015 Vijay Kopparam: Per 2015 September survey, agency is requesting $1,210,000 in additional PE								Total:	1,210,000
3811	HBP	PE				922,000					922,000
	Local Match										
Fed. Reimb. Rate: 100.00%		10/9/2014 Vijay Kopparam: Per 2014 survey, agency is requesting additional $922,000 for PE in FY 16/17. Approval of Ex. 6D is required prior to removal of HOLD.								Total:	922,000
3811	HBP	PE									
	Local Match										
Fed. Reimb. Rate: 100.00%		9/22/2011 Linda Newton: Not ready to ad within 6 months. PE funds moved from FFY 10/11 to 11/12. Funds not obligated, moved to next fiscal year. 5/10/2013 DLA-Admin: Fundline zeroed out due to FTIP cycle migration: 2010/11-15/16 to 2012/13-17/18. This does not impact funds in the current FTIP cycle.								Total:	

2014/15-2019/20 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing includes projects that should be individually listed in the FTIP/FSTIP. (Line item projects only)

District: 07 County: Los Angeles

Responsible Agency			Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
3811	HBP	PE	1,250,000								1,250,000
	Local Match										
Fed. Reimb. Rate: 100.00%		3/14/2011 Linda Newton: Reimbursement changed to 100% (Toll Credits). 3/14/2011 Linda Newton: Eligible bridge project.								Total:	1,250,000

R/W Summary:	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
Fed $					885,300				885,300
Local Match					114,700				114,700
LSSRP Bond									
Local AC									
Total					1,000,000				1,000,000

Phase Funding Details:

Proj id	Funds Src	Phase	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
3811	HBP	R/W					885,300				885,300
	Local Match						114,700				114,700
Fed. Reimb. Rate: 88.53%		9/30/2015 Vijay Kopparam: Per 2015 September survey agency is requesting $1,000,000 for RW. Agency has to submit an Ex. 6D to justify the cost prior to authorization.								Total:	1,000,000

CON Summary:	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
Fed $						16,910,000			16,910,000
Local Match									
LSSRP Bond									
Local AC									
Total						16,910,000			16,910,000

Phase Funding Details:

Proj id	Funds Src	Phase	Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
3811	HBP	CON						6,050,000			6,050,000
	Local Match										
Fed. Reimb. Rate: 100.00%		9/30/2015 Vijay Kopparam: Per 2015 September survey agency is requesting an increase in CON by $6,050,000								Total:	6,050,000
3811	HBP	CON						10,860,000		-10,860,000	
	Local Match										
Fed. Reimb. Rate: 100.00%		9/30/2015 Vijay Kopparam: Not ready to ad within 6 months. CON funds moved from FFY Beyond to 18/19. As requested in September 2015 Survey.								Total:	
3811	HBP	CON								4,610,000	4,610,000
	Local Match										
Fed. Reimb. Rate: 100.00%		10/9/2014 Vijay Kopparam: Per 2014 September survey, agency is requesting $4,610,000 for CON.. Approval of Ex. 6D is required prior to removal of hold.								Total:	4,610,000

2014/15-2019/20 Highway Bridge Program

See the appropriate FTIP/FSTIP for current funding commitments. This listing includes projects that should be individually listed in the FTIP/FSTIP. (Line item projects only)

District: 07 County: Los Angeles

Responsible Agency			Prior	14/15	15/16	16/17	17/18	18/19	19/20	Beyond	Total
3811	HBP	CON					-6,250,000			6,250,000	
	Local Match										
Fed. Reimb. Rate: 100.00%		10/9/2014 Vijay Kopparam: Not ready to ad within 6 months. CON funds moved from FFY 17/18 to Beyond. As requested in September 2014 Survey.								Total:	
3811	HBP	CON				-6,250,000	6,250,000				
	Local Match										
Fed. Reimb. Rate: 100.00%		3/30/2014 DLA-Admin: Not ready to ad within 6 months. CON funds moved from FFY 16/17 to 17/18. Action taken to financially constrain the FTIP (PUSH). Attempt will be made to program this project in year shown.								Total:	
3811	HBP	CON			-6,250,000	6,250,000					
	Local Match										
Fed. Reimb. Rate: 100.00%		11/14/2013 DLA-Admin: Not ready to ad within 6 months. CON funds moved from FFY 15/16 to 16/17. Action taken to financially constrain the FTIP (PUSH). Attempt will be made to program this project in year shown.								Total:	
3811	HBP	CON			6,250,000					-6,250,000	
	Local Match										
Fed. Reimb. Rate: 100.00%		9/22/2011 Linda Newton: Not ready to ad within 6 months. CON funds moved from FFY Beyond to 15/16. As requested in September 2011 Survey.								Total:	
3811	HBP	CON	-6,250,000							6,250,000	
	Local Match										
Fed. Reimb. Rate: 100.00%		3/25/2011 DLA-Admin: Not ready to ad within 6 months. CON funds moved from FFY 13/14 to Beyond. Action taken to financially constrain the FTIP (PUSH).								Total:	
3811	HBP	CON	6,250,000								6,250,000
	Local Match										
Fed. Reimb. Rate: 100.00%		3/14/2011 Linda Newton: Reimbursement changed to 100% (Toll Credits). 3/14/2011 Linda Newton: Eligible bridge project.								Total:	6,250,000

VIEWING A PROJECT (READ-ONLY MODE)
IF YOU WOULD LIKE TO MAKE CHANGES TO THIS PROJECT, PLEASE PROCEED THROUGH AN AMENDMENT.

VIEW PREVIOUS VERSIONS OF THIS PROJECT | VIEW / UPLOAD PROJECT DOCUMENTS

PROJECT ID:	LA0G1296	VERSION:	2	SCAG VERSION:	2
CTIPS ID:	n/a	PROPOSED FTIP:	17-01	TOTAL COST	$21,292
PPNO:	n/a			OBLIGATED COST	$0
EA NUMBER:	n/a				

LAST MODIFIED BY: Nancy Marroquin (8/10/2016) APPROVED BY: Justine Anne Pascual (8/18/2016) HISTORY [+] [DETAILS CHANGED]

THIS PROJECT IS POTENTIAL MODELING

AMENDMENT REASON

- (•) SCHEDULE / FUNDING / SCOPE CHANGE
- ( ) COMPLETE PROJECT
- ( ) DELETE PROJECT

* denotes required fields

ADMINISTRATIVE EDIT

S

PROGRAM SOURCE	TIP PROJECT ID	SCAG MODELING #	CAP INC	REGN SIG	MODE NO	MODELING	MODELING LOCKED
Formal Amendmen for SHOPP, HBP a							YES

GROUP PROJ	GROUP NAME	CONFORMITY CATEGORY
No		NON-EXEMPT

EMISSION REDUCTIONS (kg/day)

ROG/VOC	CO	NOx	PM 10	PM 2.5

PROJECT_TITLE
BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2 lane bridge with new 2 lane bridge. 3/14/2011:
Toll Credits programmed for PE & CON. (Lump Sum bridge project 53C1900 (5107-(033)).

PROJECT INFORMATION

PROGRAM / AUTHORIZATION TYPE	ID
SCAG RTP PROJECT #	1AL04
HBRR	53C1900

*IMPLEMENTING AGENCY: Santa Monica, City of

*PROJECT MANAGER	*PHONE (10-DIGIT)	*EMAIL
Selim Eren	3104588721	selim.eren@smgov.net

*CFP MODE: Highway Rehabilitation & Reconstruction

*PROJECT DESCRIPTION - GUIDELINES

BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2 lane bridge with new 2 lane bridge. 3/14/2011: Toll Credits programmed for PE & CON. (Lump Sum bridge project 53C1900 (5107-(033)).

*PRIMARY PROGRAM CODE - Look up Program Code: CAX65 - NEW BRIDGE: RS

#1 SECONDARY PROGRAM CODE:

#2 SECONDARY PROGRAM CODE:

*SYSTEM	ROUTE	SUFFIX	*LOCAL STREET NAME	*FROM	*TO
Local Hwy			Colorado Ave. Over Appian Way/Promenade	Ocean Ave.	Pier

*STREET DISTANCE	*LANE # EXISTED	*LANE # PROPOSED	*IMPROVEMENT_DESC
600	2	0	Replace existing vehicle between Ocean Ave. and Sa

HOV_ACCESS_EGRESS_LOC	TOLL_RATE	TOLL_COLLECT_LOC	TOLL_METHOD
	$		

[REMOVE MODELING SECTION]

*LOCAL STREET NAME	*FROM	*TO
Moss Avenue	Apian Way	Santa Monica Pier

STREET DISTANCE	*LANE # EXISTED	*LANE # PROPOSED	*IMPROVEMENT DESC
215	0	2	New two-lane vehicle bridge at Moss Avenue betwee

HOV ACCESS EGRESS LOC	TOLL RATE	TOLL COLLECT LOC	TOLL METHOD
	$		

[ADD NEW MODELING SECTION]

*FEDERAL UZA: Los Angeles-Long Beach-Santa Ana | SCAG SUB-AREA: | MTA SUB-REGION: Westside Area

ENVIRONMENTAL INFORMATION

*AIR BASIN - MAP: SCAB | *ENVIRONMENTAL DOCUMENT: DRAFT ENVIRONMENTAL IMPACT STATEMENT/DRAFT ENVIRONMENTAL IMPACT REPORT - JOINT NEPA/CEQA | *ENV DOC COMPLETION DATE: 12/1/2018

PROGRAMMING INFORMATION ($000)

[HISTORICAL REVENUES] [GRAPH REVENUES]

*EST TOTAL PROJECT COST: $21,292

STIP / SHOPP

• **WARNING ESTIMATE TOTAL COST IS GREATER THAN $10 MILLIONS**

FISCAL YEAR	FUND TYPE (PROGRAMMED REVENUE SOURCE) - FUND HELP	PA&ED/PS&E	ROW	CON	TOTAL	
15/16	HBRR-L - Bridge- Local	$1,250	$0	$0	$1,250	X
16/17	HBRR-L - Bridge- Local	$2,132	$0	$0	$2,132	X
17/18	HBRR-L - Bridge- Local	$0	$885	$0	$885	X
18/19	HBRR-L - Bridge- Local	$0	$0	$16,910	$16,910	X
17/18	CITY - City Funds	$0	$115	$0	$115	X
					$0	
					$0	
					$0	
					$0	
					$0	
	HBRR-L - Bridge- Local	$3,382	$885	$16,910	$21,177	
	CITY - City Funds	$0	$115	$0	$115	
	GRAND TOTAL	$3,382	$1,000	$16,910	$21,292	

*Toll Credit is not part of the GRAND TOTAL

Update Subtotals

WHY DID THE TOTAL PROJECT COST INCREASE?

Funds reprogrammed. Please assign non-exempt for conformity category.

SCHEDULE INFORMATION

*PROJECT COMPLETION DATE: 12/1/2021 | *CURRENT IMPLEMENTATION STATUS: Environmental Document/Pre-Design Phase (PAED) | LAST UPDATED: 8/18/2016 12:13:42 PM

Do you have an E-76 (or an approved grant) for the design/engineering phase of the project? Y

Do you have an E-76 (or an approved grant) for the right-of-way phase of the project? N

Do you have an E-76 (or an approved grant) for the construction phase of the project? N

CALTRANS ID: 5107033

Project Length (Feet), if known

CHANGE REASON

HISTORICAL COMMENTS

*** Change Reason List** UPDATE CHANGE REASON

SCHEDULE / FUNDING / SCOPE (CHOOSE ALL THAT APPLY)

COST INCREASE

[SEE HISTORICAL COMMENTS]

*GENERAL COMMENTS - LAST UPDATED: 7/27/2016 - GUIDANCE - (Please comment on the status of the project and provide the reason for any changes to the project description, funding information and schedule made above.)

Funds reprogrammed. Please assign non-exempt for conformity category.

[SEE HISTORICAL COMMENTS]
MODELING COMMENTS - LAST UPDATED: 7/27/2016 - (If the project scope has been changed, the project was delayed or advanced or the total projects cost has changed, provide a reason for the changes. If there is no significant change made above note that there is "no significant change made)

Funds reprogrammed. Please assign non-exempt for conformity category.

[SEE HISTORICAL COMMENTS]
TCM COMMENTS - (If the project scope has been changed, the project was delayed or advanced or the total projects cost has changed, provide a reason for the changes. If there is no significant change made above note that there is "no significant change made)

CONTACT METRO 4.88s EMAIL PROGRAMMETROHELP@ECOINTERACTIVE.COM

Appendix B **Local Climate and Ambient Air Monitoring Data**

SANTA MONICA PIER, CALIFORNIA (047953)

Period of Record Monthly Climate Summary

Period of Record : 01/01/1937 to 01/19/2015

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	64.1	63.7	63.4	64.5	65.4	68.1	71.0	72.1	72.1	70.4	68.0	64.8	67.3
Average Min. Temperature (F)	49.2	49.9	50.9	52.9	55.6	58.4	61.2	62.2	61.4	58.2	53.6	49.7	55.3
Average Total Precipitation (in.)	2.69	3.01	2.03	0.73	0.17	0.03	0.02	0.08	0.15	0.33	1.36	2.04	12.62
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 93.1% Min. Temp.: 93.1% Precipitation: 94.3% Snowfall: 94.6% Snow Depth: 94.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
RED BLUFF AIRPORT ASOS	KRBL	1996-2006	7.4	8.9	8.7	8.9	8.5	8.8	7.2	7.0	7.5	7.7	7.5	8.7	8.0
REDDING AIRPORT ASOS	KRDD	1996-2006	5.2	6.8	6.4	6.9	6.6	6.9	5.7	5.4	5.7	5.7	4.9	6.2	6.0
RIVERSIDE AIRPORT ASOS	KRAL	1998-2006	5.0	5.2	4.9	5.1	5.6	5.8	5.5	5.1	4.4	4.1	4.3	5.4	5.0
RIVERSIDE-MARCH AFB	KRIV	1996-2006	5.2	5.9	5.4	6.0	6.2	6.2	6.2	6.0	5.5	5.3	5.0	5.6	5.7
SACRAMENTO EXEC AP ASOS	KSAC	1996-2006	5.5	6.4	6.8	7.6	7.5	8.2	7.8	7.2	6.3	5.8	5.0	6.0	6.6
SACRAMENTO INTL AP ASOS	KSMF	1996-2006	6.9	8.0	7.9	8.7	8.6	9.4	9.0	8.4	7.6	7.3	6.4	7.7	8.0
SACRAMENTO-MATHER AP	KMHR	2000-2006	4.8	5.8	6.5	6.8	6.7	7.2	6.9	6.0	5.7	5.2	4.6	6.2	6.0
SACRAMENTO-MCCLELLAN AF	KMCC	1992-2000	7.7	8.1	7.5	8.0	7.9	8.7	8.8	8.5	7.4	6.8	6.3	7.9	7.8
SALINAS AIRPORT ASOS	KSNS	1996-2006	7.3	8.1	7.7	8.4	9.2	9.8	9.1	8.4	7.5	6.9	6.9	7.8	8.1
SAN CARLOS AIRPORT	KSQL	1996-2006	8.2	9.5	10.6	11.5	12.1	12.7	11.8	11.3	10.3	9.4	8.5	8.6	10.5
SAN DIEGO-BROWN FIELD	KSDM	1996-2006	5.6	6.7	6.0	6.4	5.9	5.6	5.3	5.0	5.0	5.1	5.5	6.0	5.7
SAN DIEGO-GILLESPIE FLD	KSEE	1996-2006	3.8	5.4	6.1	7.4	7.1	7.0	6.9	6.8	6.4	5.5	4.1	3.7	5.9
SAN DIEGO-LINDBERGH FLD	KSAN	1996-2006	4.8	6.1	6.6	7.4	7.0	7.2	6.9	6.8	6.5	5.6	4.8	4.5	6.1
SAN DIEGO-MONTGOMERY AP	KMYF	1996-2006	4.6	5.6	5.9	6.7	6.3	6.5	6.0	6.0	5.9	5.2	4.6	4.5	5.6
SAN FRANCISCO INTL AP	KSFO	1996-2006	6.7	8.2	10.2	12.1	13.6	14.1	12.9	12.3	10.6	9.0	7.2	7.2	10.3
SAN JOSE INTL AP ASOS	KSJC	1996-2006	5.4	6.6	7.0	8.0	8.2	8.4	7.7	7.4	6.5	5.8	5.3	6.0	6.8
SAN JOSE-REID HILLVIEW	KRHV	1996-2006	5.3	7.2	8.1	9.3	9.7	9.8	8.8	8.5	7.5	6.5	5.5	5.9	7.7
SAN LUIS OBISPO AP ASOS	KSBP	1996-2006	5.4	6.5	7.4	8.2	9.3	8.5	7.6	7.7	7.1	6.5	5.8	5.3	7.1
SAN NICOLAS ISLAND NAS	KNSI	1996-2006	11.1	13.1	13.0	14.8	13.2	12.5	11.6	12.0	11.9	10.8	11.8	11.8	12.3
SANDBURG ASOS	KSDB	1996-2006	14.3	15.4	14.6	14.7	15.5	14.5	12.1	11.9	12.1	13.1	14.1	15.5	14.0
SANTA ANA AIRPORT ASOS	KSNA	1996-2006	4.3	5.2	5.7	6.4	6.7	7.0	6.7	6.3	5.6	4.9	4.4	4.4	5.6
SANTA BARBARA AP ASOS	KSBA	1996-2006	4.2	5.7	5.8	6.6	6.0	6.0	5.9	5.5	5.2	4.5	4.1	4.1	5.3
SANTA MARIA AP ASOS	KSMX	1996-2006	5.7	6.7	7.2	7.8	8.3	7.7	6.5	6.1	5.6	5.7	5.8	5.8	6.5
SANTA MONICA AP ASOS	KSMO	1996-2006	5.1	6.1	6.2	7.0	6.7	6.8	6.5	6.2	5.7	5.1	5.0	5.3	6.0
SANTA ROSA AIRPORT ASOS	KSTS	1996-2006	3.5	4.8	5.4	5.8	6.0	6.3	5.8	5.3	4.7	4.2	3.6	4.1	4.9
SOUTH LAKE TAHOE AP ASOS	KTVL	1996-2006	5.5	5.7	6.7	7.5	6.9	6.6	5.9	5.8	5.6	5.4	6.0	6.1	6.1
STOCKTON AIRPORT ASOS	KSCK	1996-2006	6.2	7.3	7.4	8.8	9.6	10.0	8.7	8.3	7.4	6.4	5.7	7.0	7.7
THERMAL AIRPORT ASOS	KTRM	1996-2006	5.1	5.7	7.6	9.2	9.3	9.0	7.4	6.6	6.8	6.2	5.2	4.9	6.8
TORRANCE AIRPORT	KTOA	1996-2006	5.6	7.2	7.9	8.7	8.7	9.4	9.5	9.2	8.5	7.1	6.0	5.7	7.8
TRUCKEE AIRPORT AWOS	KTRK	1996-2006	3.5	4.0	4.8	5.5	5.5	5.0	4.8	4.6	4.2	3.7	4.0	3.8	4.4
TWENTYNINE PALMS EAF	KNXP	1996-2006	7.0	7.8	8.5	10.4	9.5	9.7	8.3	7.8	6.9	6.7	6.6	6.9	8.0
UKIAH AIRPORT ASOS	KUKI	1996-2006	2.6	3.5	4.1	4.6	4.9	5.5	4.5	4.0	3.2	2.7	2.5	2.9	3.7
VACAVILLE AIRPORT ASOS	KVCB	1998-2006	4.4	5.5	6.3	7.1	7.0	7.5	7.3	6.7	5.9	5.5	4.4	4.9	6.0
VAN NUYS AIRPORT ASOS	KVNY	1996-2006	5.9	6.3	5.5	6.0	5.7	5.7	5.6	5.0	4.6	4.5	5.1	6.5	5.5
VISALIA AIRPORT AWOS	KVIS	1996-2006	3.3	4.0	4.3	5.1	5.9	5.9	4.9	4.4	3.8	3.2	3.0	3.1	4.2
WATSONVILLE AP ASOS	KWVI	1998-2006	3.2	3.8	3.7	5.1	5.1	5.2	4.9	4.6	4.1	3.6	3.1	3.4	4.1

COLORADO

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
AKRON AIRPORT ASOS	KAKO	1996-2006	11.5	12.5	13.1	14.2	12.7	12.6	11.5	11.2	11.5	12.1	12.0	12.0	12.2
ALAMOSA AIRPORT ASOS	KALS	1996-2006	5.7	6.8	8.8	10.8	10.0	9.5	7.1	6.6	7.1	6.9	6.2	5.4	7.5
ASPEN-PITKIN COUNTY AP	KASE	1996-2006	5.1	5.6	6.4	7.5	7.6	7.7	7.1	6.9	6.9	6.2	5.2	5.1	6.4
AURORA-BUCKLEY AFB	KBKF	1996-2006	8.3	8.6	9.3	10.1	8.6	8.4	7.9	7.6	7.6	7.9	8.0	8.6	8.4
BOULDER-JEFFCO AP ASOS	KBJC	1996-2006	11.0	10.3	10.8	11.1	10.4	10.1	9.5	9.3	9.2	9.2	9.6	11.0	10.1
BURLINGTON AIRPORT ASOS	KITR	1997-2006	11.2	12.5	13.2	14.0	13.1	12.9	11.8	10.9	11.9	11.9	11.8	11.5	12.2
COLORADO SPRGS AP ASOS	KCOS	1996-2006	8.8	9.5	10.6	12.3	10.9	10.6	9.2	8.9	9.1	9.7	9.0	9.2	9.8
CORTEZ AIRPORT ASOS	KCEZ	1996-2006	5.8	6.5	7.6	8.8	8.5	8.4	6.8	6.3	6.6	6.8	6.1	6.0	7.0
CRAIG AIRPORT AWOS	KCAG	1996-2006	4.0	4.5	5.7	7.6	6.8	6.9	5.8	5.7	5.4	5.1	4.3	3.9	5.4
DENVER INTL AP ASOS	KDEN	1996-2006	9.7	10.0	10.8	11.9	11.0	10.7	10.3	10.1	9.9	9.9	9.6	10.1	10.3
DENVER-CENTENNIAL AP	KAPA	1996-2006	8.3	8.7	9.3	10.5	9.5	9.6	8.8	8.4	8.4	8.1	8.1	8.5	8.8
DURANGO AIRPORT ASOS	KDRO	1996-2006	4.6	5.5	6.6	7.9	7.6	7.3	6.3	5.8	5.6	5.7	4.9	4.6	6.0
EAGLE AIRPORT ASOS	KEGE	1996-2006	3.9	4.6	5.9	7.2	7.1	7.1	5.3	5.1	5.1	4.9	3.8	3.6	5.3
FORT CARSON-BUTTS AAF	KFCS	1996-2006	9.7	11.0	12.1	13.0	11.3	11.4	9.8	9.1	9.5	10.1	9.8	11.0	10.6
FORT COLLINS AP ASOS	KFNL	1996-2006	6.2	7.1	7.9	8.9	7.6	7.2	6.9	6.7	6.4	6.5	6.3	6.6	7.0
GRAND JUNCTION AP ASOS	KGJT	1996-2006	5.1	6.5	7.9	9.7	9.5	9.9	9.6	9.1	8.5	7.6	5.7	5.3	7.8
GREELEY AIRPORT AWOS	KGXY	1996-2006	6.0	7.1	8.3	9.7	8.3	7.4	6.1	5.8	5.8	6.1	6.1	6.0	6.8
GUNNISON AIRPORT AWOS	KGUC	1996-2006	2.7	3.6	5.3	7.3	6.6	6.3	5.3	4.9	4.7	4.8	3.4	2.6	4.8
HAYDEN AIRPORT AWOS	KHDN	1996-2006	6.8	6.8	7.2	8.5	8.3	8.5	8.0	8.0	7.8	7.6	6.8	6.8	7.6
LA JUNTA AIRPORT ASOS	KLHX	1996-2006	8.9	9.9	11.3	12.9	11.5	11.9	10.1	9.5	9.5	9.9	9.2	9.4	10.3
LA VETA PASS AWOS	KVTP	2001-2006	18.8	18.0	17.1	17.1	15.8	13.8	12.3	12.1	12.4	16.7	14.2	17.8	15.5
LAMAR AIRPORT ASOS	KLAA	1996-2006	7.9	9.2	10.5	12.1	10.7	11.5	10.2	9.1	9.2	9.0	8.3	8.0	9.6
LEADVILLE AIRPORT ASOS	KLXV	1998-2006	8.2	8.2	8.0	8.6	8.3	7.9	6.2	5.8	6.7	7.5	7.4	8.1	7.6
LIMON AIRPORT ASOS	KLIC	1996-2006	8.3	9.8	10.5	12.2	10.7	10.3	9.0	8.7	8.6	9.3	8.6	8.6	9.5
MEEKER AIRPORT ASOS	KEEO	1997-2006	3.8	4.5	6.0	7.4	7.3	7.5	6.4	6.1	6.1	5.5	4.4	3.6	5.7
MONARCH PASS AWOS	KMYP	2001-2006	24.7	20.6	21.6	21.3	19.7	17.5	13.4	11.4	14.8	19.8	22.5	22.6	18.8
MONTROSE AIRPORT ASOS	KMTJ	1996-2006	5.5	6.2	7.6	8.9	8.9	8.8	7.7	7.1	7.2	6.7	5.9	5.3	7.1
MONUMENT PASS AWOS	KMNH	2001-2006	9.1	9.2	10.1	11.3	9.8	9.6	8.7	8.9	9.1	9.3	9.3	9.3	9.5

LOS ANGELES INT'L AP, CA (KL	E	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	E	WSW
LOS ANGELES-DOWNTOWN, CA (KC	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	WSW
MADERA MUNI AP, CA (KMAE).	ESE	E	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	E	E	WNW
MARYSVILLE AIRPORT, CA (KMYV	SSE	SSE	SSE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
MCCLELLAN AFB, CA (KMCC). W	SSE	SSE	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	SSE	SSE	SSE
MERCED MUNI AP, CA (KMCE).	SE	SE	NNW	NNW	NW	NW	NW	NW	NW	NW	NW	ESE	NW
MIRAMAR NAS, CA (KNKX). WIN	E	E	E	WNW	W	WNW	WNW	NW	NW	E	E	E	E
MODESTO AIRPORT, CA (KMOD).	SE	SE	NW	NW	NW	NW	NNW	NNW	NW	NW	NW	SE	NW
MOFFETT FIELD NAS, CA (KNUQ)	SE	SE	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	SE	NNW
MONTEREY AIRPORT, CA (KMRY).	ESE	ESE	W	WNW	W	W	W	W	W	W	ESE	ESE	W
MOUNT SHASTA CITY, CA (KMHS)	SE	SE	SE	NW	N	N	N	NE	NE	N	NE	SE	N
NAPA COUNTY AP, CA (KAPC).	E	E	W	W	W	SSW	SSW	SSW	SSW	SSW	E	E	SSW
OAKLAND INT'L AP, CA (KOAK).	SE	W	W	W	W	W	W	W	W	W	W	SE	W
OCEANSIDE MUNI AP, CA (KOKB)	W	NE	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	NNE	WSW
ONTARIO INT'L AP, CA (KONT).	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	W	W	W	W
OROVILLE MUNI AP, CA (KOVE).	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	E	E	SSE	SSE	SSE
OXNARD AIRPORT, CA (KOXR).	W	W	W	W	W	W	W	W	W	W	W	NE	W
PALM SPRINGS AP, CA (KPSP).	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
PALMDALE AP, CA (KPMD). WIN	W	W	SW	W	SW	SW	SW	SW	SW	SW	W	W	SW
PALO ALTO AP, CA (KPAO). WI	N	N	N	NNW	N	N	N	N	N	NNW	N	N	N
PASO ROBLES AP, CA (KPRB).	E	E	NW	NW	NW	NW	SSW	WNW	NW	NW	E	E	NW
POINT MUGU NAS, CA (KNTD).	NE	W	W	W	W	W	W	W	W	W	NE	NE	W
POINT PIEDRAS BLANCAS, CA (K	N	N	NNW	NNW	N	N	N	NW	NNW	N	N	N	N
PORTERVILLE MUNI AP, CA (KPT	E	E	ESE	NW	NW	NW	NW	S	S	ESE	E	E	NW
RAMONA AIRPORT, CA (KRNM).	W	W	W	W	W	W	W	W	W	W	WNW	E	W
RED BLUFF AP, CA (KRBL). WI	NNW	SSE	N	NNW	SSE	N	S	S	NNW	NNW	NNW	NNW	NNW
REDDING AIRPORT, CA (KRDD).	N	N	N	N	N	N	S	S	N	N	N	N	N
RIVERSIDE MUNI AP, CA (KRAL)	WNW	WNW	WNW	W	WNW	WNW	WNW	WNW	WNW	WNW	WNW	N	WNW
RIVERSIDE-MARCH AFB, CA (KRI	NW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	NW	WNW
SACRAMENTO EXECUTIVE AP, CA	SE	SSE	S	SSW	S	S	S	S	S	S	SSE	SSE	S
SACRAMENTO INT'L AP, CA (KSM	SSE	SSE	S	S	S	S	S	S	S	S	NW	SSE	S
SACRAMENTO-MATHER AP, CA (KM	SE	SE	SE	S	S	S	S	S	S	SE	SE	SE	S
SALINAS MUNI AP, CA (KSNS).	SE	SE	W	W	W	W	WNW	WNW	WNW	WNW	SE	SE	W
SAN CARLOS AP, CA (KSQL). W	N	W	W	W	W	W	W	W	N	N	N	N	W
SAN DIEGO-BROWN FIELD, CA (K	W	W	W	W	W	W	W	W	W	W	W	SE	W
SAN DIEGO-GILLESPIE FIELD, C	W	W	W	W	W	W	W	W	W	W	W	W	W
SAN DIEGO-LINDBERGH FIELD, C	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW
SAN DIEGO-MONTGOMERY FIELD,	W	W	W	W	WSW	WSW	WSW	WSW	WNW	W	W	W	W
SAN DIEGO-NORTH ISLAND NAS,	NW	W	W	W	W	W	W	NW	NW	NW	NW	NW	W
SAN FRANCISCO INT'L AP, CA (	W	W	W	W	W	W	W	W	W	W	W	W	W
SAN JOSE INT'L AP, CA (KSJC)	SSE	SSE	NNW	NNW	NNW	NNW	NW	NNW	NW	NW	NW	SE	NNW
SAN JOSE-REID HILLVIEW AP, C	SE	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW
SAN LUIS OBISPO AP, CA (KSBP	NW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	NW	NW	WNW
SAN NICHOLAS ISLAND NOLF, CA	WNW	WNW	WNW	WNW	WNW	NW	WNW	NW	WNW	WNW	NW	NW	WNW
SANDBURG, CA (KSDB). WIND R	NE	S	NW	NW	NW	NW	NW	NW	NW	NW	NE	NE	NW
SANTA ANA-JOHN WAYNE AP, CA	S	S	S	S	S	SSW	SSW	SSW	SW	SW	SW	S	SSW
SANTA BARBARA AP, CA (KSBA).	WSW	W	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW
SANTA MARIA AP, CA (KSMX).	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW	WNW
SANTA MONICA AIRPORT, CA (KS	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	N	SW
SANTA ROSA AIRPORT, CA (KSTS	S	SE	S	S	S	S	S	S	S	S	S	SE	S
SISKIYOU COUNTY AP-MONTAGUE,	S	S	N	N	N	N	N	N	N	N	S	S	N
SOUTH LAKE TAHOE AP, CA (KTV	S	S	S	S	S	SSW	S	S	S	S	S	S	S
STOCKTON AIRPORT, CA (KSCK).	SE	SE	W	W	W	W	W	W	W	W	W	SE	W
THERMAL AIRPORT, CA (KTRM).	N	N	NNW	NNW	NW	NW	NW	NW	NNW	NNW	NW	NW	NW
TORRANCE AIRPORT, CA (KTOA).	W	W	W	W	W	W	WNW	WNW	W	W	W	W	W
TRAVIS AFB-FAIRFIELD, CA (KS	N	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	N	N	WSW
TRUCKEE AIRPORT, CA (KTRK).	S	S	S	SSW	SW	SSW	SW	SSW	SSW	N	S	S	S
TUSTIN MCAS, CA (KNTK). WIN	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WSW
TWENTYNINE PALMS EAF, CA (KN	W	W	WNW	WNW	WNW	NW	W	W	W	W	WNW	NW	WNW
UKIAH AIRPORT, CA (KUKI). W	S	SSE	WNW	WNW	N	N	N	N	N	W	SSE	SSE	N
VACAVILLE AIRPORT, CA (KVCB)	NNW	S	SSW	SSW	SSW	SSW	S	SSW	SSW	SSW	SSW	NNW	SSW
VAN NUYS AP, CA (KVNY). WIN	N	N	SE	SE	ESE	ESE	ESE	ESE	ESE	ESE	N	N	ESE
VISALIA AIRPORT, CA (KVIS).	SE	SE	NW	NW	NW	NW	NW	WNW	NW	NW	ESE	ESE	NW

California Environmental Protection Agency
Air Resources Board

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Compton-700 North Bullis Road

iADAM

	2013		2014		2015	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jan 1	52.1	Jan 11	35.8	Jan 21	41.3
Second High:	Dec 24	28.5	Jan 20	33.5	Feb 5	40.0
Third High:	Oct 25	24.3	Nov 28	30.9	Jan 18	37.2
Fourth High:	Jan 16	24.1	Jan 29	30.8	Jan 3	34.0
California:						
First High:	Jan 1	52.1	Jan 11	35.8	Jan 21	41.3
Second High:	Dec 24	28.5	Jan 20	33.5	Feb 5	40.0
Third High:	Oct 25	24.3	Nov 28	30.9	Jan 18	37.2
Fourth High:	Jan 16	24.1	Jan 29	30.8	Jan 3	34.0
National:						
Estimated # Days > 24-Hour Std:		3.1		*		9.0
Measured # Days > 24-Hour Std:		1		1		3
24-Hour Standard Design Value:		29		*		*
24-Hour Standard 98th Percentile:		24.3		*		37.2
2006 Annual Std Design Value:		12.2		*		*
2013 Annual Std Design Value:		12.2		12.2		12.2
Annual Average:		11.9		*		11.7
California:						
Annual Std Designation Value:		13		12		*
Annual Average:		*		*		*
Year Coverage:		95		75		97

Notes:

Daily PM2.5 averages and related statistics are available at Compton-700 North Bullis Road between 2008 and 2015. Some years in this range may not be represented.
All averages expressed in micrograms per cubic meter.
An exceedance of a standard is not necessarily related to a violation of the standard.
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data

represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Available Pollutants:

8-Hour Ozone | Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide

California Environmental Protection Agency
Air Resources Board

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Los Angeles-Westchester Parkway

iADAM

	2013		2014		2015	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Apr 16	38.0	Jan 23	46.0	Dec 8	42.0
Second High:	Jul 9	35.0	Apr 29	40.0	Oct 9	39.0
Third High:	May 22	34.0	May 11	36.0	Apr 30	35.0
Fourth High:	May 4	29.0	Jan 5	35.0	Sep 9	34.0
California:						
First High:	Apr 16	37.0	Jan 23	45.0	Dec 8	42.0
Second High:	May 22	34.0	Apr 29	40.0	Oct 9	39.0
Third High:	Jul 9	34.0	May 11	36.0	Apr 30	35.0
Fourth High:	May 4	29.0	Jan 5	35.0	Sep 21	34.0

	2013	2014	2015
National:			
Estimated # Days > 24-Hour Std:	0.0	0.0	0.0
Measured # Days > 24-Hour Std:	0	0	0
3-Yr Avg Est # Days > 24-Hr Std:	0.0	0.0	0.0
Annual Average:	20.8	22.1	21.2
3-Year Average:	21	21	21
California:			
Estimated # Days > 24-Hour Std:	*	0.0	*
Measured # Days > 24-Hour Std:	0	0	0
Annual Average:	*	21.9	*
3-Year Maximum Annual Average:	21	22	22
Year Coverage:	85	100	99

Notes:

Daily PM10 averages and related statistics are available at Los Angeles-Westchester Parkway between 2004 and 2015. Some years in this range may not be represented.
All averages expressed in micrograms per cubic meter.
The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in italics or italics .
An exceedance of a standard is not necessarily related to a violation of the standard.
All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.
State and national statistics may differ for the following reasons:
State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and

national statistics may therefore be based on different samplers.

State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.

State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.

3-Year statistics represent the listed year and the 2 years before the listed year.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Available Pollutants:

8-Hour Ozone | Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide

California Environmental Protection Agency
Air Resources Board

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Los Angeles-Westchester Parkway

iADAM

	2013		2014		2015	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National:						
First High:	May 3	0.081	May 2	0.080	Oct 11	0.077
Second High:	Mar 24	0.062	Oct 5	0.079	Oct 12	0.074
Third High:	Oct 4	0.060	May 15	0.076	Oct 9	0.071
Fourth High:	Oct 20	0.060	Apr 30	0.075	Oct 26	0.069
California:						
First High:	May 3	0.082	May 2	0.080	Oct 11	0.078
Second High:	Mar 24	0.062	Oct 5	0.079	Oct 12	0.075
Third High:	Oct 4	0.060	May 15	0.076	Oct 9	0.072
Fourth High:	Oct 20	0.060	Apr 30	0.075	Sep 20	0.069
National:						
# Days Above the Standard:		1		3		1
Nat'l Standard Design Value:		*		0.064		0.068
National Year Coverage:		85		94		92
California:						
# Days Above the Standard:		1		6		3
California Designation Value:		0.082		0.072		0.076
Expected Peak Day Concentration:		*		0.072		0.076
California Year Coverage:		78		93		91

Notes:

Eight-hour ozone averages and related statistics are available at Los Angeles-Westchester Parkway between 2004 and 2015. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Available Pollutants:

8-Hour Ozone | Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide

California Environmental Protection Agency
Air Resources Board

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Los Angeles-Westchester Parkway

iADAM

	2013		2014		2015	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	May 3	0.105	Oct 5	0.114	Oct 9	0.096
Second High:	Mar 24	0.074	May 15	0.090	Oct 11	0.093
Third High:	Oct 21	0.069	Apr 30	0.087	Oct 12	0.091
Fourth High:	Sep 29	0.068	May 2	0.086	Sep 20	0.086
California:						
# Days Above the Standard:		1		1		1
California Designation Value:		0.08		0.08		0.09
Expected Peak Day Concentration:		0.077		0.083		0.088
National:						
# Days Above the Standard:		0		0		0
Nat'l Standard Design Value:		0.076		0.090		0.093
Year Coverage:		90		96		92

Notes:

Hourly ozone measurements and related statistics are available at Los Angeles-Westchester Parkway between 2004 and 2015. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005 and is no longer in effect. Statistics related to the revoked standard are shown in italics or italics .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Available Pollutants:

8-Hour Ozone | Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide

California Environmental Protection Agency
Air Resources Board

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Los Angeles-Westchester Parkway

iADAM

	2013		2014		2015	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Feb 15	77.8	Nov 5	87.3	Jan 25	87.0
Second High:	Nov 7	62.5	Jan 14	79.2	Oct 9	72.5
Third High:	Jan 9	62.4	Jan 16	79.1	Nov 20	67.9
Fourth High:	Oct 5	60.5	Oct 24	78.7	Mar 26	64.2
California:						
First High:	Feb 15	77	Nov 5	87	Jan 25	87
Second High:	Jan 9	62	Jan 14	79	Oct 9	72
Third High:	Nov 7	62	Jan 16	79	Nov 20	67
Fourth High:	Oct 5	60	Oct 24	78	Mar 26	64

	2013	2014	2015
National:			
1-Hour Standard Design Value:	*	*	62
1-Hour Standard 98th Percentile:	58.4	66.4	59.9
# Days Above the Standard:	0	0	0
Annual Standard Design Value:	12	12	11
California:			
1-Hour Std Designation Value:	70	70	70
Expected Peak Day Concentration:	74	72	73
# Days Above the Standard:	0	0	0
Annual Std Designation Value:	13	12	12
Annual Average:	*	12	11
Year Coverage:	98	95	97

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Los Angeles-Westchester Parkway between 2004 and 2015. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Available Pollutants:

8-Hour Ozone | Hourly Ozone | PM2.5 | PM10 | Carbon Monoxide | Nitrogen Dioxide | State Sulfur Dioxide | Hydrogen Sulfide

Appendix C **Construction Emissions Calculations and SCAQMD Rule 403**

Santa Monica Pier Bridge Replacement

Construction Assumptions for Alternative 3 (Two New Bridges- New Replacement Bridge for Pedestrian, Bicycle, Emergency and Limited Access at the Existing Alignment and New Permanent Vehicle Only Bridge at Moss Avenue)

			Conversion	
Start:	1/1/2023			
Completion:	12/31/2024			
Duration:	24	months	519	working days
Grubbing/Land Clearing	2.4	months	53	working days
Grading/Excavation	9.6	months	211	working days
Drainage/Utilities/Sub-Grade	8.4	months	185	working days
Paving	3.6	months	70	working days
Project Length	490	feet	0.09	miles
Total Project Area	1.5	acres		
Soil Imported	7,000	cubic yards		
Soil Exported	7,000	cubic yards		

Santa Monica Pier Bridge Replacement

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project footprint would be approximately 1.5 acres

Construction Phase - 24-month construction period starting in 2023; construction 5 days per week assumed

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Grading - An estimated 7,000 cubic yards of material would be imported and an estimate 7,000 cy would be exported

Area Coating - Bridge structure assumed to not be painted

Construction Off-road Equipment Mitigation - Rule 403 compliance
Tier 4 Final equipment for mitigation

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	98010	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	50
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	2.00	53.00
tblConstructionPhase	NumDays	4.00	211.00
tblConstructionPhase	NumDays	200.00	185.00
tblConstructionPhase	NumDays	10.00	70.00
tblGrading	AcresOfGrading	53.00	1.50
tblGrading	AcresOfGrading	1,266.00	1.50
tblGrading	MaterialExported	0.00	7,000.00
tblGrading	MaterialImported	0.00	7,000.00
tblOffRoadEquipment	HorsePower	125.00	9.00
tblOffRoadEquipment	HorsePower	78.00	226.00
tblOffRoadEquipment	HorsePower	84.00	89.00
tblOffRoadEquipment	HorsePower	174.00	84.00
tblOffRoadEquipment	HorsePower	226.00	174.00
tblOffRoadEquipment	HorsePower	208.00	174.00
tblOffRoadEquipment	HorsePower	208.00	255.00

tblOffRoadEquipment	HorsePower	162.00	255.00
tblOffRoadEquipment	HorsePower	8.00	97.00
tblOffRoadEquipment	HorsePower	162.00	97.00
tblOffRoadEquipment	HorsePower	84.00	46.00
tblOffRoadEquipment	LoadFactor	0.42	0.56
tblOffRoadEquipment	LoadFactor	0.48	0.29
tblOffRoadEquipment	LoadFactor	0.74	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.29	0.41
tblOffRoadEquipment	LoadFactor	0.43	0.41
tblOffRoadEquipment	LoadFactor	0.43	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.74	0.45
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Crawler Tractors

tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType	Welders	Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	55.00	53.00
tblTripsAndVMT	WorkerTripNumber	15.00	13.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	8.4831	84.6455	75.5694	0.1614	5.3888	3.6993	8.9700	2.9234	3.4034	6.0852	0.0000	15,395.9765	15,395.9765	4.6498	0.0000	15,493.6232
2024	8.0467	77.7154	74.0579	0.1614	10.9432	3.3683	14.3114	4.0742	3.0988	7.1730	0.0000	15,388.0871	15,388.0871	4.6476	0.0000	15,485.6864
Total	**16.5298**	**162.3608**	**149.6273**	**0.3228**	**16.3320**	**7.0675**	**23.2814**	**6.9976**	**6.5022**	**13.2582**	**0.0000**	**30,784.0636**	**30,784.0636**	**9.2974**	**0.0000**	**30,979.3096**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	2.0661	8.9686	83.6799	0.1614	2.1930	0.2769	2.4700	1.1451	0.2741	1.3634	0.0000	15,395.9765	15,395.9765	4.6498	0.0000	15,493.6232
2024	2.0594	9.4421	83.5608	0.1614	5.0293	0.2770	5.3063	1.7855	0.2742	2.0597	0.0000	15,388.0871	15,388.0871	4.6476	0.0000	15,485.6864
Total	**4.1255**	**18.4107**	**167.2406**	**0.3228**	**7.2223**	**0.5540**	**7.7763**	**2.9305**	**0.5484**	**3.4231**	**0.0000**	**30,784.0636**	**30,784.0636**	**9.2974**	**0.0000**	**30,979.3096**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**75.04**	**88.66**	**-11.77**	**0.00**	**55.78**	**92.16**	**66.60**	**58.12**	**91.57**	**74.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3975	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.3000e-004	3.3000e-004	0.0000		3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.3975**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**0.0000**	**3.5000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3975	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.3000e-004	3.3000e-004	0.0000		3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.3975**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**0.0000**	**3.5000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grubbing/Land Clearing	Site Preparation	1/1/2023	3/15/2023	5	53	
2	Grading/Excavation	Grading	3/16/2023	1/4/2024	5	211	
3	Drainage/Utilities/Sub-Grade	Building Construction	1/5/2024	9/19/2024	5	185	
4	Paving	Paving	9/20/2024	12/26/2024	5	70	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Pavers	1	8.00	9	0.56
Drainage/Utilities/Sub-Grade	Air Compressors	1	8.00	226	0.29
Drainage/Utilities/Sub-Grade	Generator Sets	1	8.00	89	0.20
Drainage/Utilities/Sub-Grade	Graders	2	8.00	84	0.74
Grading/Excavation	Cranes	1	8.00	174	0.41
Grubbing/Land Clearing	Crawler Tractors	1	8.00	174	0.41
Paving	Cement and Mortar Mixers	1	6.00	9	0.56

Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	8.00	80	0.38
Grading/Excavation	Crawler Tractors	2	8.00	255	0.40
Grubbing/Land Clearing	Excavators	2	8.00	255	0.40
Drainage/Utilities/Sub-Grade	Plate Compactors	1	8.00	97	0.37
Grading/Excavation	Excavators	4	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading/Excavation	Graders	2	8.00	174	0.41
Drainage/Utilities/Sub-Grade	Pumps	1	8.00	46	0.45
Grading/Excavation	Rollers	3	8.00	80	0.38
Grading/Excavation	Rubber Tired Loaders	3	8.00	199	0.36
Grading/Excavation	Scrapers	4	8.00	361	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Rough Terrain Forklifts	1	8.00	100	0.40
Drainage/Utilities/Sub-Grade	Scrapers	4	8.00	361	0.48
Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Cranes	1	6.00	226	0.29
Drainage/Utilities/Sub-Grade	Forklifts	1	6.00	89	0.20
Grubbing/Land Clearing	Graders	1	8.00	174	0.41
Grading/Excavation	Rubber Tired Dozers	1	6.00	255	0.40
Grubbing/Land Clearing	Rubber Tired Dozers	1	7.00	255	0.40
Grubbing/Land Clearing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Drainage/Utilities/Sub-Grade	18	27.00	11.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	22	53.00	0.00	1,750.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grubbing/Land Clearing	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Grubbing/Land Clearing - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2993	0.0000	5.2993	2.8997	0.0000	2.8997			0.0000			0.0000
Off-Road	2.2205	20.3421	20.2265	0.0407		0.9805	0.9805		0.9021	0.9021		3,942.5594	3,942.5594	1.2751		3,969.3366
Total	**2.2205**	**20.3421**	**20.2265**	**0.0407**	**5.2993**	**0.9805**	**6.2798**	**2.8997**	**0.9021**	**3.8017**		**3,942.5594**	**3,942.5594**	**1.2751**		**3,969.3366**

3.2 Grubbing/Land Clearing - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0210	0.0257	0.3246	1.1600e-003	0.0894	7.5000e-004	0.0902	0.0237	6.9000e-004	0.0244		80.1389	80.1389	3.5800e-003		80.2140
Total	**0.0210**	**0.0257**	**0.3246**	**1.1600e-003**	**0.0894**	**7.5000e-004**	**0.0902**	**0.0237**	**6.9000e-004**	**0.0244**		**80.1389**	**80.1389**	**3.5800e-003**		**80.2140**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0667	0.0000	2.0667	1.1309	0.0000	1.1309			0.0000			0.0000
Off-Road	0.4993	2.1636	23.0314	0.0407		0.0666	0.0666		0.0666	0.0666	0.0000	3,942.5594	3,942.5594	1.2751		3,969.3366
Total	**0.4993**	**2.1636**	**23.0314**	**0.0407**	**2.0667**	**0.0666**	**2.1333**	**1.1309**	**0.0666**	**1.1975**	**0.0000**	**3,942.5594**	**3,942.5594**	**1.2751**		**3,969.3366**

3.2 Grubbing/Land Clearing - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0210	0.0257	0.3246	1.1600e-003	0.0506	7.5000e-004	0.0513	0.0142	6.9000e-004	0.0149		80.1389	80.1389	3.5800e-003		80.2140
Total	**0.0210**	**0.0257**	**0.3246**	**1.1600e-003**	**0.0506**	**7.5000e-004**	**0.0513**	**0.0142**	**6.9000e-004**	**0.0149**		**80.1389**	**80.1389**	**3.5800e-003**		**80.2140**

3.3 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5316	0.0000	4.5316	2.4846	0.0000	2.4846			0.0000			0.0000
Off-Road	8.2284	83.5263	72.0291	0.1476		3.6639	3.6639		3.3708	3.3708		14,291.2122	14,291.2122	4.6221		14,388.2756
Total	**8.2284**	**83.5263**	**72.0291**	**0.1476**	**4.5316**	**3.6639**	**8.1955**	**2.4846**	**3.3708**	**5.8554**		**14,291.2122**	**14,291.2122**	**4.6221**		**14,388.2756**

3.3 Grading/Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1155	0.9490	1.3898	6.1000e-003	0.1467	0.0305	0.1771	0.0401	0.0280	0.0681		573.8442	573.8442	4.0800e-003		573.9299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1392	0.1702	2.1505	7.6800e-003	0.5924	4.9500e-003	0.5974	0.1571	4.6000e-003	0.1617		530.9201	530.9201	0.0237		531.4177
Total	**0.2547**	**1.1192**	**3.5403**	**0.0138**	**0.7391**	**0.0354**	**0.7745**	**0.1972**	**0.0326**	**0.2298**		**1,104.7644**	**1,104.7644**	**0.0278**		**1,105.3476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7673	0.0000	1.7673	0.9690	0.0000	0.9690			0.0000			0.0000
Off-Road	1.8114	7.8494	80.1395	0.1476		0.2415	0.2415		0.2415	0.2415	0.0000	14,291.2122	14,291.2122	4.6221		14,388.2756
Total	**1.8114**	**7.8494**	**80.1395**	**0.1476**	**1.7673**	**0.2415**	**2.0089**	**0.9690**	**0.2415**	**1.2105**	**0.0000**	**14,291.2122**	**14,291.2122**	**4.6221**		**14,388.2756**

3.3 Grading/Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1155	0.9490	1.3898	6.1000e-003	0.0908	0.0305	0.1213	0.0264	0.0280	0.0544		573.8442	573.8442	4.0800e-003		573.9299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1392	0.1702	2.1505	7.6800e-003	0.3349	4.9500e-003	0.3399	0.0939	4.6000e-003	0.0985		530.9201	530.9201	0.0237		531.4177
Total	**0.2547**	**1.1192**	**3.5403**	**0.0138**	**0.4257**	**0.0354**	**0.4611**	**0.1203**	**0.0326**	**0.1529**		**1,104.7644**	**1,104.7644**	**0.0278**		**1,105.3476**

3.3 Grading/Excavation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5316	0.0000	4.5316	2.4846	0.0000	2.4846			0.0000			0.0000
Off-Road	7.7987	76.6059	70.6367	0.1476		3.3328	3.3328		3.0661	3.0661		14,285.9846	14,285.9846	4.6204		14,383.0125
Total	**7.7987**	**76.6059**	**70.6367**	**0.1476**	**4.5316**	**3.3328**	**7.8644**	**2.4846**	**3.0661**	**5.5508**		**14,285.9846**	**14,285.9846**	**4.6204**		**14,383.0125**

3.3 Grading/Excavation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1156	0.9485	1.3770	6.1100e-003	5.8192	0.0305	5.8497	1.4325	0.0281	1.4605		575.0466	575.0466	4.1400e-003		575.1335
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1324	0.1609	2.0443	7.7400e-003	0.5924	5.0000e-003	0.5974	0.1571	4.6400e-003	0.1618		527.0560	527.0560	0.0231		527.5405
Total	**0.2480**	**1.1095**	**3.4212**	**0.0139**	**6.4116**	**0.0355**	**6.4471**	**1.5896**	**0.0327**	**1.6223**		**1,102.1025**	**1,102.1025**	**0.0272**		**1,102.6739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7673	0.0000	1.7673	0.9690	0.0000	0.9690			0.0000			0.0000
Off-Road	1.8114	7.8494	80.1395	0.1476		0.2415	0.2415		0.2415	0.2415	0.0000	14,285.9846	14,285.9846	4.6204		14,383.0125
Total	**1.8114**	**7.8494**	**80.1395**	**0.1476**	**1.7673**	**0.2415**	**2.0089**	**0.9690**	**0.2415**	**1.2105**	**0.0000**	**14,285.9846**	**14,285.9846**	**4.6204**		**14,383.0125**

3.3 Grading/Excavation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1156	0.9485	1.3770	6.1100e-003	2.9271	0.0305	2.9576	0.7226	0.0281	0.7506		575.0466	575.0466	4.1400e-003		575.1335
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1324	0.1609	2.0443	7.7400e-003	0.3349	5.0000e-003	0.3399	0.0939	4.6400e-003	0.0985		527.0560	527.0560	0.0231		527.5405
Total	**0.2480**	**1.1095**	**3.4212**	**0.0139**	**3.2620**	**0.0355**	**3.2975**	**0.8165**	**0.0327**	**0.8492**		**1,102.1025**	**1,102.1025**	**0.0272**		**1,102.6739**

3.4 Drainage/Utilities/Sub-Grade - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.4542	57.4588	50.4732	0.1047		2.6771	2.6771		2.4838	2.4838		9,962.1476	9,962.1476	2.7944		10,020.8303
Total	**6.4542**	**57.4588**	**50.4732**	**0.1047**		**2.6771**	**2.6771**		**2.4838**	**2.4838**		**9,962.1476**	**9,962.1476**	**2.7944**		**10,020.8303**

3.4 Drainage/Utilities/Sub-Grade - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0626	0.3989	0.8352	2.3900e-003	0.0687	9.7600e-003	0.0784	0.0195	8.9800e-003	0.0285		223.5947	223.5947	1.5300e-003		223.6269
Worker	0.0674	0.0820	1.0414	3.9400e-003	0.3018	2.5500e-003	0.3043	0.0800	2.3600e-003	0.0824		268.5002	268.5002	0.0118		268.7470
Total	**0.1300**	**0.4808**	**1.8766**	**6.3300e-003**	**0.3705**	**0.0123**	**0.3828**	**0.0996**	**0.0113**	**0.1109**		**492.0950**	**492.0950**	**0.0133**		**492.3739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3165	8.9613	54.9001	0.1047		0.1639	0.1639		0.1639	0.1639	0.0000	9,962.1476	9,962.1476	2.7944		10,020.8303
Total	**1.3165**	**8.9613**	**54.9001**	**0.1047**		**0.1639**	**0.1639**		**0.1639**	**0.1639**	**0.0000**	**9,962.1476**	**9,962.1476**	**2.7944**		**10,020.8303**

3.4 Drainage/Utilities/Sub-Grade - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0626	0.3989	0.8352	2.3900e-003	0.0436	9.7600e-003	0.0533	0.0134	8.9800e-003	0.0224		223.5947	223.5947	1.5300e-003		223.6269
Worker	0.0674	0.0820	1.0414	3.9400e-003	0.1706	2.5500e-003	0.1732	0.0478	2.3600e-003	0.0502		268.5002	268.5002	0.0118		268.7470
Total	**0.1300**	**0.4808**	**1.8766**	**6.3300e-003**	**0.2142**	**0.0123**	**0.2265**	**0.0612**	**0.0113**	**0.0726**		**492.0950**	**492.0950**	**0.0133**		**492.3739**

3.5 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6399	6.1704	9.0834	0.0134		0.2955	0.2955		0.2727	0.2727		1,284.0554	1,284.0554	0.4070		1,292.6017
Paving	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6960**	**6.1704**	**9.0834**	**0.0134**		**0.2955**	**0.2955**		**0.2727**	**0.2727**		**1,284.0554**	**1,284.0554**	**0.4070**		**1,292.6017**

3.5 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0325	0.0395	0.5014	1.9000e-003	0.1453	1.2300e-003	0.1465	0.0385	1.1400e-003	0.0397		129.2779	129.2779	5.6600e-003		129.3967
Total	**0.0325**	**0.0395**	**0.5014**	**1.9000e-003**	**0.1453**	**1.2300e-003**	**0.1465**	**0.0385**	**1.1400e-003**	**0.0397**		**129.2779**	**129.2779**	**5.6600e-003**		**129.3967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1577	0.6832	9.7220	0.0134		0.0210	0.0210		0.0210	0.0210	0.0000	1,284.0554	1,284.0554	0.4070		1,292.6017
Paving	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2138**	**0.6832**	**9.7220**	**0.0134**		**0.0210**	**0.0210**		**0.0210**	**0.0210**	**0.0000**	**1,284.0554**	**1,284.0554**	**0.4070**		**1,292.6017**

3.5 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0325	0.0395	0.5014	1.9000e-003	0.0822	1.2300e-003	0.0834	0.0230	1.1400e-003	0.0242		129.2779	129.2779	5.6600e-003		129.3967
Total	**0.0325**	**0.0395**	**0.5014**	**1.9000e-003**	**0.0822**	**1.2300e-003**	**0.0834**	**0.0230**	**1.1400e-003**	**0.0242**		**129.2779**	**129.2779**	**5.6600e-003**		**129.3967**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Santa Monica Pier Bridge Replacement

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project footprint would be approximately 1.5 acres

Construction Phase - 24-month construction period starting in 2023; construction 5 days per week assumed

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Grading - An estimated 7,000 cubic yards of material would be imported and an estimate 7,000 cy would be exported

Area Coating - Bridge structure assumed to not be painted

Construction Off-road Equipment Mitigation - Rule 403 compliance

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	98010	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	50
tblConstructionPhase	NumDays	2.00	53.00
tblConstructionPhase	NumDays	4.00	211.00
tblConstructionPhase	NumDays	200.00	185.00
tblConstructionPhase	NumDays	10.00	70.00
tblGrading	AcresOfGrading	53.00	1.50
tblGrading	AcresOfGrading	1,266.00	1.50
tblGrading	MaterialExported	0.00	7,000.00
tblGrading	MaterialImported	0.00	7,000.00
tblOffRoadEquipment	HorsePower	125.00	9.00
tblOffRoadEquipment	HorsePower	78.00	226.00
tblOffRoadEquipment	HorsePower	84.00	89.00
tblOffRoadEquipment	HorsePower	174.00	84.00
tblOffRoadEquipment	HorsePower	226.00	174.00
tblOffRoadEquipment	HorsePower	208.00	174.00
tblOffRoadEquipment	HorsePower	208.00	255.00
tblOffRoadEquipment	HorsePower	162.00	255.00
tblOffRoadEquipment	HorsePower	8.00	97.00
tblOffRoadEquipment	HorsePower	162.00	97.00
tblOffRoadEquipment	HorsePower	84.00	46.00
tblOffRoadEquipment	LoadFactor	0.42	0.56
tblOffRoadEquipment	LoadFactor	0.48	0.29
tblOffRoadEquipment	LoadFactor	0.74	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.29	0.41
tblOffRoadEquipment	LoadFactor	0.43	0.41

tblOffRoadEquipment	LoadFactor	0.43	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	LoadFactor	0.43	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.74	0.45
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType	Welders	Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts

tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	55.00	53.00
tblTripsAndVMT	WorkerTripNumber	15.00	13.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	8.4831	84.6455	75.5694	0.1614	5.3888	3.6993	8.9700	2.9234	3.4034	6.0852	0.0000	15,395.9765	15,395.9765	4.6498	0.0000	15,493.6232
2024	8.0467	77.7154	74.0579	0.1614	10.9432	3.3683	14.3114	4.0742	3.0988	7.1730	0.0000	15,388.0871	15,388.0871	4.6476	0.0000	15,485.6864
Total	**16.5298**	**162.3608**	**149.6273**	**0.3228**	**16.3320**	**7.0675**	**23.2814**	**6.9976**	**6.5022**	**13.2582**	**0.0000**	**30,784.0636**	**30,784.0636**	**9.2974**	**0.0000**	**30,979.3096**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	8.4831	84.6455	75.5694	0.1614	2.1930	3.6993	5.8923	1.1451	3.4034	4.4927	0.0000	15,395.9765	15,395.9765	4.6498	0.0000	15,493.6232
2024	8.0467	77.7154	74.0579	0.1614	5.0293	3.3683	8.3975	1.7855	3.0988	4.8843	0.0000	15,388.0871	15,388.0871	4.6476	0.0000	15,485.6864
Total	**16.5298**	**162.3608**	**149.6273**	**0.3228**	**7.2223**	**7.0675**	**14.2898**	**2.9305**	**6.5022**	**9.3770**	**0.0000**	**30,784.0636**	**30,784.0636**	**9.2974**	**0.0000**	**30,979.3096**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**55.78**	**0.00**	**38.62**	**58.12**	**0.00**	**29.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3975	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.3000e-004	3.3000e-004	0.0000		3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.3975**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**0.0000**	**3.5000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.3975	0.0000	1.5000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		3.3000e-004	3.3000e-004	0.0000		3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.3975**	**0.0000**	**1.5000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**0.0000**	**3.5000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grubbing/Land Clearing	Site Preparation	1/1/2023	3/15/2023	5	53	
2	Grading/Excavation	Grading	3/16/2023	1/4/2024	5	211	
3	Drainage/Utilities/Sub-Grade	Building Construction	1/5/2024	9/19/2024	5	185	
4	Paving	Paving	9/20/2024	12/26/2024	5	70	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Pavers	1	8.00	9	0.56
Drainage/Utilities/Sub-Grade	Air Compressors	1	8.00	226	0.29
Drainage/Utilities/Sub-Grade	Generator Sets	1	8.00	89	0.20
Drainage/Utilities/Sub-Grade	Graders	2	8.00	84	0.74
Grading/Excavation	Cranes	1	8.00	174	0.41
Grubbing/Land Clearing	Crawler Tractors	1	8.00	174	0.41
Paving	Cement and Mortar Mixers	1	6.00	9	0.56

Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	8.00	80	0.38
Grading/Excavation	Crawler Tractors	2	8.00	255	0.40
Grubbing/Land Clearing	Excavators	2	8.00	255	0.40
Drainage/Utilities/Sub-Grade	Plate Compactors	1	8.00	97	0.37
Grading/Excavation	Excavators	4	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading/Excavation	Graders	2	8.00	174	0.41
Drainage/Utilities/Sub-Grade	Pumps	1	8.00	46	0.45
Grading/Excavation	Rollers	3	8.00	80	0.38
Grading/Excavation	Rubber Tired Loaders	3	8.00	199	0.36
Grading/Excavation	Scrapers	4	8.00	361	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Rough Terrain Forklifts	1	8.00	100	0.40
Drainage/Utilities/Sub-Grade	Scrapers	4	8.00	361	0.48
Drainage/Utilities/Sub-Grade	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Cranes	1	6.00	226	0.29
Drainage/Utilities/Sub-Grade	Forklifts	1	6.00	89	0.20
Grubbing/Land Clearing	Graders	1	8.00	174	0.41
Grading/Excavation	Rubber Tired Dozers	1	6.00	255	0.40
Grubbing/Land Clearing	Rubber Tired Dozers	1	7.00	255	0.40
Grubbing/Land Clearing	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Drainage/Utilities/Sub-Grade	Welders	3	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Drainage/Utilities/Sub-Grade	18	27.00	11.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	22	53.00	0.00	1,750.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grubbing/Land Clearing	6	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Grubbing/Land Clearing - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2993	0.0000	5.2993	2.8997	0.0000	2.8997			0.0000			0.0000
Off-Road	2.2205	20.3421	20.2265	0.0407		0.9805	0.9805		0.9021	0.9021		3,942.5594	3,942.5594	1.2751		3,969.3366
Total	**2.2205**	**20.3421**	**20.2265**	**0.0407**	**5.2993**	**0.9805**	**6.2798**	**2.8997**	**0.9021**	**3.8017**		**3,942.5594**	**3,942.5594**	**1.2751**		**3,969.3366**

3.2 Grubbing/Land Clearing - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0210	0.0257	0.3246	1.1600e-003	0.0894	7.5000e-004	0.0902	0.0237	6.9000e-004	0.0244		80.1389	80.1389	3.5800e-003		80.2140
Total	**0.0210**	**0.0257**	**0.3246**	**1.1600e-003**	**0.0894**	**7.5000e-004**	**0.0902**	**0.0237**	**6.9000e-004**	**0.0244**		**80.1389**	**80.1389**	**3.5800e-003**		**80.2140**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0667	0.0000	2.0667	1.1309	0.0000	1.1309			0.0000			0.0000
Off-Road	2.2205	20.3421	20.2265	0.0407		0.9805	0.9805		0.9021	0.9021	0.0000	3,942.5594	3,942.5594	1.2751		3,969.3366
Total	**2.2205**	**20.3421**	**20.2265**	**0.0407**	**2.0667**	**0.9805**	**3.0472**	**1.1309**	**0.9021**	**2.0329**	**0.0000**	**3,942.5594**	**3,942.5594**	**1.2751**		**3,969.3366**

3.2 Grubbing/Land Clearing - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0210	0.0257	0.3246	1.1600e-003	0.0506	7.5000e-004	0.0513	0.0142	6.9000e-004	0.0149		80.1389	80.1389	3.5800e-003		80.2140
Total	**0.0210**	**0.0257**	**0.3246**	**1.1600e-003**	**0.0506**	**7.5000e-004**	**0.0513**	**0.0142**	**6.9000e-004**	**0.0149**		**80.1389**	**80.1389**	**3.5800e-003**		**80.2140**

3.3 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5316	0.0000	4.5316	2.4846	0.0000	2.4846			0.0000			0.0000
Off-Road	8.2284	83.5263	72.0291	0.1476		3.6639	3.6639		3.3708	3.3708		14,291.2122	14,291.2122	4.6221		14,388.2756
Total	**8.2284**	**83.5263**	**72.0291**	**0.1476**	**4.5316**	**3.6639**	**8.1955**	**2.4846**	**3.3708**	**5.8554**		**14,291.2122**	**14,291.2122**	**4.6221**		**14,388.2756**

3.3 Grading/Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1155	0.9490	1.3898	6.1000e-003	0.1467	0.0305	0.1771	0.0401	0.0280	0.0681		573.8442	573.8442	4.0800e-003		573.9299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1392	0.1702	2.1505	7.6800e-003	0.5924	4.9500e-003	0.5974	0.1571	4.6000e-003	0.1617		530.9201	530.9201	0.0237		531.4177
Total	**0.2547**	**1.1192**	**3.5403**	**0.0138**	**0.7391**	**0.0354**	**0.7745**	**0.1972**	**0.0326**	**0.2298**		**1,104.7644**	**1,104.7644**	**0.0278**		**1,105.3476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7673	0.0000	1.7673	0.9690	0.0000	0.9690			0.0000			0.0000
Off-Road	8.2284	83.5263	72.0291	0.1476		3.6639	3.6639		3.3708	3.3708	0.0000	14,291.2122	14,291.2122	4.6221		14,388.2756
Total	**8.2284**	**83.5263**	**72.0291**	**0.1476**	**1.7673**	**3.6639**	**5.4312**	**0.9690**	**3.3708**	**4.3398**	**0.0000**	**14,291.2122**	**14,291.2122**	**4.6221**		**14,388.2756**

3.3 Grading/Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1155	0.9490	1.3898	6.1000e-003	0.0908	0.0305	0.1213	0.0264	0.0280	0.0544		573.8442	573.8442	4.0800e-003		573.9299
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1392	0.1702	2.1505	7.6800e-003	0.3349	4.9500e-003	0.3399	0.0939	4.6000e-003	0.0985		530.9201	530.9201	0.0237		531.4177
Total	**0.2547**	**1.1192**	**3.5403**	**0.0138**	**0.4257**	**0.0354**	**0.4611**	**0.1203**	**0.0326**	**0.1529**		**1,104.7644**	**1,104.7644**	**0.0278**		**1,105.3476**

3.3 Grading/Excavation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.5316	0.0000	4.5316	2.4846	0.0000	2.4846			0.0000			0.0000
Off-Road	7.7987	76.6059	70.6367	0.1476		3.3328	3.3328		3.0661	3.0661		14,285.9846	14,285.9846	4.6204		14,383.0125
Total	**7.7987**	**76.6059**	**70.6367**	**0.1476**	**4.5316**	**3.3328**	**7.8644**	**2.4846**	**3.0661**	**5.5508**		**14,285.9846**	**14,285.9846**	**4.6204**		**14,383.0125**

3.3 Grading/Excavation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1156	0.9485	1.3770	6.1100e-003	5.8192	0.0305	5.8497	1.4325	0.0281	1.4605		575.0466	575.0466	4.1400e-003		575.1335
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1324	0.1609	2.0443	7.7400e-003	0.5924	5.0000e-003	0.5974	0.1571	4.6400e-003	0.1618		527.0560	527.0560	0.0231		527.5405
Total	**0.2480**	**1.1095**	**3.4212**	**0.0139**	**6.4116**	**0.0355**	**6.4471**	**1.5896**	**0.0327**	**1.6223**		**1,102.1025**	**1,102.1025**	**0.0272**		**1,102.6739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.7673	0.0000	1.7673	0.9690	0.0000	0.9690			0.0000			0.0000
Off-Road	7.7987	76.6059	70.6367	0.1476		3.3328	3.3328		3.0661	3.0661	0.0000	14,285.9846	14,285.9846	4.6204		14,383.0125
Total	**7.7987**	**76.6059**	**70.6367**	**0.1476**	**1.7673**	**3.3328**	**5.1001**	**0.9690**	**3.0661**	**4.0351**	**0.0000**	**14,285.9846**	**14,285.9846**	**4.6204**		**14,383.0125**

3.3 Grading/Excavation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1156	0.9485	1.3770	6.1100e-003	2.9271	0.0305	2.9576	0.7226	0.0281	0.7506		575.0466	575.0466	4.1400e-003		575.1335
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1324	0.1609	2.0443	7.7400e-003	0.3349	5.0000e-003	0.3399	0.0939	4.6400e-003	0.0985		527.0560	527.0560	0.0231		527.5405
Total	**0.2480**	**1.1095**	**3.4212**	**0.0139**	**3.2620**	**0.0355**	**3.2975**	**0.8165**	**0.0327**	**0.8492**		**1,102.1025**	**1,102.1025**	**0.0272**		**1,102.6739**

3.4 Drainage/Utilities/Sub-Grade - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.4542	57.4588	50.4732	0.1047		2.6771	2.6771		2.4838	2.4838		9,962.1476	9,962.1476	2.7944		10,020.8303
Total	**6.4542**	**57.4588**	**50.4732**	**0.1047**		**2.6771**	**2.6771**		**2.4838**	**2.4838**		**9,962.1476**	**9,962.1476**	**2.7944**		**10,020.8303**

3.4 Drainage/Utilities/Sub-Grade - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0626	0.3989	0.8352	2.3900e-003	0.0687	9.7600e-003	0.0784	0.0195	8.9800e-003	0.0285		223.5947	223.5947	1.5300e-003		223.6269
Worker	0.0674	0.0820	1.0414	3.9400e-003	0.3018	2.5500e-003	0.3043	0.0800	2.3600e-003	0.0824		268.5002	268.5002	0.0118		268.7470
Total	**0.1300**	**0.4808**	**1.8766**	**6.3300e-003**	**0.3705**	**0.0123**	**0.3828**	**0.0996**	**0.0113**	**0.1109**		**492.0950**	**492.0950**	**0.0133**		**492.3739**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	6.4542	57.4588	50.4732	0.1047		2.6771	2.6771		2.4838	2.4838	0.0000	9,962.1476	9,962.1476	2.7944		10,020.8303
Total	**6.4542**	**57.4588**	**50.4732**	**0.1047**		**2.6771**	**2.6771**		**2.4838**	**2.4838**	**0.0000**	**9,962.1476**	**9,962.1476**	**2.7944**		**10,020.8303**

3.4 Drainage/Utilities/Sub-Grade - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0626	0.3989	0.8352	2.3900e-003	0.0436	9.7600e-003	0.0533	0.0134	8.9800e-003	0.0224		223.5947	223.5947	1.5300e-003		223.6269
Worker	0.0674	0.0820	1.0414	3.9400e-003	0.1706	2.5500e-003	0.1732	0.0478	2.3600e-003	0.0502		268.5002	268.5002	0.0118		268.7470
Total	**0.1300**	**0.4808**	**1.8766**	**6.3300e-003**	**0.2142**	**0.0123**	**0.2265**	**0.0612**	**0.0113**	**0.0726**		**492.0950**	**492.0950**	**0.0133**		**492.3739**

3.5 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6399	6.1704	9.0834	0.0134		0.2955	0.2955		0.2727	0.2727		1,284.0554	1,284.0554	0.4070		1,292.6017
Paving	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6960**	**6.1704**	**9.0834**	**0.0134**		**0.2955**	**0.2955**		**0.2727**	**0.2727**		**1,284.0554**	**1,284.0554**	**0.4070**		**1,292.6017**

3.5 Paving - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0325	0.0395	0.5014	1.9000e-003	0.1453	1.2300e-003	0.1465	0.0385	1.1400e-003	0.0397		129.2779	129.2779	5.6600e-003		129.3967
Total	**0.0325**	**0.0395**	**0.5014**	**1.9000e-003**	**0.1453**	**1.2300e-003**	**0.1465**	**0.0385**	**1.1400e-003**	**0.0397**		**129.2779**	**129.2779**	**5.6600e-003**		**129.3967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6399	6.1704	9.0834	0.0134		0.2955	0.2955		0.2727	0.2727	0.0000	1,284.0554	1,284.0554	0.4070		1,292.6017
Paving	0.0561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6960**	**6.1704**	**9.0834**	**0.0134**		**0.2955**	**0.2955**		**0.2727**	**0.2727**	**0.0000**	**1,284.0554**	**1,284.0554**	**0.4070**		**1,292.6017**

3.5 Paving - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0325	0.0395	0.5014	1.9000e-003	0.0822	1.2300e-003	0.0834	0.0230	1.1400e-003	0.0242		129.2779	129.2779	5.6600e-003		129.3967
Total	**0.0325**	**0.0395**	**0.5014**	**1.9000e-003**	**0.0822**	**1.2300e-003**	**0.0834**	**0.0230**	**1.1400e-003**	**0.0242**		**129.2779**	**129.2779**	**5.6600e-003**		**129.3967**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Santa Monica Pier Bridge Replacement

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.50	Acre	1.50	65,340.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project footprint would be approximately 1.5 acres

Construction Phase - 24-month construction period starting in 2023; construction 5 days per week assumed

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Off-road Equipment - Construction equipment list consistent with Road Construction model

Grading - An estimated 7,000 cubic yards of material would be imported and an estimate 7,000 cy would be exported

Area Coating - Bridge structure assumed to not be painted

Construction Off-road Equipment Mitigation - Rule 403 compliance
Tier 4 Final equipment for mitigation

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	98010	0
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	50
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	2.00	53.00
tblConstructionPhase	NumDays	4.00	211.00
tblConstructionPhase	NumDays	200.00	185.00
tblConstructionPhase	NumDays	10.00	70.00
tblGrading	AcresOfGrading	53.00	1.50
tblGrading	AcresOfGrading	1,266.00	1.50
tblGrading	MaterialExported	0.00	7,000.00
tblGrading	MaterialImported	0.00	7,000.00
tblOffRoadEquipment	HorsePower	125.00	9.00
tblOffRoadEquipment	HorsePower	78.00	226.00
tblOffRoadEquipment	HorsePower	84.00	89.00
tblOffRoadEquipment	HorsePower	174.00	84.00
tblOffRoadEquipment	HorsePower	226.00	174.00
tblOffRoadEquipment	HorsePower	208.00	174.00
tblOffRoadEquipment	HorsePower	208.00	255.00

tblOffRoadEquipment	HorsePower	162.00	255.00
tblOffRoadEquipment	HorsePower	8.00	97.00
tblOffRoadEquipment	HorsePower	162.00	97.00
tblOffRoadEquipment	HorsePower	84.00	46.00
tblOffRoadEquipment	LoadFactor	0.42	0.56
tblOffRoadEquipment	LoadFactor	0.48	0.29
tblOffRoadEquipment	LoadFactor	0.74	0.20
tblOffRoadEquipment	LoadFactor	0.41	0.74
tblOffRoadEquipment	LoadFactor	0.29	0.41
tblOffRoadEquipment	LoadFactor	0.43	0.41
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tblOffRoadEquipment	LoadFactor	0.38	0.37
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tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
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tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType	Cranes	Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType	Generator Sets	Graders
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Cranes
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Crawler Tractors

tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType	Welders	Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	OperationalYear	2014	2025
tblTripsAndVMT	WorkerTripNumber	55.00	53.00
tblTripsAndVMT	WorkerTripNumber	15.00	13.00
tblTripsAndVMT	WorkerTripNumber	15.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.9373	9.3082	8.3739	0.0178	0.6959	0.4089	1.1048	0.3596	0.3762	0.7358	0.0000	1,540.0974	1,540.0974	0.4673	0.0000	1,549.9114
2024	0.6507	5.7350	5.3348	0.0111	0.5292	0.2659	0.7951	0.2756	0.2466	0.5222	0.0000	948.8475	948.8475	0.2571	0.0000	954.2475
Total	**1.5880**	**15.0431**	**13.7087**	**0.0289**	**1.2251**	**0.6748**	**1.8999**	**0.6353**	**0.6228**	**1.2580**	**0.0000**	**2,488.9449**	**2,488.9449**	**0.7245**	**0.0000**	**2,504.1589**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2275	0.9939	9.2877	0.0178	0.2859	0.0305	0.3163	0.1448	0.0302	0.1750	0.0000	1,540.0957	1,540.0957	0.4673	0.0000	1,549.9097
2024	0.1466	0.9194	5.7857	0.0111	0.2152	0.0176	0.2328	0.1102	0.0175	0.1277	0.0000	948.8464	948.8464	0.2571	0.0000	954.2464
Total	**0.3741**	**1.9133**	**15.0733**	**0.0289**	**0.5010**	**0.0481**	**0.5491**	**0.2550**	**0.0477**	**0.3027**	**0.0000**	**2,488.9421**	**2,488.9421**	**0.7245**	**0.0000**	**2,504.1561**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**76.44**	**87.28**	**-9.95**	**0.00**	**59.10**	**92.87**	**71.10**	**59.85**	**92.34**	**75.93**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC2014 (v1.0.7) Emission Rates
Region Type: Sub-Area
Region: Los Angeles (SC)
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2011 Categories
Units: miles/day for VMT, g/mile for RUNEX, PMBW and PMTW

Region	CalYr	VehClass	MdlYr	Speed	Fuel	VMT	Weight	CO_RUNEX	Weighted Factor
Los Angeles (SC)	2025	LDA	Aggregated	5	GAS	387,280.62	55.91%	0.977750788	0.546684975
Los Angeles (SC)	2025	LDT1	Aggregated	5	GAS	35,140.73	5.07%	2.34368776	0.118903263
Los Angeles (SC)	2025	LDT2	Aggregated	5	GAS	164,232.72	23.71%	1.203364568	0.285325182
Los Angeles (SC)	2025	LHD1	Aggregated	5	GAS	3,962.56	0.57%	2.154967807	0.012328204
Los Angeles (SC)	2025	LHD2	Aggregated	5	GAS	1,272.88	0.18%	0.627392326	0.001152948
Los Angeles (SC)	2025	MCY	Aggregated	5	GAS	4,087.12	0.59%	43.4169294	0.256188797
Los Angeles (SC)	2025	MDV	Aggregated	5	GAS	90,938.88	13.13%	1.762349212	0.231379452
Los Angeles (SC)	2025	MH	Aggregated	5	GAS	383.93	0.06%	3.656634113	0.002026825
Los Angeles (SC)	2025	OBUS	Aggregated	5	GAS	625.87	0.09%	0.930475494	0.000840765
Los Angeles (SC)	2025	SBUS	Aggregated	5	GAS	599.68	0.09%	1.418075759	0.001227724
Los Angeles (SC)	2025	T6TS	Aggregated	5	GAS	1,493.88	0.22%	1.622523254	0.003499372
Los Angeles (SC)	2025	T7IS	Aggregated	5	GAS	183.71	0.03%	52.84230963	0.014014923
Los Angeles (SC)	2025	UBUS	Aggregated	5	GAS	2,452.14	0.35%	7.580339668	0.026835908
						692,654.73	100.00%		1.500408340

(Adopted May 7, 1976) (Amended November 6, 1992)
(Amended July 9, 1993) (Amended February 14, 1997)
(Amended December 11, 1998)(Amended April 2, 2004)
(Amended June 3, 2005)

RULE 403. FUGITIVE DUST

(a) Purpose

The purpose of this Rule is to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions.

(b) Applicability

The provisions of this Rule shall apply to any activity or man-made condition capable of generating fugitive dust.

(c) Definitions

(1) ACTIVE OPERATIONS means any source capable of generating fugitive dust, including, but not limited to, earth-moving activities, construction/demolition activities, disturbed surface area, or heavy- and light-duty vehicular movement.

(2) AGGREGATE-RELATED PLANTS are defined as facilities that produce and / or mix sand and gravel and crushed stone.

(3) AGRICULTURAL HANDBOOK means the region-specific guidance document that has been approved by the Governing Board or hereafter approved by the Executive Officer and the U.S. EPA. For the South Coast Air Basin, the Board-approved region-specific guidance document is the Rule 403 Agricultural Handbook dated December 1998. For the Coachella Valley, the Board-approved region-specific guidance document is the Rule 403 Coachella Valley Agricultural Handbook dated April 2, 2004.

(4) ANEMOMETERS are devices used to measure wind speed and direction in accordance with the performance standards, and maintenance and calibration criteria as contained in the most recent Rule 403 Implementation Handbook.

(5) BEST AVAILABLE CONTROL MEASURES means fugitive dust control actions that are set forth in Table 1 of this Rule.

(6) BULK MATERIAL is sand, gravel, soil, aggregate material less than two inches in length or diameter, and other organic or inorganic particulate matter.

(7) CEMENT MANUFACTURING FACILITY is any facility that has a cement kiln at the facility.

(8) CHEMICAL STABILIZERS are any non-toxic chemical dust suppressant which must not be used if prohibited for use by the Regional Water Quality Control Boards, the California Air Resources Board, the U.S. Environmental Protection Agency (U.S. EPA), or any applicable law, rule or regulation. The chemical stabilizers shall meet any specifications, criteria, or tests required by any federal, state, or local water agency. Unless otherwise indicated, the use of a non-toxic chemical stabilizer shall be of sufficient concentration and application frequency to maintain a stabilized surface.

(9) COMMERCIAL POULTRY RANCH means any building, structure, enclosure, or premises where more than 100 fowl are kept or maintained for the primary purpose of producing eggs or meat for sale or other distribution.

(10) CONFINED ANIMAL FACILITY means a source or group of sources of air pollution at an agricultural source for the raising of 3,360 or more fowl or 50 or more animals, including but not limited to, any structure, building, installation, farm, corral, coop, feed storage area, milking parlor, or system for the collection, storage, or distribution of solid and liquid manure; if domesticated animals, including horses, sheep, goats, swine, beef cattle, rabbits, chickens, turkeys, or ducks are corralled, penned, or otherwise caused to remain in restricted areas for commercial agricultural purposes and feeding is by means other than grazing.

(11) CONSTRUCTION/DEMOLITION ACTIVITIES means any on-site mechanical activities conducted in preparation of, or related to, the building, alteration, rehabilitation, demolition or improvement of property, including, but not limited to the following activities: grading, excavation, loading, crushing, cutting, planing, shaping or ground breaking.

(12) CONTRACTOR means any person who has a contractual arrangement to conduct an active operation for another person.

(13) DAIRY FARM is an operation on a property, or set of properties that are contiguous or separated only by a public right-of-way, that raises cows or

produces milk from cows for the purpose of making a profit or for a livelihood. Heifer and calf farms are dairy farms.

(14) DISTURBED SURFACE AREA means a portion of the earth's surface which has been physically moved, uncovered, destabilized, or otherwise modified from its undisturbed natural soil condition, thereby increasing the potential for emission of fugitive dust. This definition excludes those areas which have:

(A) been restored to a natural state, such that the vegetative ground cover and soil characteristics are similar to adjacent or nearby natural conditions;

(B) been paved or otherwise covered by a permanent structure; or

(C) sustained a vegetative ground cover of at least 70 percent of the native cover for a particular area for at least 30 days.

(15) DUST SUPPRESSANTS are water, hygroscopic materials, or non-toxic chemical stabilizers used as a treatment material to reduce fugitive dust emissions.

(16) EARTH-MOVING ACTIVITIES means the use of any equipment for any activity where soil is being moved or uncovered, and shall include, but not be limited to the following: grading, earth cutting and filling operations, loading or unloading of dirt or bulk materials, adding to or removing from open storage piles of bulk materials, landfill operations, weed abatement through disking, and soil mulching.

(17) DUST CONTROL SUPERVISOR means a person with the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule 403 requirements at an active operation.

(18) FUGITIVE DUST means any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of any person.

(19) HIGH WIND CONDITIONS means that instantaneous wind speeds exceed 25 miles per hour.

(20) INACTIVE DISTURBED SURFACE AREA means any disturbed surface area upon which active operations have not occurred or are not expected to occur for a period of 20 consecutive days.

(21) LARGE OPERATIONS means any active operations on property which contains 50 or more acres of disturbed surface area; or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic

meters (5,000 cubic yards) or more three times during the most recent 365-day period.

(22) OPEN STORAGE PILE is any accumulation of bulk material, which is not fully enclosed, covered or chemically stabilized, and which attains a height of three feet or more and a total surface area of 150 or more square feet.

(23) PARTICULATE MATTER means any material, except uncombined water, which exists in a finely divided form as a liquid or solid at standard conditions.

(24) PAVED ROAD means a public or private improved street, highway, alley, public way, or easement that is covered by typical roadway materials, but excluding access roadways that connect a facility with a public paved roadway and are not open to through traffic. Public paved roads are those open to public access and that are owned by any federal, state, county, municipal or any other governmental or quasi-governmental agencies. Private paved roads are any paved roads not defined as public.

(25) PM_{10} means particulate matter with an aerodynamic diameter smaller than or equal to 10 microns as measured by the applicable State and Federal reference test methods.

(26) PROPERTY LINE means the boundaries of an area in which either a person causing the emission or a person allowing the emission has the legal use or possession of the property. Where such property is divided into one or more sub-tenancies, the property line(s) shall refer to the boundaries dividing the areas of all sub-tenancies.

(27) RULE 403 IMPLEMENTATION HANDBOOK means a guidance document that has been approved by the Governing Board on April 2, 2004 or hereafter approved by the Executive Officer and the U.S. EPA.

(28) SERVICE ROADS are paved or unpaved roads that are used by one or more public agencies for inspection or maintenance of infrastructure and which are not typically used for construction-related activity.

(29) SIMULTANEOUS SAMPLING means the operation of two PM_{10} samplers in such a manner that one sampler is started within five minutes of the other, and each sampler is operated for a consecutive period which must be not less than 290 minutes and not more than 310 minutes.

(30) SOUTH COAST AIR BASIN means the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange

County as defined in California Code of Regulations, Title 17, Section 60104. The area is bounded on the west by the Pacific Ocean, on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains, and on the south by the San Diego county line.

(31) STABILIZED SURFACE means any previously disturbed surface area or open storage pile which, through the application of dust suppressants, shows visual or other evidence of surface crusting and is resistant to wind-driven fugitive dust and is demonstrated to be stabilized. Stabilization can be demonstrated by one or more of the applicable test methods contained in the Rule 403 Implementation Handbook.

(32) TRACK-OUT means any bulk material that adheres to and agglomerates on the exterior surface of motor vehicles, haul trucks, and equipment (including tires) that have been released onto a paved road and can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(33) TYPICAL ROADWAY MATERIALS means concrete, asphaltic concrete, recycled asphalt, asphalt, or any other material of equivalent performance as determined by the Executive Officer, and the U.S. EPA.

(34) UNPAVED ROADS means any unsealed or unpaved roads, equipment paths, or travel ways that are not covered by typical roadway materials. Public unpaved roads are any unpaved roadway owned by federal, state, county, municipal or other governmental or quasi-governmental agencies. Private unpaved roads are all other unpaved roadways not defined as public.

(35) VISIBLE ROADWAY DUST means any sand, soil, dirt, or other solid particulate matter which is visible upon paved road surfaces and which can be removed by a vacuum sweeper or a broom sweeper under normal operating conditions.

(36) WIND-DRIVEN FUGITIVE DUST means visible emissions from any disturbed surface area which is generated by wind action alone.

(37) WIND GUST is the maximum instantaneous wind speed as measured by an anemometer.

(d) Requirements

(1) No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

(A) the dust remains visible in the atmosphere beyond the property line of the emission source; or

(B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

(2) No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

(3) No person shall cause or allow PM_{10} levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM_{10} monitoring. If sampling is conducted, samplers shall be:

(A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM_{10}.

(B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

(4) No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

(5) No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

(A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.

(B) Pave the surface extending at least 100 feet and at least 20 feet wide.

(C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.

(E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).

(6) Beginning January 1, 2006, any person who operates or authorizes the operation of a confined animal facility subject to this Rule shall implement the applicable conservation management practices specified in Table 4 of this Rule.

(e) Additional Requirements for Large Operations

(1) Any person who conducts or authorizes the conducting of a large operation subject to this Rule shall implement the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards can not be met through use of Table 2 actions; and shall:

(A) submit a fully executed Large Operation Notification (Form 403 N) to the Executive Officer within 7 days of qualifying as a large operation;

(B) include, as part of the notification, the name(s), address(es), and phone number(s) of the person(s) responsible for the submittal, and a description of the operation(s), including a map depicting the location of the site;

(C) maintain daily records to document the specific dust control actions taken, maintain such records for a period of not less than three years; and make such records available to the Executive Officer upon request;

(D) install and maintain project signage with project contact signage that meets the minimum standards of the Rule 403 Implementation Handbook, prior to initiating any earthmoving activities;

(E) identify a dust control supervisor that:

(i) is employed by or contracted with the property owner or developer;

(ii) is on the site or available on-site within 30 minutes during working hours;

(iii) has the authority to expeditiously employ sufficient dust mitigation measures to ensure compliance with all Rule requirements;

(iv) has completed the AQMD Fugitive Dust Control Class and has been issued a valid Certificate of Completion for the class; and

(F) notify the Executive Officer in writing within 30 days after the site no longer qualifies as a large operation as defined by paragraph (c)(18).

(2) Any Large Operation Notification submitted to the Executive Officer or AQMD-approved dust control plan shall be valid for a period of one year from the date of written acceptance by the Executive Officer. Any Large Operation Notification accepted pursuant to paragraph (e)(1), excluding those submitted by aggregate-related plants and cement manufacturing facilities must be resubmitted annually by the person who conducts or authorizes the conducting of a large operation, at least 30 days prior to the expiration date, or the submittal shall no longer be valid as of the expiration date. If all fugitive dust sources and corresponding control measures or special circumstances remain identical to those identified in the previously accepted submittal or in an AQMD-approved dust control plan, the resubmittal may be a simple statement of no-change (Form 403NC).

(f) Compliance Schedule

The newly amended provisions of this Rule shall become effective upon adoption. Pursuant to subdivision (e), any existing site that qualifies as a large operation will have 60 days from the date of Rule adoption to comply with the notification and recordkeeping requirements for large operations. Any Large Operation

Notification or AQMD-approved dust control plan which has been accepted prior to the date of adoption of these amendments shall remain in effect and the Large Operation Notification or AQMD-approved dust control plan annual resubmittal date shall be one year from adoption of this Rule amendment.

(g) Exemptions

(1) The provisions of this Rule shall not apply to:

(A) Dairy farms.

(B) Confined animal facilities provided that the combined disturbed surface area within one continuous property line is one acre or less.

(C) Agricultural vegetative crop operations provided that the combined disturbed surface area within one continuous property line and not separated by a paved public road is 10 acres or less.

(D) Agricultural vegetative crop operations within the South Coast Air Basin, whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Agricultural Handbook;

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(E) Agricultural vegetative crop operations outside the South Coast Air Basin whose combined disturbed surface area includes more than 10 acres provided that the person responsible for such operations:

(i) voluntarily implements the conservation management practices contained in the Rule 403 Coachella Valley Agricultural Handbook; and

(ii) completes and maintains the self-monitoring form documenting sufficient conservation management practices, as described in the Rule 403 Coachella Valley Agricultural Handbook; and

(iii) makes the completed self-monitoring form available to the Executive Officer upon request.

(F) Active operations conducted during emergency life-threatening situations, or in conjunction with any officially declared disaster or state of emergency.

(G) Active operations conducted by essential service utilities to provide electricity, natural gas, telephone, water and sewer during periods of service outages and emergency disruptions.

(H) Any contractor subsequent to the time the contract ends, provided that such contractor implemented the required control measures during the contractual period.

(I) Any grading contractor, for a phase of active operations, subsequent to the contractual completion of that phase of earth-moving activities, provided that the required control measures have been implemented during the entire phase of earth-moving activities, through and including five days after the final grading inspection.

(J) Weed abatement operations ordered by a county agricultural commissioner or any state, county, or municipal fire department, provided that:

(i) mowing, cutting or other similar process is used which maintains weed stubble at least three inches above the soil; and

(ii) any discing or similar operation which cuts into and disturbs the soil, where watering is used prior to initiation of these activities, and a determination is made by the agency issuing the weed abatement order that, due to fire hazard conditions, rocks, or other physical obstructions, it is not practical to meet the conditions specified in clause (g)(1)(H)(i). The provisions this clause shall not exempt the owner of any property from stabilizing, in accordance with paragraph (d)(2), disturbed surface areas which have been created as a result of the weed abatement actions.

(K) sandblasting operations.

(2) The provisions of paragraphs (d)(1) and (d)(3) shall not apply:

(A) When wind gusts exceed 25 miles per hour, provided that:

(i) The required Table 3 contingency measures in this Rule are implemented for each applicable fugitive dust source type, and;

(ii) records are maintained in accordance with subparagraph (e)(1)(C).

(B) To unpaved roads, provided such roads:

(i) are used solely for the maintenance of wind-generating equipment; or

(ii) are unpaved public alleys as defined in Rule 1186; or

(iii) are service roads that meet all of the following criteria:

(a) are less than 50 feet in width at all points along the road;

(b) are within 25 feet of the property line; and

(c) have a traffic volume less than 20 vehicle-trips per day.

(C) To any active operation, open storage pile, or disturbed surface area for which necessary fugitive dust preventive or mitigative actions are in conflict with the federal Endangered Species Act, as determined in writing by the State or federal agency responsible for making such determinations.

(3) The provisions of (d)(2) shall not apply to any aggregate-related plant or cement manufacturing facility that implements the applicable actions specified in Table 2 of this Rule at all times and shall implement the applicable actions specified in Table 3 of this Rule when the applicable performance standards of paragraphs (d)(1) and (d)(3) can not be met through use of Table 2 actions.

(4) The provisions of paragraphs (d)(1), (d)(2), and (d)(3) shall not apply to:

(A) Blasting operations which have been permitted by the California Division of Industrial Safety; and

(B) Motion picture, television, and video production activities when dust emissions are required for visual effects. In order to obtain this exemption, the Executive Officer must receive notification in writing at least 72 hours in advance of any such activity and no nuisance results from such activity.

(5) The provisions of paragraph (d)(3) shall not apply if the dust control actions, as specified in Table 2, are implemented on a routine basis for

each applicable fugitive dust source type. To qualify for this exemption, a person must maintain records in accordance with subparagraph (e)(1)(C).

(6) The provisions of paragraph (d)(4) shall not apply to earth coverings of public paved roadways where such coverings are approved by a local government agency for the protection of the roadway, and where such coverings are used as roadway crossings for haul vehicles provided that such roadway is closed to through traffic and visible roadway dust is removed within one day following the cessation of activities.

(7) The provisions of subdivision (e) shall not apply to:

(A) officially-designated public parks and recreational areas, including national parks, national monuments, national forests, state parks, state recreational areas, and county regional parks.

(B) any large operation which is required to submit a dust control plan to any city or county government which has adopted a District-approved dust control ordinance.

(C) any large operation subject to Rule 1158, which has an approved dust control plan pursuant to Rule 1158, provided that all sources of fugitive dust are included in the Rule 1158 plan.

(8) The provisions of subparagraph (e)(1)(A) through (e)(1)(C) shall not apply to any large operation with an AQMD-approved fugitive dust control plan provided that there is no change to the sources and controls as identified in the AQMD-approved fugitive dust control plan.

(h) Fees

Any person conducting active operations for which the Executive Officer conducts upwind/downwind monitoring for PM_{10} pursuant to paragraph (d)(3) shall be assessed applicable Ambient Air Analysis Fees pursuant to Rule 304.1. Applicable fees shall be waived for any facility which is exempted from paragraph (d)(3) or meets the requirements of paragraph (d)(3).

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Backfilling	01-1 Stabilize backfill material when not actively handling; and 01-2 Stabilize backfill material during handling; and 01-3 Stabilize soil at completion of activity.	✓ Mix backfill soil with water prior to moving ✓ Dedicate water truck or high capacity hose to backfilling equipment ✓ Empty loader bucket slowly so that no dust plumes are generated ✓ Minimize drop height from loader bucket
Clearing and grubbing	02-1 Maintain stability of soil through pre-watering of site prior to clearing and grubbing; and 02-2 Stabilize soil during clearing and grubbing activities; and 02-3 Stabilize soil immediately after clearing and grubbing activities.	✓ Maintain live perennial vegetation where possible ✓ Apply water in sufficient quantity to prevent generation of dust plumes
Clearing forms	03-1 Use water spray to clear forms; or 03-2 Use sweeping and water spray to clear forms; or 03-3 Use vacuum system to clear forms.	✓ Use of high pressure air to clear forms may cause exceedance of Rule requirements
Crushing	04-1 Stabilize surface soils prior to operation of support equipment; and 04-2 Stabilize material after crushing.	✓ Follow permit conditions for crushing equipment ✓ Pre-water material prior to loading into crusher ✓ Monitor crusher emissions opacity ✓ Apply water to crushed material to prevent dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Cut and fill	05-1 Pre-water soils prior to cut and fill activities; and 05-2 Stabilize soil during and after cut and fill activities.	✓ For large sites, pre-water with sprinklers or water trucks and allow time for penetration ✓ Use water trucks/pulls to water soils to depth of cut prior to subsequent cuts
Demolition – mechanical/manual	06-1 Stabilize wind erodible surfaces to reduce dust; and 06-2 Stabilize surface soil where support equipment and vehicles will operate; and 06-3 Stabilize loose soil and demolition debris; and 06-4 Comply with AQMD Rule 1403.	✓ Apply water in sufficient quantities to prevent the generation of visible dust plumes
Disturbed soil	07-1 Stabilize disturbed soil throughout the construction site; and 07-2 Stabilize disturbed soil between structures	✓ Limit vehicular traffic and disturbances on soils where possible ✓ If interior block walls are planned, install as early as possible ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes
Earth-moving activities	08-1 Pre-apply water to depth of proposed cuts; and 08-2 Re-apply water as necessary to maintain soils in a damp condition and to ensure that visible emissions do not exceed 100 feet in any direction; and 08-3 Stabilize soils once earth-moving activities are complete.	✓ Grade each project phase separately, timed to coincide with construction phase ✓ Upwind fencing can prevent material movement on site ✓ Apply water or a stabilizing agent in sufficient quantities to prevent the generation of visible dust plumes

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Importing/exporting of bulk materials	09-1 Stabilize material while loading to reduce fugitive dust emissions; and 09-2 Maintain at least six inches of freeboard on haul vehicles; and 09-3 Stabilize material while transporting to reduce fugitive dust emissions; and 09-4 Stabilize material while unloading to reduce fugitive dust emissions; and 09-5 Comply with Vehicle Code Section 23114.	✓ Use tarps or other suitable enclosures on haul trucks ✓ Check belly-dump truck seals regularly and remove any trapped rocks to prevent spillage ✓ Comply with track-out prevention/mitigation requirements ✓ Provide water while loading and unloading to reduce visible dust plumes
Landscaping	10-1 Stabilize soils, materials, slopes	✓ Apply water to materials to stabilize ✓ Maintain materials in a crusted condition ✓ Maintain effective cover over materials ✓ Stabilize sloping surfaces using soil binders until vegetation or ground cover can effectively stabilize the slopes ✓ Hydroseed prior to rain season
Road shoulder maintenance	11-1 Apply water to unpaved shoulders prior to clearing; and 11-2 Apply chemical dust suppressants and/or washed gravel to maintain a stabilized surface after completing road shoulder maintenance.	✓ Installation of curbing and/or paving of road shoulders can reduce recurring maintenance costs ✓ Use of chemical dust suppressants can inhibit vegetation growth and reduce future road shoulder maintenance costs

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Screening	12-1 Pre-water material prior to screening; and 12-2 Limit fugitive dust emissions to opacity and plume length standards; and 12-3 Stabilize material immediately after screening.	✓ Dedicate water truck or high capacity hose to screening operation ✓ Drop material through the screen slowly and minimize drop height ✓ Install wind barrier with a porosity of no more than 50% upwind of screen to the height of the drop point
Staging areas	13-1 Stabilize staging areas during use; and 13-2 Stabilize staging area soils at project completion.	✓ Limit size of staging area ✓ Limit vehicle speeds to 15 miles per hour ✓ Limit number and size of staging area entrances/exists
Stockpiles/ Bulk Material Handling	14-1 Stabilize stockpiled materials. 14-2 Stockpiles within 100 yards of off-site occupied buildings must not be greater than eight feet in height; or must have a road bladed to the top to allow water truck access or must have an operational water irrigation system that is capable of complete stockpile coverage.	✓ Add or remove material from the downwind portion of the storage pile ✓ Maintain storage piles to avoid steep sides or faces

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Traffic areas for construction activities	15-1 Stabilize all off-road traffic and parking areas; and 15-2 Stabilize all haul routes; and 15-3 Direct construction traffic over established haul routes.	✓ Apply gravel/paving to all haul routes as soon as possible to all future roadway areas ✓ Barriers can be used to ensure vehicles are only used on established parking areas/haul routes
Trenching	16-1 Stabilize surface soils where trencher or excavator and support equipment will operate; and 16-2 Stabilize soils at the completion of trenching activities.	✓ Pre-watering of soils prior to trenching is an effective preventive measure. For deep trenching activities, pre-trench to 18 inches soak soils via the pre-trench and resuming trenching ✓ Washing mud and soils from equipment at the conclusion of trenching activities can prevent crusting and drying of soil on equipment
Truck loading	17-1 Pre-water material prior to loading; and 17-2 Ensure that freeboard exceeds six inches (CVC 23114)	✓ Empty loader bucket such that no visible dust plumes are created ✓ Ensure that the loader bucket is close to the truck to minimize drop height while loading
Turf Overseeding	18-1 Apply sufficient water immediately prior to conducting turf vacuuming activities to meet opacity and plume length standards; and 18-2 Cover haul vehicles prior to exiting the site.	✓ Haul waste material immediately off-site

TABLE 1
BEST AVAILABLE CONTROL MEASURES
(Applicable to All Construction Activity Sources)

Source Category	Control Measure	Guidance
Unpaved roads/parking lots	19-1 Stabilize soils to meet the applicable performance standards; and 19-2 Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
Vacant land	20-1 In instances where vacant lots are 0.10 acre or larger and have a cumulative area of 500 square feet or more that are driven over and/or used by motor vehicles and/or off-road vehicles, prevent motor vehicle and/or off-road vehicle trespassing, parking and/or access by installing barriers, curbs, fences, gates, posts, signs, shrubs, trees or other effective control measures.	

Table 2
DUST CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY		CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR
	(1a-1)	For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b)	Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Earth-moving: Construction cut areas and mining operations:	(1c)	Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b)	Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c)	Apply chemical stabilizers within five working days of grading completion; OR
	(2d)	Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a)	Apply water to at least 80 percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR
	(3b)	Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR
	(3c)	Establish a vegetative ground cover within 21 days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR
	(3d)	Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.

Table 2 (Continued)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS	
Unpaved Roads	(4a)	Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR
	(4b)	Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR
	(4c)	Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a)	Apply chemical stabilizers; OR
	(5b)	Apply water to at least 80 percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR
	(5c)	Install temporary coverings; OR
	(5d)	Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile. This option may only be used at aggregate-related plants or at cement manufacturing facilities.
All Categories	(6a)	Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

TABLE 3
CONTINGENCY CONTROL MEASURES FOR LARGE OPERATIONS

FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR (1B) Apply chemical stabilizers prior to wind event; OR (2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR (3B) Take the actions specified in Table 2, Item (3c); OR (4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice per hour; OR (2D) Install temporary coverings.
Paved road track-out	(1E) Cover all haul vehicles; OR (2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 3 may be used.

Table 4
(Conservation Management Practices for Confined Animal Facilities)

SOURCE CATEGORY	CONSERVATION MANAGEMENT PRACTICES
Manure Handling **(Only applicable to Commercial Poultry Ranches)**	(1a) Cover manure prior to removing material off-site; AND (1b) Spread the manure before 11:00 AM and when wind conditions are less than 25 miles per hour; AND (1c) Utilize coning and drying manure management by removing manure at laying hen houses at least twice per year and maintain a base of no less than 6 inches of dry manure after clean out; or in lieu of complying with conservation management practice (1c), comply with conservation management practice (1d). (1d) Utilize frequent manure removal by removing the manure from laying hen houses at least every seven days and immediately thin bed dry the material.
Feedstock Handling	(2a) Utilize a sock or boot on the feed truck auger when filling feed storage bins.
Disturbed Surfaces	(3a) Maintain at least 70 percent vegetative cover on vacant portions of the facility; OR (3b) Utilize conservation tillage practices to manage the amount, orientation and distribution of crop and other plant residues on the soil surface year-round, while growing crops (if applicable) in narrow slots or tilled strips; OR (3c) Apply dust suppressants in sufficient concentrations and frequencies to maintain a stabilized surface.
Unpaved Roads	(4a) Restrict access to private unpaved roads either through signage or physical access restrictions and control vehicular speeds to no more than 15 miles per hour through worker notifications, signage, or any other necessary means; OR (4b) Cover frequently traveled unpaved roads with low silt content material (i.e., asphalt, concrete, recycled road base, or gravel to a minimum depth of four inches); OR (4c) Treat unpaved roads with water, mulch, chemical dust suppressants or other cover to maintain a stabilized surface.
Equipment Parking Areas	(5a) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (5b) Apply material with low silt content (i.e., asphalt, concrete, recycled road base, or gravel to a depth of four inches).

Appendix D

Project-Level Conformity Documentation

- Caltrans CO Protocol Excerpts (Table 1, Table 2, and CO Analysis Flow Charts)
- PM Project Summary for Interagency Consultation and TCWG Concurrence that Build Alternative 3 (Preferred Alternative) is not a POAQC

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Transportation Project-Level Carbon Monoxide Protocol Revised December, 1997

UCD-ITS-RR-97-21
December 1997

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Table 1. Projects Exempt from All Emissions Analyses

Safety	
Railroad/highway crossing	
Hazard elimination program	
Safer non-Federal-aid system roads	
Shoulder improvements	
Increasing sight distance	
Safety improvement program	
Traffic control devices and operating assistance other than signalization projects	
Railroad/highway crossing warning devices	
Guardrails, median barriers, crash cushions	
Pavement resurfacing and/or rehabilitation	
Pavement marking demonstration	
Emergency relief (23 U.S.C. 125)	
Fencing	
Skid treatments	
Safety roadside rest areas	
Adding medians	
Truck climbing lanes outside the urbanized area	
Lighting improvements	
Widening narrow pavements or reconstructing bridges (no additional travel lanes)	Build Alternatives 1 and 2 Only
Emergency truck pullovers	
Mass Transit	
Operating assistance to transit agencies	
Purchase of support vehicles	
Rehabilitation of transit vehicles[2]	
Purchase of office, shop, and operating equipment for existing facilities	
Purchase of operating equipment for vehicles (e.g. radios, fareboxes, lifts, etc.)	
Construction of renovation of power, signal, and communications systems	
Construction of small passenger shelters and information kiosks	
Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures).	
Rehabilitation or reconstruction of track structures, track and track bed in existing right-of-way	
Purchase of new buses and rail cars to replace exiting vehicles or for minor expansions of the fleet[2]	
Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR Part 771	
Air Quality	
Continuation of ride-sharing and van-pooling promotion activities at current level	
Bicycle and pedestrian facilities	

Table 1 (continued). Projects Exempt from all Emissions Analyses

Other

[2] PM_{10} nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan.

Specific activities which do not involve or lead directly to construction, such as: Planning and technical studies Grants for training and research programs Planning activities conducted pursuant to titles 23 and 49 U.S.C. Federal-aid systems revisions
Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action
Noise attenuation
Emergency or hardship advance land acquisitions [23 CFR 712.204(d)]
Acquisition of scenic easements
Plantings, landscaping, etc.
Sign removal
Directional and informational signs
Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities)
Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes

Source: 40 CFR Part 93, Table 2

2.15 Projects Exempt from Regional Emissions Analyses

Certain projects are ordinarily exempt from all regional emissions analyses according to Table 3 of 40 CFR § 93.127, reproduced in Table 2 of the Protocol. However, the exempt status may be revoked if the MPO, in consultation with the local air district, the California Air Resources Board (CARB), Caltrans, EPA, and the FHWA (in the case of a highway project) or the FTA (in the case of a transit project) concur that a project has potential regional emissions impacts for any reason [40 CFR § 93.127].

Table 2. Projects Exempt from Regional Emissions Analysis

Intersection channelization projects
Intersection signalization projects at individual intersections
Interchange reconfiguration projects
Changes in vertical and horizontal alignment
Truck size and weight inspection stations
Bus terminals and transfer points

Source: 40 CFR Part 93, Table 3

2.16 Traffic signal synchronization projects

Traffic signal synchronization projects may be approved, funded, and implemented without satisfying the requirements of the conformity rule. However, all subsequent regional emissions analyses required by 40 CFR 93.118 and 93.119 for transportation plans, TIPs, or projects not from a conforming plan and TIP must include such regionally significant traffic signal synchronization projects. [FR Doc. 97–20968 Filed 8–14–97; 8:45 am]

Project is exempt for conformity requirements for Build Alternatives 1 and 2. Build Alternative 3 is subject to federal conformity requirements. The flow chart is used to show the process for Build Alternative 3 only.

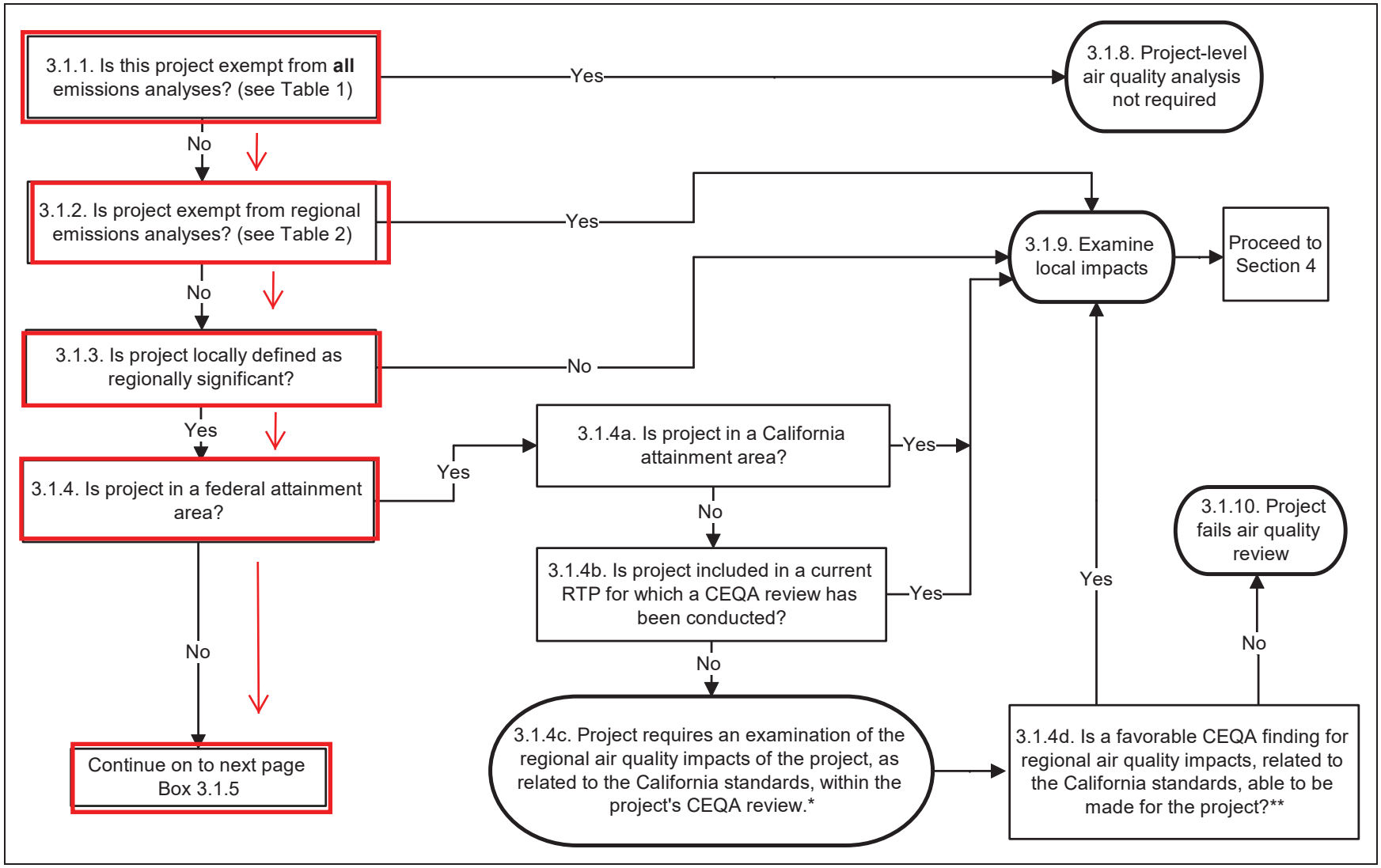


Figure 1. Requirements for New Projects

Project is exempt for conformity requirements for Build Alternatives 1 and 2. Build Alternative 3 is subject to federal conformity requirements. The flow chart is used to show the process for Build Alternative 3 only.

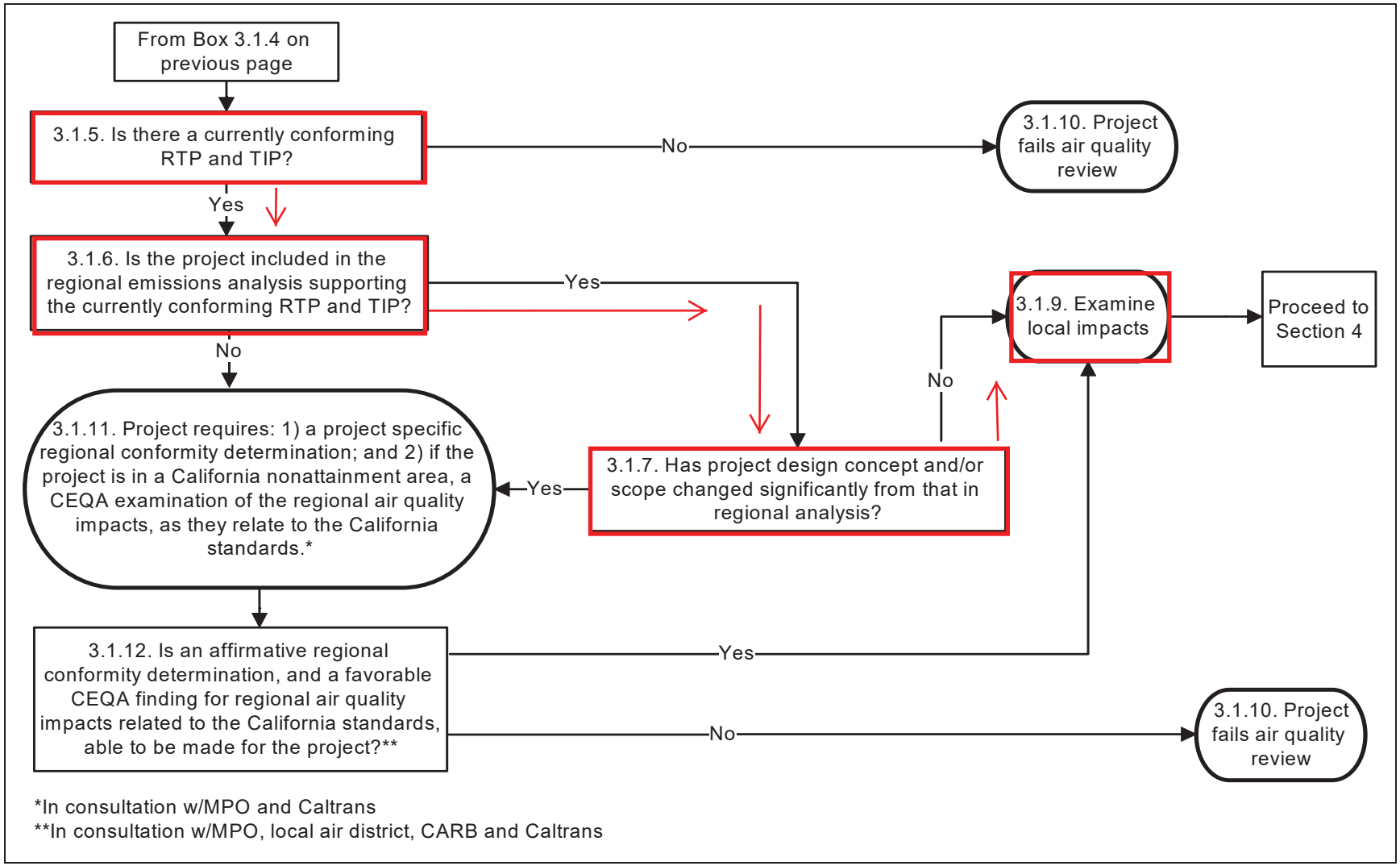


Figure 1 (cont.). Requirements for New Projects

Project is exempt for conformity requirements for Build Alternatives 1 and 2. Build Alternative 3 is subject to federal conformity requirements. The flow chart is used to show the process for Build Alternative 3 only.

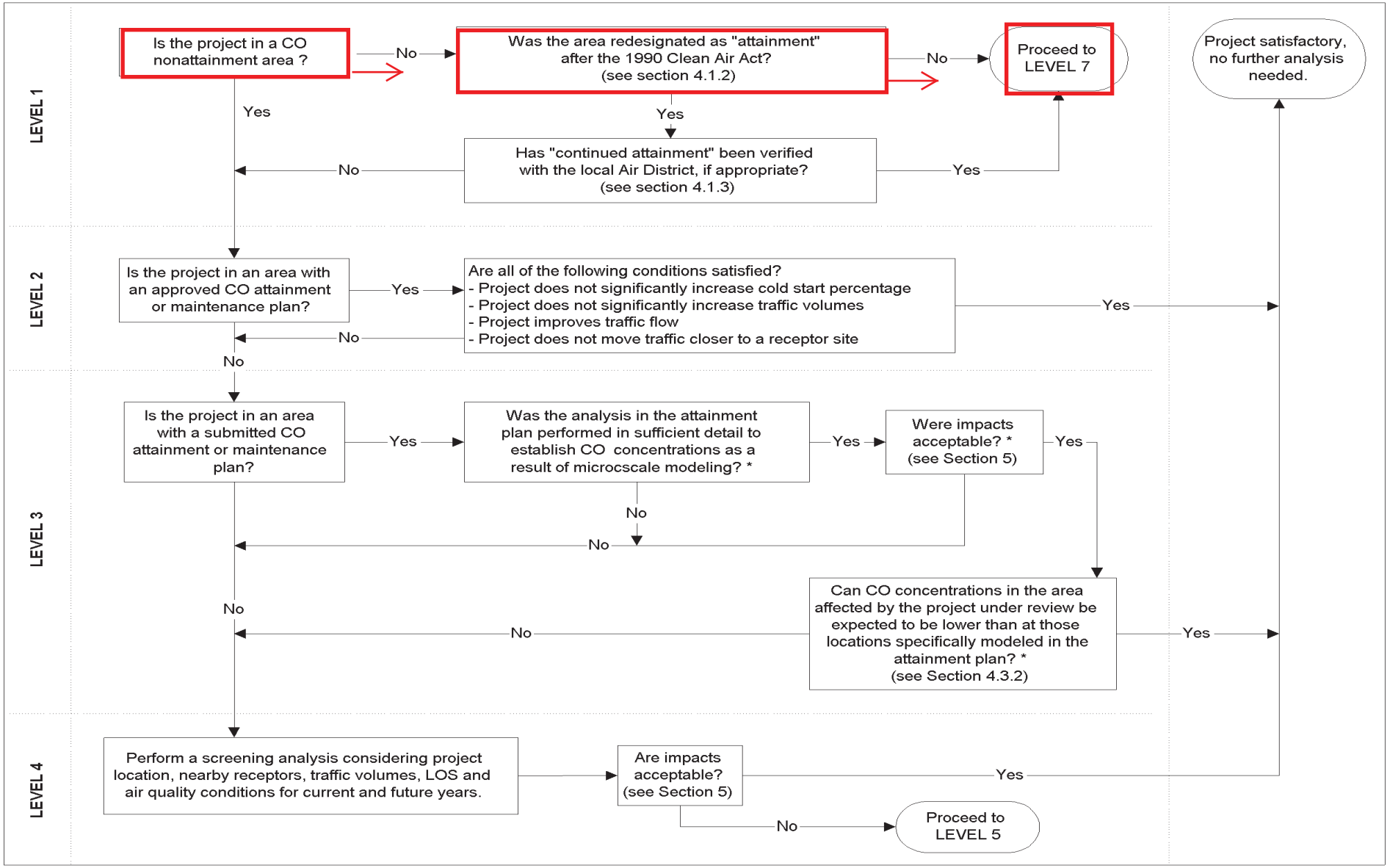


Figure 3. Local CO Analysis

Project is exempt for conformity requirements for Build Alternatives 1 and 2. Build Alternative 3 is subject to federal conformity requirements. The flow chart is used to show the process for Build Alternative 3 only.

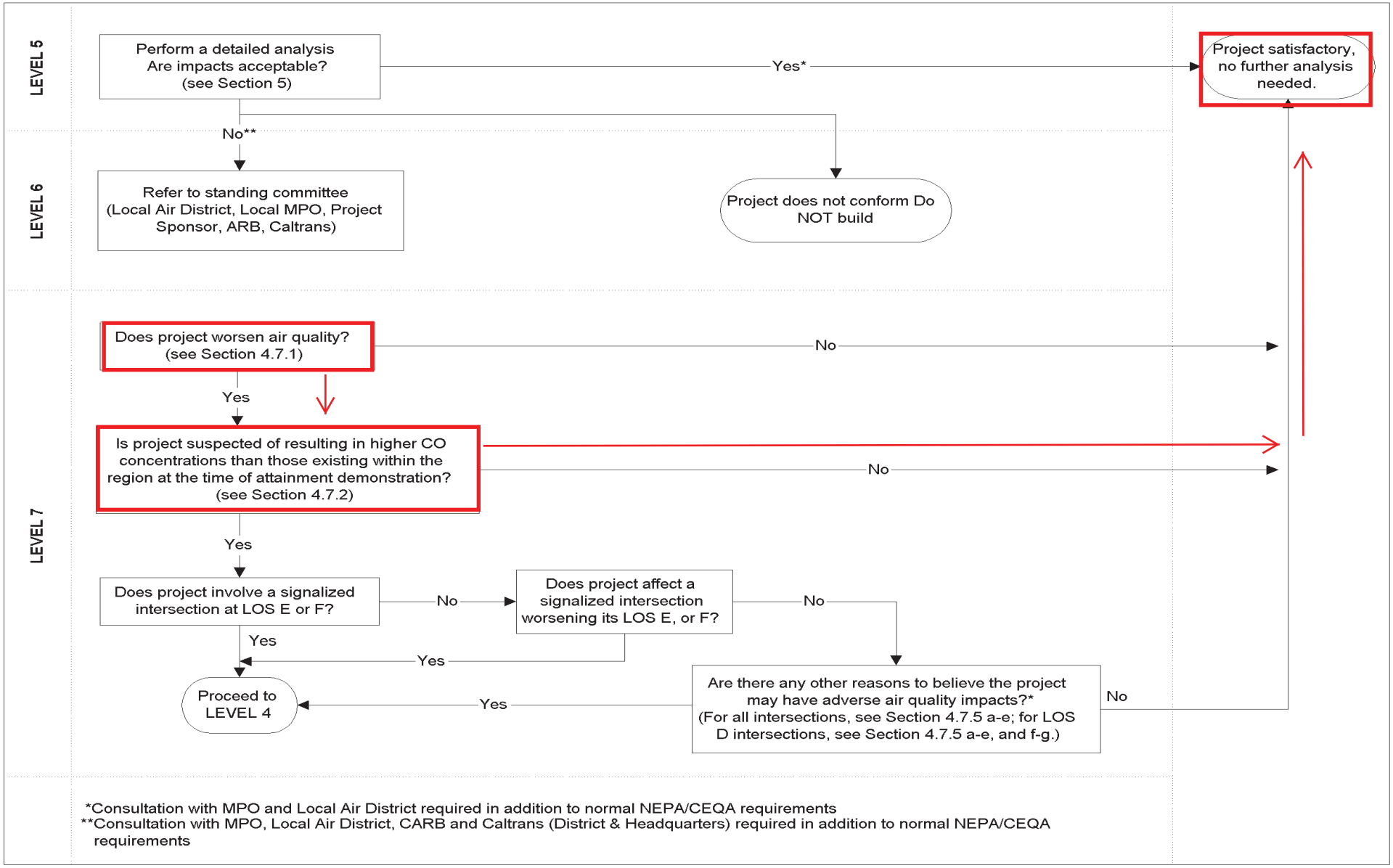
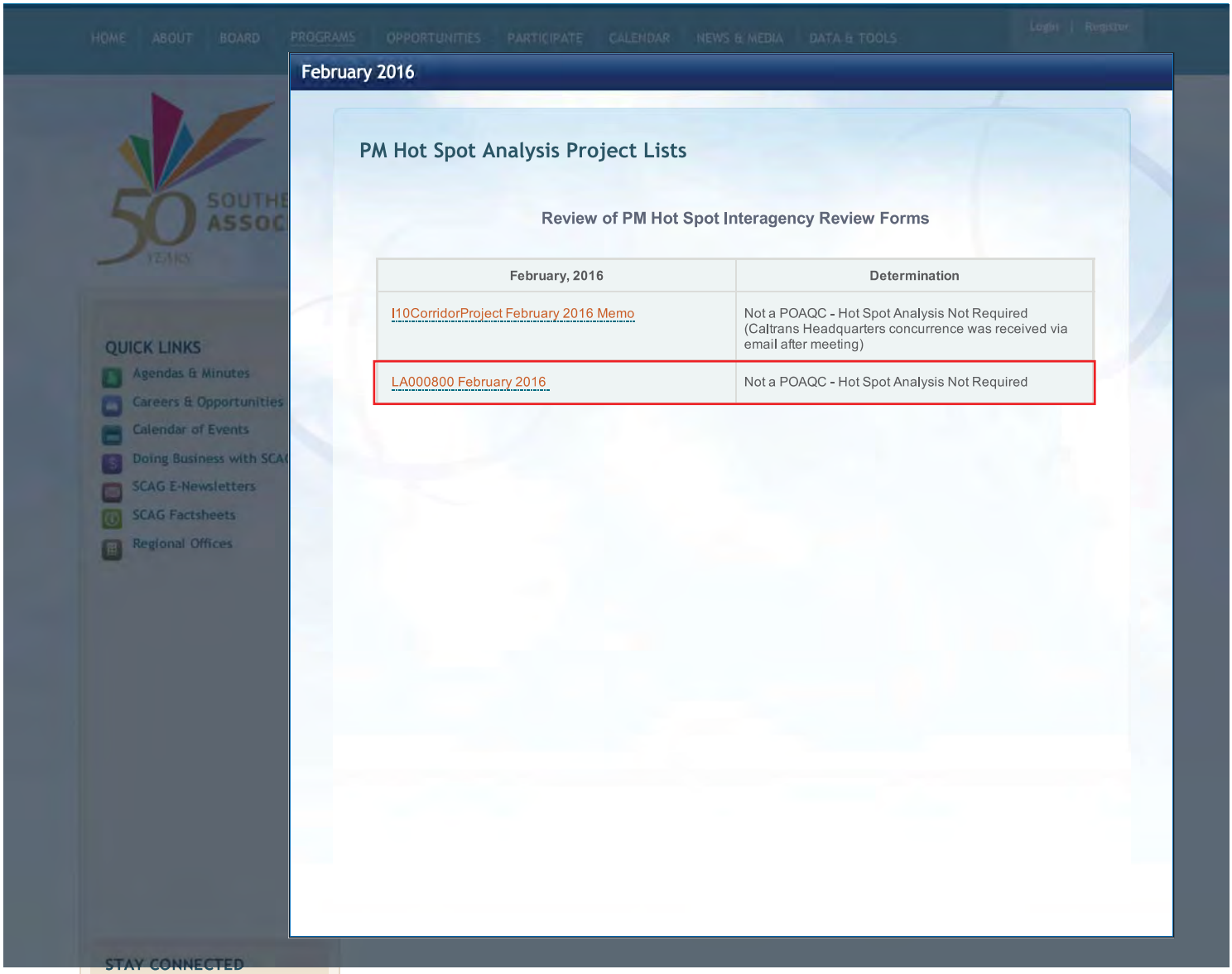


Figure 3 (cont.). Local CO Analysis



Lists of PM hot spot interagency review forms, qualitative analyses and quantitative analyses

SEARCH BY: SEARCH

PM Hot Spot Forms	Qualitative Analysis	Quantitative Analysis
March, 2016	July, 2015	March, 2016
February, 2016	October, 2014	September, 2015
November, 2015	March, 2014	July, 2015
October, 2015	January, 2014	May, 2015
September, 2015	December, 2013	October, 2014
August, 2015	February, 2013	August, 2014
July, 2015	November, 2012	July, 2014
May, 2015	September, 2012	June, 2014

RTIP ID# *(required)*: LA000800

TCWG Consideration Date: February 23, 2016

Project Description *(clearly describe project)*
The City of Santa Monica and the California Department of Transportation (Caltrans) are proposing the replacement of the Santa Monica Pier Bridge. The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). A joint Draft Environmental Impact Report (EIR)/Environmental Assessment (EA) for this project is currently being prepared. The City of Santa Monica is the lead agency under CEQA and Caltrans is the lead agency under NEPA. **Figure 1-1** and **Figure 1-2** show the regional location and project vicinity, respectively.

The Pier Bridge, constructed in 1939, is approximately 490 feet long and extends west from the intersection of Ocean Avenue and Colorado Avenue to the Santa Monica Pier in the City of Santa Monica. The proposed project would include the replacement of the existing, structurally deficient Pier Bridge with a new multi-modal bridge to meet current seismic and Americans with Disabilities Act (ADA) standards. Three build alternatives are being considered:

- Alternative 1: New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue During Construction (see **Figure 1-3**).
- Alternative 2: New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge During Construction (see **Figure 1-3**).
- Alternative 3 (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue (see **Figure 1-4**).

The Pier Bridge qualifies for replacement under the federal Highway Bridge Program (HBP) and is eligible for Toll-Credit funding. As such, the project is included in the 2015 Federal Statewide Transportation Improvement Program (FSTIP) and is proposed for funding under the HBP, under the individual project ID of BHLO-5107(033). This project is also included in the Southern California Association of Governments (SCAG) 2015 Federal Transportation Improvement Program (FTIP) as a project grouped with others under project ID LA000800. The SCAG 2015 FTIP was determined to have met air quality conformity requirements by Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on December 15, 2014. The 2015 FSTIP was also approved by FHWA and FTA on December 15, 2014.

Build Alternatives 1 and 2 are clearly exempt from the requirement to demonstrate transportation per 40 CFR 93.126, as they would involve replacement of the existing bridge structure at its existing location with no change in the existing number of travel lanes. Build Alternative 3 (Locally Preferred Alternative), however, replaces the existing bridge at its existing location with pedestrian, bicycle, emergency and limited access bridge at its existing location; and constructs a new bridge (with no change in number of travel lanes) that would extend from Moss Avenue, instead of from Colorado Avenue (as is the case with the existing bridge). As such, this consultation/analysis focuses on Build Alternative 3 (Locally Preferred Alternative), shown in **Figure 1-4**.

Type of Project *(use Table 1 on instruction sheet)*: Roadway realignment

County	**Narrative Location/Route & Postmiles:** BRIDGE NO. 53C1900, COLORADO AVE OVER APPIAN WAY/PROMENDAE, 0.6 MI W/O LINCOLN BLVD. Replace existing 2-lane bridge with new 2-lane bridge. **Caltrans Projects – EA#** BHLO-5107(033)
Los Angeles	

Lead Agency: City of Santa Monica			
Contact Person Keith Cooper	**Phone#** 213-312-1752	**Fax#** 213-312-1799	**Email** Keith.Cooper@icfi.com

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

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

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

Scheduled Date of Federal Action: December 2019

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

Exempt	Section 326 –Categorical Exemption	✓ Section 327 – Non-Categorical Exemption

Current Programming Dates *(as appropriate)*

	PE/Environmental	ENG	ROW	CON
Start	September 2012	September 2012	December 2017	January 2019
End	December 2017	December 2018	January 2019	December 2020

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

Purpose

The primary purposes and objectives of the proposed project are as follows:

- To provide a bridge that would be structurally sound and seismically resistant;
- To provide a bridge with a 75-year design life;
- To ensure adequate and safe access to the Pier by all users, including pedestrians, bicyclists, motorists, and emergency vehicles;
- To improve bicycle and pedestrian access to the Pier;
- To preserve the historic character of the Pier and adjacent historic structures, including the Pier entrance sign, while improving access to the Pier; and
- Maintain continuous access to the Pier for Pier users, and the continuous operations of the City and the Pier businesses during construction of the project.

Safety Needs

Peak weekend average daily traffic (ADT) to the Pier is approximately 3,667 vehicles, comprised of a mix of beach/amusement park patrons and service/delivery vehicles. However, the largest groups of bridge users by far are pedestrians and bicyclists accessing the Pier and boardwalk/beach access points from Ocean Avenue. Pier deck parking accommodates 277 vehicles. When Pier deck parking is full or during periods of high pedestrian usage, the bridge is closed to vehicular traffic and functions as a pedestrian/bicycle facility. It is notable that Pier usage is heavy not only in the summer months, but all year around. In fact, the second busiest time for Pier businesses and attendance is the Winter Holiday Season. During these high use times the bridge is not sufficiently wide enough to accommodate the pedestrians, bicycles, and vehicular traffic, causing safety concerns that have been documented by both the City of Santa Monica Police and Fire Departments. This situation exacerbates congestion at the Colorado Avenue/Ocean Avenue intersection and other intersections approaching the Pier during peak periods, often affecting traffic throughout the broader downtown area. This congestion has limited public access to the area as well as its recreational use. When pedestrian volume is high enough, many people are comfortable ignoring pedestrian indicators on the traffic signal in front of the Pier Sign and overflowing in to the roadway. Another existing point of pedestrian and vehicular conflict on the Pier is the pedestrian crosswalk across the Pier access road just prior to the vehicle turnaround and entrance to the Pier parking lot.

Surrounding Land Use/Traffic Generators *(especially effect on diesel traffic)*

Surrounding land uses include a mix of commercial, restaurant, retail, recreational, and residential uses. No surrounding land uses are associated with high levels of heavy-truck traffic. **Figure 2-1** provides an illustration of surrounding land uses.

Opening Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility Pier Bridge would have 0% heavy-truck traffic volumes. Please see **Traffic Data** attachment.
RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility Horizon year analysis was not performed, but Pier Bridge would continue to have 0% heavy truck traffic volumes.
Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT Surrounding intersection locations affected by traffic redistribution have a fleet mix of approximately 97% passenger vehicle, 2% medium truck, and 1% heavy-truck. Please see **Traffic Data** attachment. **RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT** Horizon year analysis was not performed, but surrounding intersection locations affected by traffic redistribution are expected to maintain a fleet mix of approximately 97% passenger vehicle, 2% medium truck, and 1% heavy-truck.
Describe potential traffic redistribution effects of congestion relief *(impact on other facilities)* Build Alternative 3 (Locally Preferred Alternative) would relocate the Pier Bridge vehicular access from its current location of Colorado Boulevard to a new location at Moss Avenue (see **Figure 1-4**). Given that Pier Bridge traffic volumes are relatively low, traffic redistribution effects would be limited.

Comments/Explanation/Details *(attach additional sheets as necessary)*
The United States Environmental Protection Agency (EPA) specifies in 40 CFR 93.123(b)(1) that only "projects of air quality concern" (POAQC) are required to undergo a PM2.5 and PM10 hot-spot analysis. EPA defines POAQCs as certain highway and transit projects that involve significant levels of diesel traffic or any other project that is identified by the PM2.5 SIP as a localized air quality concern. A discussion of the proposed project compared to POAQCs, as defined by 40 CFR 93.123(b)(1), is provided below:

New or expanded highway projects that have a significant number of or significant increase in diesel vehicles. The project would involve the reconstruction of the Pier Bridge at the existing location under Build Alternatives 1 and 2. Build Alternative 3 would involve reconstruction of the Pier Bridge for primarily pedestrian and bicycle use as well as the construction of a new vehicular bridge at Moss Avenue. None of the three build alternatives would increase the parking capacity on the Pier or elsewhere in the project area, nor would they involve land use changes such that trip generation would increase. Diesel vehicle use would not change as a result of project implementation.

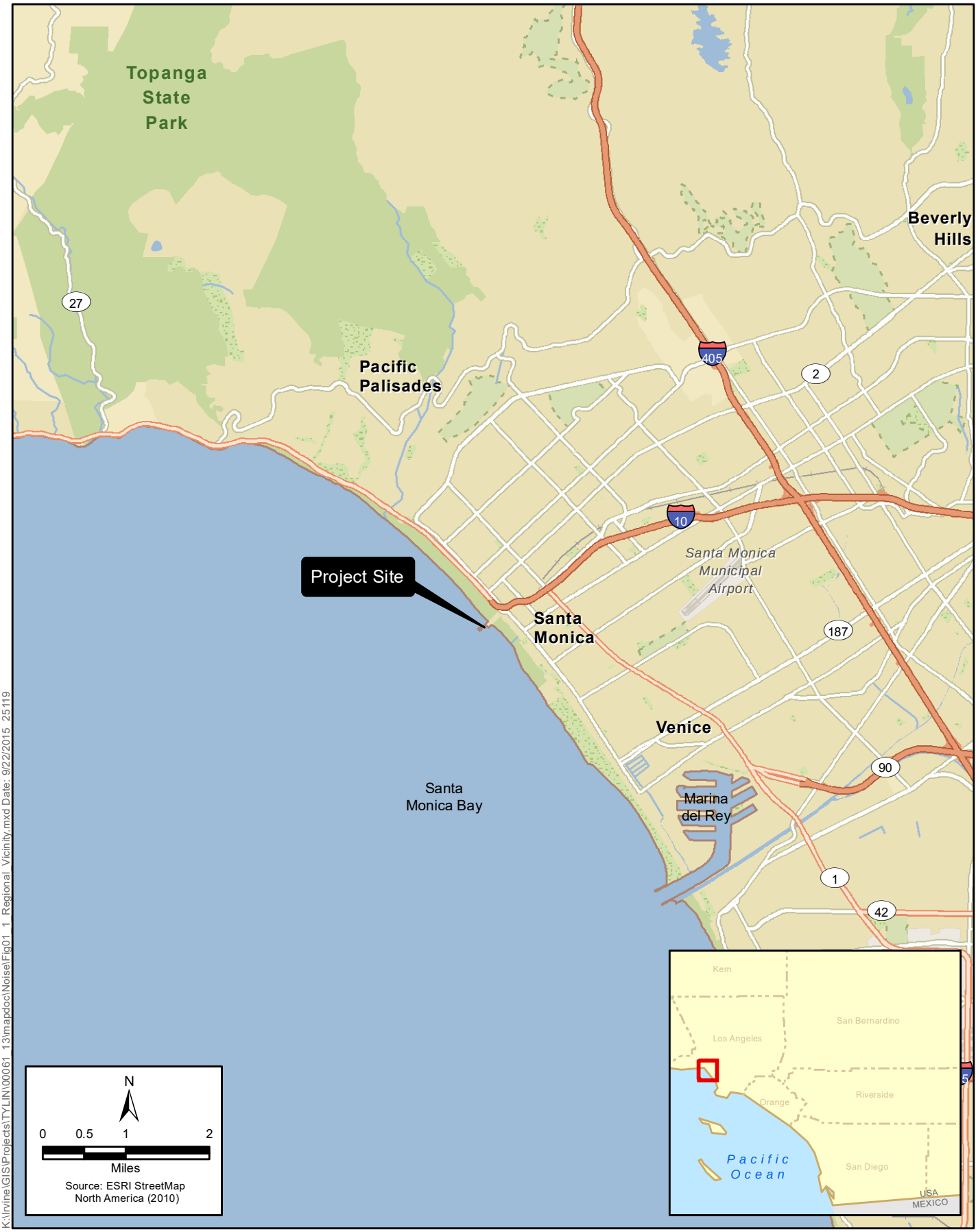
Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project. Under Build Alternative 3, Access Scenario 1 conditions in 2025, two of the five intersections operating at LOS D or worse—Ocean Avenue/Seaside Terrace and 4th Street/Interstate 10 (I-10) Eastbound On-Ramp—would experience significant traffic impacts relative to the No-Build conditions. Under Build Alternative 3, Access Scenario 2 conditions in 2025, one of the six intersections operating at LOS D or worse—Ocean Avenue/Seaside Terrace—would experience significant traffic impacts relative to the No-Build conditions. Although the operational efficiency of intersections would deteriorate, this would result from trip redistribution to access the new Moss Avenue vehicle bridge rather than as a result of the generation of new trips. Because there would be no increase in parking capacity or land use changes adjacent to the Pier, no new trips would occur. Further, the lack of change to Pier-adjacent land uses would preclude the need for new delivery and other diesel vehicle use in the area. Therefore, although there would be some deterioration of operational traffic conditions, implementation of Alternative 3 would not increase the number of diesel vehicles operating in the area.

New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location. The proposed project would be located near bus stops on Ocean Avenue, but no major congregation of buses occurs in the area. Furthermore, both the Santa Monica Big Blue Bus and Metro fleets use liquefied or compressed natural gas fuels rather than diesel fuels.

Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location. The proposed project would not expand any bus terminal, rail terminal, or related transfer point that would increase the number of diesel vehicles congregating at any single location.

Projects in or affecting locations, areas, or categories of sites that are identified in the PM2.5- or PM10-applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation. The project site is not in or affecting an area or location identified in any PM10 or PM2.5 implementation plan. The immediate project area is not considered to be a site of violation or possible violation.

The discussion provided above indicates that the proposed project would not be considered a POAQC, as defined by 40 CFR 93.123(b)(1). Therefore, it is unlikely that the proposed project would generate new air quality violations, worsen existing violations, or delay attainment of national AAQS for PM2.5 and PM10.



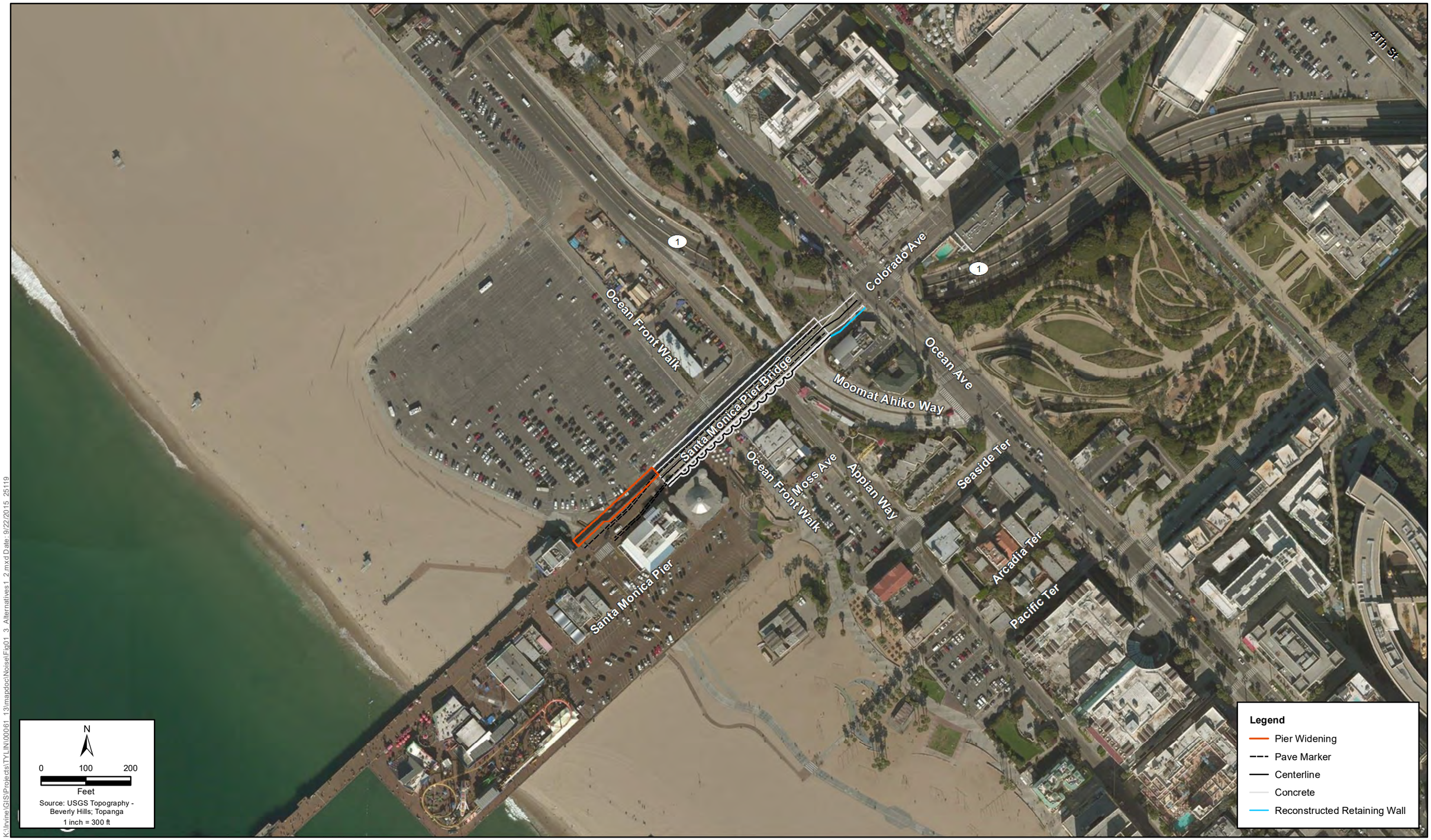
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Figure 1-1
Regional Vicinity Map
Santa Monica Pier Bridge Replacement Project



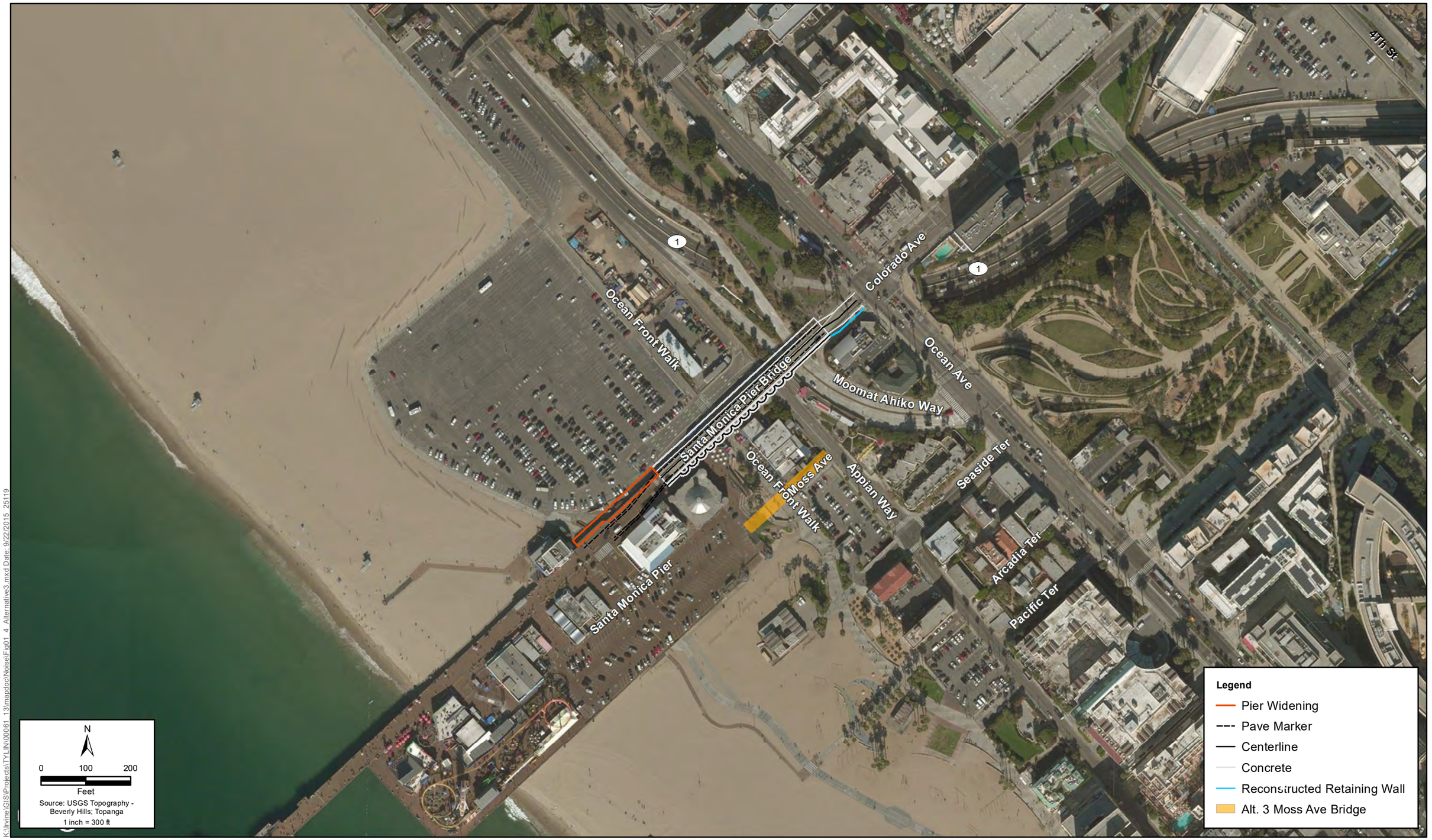
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Figure 1-2
Project Location Map
Santa Monica Pier Bridge Replacement Project



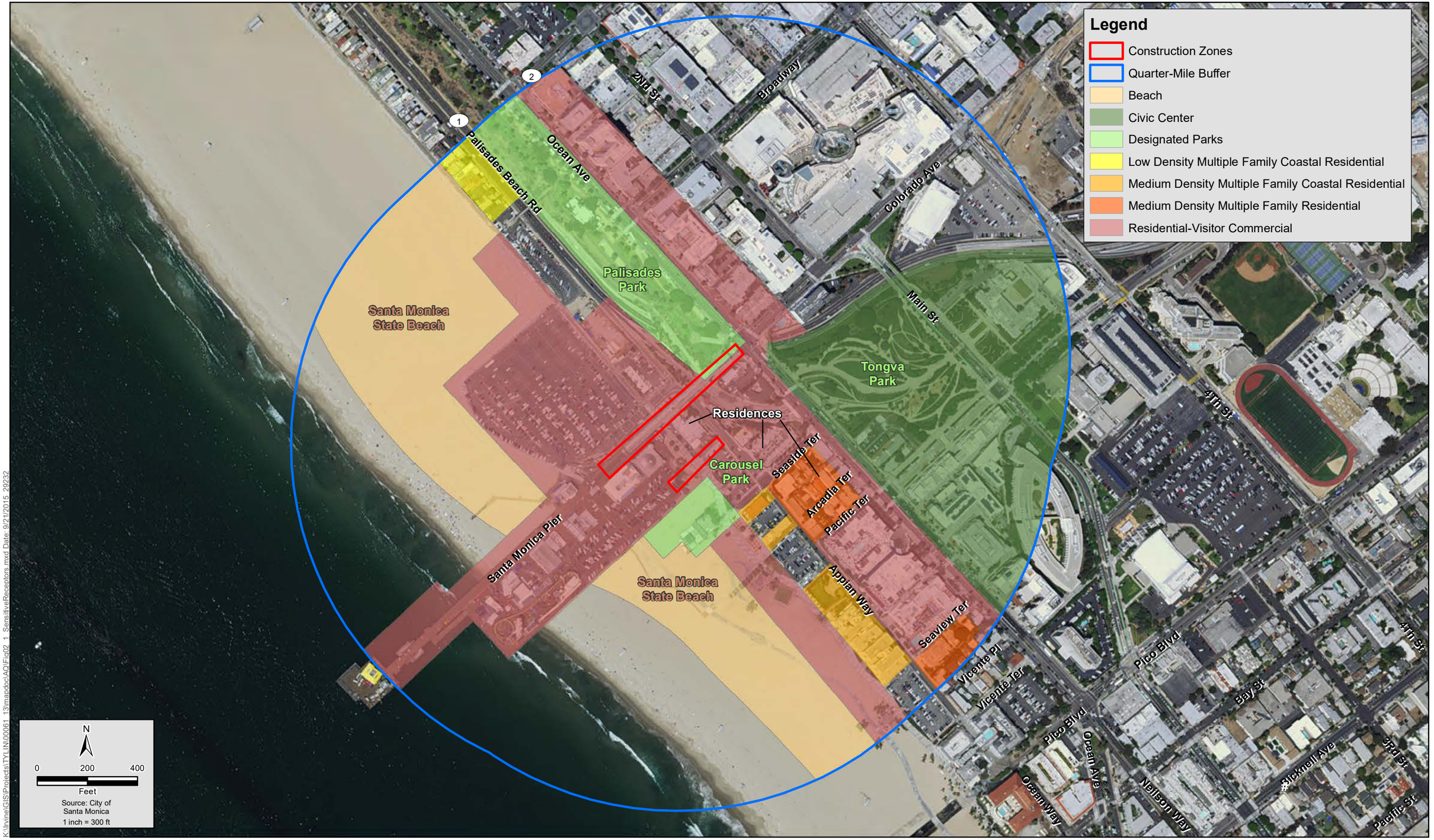
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Figure 1-3
Build Alternative 1 & 2 Location Map
Santa Monica Pier Bridge Replacement Project



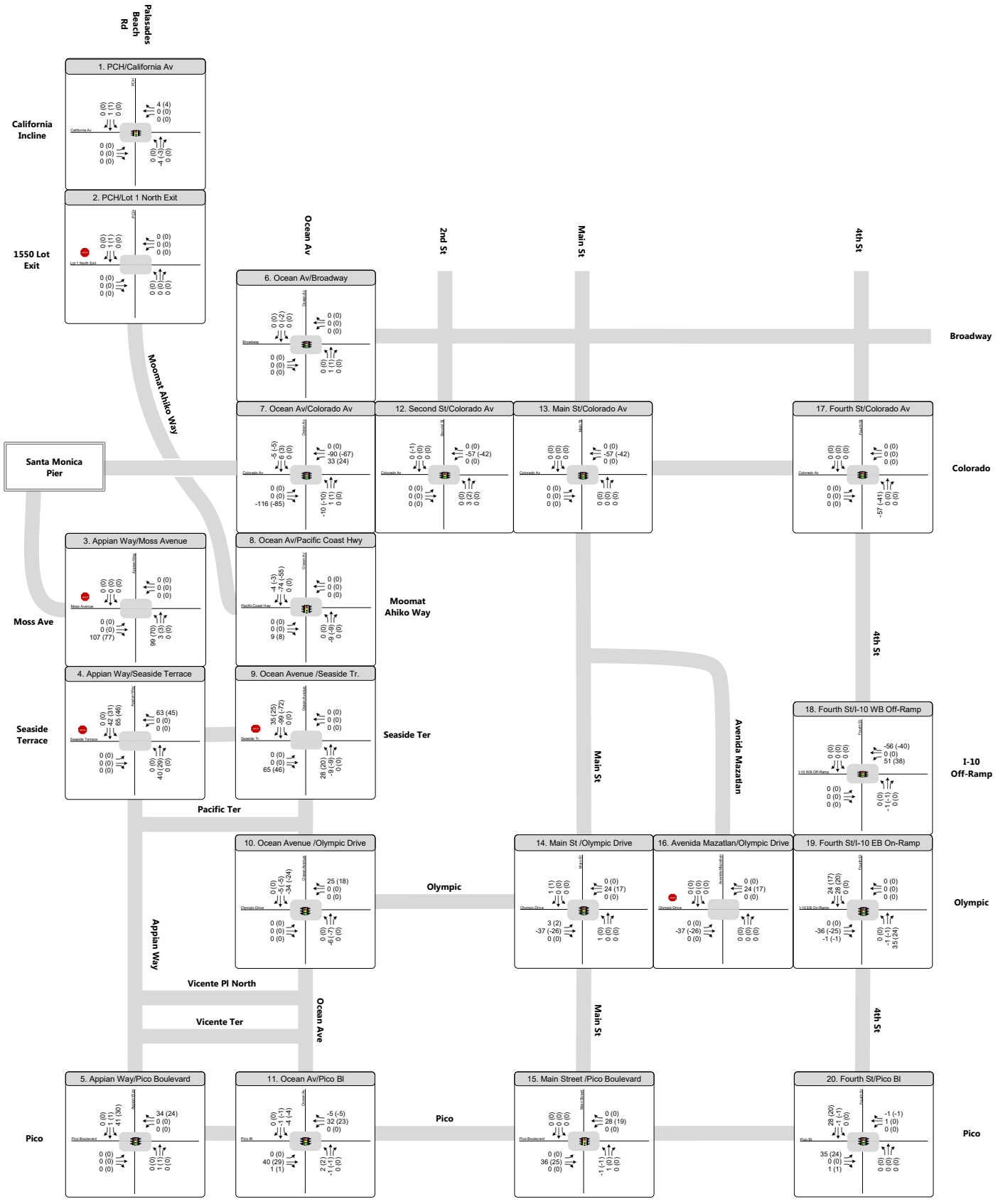
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Figure 1-4
Build Alternative 3 Location Map
Santa Monica Pier Bridge Replacement Project



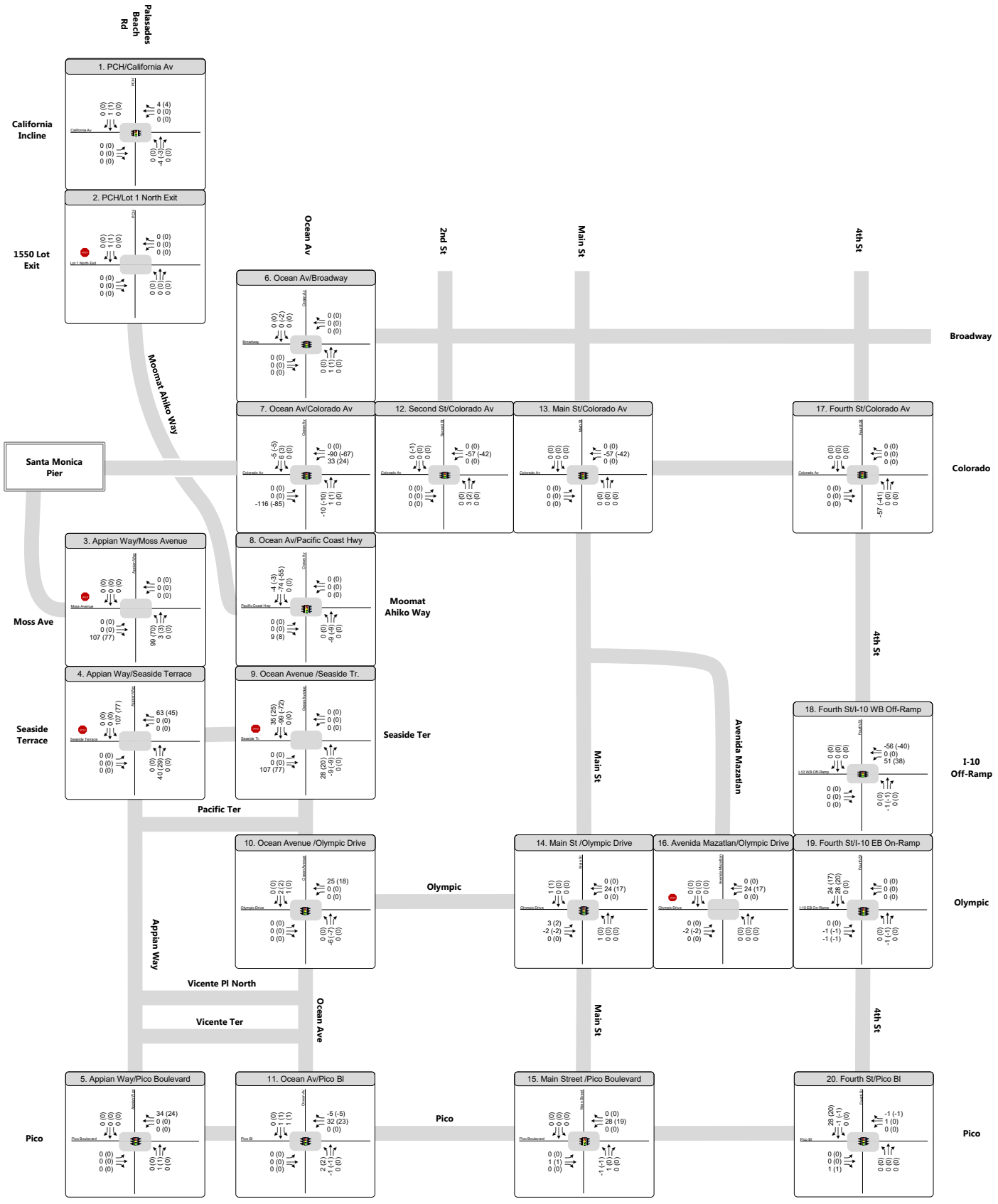
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Figure 2-1
Sensitive Receptor Locations
Santa Monica Pier Bridge Replacement



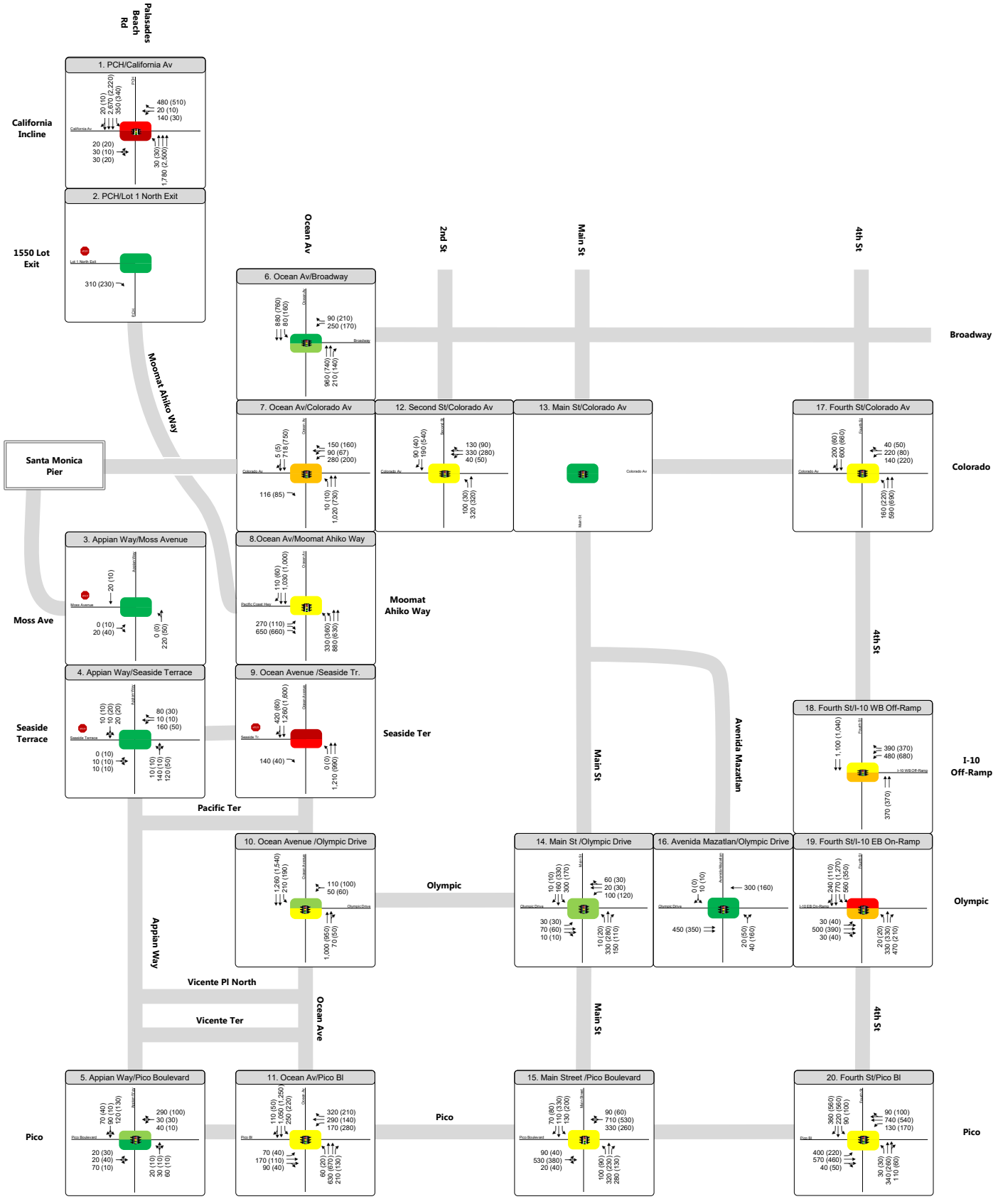
WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)



WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

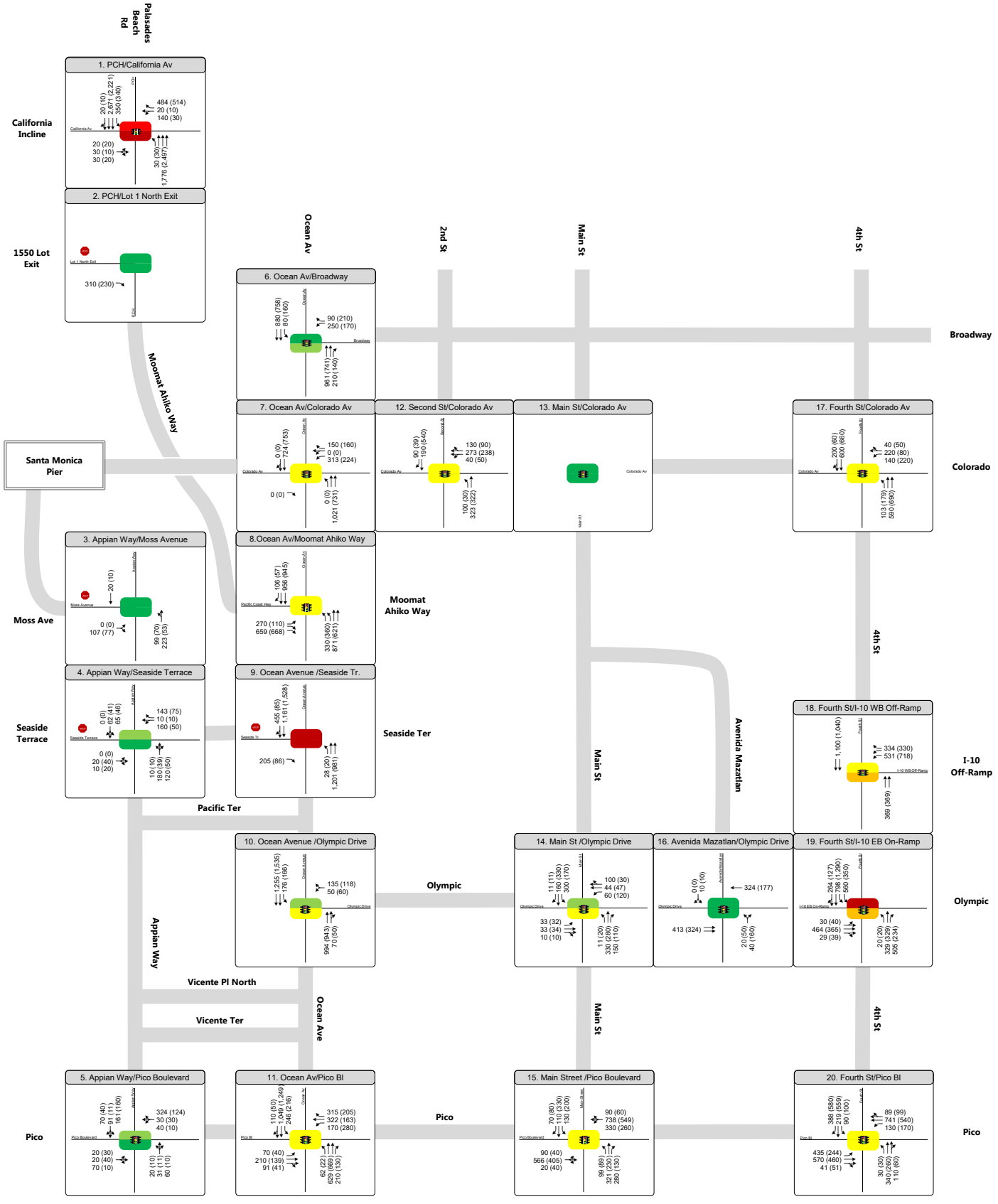


WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

FEHR PEERS
Improving Communities Since 1985

Peak Hour Traffic Volumes And Lane Configurations
Approval year (2017)/ No Project/ Alt. 1/ Alt. 2 Turning Movements Forecasts
FIGURE 6

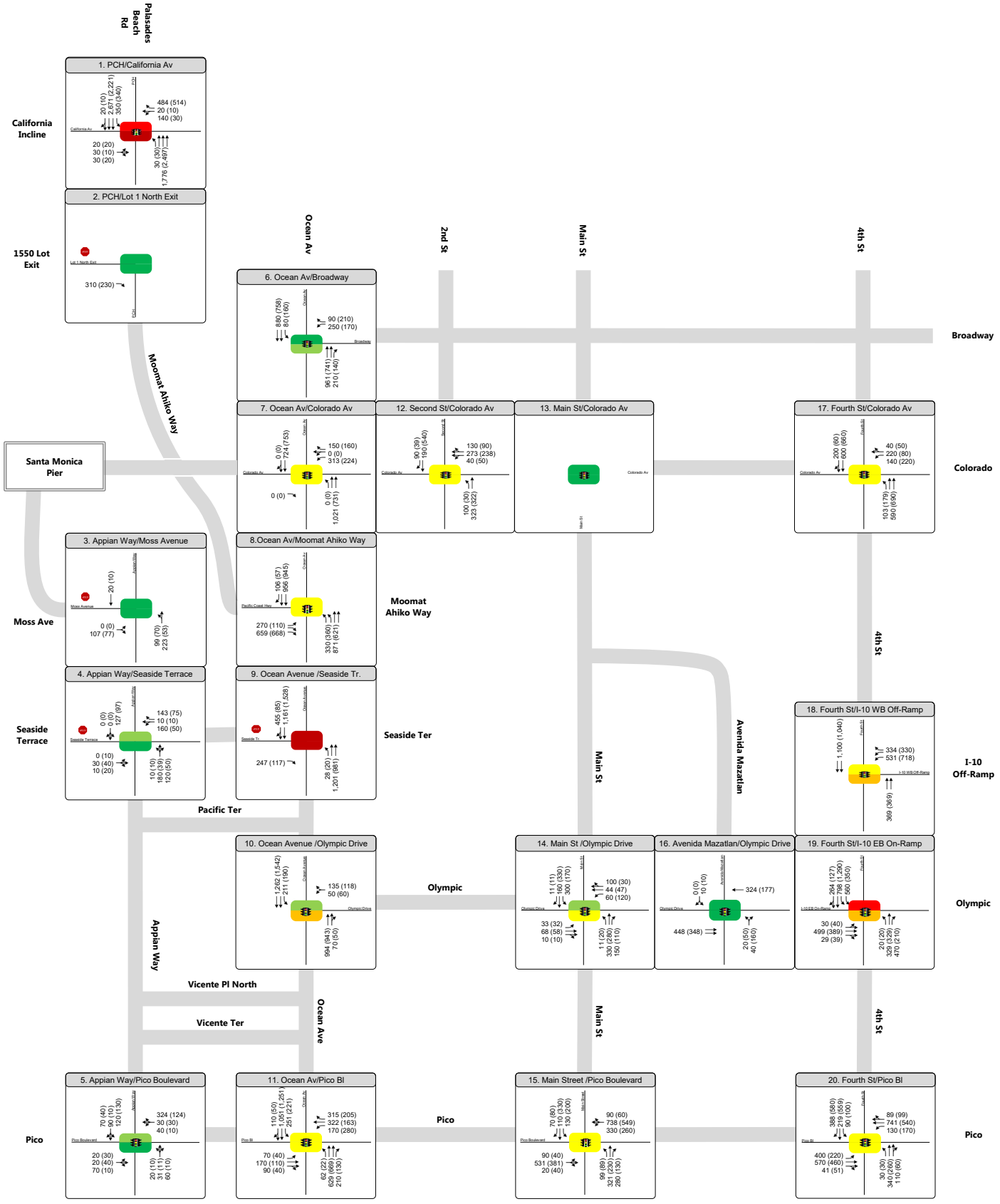


WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

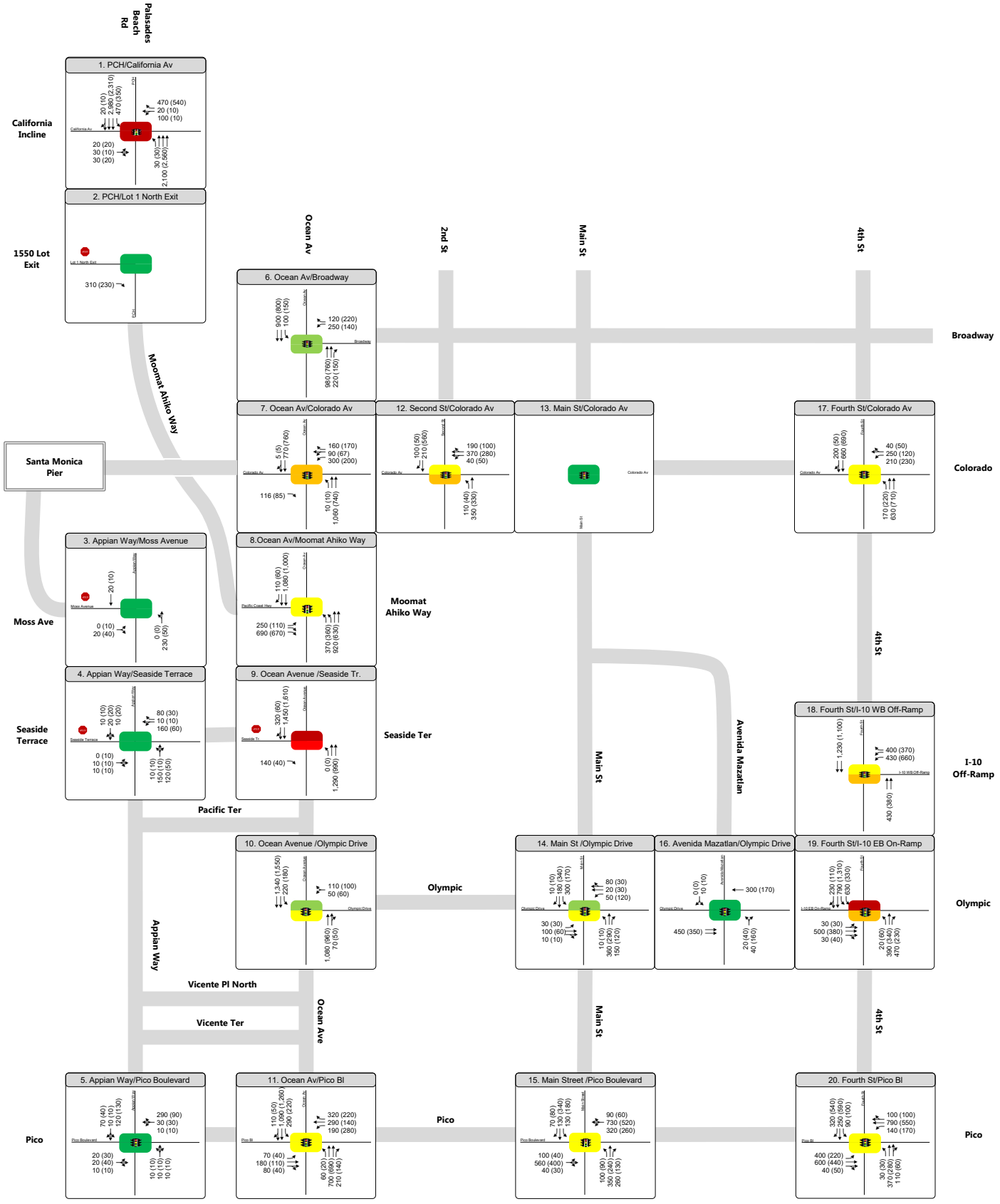
FEHR PEERS
Improving Communities Since 1985

Peak Hour Traffic Volumes And Lane Configurations
Approval year (2017)- Alternative 3 (Access1)- Turning Movements Forecasts
FIGURE 7-1



WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)



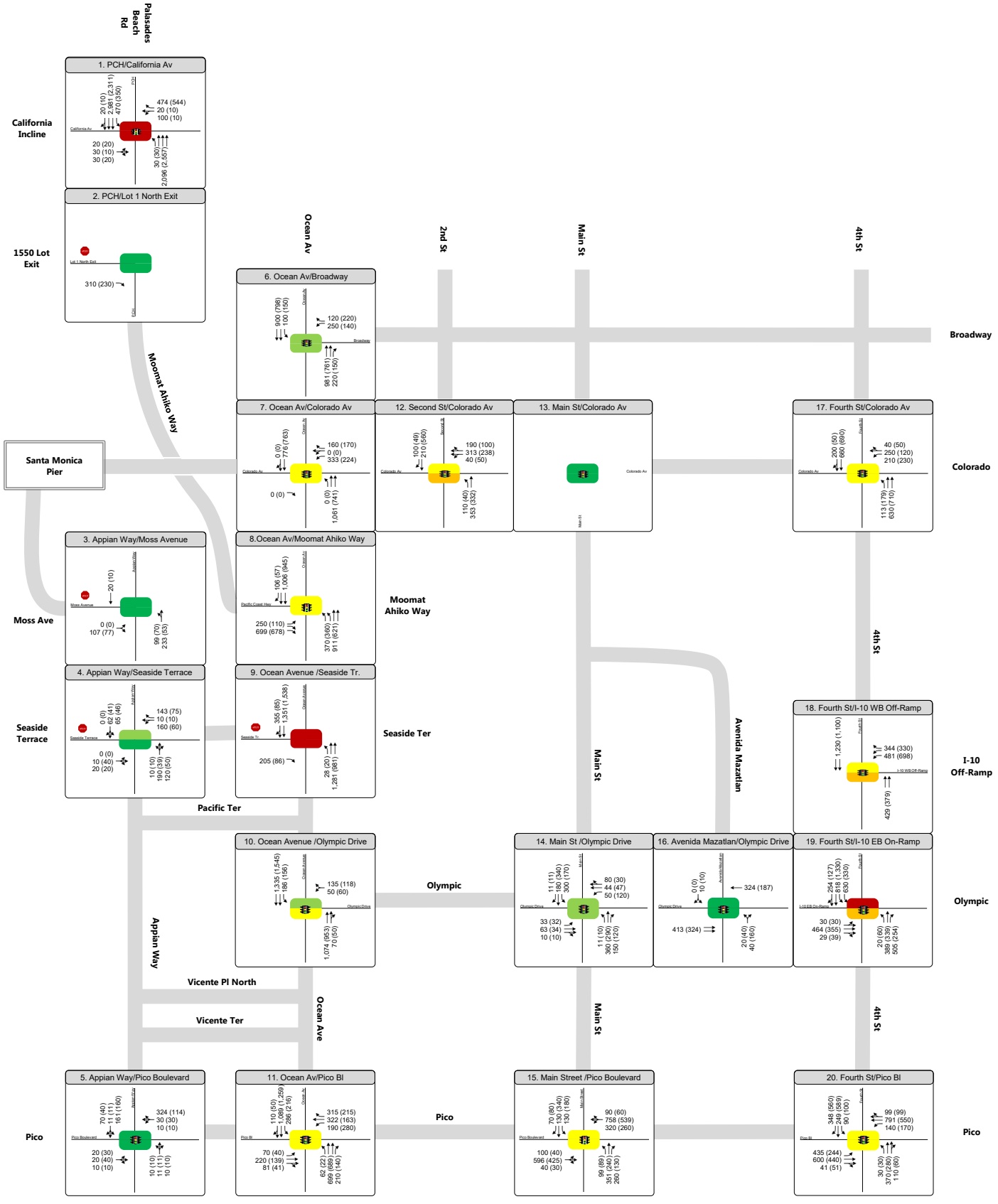
WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

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Peak Hour Traffic Volumes And Lane Configurations
Future year (2025)/ No Project/ Alt 1./ Allt 2 Turning Movements Forecasts

FIGURE 8

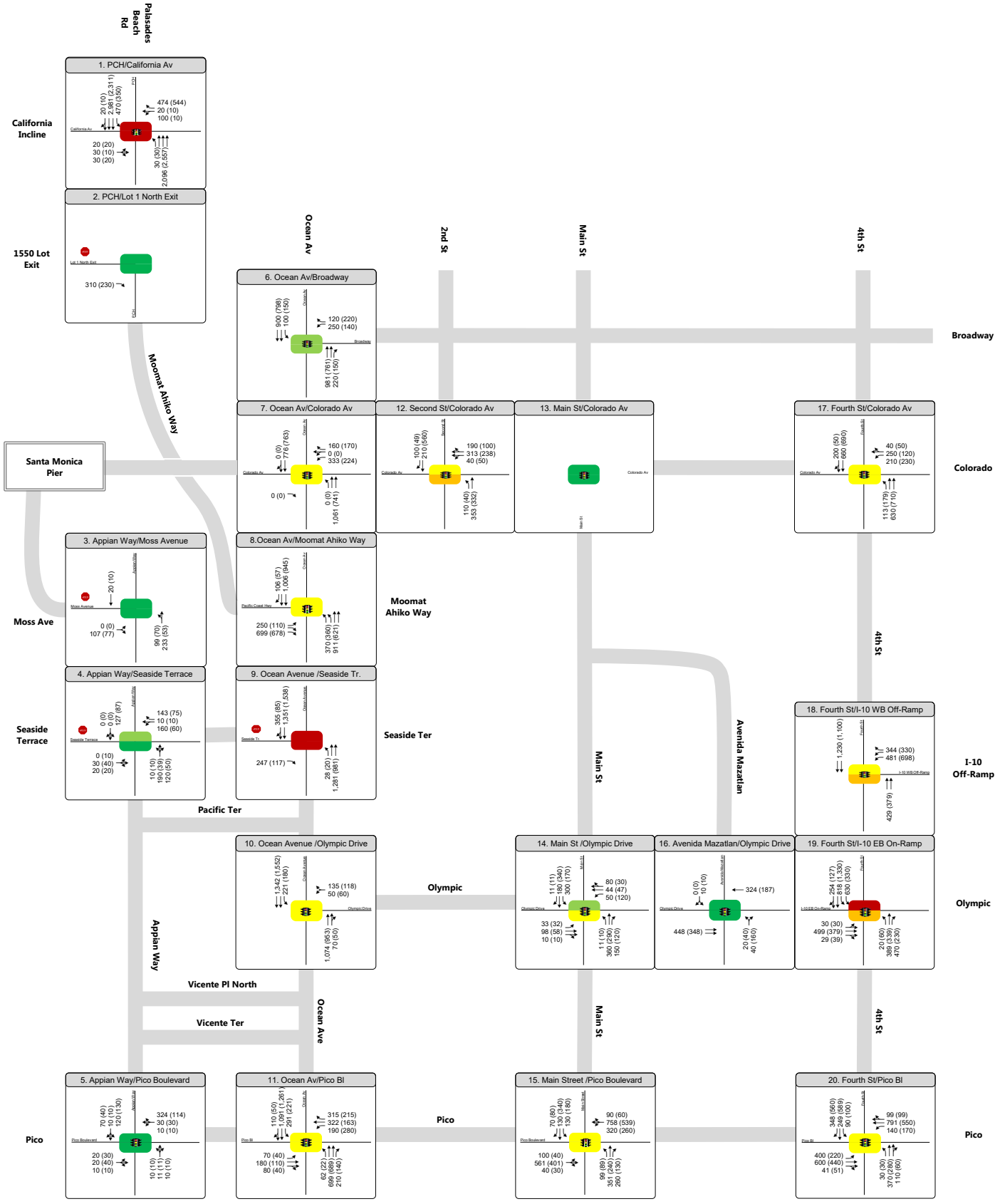


WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

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Peak Hour Traffic Volumes And Lane Configurations
Future year (2025)- Alternative 3 (Access1)- Turning Movements Forecasts
FIGURE 9-1



WKND PM Level of Service A B C D E F

Weekend Midday Peak Hour (Weekday PM Peak Hour)

FEHR PEERS
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Peak Hour Traffic Volumes And Lane Configurations
Future year (2025)- Alternative 3 (Access2)- Turning Movements Forecasts
FIGURE 9-2

TABLE 7-1
APPROVAL YEAR (2017) INTERSECTION LEVEL OF SERVICE AND IMPACT ANALYSIS
Alternative 3-Access1

NO.	INTERSECTION	CLASS	Control Type	PEAK HOUR	APPROVAL NO PROJECT (Alt 1 and Alt 2)			APPROVAL + PROJECT (Alt 3-Access 1)			V/C OR DELAY CHANGE	SIGNIFICANT IMPACT?
					V/C	DELAY	LOS	V/C	DELAY	LOS		
1	Pacific Coast Highway (PCH) &	A	Signal	PM	1.069	**	F	1.071	**	F	0.002	No
	California Incline			WKND	0.889	67	E	0.890	67	E	0	No
2	Pacific Coast Highway (PCH) &	A	TWSC	PM	0.211	9	A	0.211	9	A	0	No
	The Lot Exit			WKND	0.284	10	A	0.285	10	A	0	No
3	Appian Way &	C	TWSC	PM	0.000	7	A	0.000	8	A	1	No
	Moss Avenue			WKND	0.000	8	A	0.000	9	A	1	No
4	Appian Way &	C	AWSC	PM	na	8	A	na	9	A	1	No
	Seaside Terrace			WKND	na	9	A	na	10	B	1	No
5	Appian Way &	A	AWSC	PM	na	9	A	na	9	A	0	No
	Pico Boulevard			WKND	na	11	B	na	12	B	1	No
6	Ocean Avenue &	A	Signal	PM	0.396	11	B	0.396	11	B	0	No
	Broadway			WKND	0.428	10	A	0.428	10	A	0	No
7	Ocean Avenue &	A	Signal	PM	0.436	43	D	0.340	32	C	-11	No
	Colorado Avenue			WKND	0.541	50	D	0.418	32	C	-18	No
8	Ocean Avenue &	A	Signal	PM	0.621	22	C	0.608	22	C	0	No
	Moomat Ahiko Way			WKND	0.604	29	C	0.587	29	C	0	No
9	Ocean Avenue &	A	TWSC	PM	0.267	36	E	0.552	51	F	15	Yes
	Seaside Terrace			WKND	0.880	99	F	1.227	**	F	0.347	Yes
10	Ocean Avenue &	A	Signal	PM	0.651	30	C	0.667	31	C	1	No
	Olympic Boulevard			WKND	0.605	18	B	0.601	18	B	0	No
11	Ocean Avenue &	A	Signal	PM	0.555	24	C	0.622	25	C	1	No
	Pico Boulevard			WKND	0.510	31	C	0.506	31	C	0	No
12/13	2nd Street &	A	Signal	PM	0.288	30	C	0.277	32	C	2	No
	Colorado Avenue			WKND	0.317	33	C	0.302	35	C	2	No
14	Main Street &	C	Signal	PM	0.331	14	B	0.241	13	B	-1	No
	Olympic Boulevard			WKND	0.355	14	B	0.349	13	B	-1	No
15	Main Street &	A	Signal	PM	0.481	31	C	0.488	32	C	1	No
	Pico Boulevard			WKND	0.523	30	C	0.530	30	C	0	No
16	Mazatlan Drive	C	Signal	PM	0.270	7	A	0.266	7	A	0	No
	Olympic Boulevard			WKND	0.226	6	A	0.240	6	A	0	No
17	4th Street &	A	Signal	PM	0.511	22	C	0.499	22	C	0	No
	Colorado Avenue			WKND	0.463	23	C	0.444	22	C	-1	No
18	4th Street &	A	Signal	PM	0.920	44	D	0.891	39	D	-5	No
	I-10 Freeway Westbound Off-Ramp			WKND	0.611	25	C	0.571	24	C	-1	No
19	4th Street &	A	Signal	PM	0.764	41	D	0.787	45	D	4	No
	I-10 Freeway Eastbound On-Ramp			WKND	1.023	79	E	1.046	88	F	9	Yes
20	4th Street &	A	Signal	PM	0.596	28	C	0.617	29	C	1	No
	Pico Boulevard			WKND	0.606	28	C	0.644	29	C	1	No

Notes:

* Average stopped delay per vehicle, in seconds.

** Indicates oversaturated conditions. Delay cannot be calculated.

A Arterial intersection

C Collector intersection

AWSC All Way Stop Control

TWSC Two-Way Stop Control

TABLE 7-2
APPROVAL YEAR (2017) INTERSECTION LEVEL OF SERVICE AND IMPACT ANALYSIS
Alternative 3-Access2

NO.	INTERSECTION	CLASS	Control Type	PEAK HOUR	APPROVAL NO PROJECT (Alt 1 and Alt 2)			APPROVAL + PROJECT (Alt 3-Access 2)			V/C OR DELAY CHANGE	SIGNIFICANT IMPACT?
					V/C	DELAY	LOS	V/C	DELAY	LOS		
1	Pacific Coast Highway (PCH) &	A	Signal	PM	1.069	**	F	1.071	**	F	0.002	No
	California Incline			WKND	0.889	67	E	0.890	67	E	0	No
2	Pacific Coast Highway (PCH) &	A	TWSC	PM	0.211	9	A	0.211	9	A	0	No
	The Lot Exit			WKND	0.284	10	A	0.285	10	A	0	No
3	Appian Way &	C	TWSC	PM	0.000	7	A	0.000	8	A	1	No
	Moss Avenue			WKND	0.000	8	A	0.000	9	A	1	No
4	Appian Way &	C	AWSC	PM	na	8	A	na	9	A	1	No
	Seaside Terrace			WKND	na	9	A	na	10	B	1	No
5	Appian Way &	A	AWSC	PM	na	9	A	na	9	A	0	No
	Pico Boulevard			WKND	na	11	B	na	12	B	1	No
6	Ocean Avenue &	A	Signal	PM	0.396	11	B	0.396	11	B	0	No
	Broadway			WKND	0.428	10	A	0.428	10	A	0	No
7	Ocean Avenue &	A	Signal	PM	0.436	43	D	0.340	32	C	-11	No
	Colorado Avenue			WKND	0.541	50	D	0.418	32	C	-18	No
8	Ocean Avenue &	A	Signal	PM	0.621	22	C	0.608	22	C	0	No
	Moomat Ahiko Way			WKND	0.604	29	C	0.587	29	C	0	No
9	Ocean Avenue &	A	TWSC	PM	0.267	36	E	0.748	74	F	38	Yes
	Seaside Terrace			WKND	0.880	99	F	1.478	**	F	0.598	Yes
10	Ocean Avenue &	A	Signal	PM	0.651	30	C	0.669	37	D	7	No
	Olympic Boulevard			WKND	0.605	18	B	0.624	20	B	2	No
11	Ocean Avenue &	A	Signal	PM	0.555	24	C	0.614	24	C	0	No
	Pico Boulevard			WKND	0.510	31	C	0.507	31	C	0	No
12/13	2nd Street &	A	Signal	PM	0.288	30	C	0.277	32	C	2	No
	Colorado Avenue			WKND	0.317	33	C	0.302	35	C	2	No
14	Main Street &	C	Signal	PM	0.331	14	B	0.322	14	B	0	No
	Olympic Boulevard			WKND	0.355	14	B	0.355	14	B	0	No
15	Main Street &	A	Signal	PM	0.481	31	C	0.482	31	C	0	No
	Pico Boulevard			WKND	0.523	30	C	0.530	30	C	0	No
16	Mazatlan Drive	C	Signal	PM	0.270	7	A	0.269	7	A	0	No
	Olympic Boulevard			WKND	0.226	6	A	0.240	6	A	0	No
17	4th Street &	A	Signal	PM	0.511	22	C	0.499	22	C	0	No
	Colorado Avenue			WKND	0.463	23	C	0.444	22	C	-1	No
18	4th Street &	A	Signal	PM	0.920	44	D	0.891	39	D	-5	No
	I-10 Freeway Westbound Off-Ramp			WKND	0.611	25	C	0.571	24	C	-1	No
19	4th Street &	A	Signal	PM	0.764	41	D	0.764	41	D	0	No
	I-10 Freeway Eastbound On-Ramp			WKND	1.023	79	E	1.022	78	E	-1	No
20	4th Street &	A	Signal	PM	0.596	28	C	0.607	28	C	0	No
	Pico Boulevard			WKND	0.606	28	C	0.623	28	C	0	No

Notes:

* Average stopped delay per vehicle, in seconds.

** Indicates oversaturated conditions. Delay cannot be calculated.

A Arterial intersection

C Collector intersection

AWSC All Way Stop Control

TWSC Two-Way Stop Control

TABLE 8-1
FUTURE YEAR (2025) INTERSECTION LEVEL OF SERVICE AND IMPACT ANALYSIS
Alternative 3-Access1

NO.	INTERSECTION	CLASS	Control Type	PEAK HOUR	FUTURE NO PROJECT (Alt 1 and Alt 2)			FUTURE + PROJECT (Alt 3-Access 1)			V/C OR DELAY CHANGE	SIGNIFICANT IMPACT?
					V/C	DELAY	LOS	V/C	DELAY	LOS		
1	Pacific Coast Highway (PCH) &	A	Signal	PM	1.107	**	F	1.109	**	F	0.002	No
	California Incline			WKND	1.014	87	F	1.011	86	F	-1	No
2	Pacific Coast Highway (PCH) &	A	TWSC	PM	0.211	9	A	0.211	9	A	0	No
	The Lot Exit			WKND	0.284	10	A	0.285	10	A	0	No
3	Appian Way &	C	TWSC	PM	0.000	7	A	0.000	8	A	1	No
	Moss Avenue			WKND	0.000	8	A	0.000	9	A	1	No
4	Appian Way &	C	AWSC	PM	na	8	A	na	9	A	1	No
	Seaside Terrace			WKND	na	10	A	na	11	B	1	No
5	Appian Way &	A	AWSC	PM	na	9	A	na	9	A	0	No
	Pico Boulevard			WKND	na	9	A	na	10	A	1	No
6	Ocean Avenue &	A	Signal	PM	0.394	11	B	0.393	11	B	0	No
	Broadway			WKND	0.436	10	B	0.437	10	B	0	No
7	Ocean Avenue &	A	Signal	PM	0.447	45	D	0.350	33	C	-12	No
	Colorado Avenue			WKND	0.559	55	D	0.437	33	C	-22	No
8	Ocean Avenue &	A	Signal	PM	0.638	22	C	0.625	22	C	0	No
	Moomat Ahiko Way			WKND	0.640	29	C	0.623	30	C	1	No
9	Ocean Avenue &	A	TWSC	PM	0.276	37	E	0.570	54	F	17	Yes
	Seaside Terrace			WKND	0.950	121	F	1.324	240	F	0.374	Yes
10	Ocean Avenue &	A	Signal	PM	0.654	32	C	0.670	33	C	1	No
	Olympic Boulevard			WKND	0.652	20	B	0.648	20	C	0	No
11	Ocean Avenue &	A	Signal	PM	0.619	24	C	0.628	25	C	1	No
	Pico Boulevard			WKND	0.520	32	C	0.517	32	C	0	No
12/13	2nd Street &	A	Signal	PM	0.447	35	D	0.434	35	D	0	No
	Colorado Avenue			WKND	0.366	32	C	0.351	33	C	1	No
14	Main Street &	C	Signal	PM	0.324	20	B	0.389	20	C	0	No
	Olympic Boulevard			WKND	0.362	14	B	0.401	14	B	0	No
15	Main Street &	A	Signal	PM	0.487	31	C	0.494	32	C	1	No
	Pico Boulevard			WKND	0.519	31	C	0.528	31	C	0	No
16	Mazatlan Drive	C	Signal	PM	0.247	7	A	0.269	7	A	0	No
	Olympic Boulevard			WKND	0.226	6	A	0.240	6	A	0	No
17	4th Street &	A	Signal	PM	0.527	23	C	0.515	23	C	0	No
	Colorado Avenue			WKND	0.504	25	C	0.484	24	C	-1	No
18	4th Street &	A	Signal	PM	0.965	55	D	0.937	47	D	-8	No
	I-10 Freeway Westbound Off-Ramp			WKND	0.665	25	C	0.625	23	C	-2	No
19	4th Street &	A	Signal	PM	0.763	42	D	0.788	47	D	5	No
	I-10 Freeway Eastbound On-Ramp			WKND	1.084	100	F	1.108	**	F	0.024	Yes
20	4th Street &	A	Signal	PM	0.605	29	C	0.616	29	C	0	No
	Pico Boulevard			WKND	0.605	30	C	0.633	31	C	1	No

Notes:

* Average stopped delay per vehicle, in seconds.

** Indicates oversaturated conditions. Delay cannot be calculated.

A Arterial intersection

C Collector intersection

AWSC All Way Stop Control

TWSC Two-Way Stop Control

TABLE 8-2
FUTURE YEAR (2025) INTERSECTION LEVEL OF SERVICE AND IMPACT ANALYSIS
Alternative 3-Access2

NO.		INTERSECTION	CLASS	Control Type	PEAK HOUR	FUTURE NO PROJECT (Alt 1 and Alt 2)			FUTURE + PROJECT (Alt 3-Access 2)			V/C OR DELAY CHANGE	SIGNIFICANT IMPACT?
						V/C	DELAY	LOS	V/C	DELAY	LOS		
1	1	Pacific Coast Highway (PCH) &	A	Signal	PM	1.107	**	F	1.109	**	F	0.002	No
	1	California Incline			WKND	1.014	87	F	1.011	86	F	-1	No
2	1492285	Pacific Coast Highway (PCH) &	A	TWSC	PM	0.211	9	A	0.211	9	A	0	No
	1492285	The Lot Exit			WKND	0.284	10	A	0.285	10	A	0	No
3	1023808	Appian Way &	C	TWSC	PM	0.000	7	A	0.000	10	B	3	No
	1023808	Moss Avenue			WKND	0.000	8	A	0.000	13	B	5	No
4	158	Appian Way &	C	AWSC	PM	na	8	A	na	9	A	1	No
	158	Seaside Terrace			WKND	na	10	A	na	11	B	1	No
5	159	Appian Way &	A	AWSC	PM	na	9	A	na	9	A	0	No
	159	Pico Boulevard			WKND	na	9	A	na	10	A	1	No
6	170	Ocean Avenue &	A	Signal	PM	0.394	11	B	0.393	11	B	0	No
	170	Broadway			WKND	0.436	10	B	0.437	10	B	0	No
7	6	Ocean Avenue &	A	Signal	PM	0.447	45	D	0.350	33	C	-12	No
	6	Colorado Avenue			WKND	0.559	55	D	0.437	33	C	-22	No
8	7	Ocean Avenue &	A	Signal	PM	0.638	22	C	0.625	22	C	0	No
	7	Moomat Ahiko Way			WKND	0.640	29	C	0.623	30	C	1	No
9	177	Ocean Avenue &	A	TWSC	PM	0.276	37	E	0.772	79	F	42	Yes
	177	Seaside Terrace			WKND	0.950	121	F	1.596	**	F	0.646	Yes
10	674	Ocean Avenue &	A	Signal	PM	0.654	32	C	0.672	40	D	8	No
	674	Olympic Boulevard			WKND	0.652	20	B	0.672	22	C	2	No
11	8	Ocean Avenue &	A	Signal	PM	0.619	24	C	0.619	24	C	0	No
	8	Pico Boulevard			WKND	0.520	32	C	0.518	32	C	0	No
12/13	15	2nd Street &	A	Signal	PM	0.447	35	D	0.434	35	D	0	No
	15	Colorado Avenue			WKND	0.366	32	C	0.351	33	C	1	No
14	514	Main Street &	C	Signal	PM	0.324	20	B	0.391	20	C	0	No
	514	Olympic Boulevard			WKND	0.362	14	B	0.408	15	B	1	No
15	17	Main Street &	A	Signal	PM	0.487	31	C	0.487	31	C	0	No
	17	Pico Boulevard			WKND	0.519	31	C	0.525	31	C	0	No
16	176	Mazatlan Drive	C	Signal	PM	0.247	7	A	0.270	7	A	0	No
	176	Olympic Boulevard			WKND	0.226	6	A	0.240	6	A	0	No
17	34	4th Street &	A	Signal	PM	0.527	23	C	0.515	23	C	0	No
	34	Colorado Avenue			WKND	0.504	25	C	0.484	24	C	-1	No
18	35	4th Street &	A	Signal	PM	0.965	55	D	0.937	47	D	-8	No
	35	I-10 Freeway Westbound Off-Ramp			WKND	0.665	25	C	0.625	23	C	-2	No
19	36	4th Street &	A	Signal	PM	0.763	42	D	0.763	42	D	0	No
	36	I-10 Freeway Eastbound On-Ramp			WKND	1.084	100	F	1.086	98	F	-2	No
20	37	4th Street &	A	Signal	PM	0.605	29	C	0.606	29	C	0	No
	37	Pico Boulevard			WKND	0.605	30	C	0.621	30	C	0	No

Notes:

*	Average stopped delay per vehicle, in seconds.
**	Indicates oversaturated conditions. Delay cannot be calculated.
A	Arterial intersection
C	Collector intersection
AWSC	All Way Stop Control
TWSC	Two-Way Stop Control

Appendix E **Re-Entrained Road Dust Calculations and EPA AP-42, Section 13.2.1 (Re-entrained Dust Emissions Computation Documentation)**

Interim Guidance Update on Mobile Source Air Toxic Analysis in **NEPA - Appendix C**

Sec. 1502.22 INCOMPETE OR UNAVAILABLE INFORMATION

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.

c. 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 an 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. Environmental Protection Agency (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 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" (EPA, http://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). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update 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, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

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 occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). 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 (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

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.

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.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff Victoria Martinez (787) 766-5600 X231, Bruce Bender (202) 366-2851, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support.

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Air Quality

Transportation & Toxic Air Pollutants

Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA - Appendix D

PDF files can be viewed with the Acrobat® Reader®

Human epidemiology and animal toxicology experiments indicate that many chemicals or mixtures termed air toxics have the potential to impact human health. As toxicology, epidemiology and air contaminant measurement techniques have improved over the decades, scientists and regulators have increased their focus on the levels of each chemical or material in the air in an effort to link potential exposures with potential health effects. The EPA's list of 21 mobile source toxics represents their prioritization of these chemicals or materials for further study and evaluation. The EPA's strategy for evaluating air toxic compounds effects is focused on both national trends and local impacts. The FHWA has embarked on an air toxics research program with the intent of understanding the mobile source contribution and its impact on local and national air quality. Several of studies either initiated or supported by FHWA are described below[1].

Air toxics emissions from mobile sources have the potential to impact human health and often represent a regulatory agency concern. The FHWA has responded to this concern by developing an integrated research program to answer the most important transportation community questions related to air toxics, human health, and the NEPA process. To this end, FHWA has performed, funded or is currently managing several research projects. Many of these projects are based on an Air Toxics Research Workplan that provides a roadmap for agency research efforts[2]. These efforts include:

THE NATIONAL NEAR ROADWAY MSAT STUDY

The FHWA, in conjunction with the EPA and a consortium of State departments of transportation, studied the concentration and physical behavior of MSAT and mobile source PM 2.5 in Las Vegas, Nevada and Detroit, Michigan. The study criteria dictated that the study site be open to traffic and have 150,000 Annual Average Daily Traffic or more. These studies were intended to provide knowledge about the dispersion of MSAT emissions with the ultimate goal of enabling more informed transportation and environmental decisions at the project-level. These studies are unique in that the monitored data was collected for the entire year. The Las Vegas, NV report revealed there are a large number of influences in this urban setting and researchers must look beyond the roadway to find all the sources in the near road environment. Additionally, in Las Vegas, meteorology played a large role in the concentrations measured in the near road study area. More information is available at http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_t

TRAFFIC-RELATED AIR POLLUTION

Going One Step Beyond: A Neighborhood Scale Air Toxics Assessment in North Denver (The Good Neighbor Project)

In 2007, the Denver Department of Environmental Health (DDEH) issued a technical report entitled Going One Step Beyond: A Neighborhood Scale Air Toxics Assessment in North Denver (The Good Neighbor Project). This research project was funded by FHWA. In this study, DDEH conducted a neighborhood-scale air toxics assessment in North Denver, which includes a portion of the proposed I-70 East project area. Residents in this area have been very concerned about both existing health effects in their neighborhoods (from industrial activities, hazardous waste sites, and traffic) and potential health impacts from changes to I-70.

The study was designed to compare modeled levels of the six priority MSATs identified in FHWA's 2006 guidance with measurements at existing MSAT monitoring sites in the study area. MOBILE6.2 emissions factors and the ISC3ST dispersion model were used (some limited testing of the CALPUFF model was also performed). Key findings include: 1) modeled mean annual concentrations from highways were well below estimated Integrated Risk Information System (IRIS) cancer and non-cancer risk values for all six MSAT; 2) modeled concentrations dropped off sharply within 50 meters of roadways; 3) modeled MSAT concentrations tended to be higher along highways near the Denver Central Business District (CBD) than along the I-70 East corridor (in some cases, they were higher within the CBD itself, as were the monitored values); and 4) dispersion model results were generally lower than monitored concentrations

but within a factor of two at all locations.

Mobile Source Air Toxic Hot Spot

Given concerns about the possibility of MSAT exposure in the near road environment, The Health Effects Institute (HEI) dedicated a number of research efforts at trying to find a MSAT "hotspot." In 2011 three studies were published that tested this hypothesis. In general the authors confirm that while highways are a source of air toxics, they were unable to find that highways were the only source of these pollutants and determined that near road exposures were often no different or no higher than background or ambient levels of exposure, and hence no true hot spots were identified. These links provide additional information http://pubs.healtheffects.org/getfile.php?u=659 page 137, http://pubs.healtheffects.org/getfile.php?u=656 page 143, and http://pubs.healtheffects.org/getfile.php?u=617 page 87, where monitored on-road emissions were higher than emission levels monitored near road residences, but the issue of hot spot was not ultimately discussed.

Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects

In January 2010, HEI released Special Report #17, investigating the health effects of traffic related air pollution. The goal of the research was to synthesize available information on the effects of traffic on health. Researchers looked at linkages between: (1) traffic emissions (at the tailpipe) with ambient air pollution in general, (2) concentrations of ambient pollutants with human exposure to pollutants from traffic, (3) exposure to pollutants from traffic with human-health effects and toxicologic data, and (4) toxicologic data with epidemiological associations. Challenges in making exposure assessments, such as quality and quantity of emissions data and models, were investigated, as was the appropriateness of the use of proximity as an exposure-assessment model. Overall, researchers felt that there was "sufficient" evidence for causality for the exacerbation of asthma. Evidence was "suggestive but not sufficient" for other health outcomes such as cardiovascular mortality and others. Study authors also note that past epidemiologic studies may not provide an appropriate assessment of future health associations as vehicle emissions are decreasing overtime. The report is available from HEI's website at http://www.healtheffects.org/. The FHWA provides financial support to HEI's research work.

HEI SPECIAL REPORT #16

In November 2007, the HEI published Special Report #16: Mobile-Source Air Toxics: A Critical Review of the Literature on Exposure and Health Effects. The purpose of this Report was to accomplish the following tasks:

- Use information from the peer-reviewed literature to summarize the health effects of exposure to the 21 MSATs defined by the EPA in 2001;
- Critically analyze the literature for a subset of priority MSAT; and
- Identify and summarize key gaps in existing research and unresolved questions about the priority MSAT.

The HEI chose to review literature for acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, naphthalene, and polycyclic organic matter (POM). Diesel exhaust was included, but not reviewed in this study since it had been reviewed by HEI and EPA recently. In general, the Report concluded that the cancer health effects due to mobile sources are difficult to discern since the majority of quantitative assessments are derived from occupational cohorts with high concentration exposures and some cancer potency estimates are derived from animal models. The Report suggested that substantial improvements in analytical sensitively and specificity of biomarkers would provide better linkages between exposure and health effects. Noncancer endpoints were not a central focus of most research, and therefore require further investigation. Subpopulation susceptibility also requires additional evaluation. The study is available from HEI's website at http://www.healtheffects.org/.

KANSAS CITY PM CHARACTERIZATION STUDY (KANSAS CITY STUDY)

This study was initiated by EPA to conduct exhaust emissions testing on 480 light-duty, gasoline vehicles in the Kansas City Metropolitan Area (KCMA). Major goals of the study included characterizing PM emissions distributions of a sample of gasoline vehicles in Kansas City; characterizing gaseous and PM toxics exhaust emissions; and characterizing the fraction of high emitters in the fleet. In the process, sampling methodologies were evaluated. Overall, results from the study were used to populate databases for the MOVES emissions model. The FHWA was one of the research sponsors. This study is available on EPA's website at: http://www.epa.gov/otaq/emission-factors-research/documents/420r08009.pdf

ESTIMATING THE TRANSPORTATION CONTRIBUTION TO PARTICULATE MATTER POLLUTION (AIR TOXICS SUPERSITE STUDY)

The purpose of this study was to improve understanding of the role of highway transportation sources in particulate matter (PM) pollution. In particular, it was important to examine uncertainties, such as the effects of the spatial and temporal distribution of travel patterns, consequences of vehicle fleet mix and fuel type, the contribution of vehicle speed and operating characteristics, and influences of geography and weather. The fundamental methodology of the study was to combine EPA research-grade air quality monitoring data in a representative sample of metropolitan areas with traffic data collected by State departments of transportation (DOTs) and local governments.

Phase I of the study, the planning and data evaluation stage, assessed the characteristics of EPA's ambient PM monitoring initiatives and recruited State DOTs and local government to participate in the research. After evaluating and selecting potential metropolitan areas based on the quality of PM and traffic monitoring data, nine cities were selected to participate in Phase II. The goal of Phase II was to determine whether correlations could be observed between traffic on highway facilities and ambient PM concentrations. The Phase I report was published in September 2002. Phase II included the collection of traffic and air quality data and data analysis. Ultimately, six cities participated: New York City (Queens), Baltimore, Pittsburgh, Atlanta, Detroit and Los Angeles.

In Phase II, air quality and traffic data were collected. The air quality data was obtained from EPA AIRS AQS system, Supersite personnel, and NARSTO data archive site. Traffic data included ITS (roadway surveillance), Coverage Counts (routine traffic monitoring) and Supplemental Counts (specifically for research project). Analyses resulted in the conclusion that only a weak correlation existed between PM2.5 concentrations and traffic activity for several of the sites. The existence of general trends indicates a relationship, which however is primarily unquantifiable. Limitations of the study include the assumption that traffic sources are close enough to ambient monitors to provide sufficiently strong source strength, that vehicle activity is an appropriate surrogate for mobile emissions, and lack of knowledge of other factors such as non-traffic sources of PM and its precursors. A paper documenting the work of Phase II was presented at the 2004 Emissions Inventory Conference and is available at http://www.epa.gov/ttn/chief/conference/ei13/mobile/black.pdf.

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[1] The information provided here is an update to research work discussed in the 2009 release of this interim guidance. The current title of each research activity is followed by the title used to describe the activity previously.

[2] Available at http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/workplan/index.cfm

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Appendix M

Natural Environment Study – Minimal Impacts

Memorandum

To:	Paul Caron Senior District Biologist, California Department of Transportation, District 7, Division of Environmental Planning
From:	Sarah Horwath Biologist, ICF
Date:	May 6, 2020
Re:	**Addendum to the Natural Environmental Study (Minimal Impacts) for the Santa Monica Pier Bridge Replacement Project**

Project Description

A review of the above-referenced Santa Monica Pier Bridge Replacement Project has been conducted to identify potential impacts on natural resources in the area. The project is proposing to replace the Santa Monica Pier Bridge (Pier Bridge), which connects the intersection of Ocean Avenue and Colorado Avenue to Santa Monica Pier in the city of Santa Monica. The proposed project would include replacement of the existing Pier Bridge with a new multi-modal bridge to meet current seismic standards and enhance access for individuals with limited mobility. Bridge replacement would also include improvements at the west and east bridge approaches on the pier. Eight build alternatives, as well as a No-Build Alternative, are being analyzed in the recirculated draft environmental impact report/environmental assessment (EIR/EA). Alternative 4 is considered the "locally preferred alternative" and analyzed in the EIR/EA as "the project," which consists of an in-kind Pier Bridge replacement with a south-side pedestrian/ADA-compliant path.

Methodology

The previous biological resource review for the above-mentioned project was conducted in February 2016. The 2016 Natural Environmental Study (Minimal Impacts) (NES [MI]) included a literature review. This encompassed Google Earth aerial imagery, U.S. Geological Survey topographic maps, California Natural Diversity Database (CNDDB) records, the California Native Plant Society (CNPS) Electronic Inventory, a National Marine Fisheries Service species list, and a species list from the U.S. Fish and Wildlife Services Information, Planning, and Conservation System. A site visit was conducted in 2016 as part of the previous biological resource review.

In March 2020, ICF reviewed the previous 2016 NES (MI) and updated the database and species lists described above.

Result

The project footprint has been reduced a small amount compared with the previous iteration included in the 2016 NES (MI). No areas that were not previously reviewed have been added to the project footprint. A review of aerial imagery, publicly available in Google Earth, showed that site conditions are generally unchanged since February 2016; therefore, the previous biological resource review remains applicable to the project. ICF has reviewed the 2016 NES (MI) and is in concurrence with the evaluations of species with potential to occur as well as the potential project impacts described in the document.

Table 1 describes the additional sensitive plant and animal species that were identified in the April 2020 literature review and not included in the 2016 NES (MI). It provides an evaluation of their potential to occur in the Biological Study Area (BSA) (defined as the project area and a 500-foot buffer). In summary, three additional plant species, four additional terrestrial species, 14 marine species, and two special-status habitats were identified through the updated literature and database review. Of these species, only four sea turtle species, as well as pinnipeds protected under the Marine Mammal Protection Act (MMPA), have potentially suitable sandy beach habitat present within the BSA. A discussion of these species and the potential for project impacts is provided below. The other species listed in Table 1 do not have suitable habitat within the BSA and would not be expected to occur; therefore, no impacts on these species as a result of the project are anticipated.

Table 1: Additional Sensitive Species and Habitats Potentially Occurring or Known to Occur within the Biological Study Area (added to list of species evaluated in Table 1 of 2016 NES [MI])

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Plants				
Atriplex pacifica Coulter's saltbush	-/-/1B.2/S2	Found in coastal scrub, coastal bluff scrub, playas, and coastal dune habitats. Requires alkali soils. Elevation range: 3–1,312 feet. Blooms: March–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Atriplex coulteri South Coast saltscale	-/-/1B.2/S1S2	Found in coastal bluff scrub, coastal dunes, coastal scrub, and valley and foothill grassland habitats, specifically, on ocean bluffs and ridge tops as well as in alkaline areas at lower levels. Requires alkaline or clay soils. Elevation range: 6–1,509 feet. Blooms: March–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Spermolepis lateriflora Western bristly scaleseed	-/-/2A/SH	Found in Sonoran desert scrub. Requires rocky or sandy soils. Elevation range: 1,198–2,198 feet. Blooms: March–April.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Animals				
Terrestrial Species				
Anniella stebbinsi Southern California legless lizard* *This species was formerly classified as silvery legless lizard (*Anniella pulchra pulchra*), which was evaluated in the 2016 NES(MI).	-/CSC/-/S3	Occurs in moist, warm loose soil with plant cover; sparsely vegetated areas with beach dunes, chaparral, pine-oak woodlands, desert scrub, and sandy washes; and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and on dunes that have been stabilized with bush lupine and mock heather often indicates suitable habitat. Found under surface objects such as rocks, boards, driftwood, and logs. Sometimes found in suburban gardens in Southern California. Soil characteristics, as well as requirements for soil moisture and relatively cool microclimates (about 93°F, maximum), limit distribution.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Arizona elegans occidentalis California glossy snake	-/CSC/-/S2	Most common in desert habitats but also occurs in chaparral, sagebrush, valley-foothill hardwood, pine-juniper, and annual grassland habitats.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Coturnicops noveboracensis Yellow rail	-/CSC/-/S1S2	Occurs in densely vegetated marshes. Breeds in sedge marshes/meadows with shallow standing water.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	**Status[a] FED/STATE/ CNPS/CNDDB**	**General Habitat Description**	**Specific Habitat[b] Present/ Absent**	**Rationale**
Spea hammondii Western spadefoot	-/CSC/-/S3	Found primarily in grasslands but occurs occasionally in valley-foothill hardwood woodlands. Requires shallow intermittent pools for breeding.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Marine Species				
Arctocephalus townsendi Guadalupe fur seal	T/T and CFP/-/S1	Breeds in coastal rocky habitats and caves. Breeding grounds are almost entirely on Guadalupe Island in Mexico. Also known to breed on the San Benito Archipelago in Mexico, with a small number occurring at San Miguel Island in California.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Balaenoptera borealis Sei whale	E/-/-/-	Pelagic cetacean.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Balaenoptera musculus Blue whale	E/-/-/-	Pelagic cetacean; found coastally when feeding and calving.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Balaenoptera physalus Fin whale	E/-/-/-	Pelagic cetacean.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Caretta caretta North Pacific loggerhead sea turtle	E/-/-/-	Pelagic sea turtle. Nests on sandy beaches; only known Pacific nesting location is in Japan.	HP	Sandy beach habitat is present within the BSA; however, the BSA is outside the known nesting range for this species. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	**Status[a] FED/STATE/ CNPS/CNDDB**	**General Habitat Description**	**Specific Habitat[b] Present/ Absent**	**Rationale**
Chelonia mydas East Pacific green sea turtle	T/-/-/S1	Primarily a near-shore sea turtle but can also be found in coastal areas, including bays and estuaries. Nests on sandy beaches. Nesting locations found in the Hawaiian Islands and U.S. Pacific island territories.	HP	Sandy beach habitat is present within the BSA; however, the BSA is outside the known nesting range for this species. This species is not expected to occur. No further constraint is present.
Dermochelys coriacea Leatherback sea turtle	E/-/-/-	Pelagic sea turtle. Nesting beaches are found only in tropical latitudes.	HP	Sandy beach habitat is present within the BSA; however, the BSA is outside the known nesting range for this species. This species is not expected to occur. No further constraint is present.
Eubalaena japonica North Pacific right whale	E/-/-/-	Pelagic cetacean. Nursery areas in shallow, coastal waters.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Haliotis cracherodii Black abalone	E/-/-/S1S2	Found in coastal intertidal and subtidal waters at depths to approximately 18 feet.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Haliotis sorenseni White abalone	E/-/-/S1	Found in coastal subtidal waters at depths of 50 to 180 feet.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Lepidochelys olivacea Olive Ridley sea turtle	T/-/-/-	Pelagic sea turtle; found occasionally in coastal areas, including bays and estuaries. Nests on sandy beaches. Only known Pacific nesting locations are in Mexico, Honduras, El Salvador, Nicaragua, and Costa Rica.	HP	Sandy beach habitat is present within the BSA; however, the BSA is outside the known nesting range for this species. This species is not expected to occur. No further constraint is present.
Megaptera novaeangliae Humpback whale	E/-/-/-	Cetacean; found primarily in coastal waters.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Orcinus orca Southern resident killer whale	E/-/-/-	Cetacean; found primarily in coastal waters.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Physeter macrocephalus Sperm whale	E/-/-/-	Pelagic cetacean.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Marine Mammal Protection Act–protected cetaceans	-/-/-/-	Cetaceans protected under the MMPA are found in marine waters.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Marine Mammal Protection Act-protected pinnipeds	-/-/-/-	Pinnipeds protected under the MMPA are found in marine waters and haul out in coastal areas, such as beaches, rocky intertidal zones, and docks.	HP	Sandy beach habitat is present within the BSA; however, because of the highly disturbed nature of the beach and the high level of human use, pinnipeds are not expected to occur within the BSA. No further constraint is present.
Habitats				
Essential Fish Habitat – Groundfish	-/-/-/-	Marine and estuarine waters defined by the National Oceanic and Atmospheric Administration and Pacific States Fisheries Management Council as Essential Fish Habitat for groundfish.	HA	No marine habitat is present within the BSA. No further constraint is present.
Essential Fish Habitat – Coastal Pelagics	-/-/-/-	Marine and estuarine waters defined by the Pacific States Fisheries Management Council as Essential Fish Habitat for coastal pelagic species.	HA	No marine habitat is present within the BSA. No further constraint is present.

[a] **Status Codes**

Federal
E = Federally Listed, Endangered
PE = Proposed Endangered
T = Federally Listed, Threatened
FC = Federal Candidate for Listing
FSC = Federal Species of Concern
D = Delisted

State
E = State Listed, Endangered
CE = Candidate Endangered
T = State Listed, Threatened
CT = Candidate Threatened
R = Rare (Native Plant Protection Act)
SSC = California Species of Special Concern
CFP = California Fully Protected Species
WL = Watch List
D = Delisted

CNPS
1A = Presumed extirpated in California and either rare or extinct elsewhere
1B = Rare, threatened, or endangered in California and elsewhere
2A = Presumed extirpated in California but common elsewhere
2B = Rare, threatened, or endangered in California but more common elsewhere
3 = More information is needed (review list)
4 = Limited distribution (watch list)
Threat Ranks
_.1 = Seriously threatened in California (more than 80% of occurrences threatened/high degree of threat and immediacy)
_.2 = Moderately threatened in California (20% to 80% of occurrences threatened/moderate degree of threat and immediacy)
_.3 = Not very threatened in California (fewer than 20% of occurrences threatened/low degree of threat and immediacy or no current threats known)

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
CNDDB Note: The CNDDB uses the same ranking methodology that was originally developed by the Nature Conservancy, now maintained and recently revised by NatureServe. The state rank (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represents a letter-plus-number score that reflect a combination of rarity, threat, and trend factors, with weighting being heavier on rarity than the other two. S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity (often five or fewer populations) or because of factors such as very steep declines that make it especially vulnerable to extirpation from the state. S2 = Imperiled – Imperiled in the state because of rarity related to a very restricted range, very few populations (often 20 or fewer), steep declines, or othesr factors that make it very vulnerable to extirpation from the state. S3 = Vulnerable – Vulnerable in the state because of a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to extirpation from the state. S4 = Apparently Secure – Uncommon but not rare in the state; some cause for long-term concern because of declines or other factors. S5 = Secure – Common, widespread, and abundant in the state. SH = All sites are historical; the element has not been seen for at least 20 years but suitable habitat still exists. SX = All sites are extirpated. Uncertainty about the rank of an element is expressed in two major ways: • By expressing the rank as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3). • By adding a "?" to the rank (e.g., S2? represents more certainty than S2S3 but less certainty than S2).				
[b] **Habitat Presence/Absence Codes** P = The species is present and was observed during survey efforts. HP = Habitat is or may be present within project footprint. The species may be present. Focused survey is warranted. HPB = Habitat is or may be present within 200 feet of the BSA. The species may be present. Focused survey is warranted. HA = No habitat present, and no further work needed. Gray highlight = No potential to occur in the BSA.				

Discussion of Sea Turtles

Olive Ridley sea turtle (*Lepidochelys olivacea*), leatherback sea turtle (*Dermochelys coriacea*), East Pacific green sea turtle (*Chelonia mydas*), and North Pacific loggerhead sea turtle (*Caretta caretta*) nest on sandy beaches along Pacific coastlines, including those in Japan, the Hawaiian Islands, U.S. Pacific islands, Mexico, Honduras, Guatemala, El Salvador, Nicaragua, and Costa Rica. These species are not known to nest on beaches in California.

Survey Results

Potentially suitable sandy beach habitat is present along the western edge of the BSA; however, the BSA is outside the known breeding ranges of the aforementioned species. Therefore, these species are not expected to occur within the BSA.

Project Impacts

Project activities are not anticipated in or immediately adjacent to sandy beach habitat. Because these species are not expected to occur within the BSA, there would be no impact on these species.

Avoidance and Minimization Efforts/Compensatory Mitigation

No additional avoidance and minimization measures are needed.

Discussion of Pinnipeds Protected Under the MMPA

Pinnipeds protected under the MMPA are found in marine waters throughout coastal California. Pinnipeds often use coastal areas such as beaches, rocky intertidal zones, and docks as haul-out and resting areas. Some species breed on protected sandy beaches in Southern California.

Survey Results

Potentially suitable sandy beach habitat is present along the western edge of the BSA; however, because of the highly disturbed nature of the beach and high level of human use, pinnipeds are not expected to occur within the BSA.

Project Impacts

Project activities are not anticipated in or immediately adjacent to sandy beach habitat. Because pinnipeds protected under the MMPA are not expected to occur within the BSA, there would be no impact on these species.

Avoidance and Minimization Efforts/Compensatory Mitigation

No additional avoidance and minimization measures are needed.

Conclusion

ICF has reviewed the existing 2016 NES (MI) and is in concurrence with the document. As described in the 2016 NES (MI) and the current project description, all proposed work would be limited to developed and paved areas. No natural habitat areas would be affected by the project. In addition, the avoidance and minimization measures described in the NES (MI) would be implemented to avoid and minimize impacts on species that could occur within adjacent sandy beach habitat or nest/roost in ornamental vegetation and bridge structures within developed portions of the project area. Therefore, it is anticipated that the project would have no impact on special-status species or habitats with implementation of the avoidance and minimization measures.

Natural Environment Study

(MINIMAL IMPACTS)

Santa Monica Pier Bridge Replacement Project

Project Number: BHLO-5107(033)

February 2016

STATE OF CALIFORNIA

Department of Transportation and the City of Santa Monica

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Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Summary

The City of Santa Monica and the California Department of Transportation (Caltrans) are proposing replacement of the Santa Monica Pier Bridge (Pier Bridge). The primary purpose and objective of the proposed project is to provide a bridge that is structurally sound and seismically resistant, with safe and adequate access for all users, including pedestrians, bicyclists, motorists, and emergency vehicles.

The proposed project would include replacement of the existing structurally deficient Pier Bridge with a safer multi-modal bridge that meets current seismic and Americans with Disabilities Act (ADA) standards. Bridge replacement would also include improvements at the west and east bridge approaches and on the Santa Monica Pier.

The proposed action and the project alternatives have been developed to meet the identified purpose and need of the project while avoiding or minimizing environmental impacts. The alternatives are Alternative 1, Alternative 2, Alternative 3, and the No-Build Alternative.

Habitat evaluations for special-status plant and animal species as well as depleted natural communities were conducted on site within a 500-foot buffer around the project area (i.e., Biological Study Area [BSA]). Potential suitable habitat for several special-status birds, bats, plants, and invertebrates exists within the BSA. Focused surveys for rare plants and general habitat assessments for special-status animal species were not conducted because of lack of suitable habitat. No impacts on any special-status species are anticipated with implementation of avoidance and minimization measures. Table S-1 summarizes the biological resources that could be affected by the proposed project and required avoidance, minimization, and mitigation measures.

Table S-1. Biological Resources Potentially Affected by the Proposed Project and Associated Avoidance, Minimization, and Mitigation Measures

Biological Resource	Impact	Avoidance, Minimization, and/or Mitigation Measures
Nesting birds	Potential direct impacts and disturbance	**BIO-3, BIO-4, BIO-7**
Special-status bats	Potential direct impacts and disturbance	**BIO-3** and **BIO-4**
Rare plants	Potential disturbance	**BIO-1**
Invasive species	Potential spread	**BIO-5** and **BIO-6**

The permits, reviews, and approvals necessary for the proposed project are listed in Table S-2.

Table S-2. Summary of Anticipated Project Permitting

Agency	Permit/Approval	Status
California Coastal Commission through Santa Monica Local Coastal Program	Coastal Development Permit	Application to be submitted following federal document adoption.

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Acronyms and Abbreviations

ADA	Americans with Disabilities Act
BSA	Biological Study Area
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CCA	California Coastal Act
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
City	City of Santa Monica
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FESA	Federal Endangered Species Act
HBP	Highway Bridge Program
HU	Hydrologic Unit
IPaC	Information, Planning, and Conservation System
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NES-MI	Natural Environment Study – Minimal Impacts
NMFS	National Marine Fisheries Service
OHWM	ordinary high-water mark
PCH	Pacific Coast Highway
Pier	Santa Monica Pier
Pier Bridge	Santa Monica Pier Bridge
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WoS	waters of the State
WoUS	waters of the United States

1 – Introduction

This Natural Environment Study – Minimal Impacts (NES-MI) describes existing biological environment and conditions and examines how the proposed Santa Monica Bridge Replacement Project may affect the biological environment. This report provides technical analysis in support of the project environmental document concerning plants, animals, and natural communities that may be affected by the proposed project.

1.1 Project History

The City of Santa Monica (City) and the California Department of Transportation (Caltrans) are proposing replacement of the Santa Monica Pier Bridge (Pier Bridge). The proposed project would be subject to both the California Environmental Quality Act (CEQA) and the federal National Environmental Policy Act (NEPA). The City of Santa Monica is the lead agency under CEQA, and Caltrans is the lead agency under NEPA. Figure 1 shows the regional location and project vicinity.

The Pier Bridge, constructed in 1939, is approximately 490 feet long, extending west from the intersection of Ocean Avenue and Colorado Avenue to the Santa Monica Pier (Pier) in the City of Santa Monica. The proposed project would include replacement of the existing structurally deficient Pier Bridge with a new multi-modal bridge to meet current seismic and Americans with Disabilities Act (ADA) standards.

1.1.1 Project Purpose and Need

The primary purpose and objective of the proposed project is to provide a bridge that is structurally sound and seismically resistant, with adequate and safe access for all users, including pedestrians, bicyclists, motorists, and emergency vehicles. The proposed project seeks to achieve the objectives while preserving the historic character of the Pier and adjacent historic structures, including the Pier entrance sign, and maintaining continuous access to the Pier for all users. This includes maintaining City and Pier business operations during construction.

This project is included in the 2015 Federal Statewide Transportation Improvement Program and proposed for funding under the Highway Bridge Program (HBP). The Pier Bridge qualifies for replacement under the HBP and is eligible for Toll-Credit funding as well. It is also included in the Southern California Association of Governments 2015 Regional Transportation Plan/Sustainable Communities Strategy.

1.2 Project Description

The proposed project would include replacement of the existing structurally deficient Pier Bridge with a safer multi-modal bridge to meet current seismic and ADA standards. Bridge replacement would also include improvements at the west and east bridge approaches and on the Pier.

This section below describes the proposed action and the project alternatives that have been developed to meet the identified purpose and need of the project while avoiding or minimizing environmental impacts. The alternatives are Alternative 1, Alternative 2, Alternative 3, and the No-Build Alternative.

1.2.1 No-Build Alternative

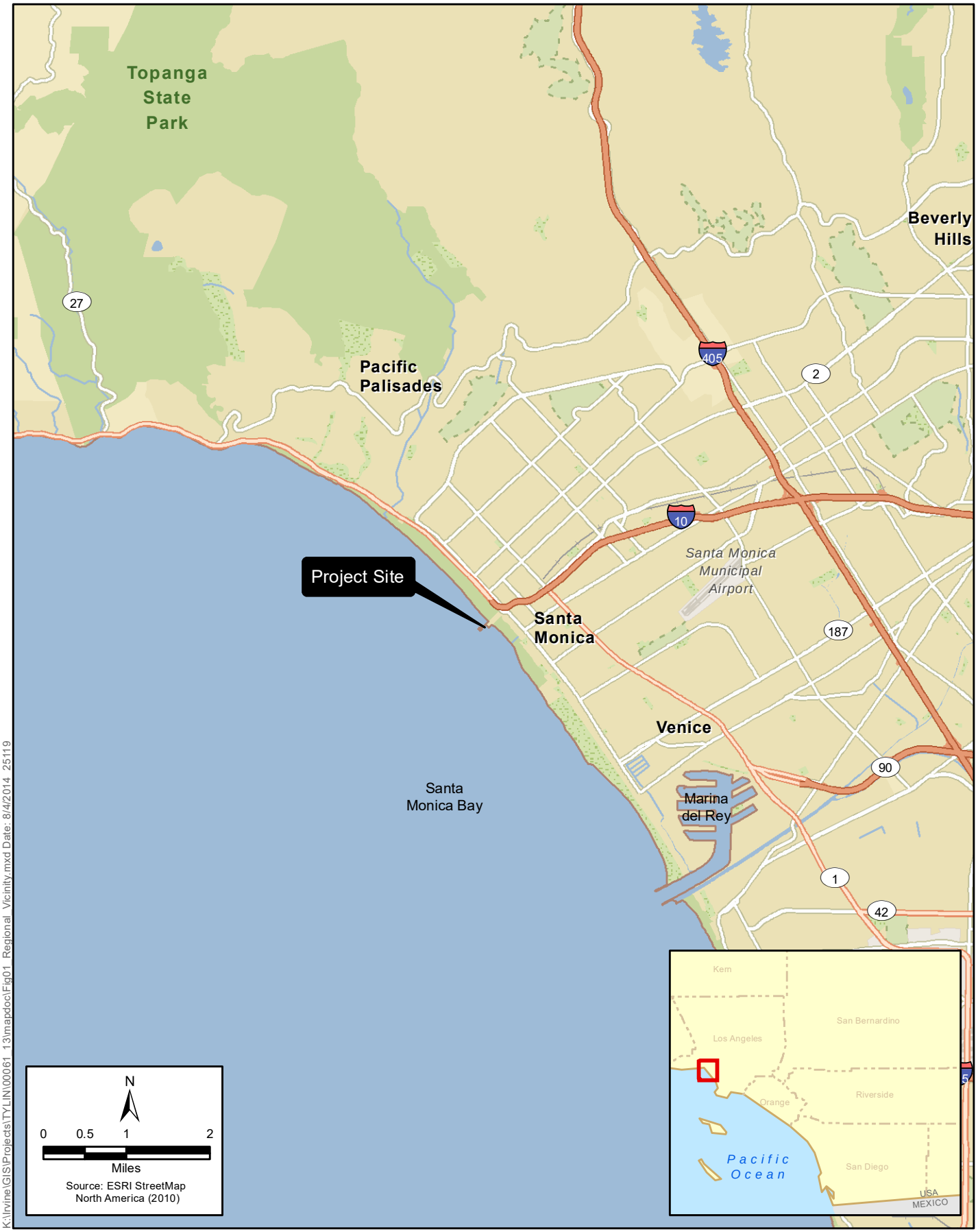
Under the No-Build Alternative, replacement of the structurally deficient Pier Bridge would not occur. The use of the existing bridge structure by pedestrians, bicyclists, and motorists would continue as it does today. The No-Build Alternative serves as a baseline to measure the build alternatives against, including their potential environmental impacts.

1.2.2 Build Alternatives

Three build alternatives are being considered:

- **Alternative 1:** New Wider Replacement Bridge at the Existing Alignment and Temporary Vehicle Access Bridge on Moss Avenue during Construction
- **Alternative 2:** New Wider Replacement Bridge at Existing Alignment and Temporary Vehicle Access Ramp North of the Pier and the Existing Bridge during Construction
- **Alternative 3** (Locally Preferred Alternative): Two New Bridges – New Replacement Bridge for Pedestrian, Bicycle, Emergency, and Limited Access at the Existing Alignment and New Permanent Vehicle-Only Bridge at Moss Avenue

The build alternatives are described in greater detail in the project Environmental Document.



K:\Irvine\GIS\Projects\TYLIN\00061_13\mapdoc\Fig01_Regional_Vicinity.mxd Date: 8/4/2014 25119

Figure 1
Regional Vicinity Map
Santa Monica Bridge Replacement

2 – Study Methods

2.1 Report Terminology

The biological study area (BSA) is the area that was evaluated for biological resources. It consists of the work area footprint of the proposed project and up to a 500-foot buffer. The terms *proposed project*, *project area*, and *project impact area* are defined as the area that has been proposed for direct impact, including permanent and temporary impacts. This is the area where construction will take place and also includes staging, storage, and access areas.

2.2 Literature Search

The California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2015) and the California Native Plant Society's (CNPS) Electronic Inventory (CNPS 2015) were queried for plants, animals, and natural communities in California that have special regulatory or management status and could occur in the vicinity of the BSA (See Appendix A for summary report). Specifically, the database searches were conducted for lands that occur on the U.S. Geological Survey (USGS) 7.5-minute quadrangle map on which the BSA appears (Beverly Hills) and the surrounding or adjacent quadrangles (Topanga, Canoga Park, Van Nuys, Burbank, Hollywood, Inglewood, and Venice). A complete list of the plant and animal species (including scientific nomenclature, regulatory status, and habitat requirements) and natural communities that were reviewed for the proposed project is provided in Tables 1 through 3 of Appendix D. Furthermore, official U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) species lists (USFWS 2015) were obtained on February 12, 2016 (Appendix B).

2.3 Project Area Evaluation

Prior to project evaluations, potentially relevant reference literature and natural resource databases were reviewed to determine the potential value of the BSA to biological resources and habitat resources with special status or resource value. Specific information for the BSA was developed in part through careful general field evaluations of aerial imagery in Google Earth (Google Earth 2015). The field evaluations determined what type of focused evaluations and/or surveys would be necessary within the BSA. A site visit was conducted on February 15, 2016 by ICF Biologist Shannon Crossen. During the site visit the entire BSA for each Alternative was carefully walked and surveyed for all potential biological resources and potential habitats (See photo log in Appendix C).

2.4 Regulatory Requirements

Listed below are the relevant regulations for protecting biological resources that are applicable to the proposed project based on literature searches and project area evaluations.

2.4.1 Federal Requirements

- National Environmental Policy Act
- Clean Water Act, Sections 401 and 404
- Federal Endangered Species Act
- Migratory Bird Treaty Act
- Executive Order 11990—Protection of Wetlands
- Executive Order 13112—Invasive Species

2.4.2 State Requirements

- California Environmental Quality Act
- California Fish and Game Code Sections 1600–1616
- Porter-Cologne Water Quality Control Act
- Coastal Zone Management Act
- California Endangered Species Act
- California Fish and Game Code (Sections 3503, 3503.5, 3505, 3800, and 3801.6)

2.5 Studies Required

No focused species-specific surveys were required because of the lack of suitable habitat in the project area. All general habitat evaluations and site evaluations were initially conducted with use of aerial imagery review at various scales to evaluate carefully the BSA in Google Earth (Google Earth 2015). In addition, a site visit focused on general flora, fauna, and habitat assessments of the BSA was conducted on February 15th 2016.

2.6 Agency Coordination and Professional Contacts

IPaC Species lists were obtained on February 12, 2016.

2.7 Limitations That May Influence Results

Several areas were not accessible in the BSA due to private property ownership. For these areas, surveys were conducted from a distance with the aid of binoculars if needed. However, given the highly developed and urbanized nature of the project area in the BSA as well as the experience and qualifications of the biologist who was involved in the evaluations, these limitations are not expected to influence the results strongly or considerably modify the findings of this study.

3 – Results: Environmental Setting

The environmental setting within the BSA consists primarily of developed and urbanized areas, which are dominated by paved roads, bridges, parking lots, and ornamental landscaped areas (nonnative vegetation). A public beach on the western edge of the BSA contains sandy beach habitat. The main streets, Pier Bridge, and sandy beach habitat all experience high volume of foot traffic by beach visitors, making this an extensively human-dominated landscape.

3.1 Description of the Existing Biological and Physical Conditions in Study Area

This section describes the existing biological and physical conditions of the project site BSA and the surrounding area. The BSA and project impact areas for each alternative are depicted in Figures 2 through 4.

3.1.1 Physical Conditions

The BSA is located within and adjacent to Santa Monica State Beach at the Santa Monica Pier entrance, adjacent to the Pacific Ocean.

Topography

The topography of the BSA is generally flat, ranging from 15 to 30 feet above mean sea level.

Soils

No soil data are available for the BSA, but adjacent soil profiles for the sandy beach habitat consist of Abaft-Beaches associations with 0% to 5% slopes. These are classified as dune landforms and beaches, respectively (U.S. Department of Agriculture, Natural Resources Conservation Service 2015).

Hydrology

The BSA is located within the Santa Monica Bay Hydrologic Unit (HU). This HU contains Santa Monica Bay and nearby portions of its tributaries.

3.1.2 Biological Conditions in the Study Area

The BSA is dominated by urban development, consisting of developed roadways, public parks and beaches, residences, and public access areas. No natural biological communities are present in the BSA.

Natural Communities and Vegetation

No natural vegetation communities exist within the BSA. Vegetation within the BSA consists of non-native ornamental landscape vegetation along the roadways, on residential properties, and in public access areas.

Wildlife

The potential for wildlife in the BSA is primarily limited to bat and bird roosting and nesting habitat that exists at the Pier Bridge and in the ornamental vegetation within the BSA (e.g., palm trees). Bridge hinges and wooden pier rafters may provide nesting and/or roosting habitat for bats and birds, and bridge/pier surfaces may serve as potential nesting habitat for birds. Trees may provide both nesting and roosting habitat for bats and birds. Evidence of current nesting was observed within the existing bridge hinges, wooden pier rafters, and on light fixtures in the wooden pier pedestrian/bike path during site visit evaluations (nesting material observed, white wash below nesting material; see Appendix C for Photo Log). No sign of bat roosting was observed (e.g., urine staining, guano, vocalizations).

Wildlife species observed during the site visit included rock pigeon (*Columba livia*) and gull species (*Larus spp.).*

Aquatic Resources

Aquatic resources under the jurisdiction of USACE, RWQCB, CDFW, and CCC were evaluated in the BSA. Aquatic resources in the form of intertidal marine waters are located at the very edge of the western portion of the BSA. These waters are subject to the jurisdiction of USACE, RWQCB, and CCC. Because no encroachment or impacts on these waters would occur, no delineation of waters was conducted. These would be completely avoided during all project-related work.

Invasive Species

Invasive plant species occur within the BSA as ornamental landscape vegetation. Invasive plant species observed within the BSA include Pride of Madeira (*Echium candicans*) and Mexican/Washington fan palm (*Washingtonia robusta*).

Habitat Connectivity

Because of the urban and highly developed environment in the BSA, as well as the absence of natural habitat connectivity features, the BSA does not support any significant wildlife or habitat connectivity.



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Figure 2
Alternative 1 - Biological Study Area
Santa Monica Bridge Replacement



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Figure 3
Alternative 2 - Biological Study Area
Santa Monica Bridge Replacement



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Figure 4
Alternative 3 - Biological Study Area
Santa Monica Bridge Replacement

Regional Species, Habitats, and Natural Communities of Concern

More than 60 special-status plant species, 50 animal species, and seven depleted natural communities are known to occur within the project region based on database searches. A list of these species and vegetation communities, as well as habitat requirements, regulatory status, and potential to occur within the BSA, is provided in Appendix D, Tables 1 through 3. Determinations for likelihood of occurrence are based on the presence of suitable habitat, quality of habitat, geographic range, elevation, and species-specific tolerances to disturbances within the BSA.

4 – Results: Biological Resources, Discussion of Impacts, and Mitigation

4.1 Habitats and Natural Communities of Special Concern

Because of the developed environment within the BSA, no habitat or natural communities of special concern exist within the BSA or surrounding area.

4.1.1 Special-Status Plant Species

A number of federally listed, state-listed, and non-listed special-status plant species are known to occur in the project region. The plants listed are considered to be of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special-status plants occurring on-site.

The following section provides the results of habitat assessments relevant to the species that have potential to occur in the BSA.

Discussion of Threatened and Endangered Plant Species

There are three federally and or state-listed plants with potential to occur in the BSA, Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), salt marsh bird's-beak (*Chloropyron maritimum* ssp. *maritimum*), and beach spectaclepod (*Dithyrea maritima*). These species have extremely low potential to occur in the BSA because of the level of disturbance and lack of suitable habitat.

Survey Results

No focused surveys for threatened or endangered plants were performed. Site visit evaluations indicated that although sandy beach habitat exists in the BSA, it is of a highly disturbed and developed nature. No vegetation or vegetated foredune habitat exists along the sandy beach habitat in the BSA. Therefore, these species have extremely low potential to occur in the BSA.

Project Impacts

Because of the limited and marginal area of suitable habitat and because construction would be limited to developed and paved areas, no impacts on any listed plant species are anticipated as a result of the proposed project.

Avoidance and Minimization Efforts/Compensatory Mitigation

Listed plant species have extremely low potential to occur within the BSA. Nevertheless, the following avoidance and minimization measure would fully avoid any potential for impacts on these species:

> **BIO-1:** All construction-related work, including staging, storage, and access, shall be limited to the greatest extent feasible, shall occur within the project limits, and shall not encroach upon the sandy beach habitat adjacent to the project.

4.1.2 Non-listed Special-Status Plant Species

There are 11 non-listed special-status plants with potential to occur in the BSA, red sand-verbena (*Aborina maritima*), Lewis's evening primrose (*Camissoniopsis lewisii*), Orcutt's pincushion (*Chaenactis glabriuscula* var. *orcuttiana*), coastal goosefoot (*Chenopodium littoreum*), island wallflower (*Erysimum insulare*), suffrutescent wallflower (*Erysimum suffrutescens*), vernal barley (*Hordeum intercedens*), southwestern spiny rush (*Juncus acutus* ssp. *Leopoldii*), south coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*), Brand's star phacelia (*Phacelia stellaris*), and woolly seablite (*Suaeda taxifoluia*).

Survey Results

No focused surveys for special-status plants were performed. Site visit evaluations indicated that although sandy beach habitat exists in the BSA, it is of a highly disturbed and developed nature. No vegetation or vegetated foredune habitat exists along the sandy beach habitat in the BSA. Therefore, these species have extremely low potential to occur in the BSA.

Project Impacts

Because of the limited and marginal area of suitable habitat, no impacts on any listed plant species are anticipated as a result of the proposed project.

Avoidance and Minimization Efforts/Compensatory Mitigation

Listed plant species have very low potential to occur within the BSA. Avoidance and minimization measure **BIO-1** would fully avoid any potential for impacts on these species.

4.1.3 Special-Status Animal Species Occurrences

A number of federally listed, state-listed, and non-listed special-status animal species are known to occur in the project region. Animals are considered to be of special concern based on: (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status animals occurring on-site.

Threatened and Endangered Animals

Discussion of Southern California Steelhead Trout

The southern California population of steelhead trout is federally listed as endangered and considered a Distinct Population Segment (DPS) by the National Marine Fisheries Service (NMFS). This species is an anadromous, ocean-going species that has experienced drastic declines associated with freshwater habitat loss resulting from extensive watershed development and subsequent development of migration barriers throughout many southern California rivers once used by the species.

Survey Results

Although the project occurs within the southern California steelhead trout DPS planning area, there is a very small amount of coastal waters present just inside the westernmost portion of the BSA along the sandy beach west of the pier. In addition, there is no suitable riverine habitat within the BSA. According to NMFS in a letter dated January, 13, 2016, “this species is not expected to be present in the vicinity of the project area.” (See Appendix E.) In addition, no designated Critical Habitat for the endangered southern California steelhead trout exists in the BSA.

Project Impacts

Because this species is not expected to be present in the BSA, no impacts on this species are anticipated as a result of the proposed project.

Avoidance and Minimization Efforts/Compensatory Mitigation

Because this species is not expected to occur, no avoidance measures are proposed for this species.

Non-Listed Special-Status Animals

There are three non-listed special-status animal species with potential to occur in the BSA, sandy beach tiger beetle (*Cicindela hirticollis gravida*), globose dune beetle (*Coelus globosus*), and western yellow bat (*Lasiurus xanthinus*).

Discussion of Sandy Beach Tiger Beetle

This species breeds primarily above the high-tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, the species is found on beaches, which are used for nesting. The species is also found on beaches in manmade salt ponds and on estuarine sand and mud flats.

Survey Results

Potentially suitable habitat is present but only within the sandy beach habitat found along the western edge of the BSA. Because of the disturbed nature of the BSA, this species has extremely low potential to occur.

Project Impacts

Project activities are not anticipated in or immediately adjacent to this habitat.

Avoidance and Minimization Efforts/Compensatory Mitigation

Although this species has extremely low potential to occur within the BSA, avoidance and minimization measure **BIO-1** would fully avoid any potential for impacts on this species.

Discussion of Globose Dune Beetle

This species is an inhabitant of coastal sand dune habitat and typically found in vegetated foredunes and sand hummocks.

Survey Results

Potentially suitable habitat is present in the sandy beach habitat on the western edge of the BSA, although the potential for occurrence is extremely low because of the lack of vegetation that this typically associated with this species.

Project Impacts

Project activities are not anticipated in or immediately adjacent to the sandy beach habitat within the BSA; therefore, no impacts are anticipated.

Avoidance and Minimization Efforts/Compensatory Mitigation

Although this species has extremely low potential to occur within the BSA, avoidance and minimization measure **BIO-1** would fully avoid any potential for impacts on this species.

Discussion of Western Yellow Bat

This species is a solitary tree-roosting bat that may be migratory or may be present year-round throughout Southern California, although little information is known about its range. This species is typically associated with water features in open grassy areas, scrub, as well as canyons and riparian habitats. Individuals usually roost in trees, hanging from the underside of leaves, and are commonly found in the southwestern United States roosting in a skirt of dead palm fronds in both native and nonnative palm trees.

Survey Results

Suitable roosting habitat is present within the BSA within the large palm trees. There is potential for this species to roost in these trees as migrants or year-round inhabitants.

Project Impacts

Direct or indirect disturbance in the form of tree disturbance, tree removal, or noise adjacent to trees may affect this species. The measure below would ensure that project impacts would be avoided and minimized to the greatest extent possible.

Avoidance and Minimization Efforts/Compensatory Mitigation

> **BIO-2:** To avoid impacts on any bats that may be roosting in palm trees within the project area, all direct impacts on palm trees shall be avoided during construction, and highly vibrative and/or noisy work shall be avoided near palm trees. If it is not possible to avoid direct or indirect impacts (e.g., direct [tree removal, tree disturbance, tree trimming] or indirect [noise, vibrations]) on palm trees, a qualified bat biologist shall survey (i.e., acoustic nighttime surveys) the trees prior to disturbance to determine whether bats are roosting in the trees. If bats are found to be present, the bat biologist shall monitor construction activities to ensure that no bats are affected during construction. The qualified bat biologist may also provide other avoidance measures to ensure that all impacts on this species are avoided and minimized.

Discussion of Crevice Dwelling Species

Crevice-dwelling species, such as some bat and bird species, are known to use bridge hinges and joints for roosting, nesting, and rearing young. These crevices provide shelter to these species in the absence of natural crevice habitat and are commonly used by a variety of crevice-dwelling species.

Survey Results

The existing bridge joints/hinges within the Pier Bridge may provide roosting or nesting habitat for crevice-dwelling species such as bats and birds (e.g., swifts). Because of the level of traffic in the area and the disturbed and urban nature of the BSA, there is low potential for these species to occur. Although there is low potential for these species to occur in the bridge, some species are well adapted to disturbance and may have a higher potential to occur in these features.

Project Impacts

Removal of the Pier Bridge has potential to directly affect any species that may be roosting or nesting within the bridge joints and hinges, potentially causing direct mortality to any species present. The measures below would ensure that project impacts would be avoided and minimized to the greatest extent possible.

Avoidance and Minimization Efforts/Compensatory Mitigation

BIO-3: A qualified bat biologist who is familiar with crevice-dwelling bird species shall survey the project disturbance limits and the Santa Monica Pier Bridge in early summer, prior to construction, to assess the potential for the bridge's use for bat roosting, bat maternity roosting, and bird roosting/nesting because maternity roosts and nesting are generally formed in spring. The qualified bat biologist shall also perform pre-construction surveys within 2 weeks prior to construction because bat and bird roosts can change seasonally. These surveys will include a combination of structure inspections, exit counts, and acoustic surveys.

BIO-4: If recommended by the qualified bat biologist, to avoid indirect disturbance of bats and birds while roosting in areas that would be subject to or adjacent to impacts from construction activities, any portion of the structure that is deemed by a qualified bat biologist to have potential bat or bird roosting habitat and may be affected by the proposed project shall have temporary bat eviction and exclusion devices installed under the supervision of the qualified bat biologist prior to the initiation of construction activities. Eviction and subsequent exclusion will be conducted during the fall (September or October) to avoid trapping flightless young inside during the summer months or hibernating/overwintering individuals during the winter. Such exclusion efforts are dependent on weather conditions, take a minimum of 2 weeks, and must be continued to keep the structures free of bats and birds until the completion of

construction. All eviction and/or exclusion techniques shall be coordinated between the qualified bat biologist and the appropriate resource agencies (e.g., California Department of Fish and Wildlife).

5 – Conclusions and Regulatory Determinations

5.1 Federal Endangered Species Act Consultation Summary

An official IPaC species list was requested on February 12, 2016 (Appendix B). According to the IPaC lists, there is no Critical Habitat within the project area. The IPaC lists, in addition to the seven-quadrangle CNDDB and CNPS list, provided the following federally threatened, endangered, or candidate species, which were incorporated into the effect analysis for the proposed project:

Plant Species: Marsh sandwort (*Arenaria paludicola*), Braunton's milk-vetch (*Astragalus brauntonii*), Ventura Marsh milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), coastal dunes milk-vetch (*Astragalus tener* var. *titi*), Nevin's barberry (*Berberis nevinii*), salt marsh bird's-beak (*Chloropyron maritimum* ssp. *Maritimum*), San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), slender-horned spineflower (*Dodecahema leptoceras*), Santa Monica dudleya (*Dudleya cymosa* ssp. *Ovatifolia*), San Diego button-celery (*Eryngium aristulatum* var. *parishii*), Gambell's watercress (*Nasturtium gambelii*), spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcittia californica*).

Animal Species: Vernal pool fairy shrimp (*Branchinecta lynchi*), marbled murrelet (*Brachtramphus marmoratus*), southwestern willow flycatcher (*Empidonax traillii extimus*), tidewater goby (*Eucyclogobius newberryi*), El Segundo blue butterfly (*Euphilotes battoides allyni*), Southern California steelhead (*Oncorhynchus mykiss irideus*), Pacific pocket mouse (*Perognathus longimembris pacificus*), California gnatcatcher (*Polioptila californica californica*), light-footed clapper rail (*Rallus longirostris levipes*), California red-legged frog (*Rana draytonii*), California least tern (*Sternula antillarum browni*), Riverside fairy shrimp (*Streptocephalus woottoni*), western snowy plover (*Charadrius alexandrinus nivosus*), and least Bell's vireo (*Vireo bellii pusillus*).

Because there is no potential for these species to occur within the project area; no species are anticipated to be affected, either directly or indirectly; and no Critical Habitat is present, a "no effect" determination under FESA is proposed for all of the above-listed species.

5.2 Wetlands and Other Waters Coordination Summary

Although no jurisdictional waters are anticipated to be affected as a result of the proposed project, it does occur within the Coastal Zone. The project would be subject to the CZMA and require a Coastal Development Permit from the Santa Monica Local Coastal Program. No other permits pertaining to waters are anticipated. No other jurisdictional waters were observed within the BSA during field evaluations.

5.2.1 Invasive Species

In compliance with EO 13112, weed control would be performed to minimize the importation of nonnative plant material during and after construction. Eradication strategies would be employed should an invasion occur. Measures to address issues related to the abatement and eradication invasive species would be included in the project design and contract specifications. These measures include measures **BIO-5** and **BIO-6**, below.

> **BIO-5:** Inspection and cleaning of construction equipment shall be performed to minimize the importation of nonnative plant material. Eradication strategies (i.e., weed control) shall be implemented should an invasion of nonnative plant species occur.
>
> **BIO-6:** After construction, species that have been listed as having a high or moderate rating on the Cal-IPC California Invasive Plant Inventory shall not be planted in any revegetated areas.

5.2.2 Bird Protection

In accordance with the provisions of the MBTA and California Fish and Game Code, the following measure, in addition to aforementioned measures **BIO-3** and **BIO-4**, would be incorporated in the proposed project:

> **BIO-7:** Within 7 days prior to the commencement of construction activities (if between January 15 and September 1), a qualified biologist shall perform a nesting bird survey that will consist of at least two site visits to determine whether there are active songbird nests within 200 feet of the project footprint and raptor nests within 500 feet of the project footprint. This survey shall also identify the species and, to the degree feasible, nesting stage (e.g., incubation of young, feeding of young, near fledging). Nests shall be mapped (not by using GPS because close encroachment may cause nest abandonment). If active nests are found, construction shall not occur within 150 feet of the songbird's nest or within 500 feet of a raptor's nest until the nesting attempt has been completed and/or abandoned because of non-project-related reasons.

6 – References

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Appendix A
CNDDB Species List Report

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad is (Beverly Hills (3411814) or Burbank (3411823) or Canoga Park (3411825) or Hollywood (3411813) or Inglewood (3311883) or Topanga (3411815) or Van Nuys (3411824) or Venice (3311884))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	None	G2G3	S1S2	SSC
Aglaothorax longipennis Santa Monica shieldback katydid	IIORT32020	None	None	G1G2	S1S2	
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
Anniella pulchra pulchra silvery legless lizard	ARACC01012	None	None	G3G4T3T4Q	S3	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Arenaria paludicola marsh sandwort	PDCAR040L0	Endangered	Endangered	G1	S1	1B.1
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T3T4	S2S3	
Astragalus brauntonii Braunton's milk-vetch	PDFAB0F1G0	Endangered	None	G2	S2	1B.1
Astragalus pycnostachyus var. lanosissimus Ventura Marsh milk-vetch	PDFAB0F7B1	Endangered	Endangered	G2T1	S1	1B.1
Astragalus tener var. titi coastal dunes milk-vetch	PDFAB0F8R2	Endangered	Endangered	G2T1	S1	1B.1
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Brennania belkini Belkin's dune tabanid fly	IIDIP17010	None	None	G1G2	S1S2	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
California macrophylla round-leaved filaree	PDGER01070	None	None	G3?	S3?	1B.2
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Calystegia felix lucky morning-glory	PDCON040P0	None	None	GHQ	SH	3.1
Carolella busckana Busck's gallmoth	IILEM2X090	None	None	G1G3	SH	
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	PDAST20095	None	None	G5T1T2	S1	1B.1
Charadrius alexandrinus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Chenopodium littoreum coastal goosefoot	PDCHE091Z0	None	None	G2	S2	1B.2
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	Candidate	Endangered	G2T1	S1	1B.1
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S1	
Cicindela senilis frosti senile tiger beetle	IICOL02121	None	None	G2G3T1T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	None	None	G4T2T3	S2S3	
Deinandra minthornii Santa Susana tarplant	PDAST4R0J0	None	Rare	G2	S2	1B.2
Diadophis punctatus modestus San Bernardino ringneck snake	ARADB10015	None	None	G5T2T3Q	S2?	
Dithyrea maritima beach spectaclepod	PDBRA10020	None	Threatened	G1	S1	1B.1
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
Dudleya blochmaniae ssp. blochmaniae Blochman's dudleya	PDCRA04051	None	None	G3T2	S2	1B.1
Dudleya cymosa ssp. ovatifolia Santa Monica dudleya	PDCRA040A5	Threatened	None	G5T1	S1	1B.1
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Empidonax traillii extimus southwestern willow flycatcher	ABPAE33043	Endangered	Endangered	G5T2	S1	
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eucosma hennei Henne's eucosman moth	IILEM0R390	None	None	G1	S1	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphilotes battoides allyni El Segundo blue butterfly	IILEPG201B	Endangered	None	G5T1	S1	
Helianthus nuttallii ssp. parishii Los Angeles sunflower	PDAST4N102	None	None	G5TH	SH	1A
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Lasionycteris noctivagans silver-haired bat	AMACC02010	None	None	G5	S3S4	
Lasiurus cinereus hoary bat	AMACC05030	None	None	G5	S4	
Lasiurus xanthinus western yellow bat	AMACC05070	None	None	G5	S3	SSC
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Malacothamnus davidsonii Davidson's bush-mallow	PDMAL0Q040	None	None	G2	S2	1B.2
Microtus californicus stephensi south coast marsh vole	AMAFF11035	None	None	G5T1T2	S1S2	SSC
Monardella hypoleuca ssp. hypoleuca white-veined monardella	PDLAM180A3	None	None	G4T2T3	S2S3	1B.3
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nasturtium gambelii Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Navarretia fossalis spreading navarretia	PDPLM0C080	Threatened	None	G2	S2	1B.1
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.1
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Onychobaris langei Lange's El Segundo Dune weevil	IICOL4W010	None	None	G1	S1	
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Panoquina errans wandering (=saltmarsh) skipper	IILEP84030	None	None	G4G5	S2	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Pelecanus occidentalis californicus California brown pelican	ABNFC01021	Delisted	Delisted	G4T3	S3	FP
Perognathus longimembris brevinasus Los Angeles pocket mouse	AMAFD01041	None	None	G5T1T2	S1S2	SSC
Perognathus longimembris pacificus Pacific pocket mouse	AMAFD01042	Endangered	None	G5T1	S1	SSC
Phacelia stellaris Brand's star phacelia	PDHYD0C510	None	None	G1	S1	1B.1
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G3T2	S2	SSC
Potentilla multijuga Ballona cinquefoil	PDROS1B120	None	None	GX	SX	1A
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Sidalcea neomexicana Salt Spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Socalchemmis gertschi Gertsch's socalchemmis spider	ILARAU7010	None	None	G1	S1	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sorex ornatus salicornicus	AMABA01104	None	None	G5T1?	S1	SSC
southern California saltmarsh shrew						
Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coast Live Oak Riparian Forest						
Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Coastal Salt Marsh						
Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Cottonwood Willow Riparian Forest						
Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Dune Scrub						
Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Sycamore Alder Riparian Woodland						
Sternula antillarum browni	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
California least tern						
Streptocephalus woottoni	ICBRA07010	Endangered	None	G1G2	S1S2	
Riverside fairy shrimp						
Symphyotrichum defoliatum	PDASTE80C0	None	None	G2	S2	1B.2
San Bernardino aster						
Symphyotrichum greatae	PDASTE80U0	None	None	G3	S3	1B.3
Greata's aster						
Taxidea taxus	AMAJF04010	None	None	G5	S3	SSC
American badger						
Thamnophis hammondii	ARADB36160	None	None	G4	S3S4	SSC
two-striped garter snake						
Trigonoscuta dorothea dorothea	IICOL51021	None	None	G1T1	S1	
Dorothy's El Segundo Dune weevil						
Tryonia imitator	IMGASJ7040	None	None	G2	S2	
mimic tryonia (=California brackishwater snail)						
Vireo bellii pusillus	ABPBW01114	Endangered	Endangered	G5T2	S2	
least Bell's vireo						

Record Count: 97

Appendix B
USFWS IPaC Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 PORTOLA ROAD, SUITE B
VENTURA, CA 93003
PHONE: (805)644-1766 FAX: (805)644-3958

Consultation Code: 08EVEN00-2016-SLI-0223 February 12, 2016
Event Code: 08EVEN00-2016-E-00462
Project Name: Santa Monica Pier Bridge Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve

conflicts with respect to threatened or endangered species or their critical habitat prior to a written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Santa Monica Pier Bridge Replacement Project

Official Species List

Provided by:

Ventura Fish and Wildlife Office
2493 PORTOLA ROAD, SUITE B
VENTURA, CA 93003
(805) 644-1766

Expect additional Species list documents from the following office(s):

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
http://www.fws.gov/carlsbad/

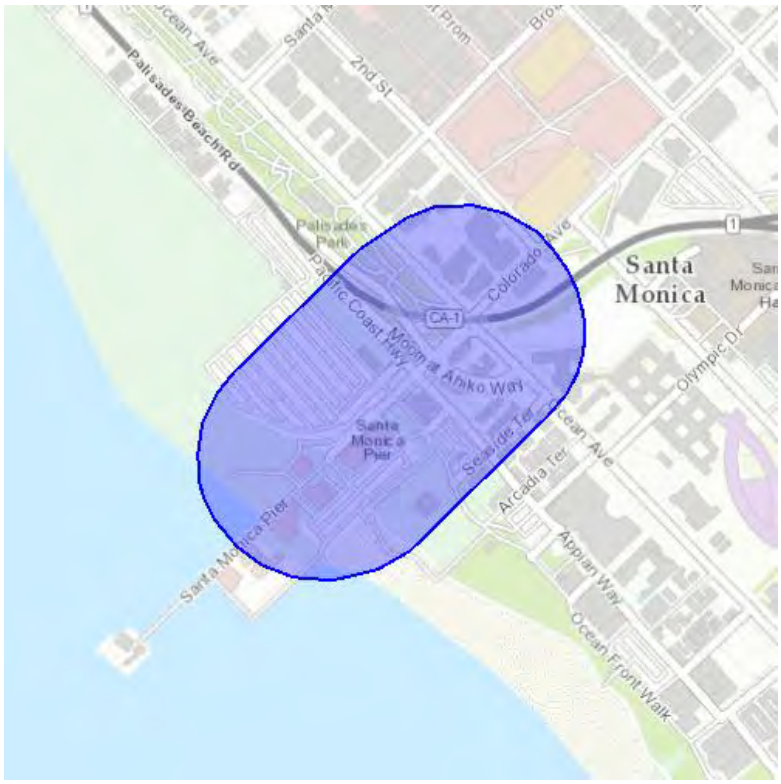
Consultation Code: 08EVEN00-2016-SLI-0223
Event Code: 08EVEN00-2016-E-00462

Project Type: TRANSPORTATION

Project Name: Santa Monica Pier Bridge Replacement Project
Project Description: The City of Santa Monica and the California Department of Transportation (Caltrans) are proposing replacement of the Santa Monica Pier Bridge (Pier Bridge). The primary purpose and objective of the proposed project is to provide a bridge that is structurally sound and seismically resistant, with safe and adequate access for all users, including pedestrians, bicyclists, motorists, and emergency vehicles.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-118.49683263571445 34.008400497267374, -118.49736853228445 34.00843476058816, -118.49781735304605 34.008575528090795, -118.49816460121878 34.00878768165011, -118.49847206166068 34.00909990224645, -118.49861185676433 34.009342772965056, -118.49867219207601 34.0095153208809, -118.49870962097314 34.00987262422472, -118.49863472834234 34.010225820111344, -118.49845261672469 34.01055083863857, -118.49821291305838 34.01079624699074, -118.49643921710963 34.01222523518715, -118.49578877147971 34.01258798969697, -118.49538401211456 34.01271056444656, -118.49484730286406 34.012734838459544, -118.49442898282626 34.01264948952878, -118.49396653439847 34.01242135955183, -118.49374041712065 34.0122287915166, -118.49354043289291 34.01198872379166, -118.49340064771486 34.011745847647795, -118.49332044750199 34.01148492822044, -118.49330170362333 34.01130589252771, -118.49332647235772 34.011037351806294, -118.49341367511079 34.01077799500299, -118.4935599602342 34.01053778893331, -118.49380520927059 34.01028792002594, -118.49573148181818 34.00873927298779, -118.49619992514202 34.008519819788056, -118.49683263571445 34.008400497267374)))

Project Counties: Los Angeles, CA

Endangered Species Act Species List

There are a total of 17 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
California red-legged frog *(Rana draytonii)* Population: Entire	Threatened	Final designated	
Birds			
California Least tern *(Sterna antillarum browni)*	Endangered		
Coastal California gnatcatcher *(Polioptila californica californica)* Population: Entire	Threatened	Final designated	
Least Bell's vireo *(Vireo bellii pusillus)* Population: Entire	Endangered	Final designated	
Light-Footed Clapper rail *(Rallus longirostris levipes)* Population: Entire	Endangered		
Marbled murrelet *(Brachyramphus marmoratus)* Population: CA, OR, WA	Threatened	Final designated	

Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Endangered	Final designated	
western snowy plover *(Charadrius nivosus ssp. nivosus)* Population: Pacific coastal pop.	Threatened	Final designated	
Crustaceans			
Riverside fairy shrimp *(Streptocephalus woottoni)* Population: Entire	Endangered	Final designated	
Vernal Pool fairy shrimp *(Branchinecta lynchi)* Population: Entire	Threatened	Final designated	
Flowering Plants			
Braunton's milk-vetch *(Astragalus brauntonii)*	Endangered	Final designated	
California Orcutt grass *(Orcuttia californica)*	Endangered		
Coastal Dunes milk-vetch *(Astragalus tener var. titi)*	Endangered		
Gambel's watercress *(Rorippa gambellii)*	Endangered		
Marsh Sandwort *(Arenaria paludicola)*	Endangered		
Salt Marsh bird's-beak *(Cordylanthus maritimus ssp. maritimus)*	Endangered		
Spreading navarretia *(Navarretia fossalis)*	Threatened	Final designated	

Critical habitats that lie within your project area

There are no critical habitats within your project area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
PHONE: (760)431-9440 FAX: (760)431-5901
URL: www.fws.gov/carlsbad/

Consultation Code: 08ECAR00-2016-SLI-0393 February 12, 2016
Event Code: 08ECAR00-2016-E-00533
Project Name: Santa Monica Pier Bridge Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Santa Monica Pier Bridge Replacement Project

Official Species List

Provided by:

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
http://www.fws.gov/carlsbad/

Expect additional Species list documents from the following office(s):

Ventura Fish and Wildlife Office
2493 PORTOLA ROAD, SUITE B
VENTURA, CA 93003
(805) 644-1766

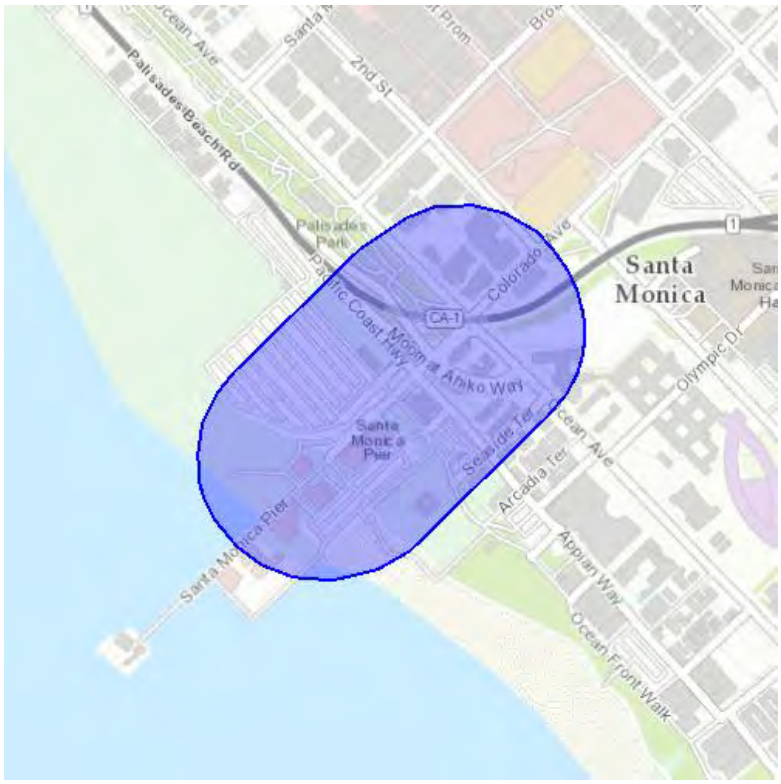
Consultation Code: 08ECAR00-2016-SLI-0393
Event Code: 08ECAR00-2016-E-00533

Project Type: TRANSPORTATION

Project Name: Santa Monica Pier Bridge Replacement Project
Project Description: The City of Santa Monica and the California Department of Transportation (Caltrans) are proposing replacement of the Santa Monica Pier Bridge (Pier Bridge). The primary purpose and objective of the proposed project is to provide a bridge that is structurally sound and seismically resistant, with safe and adequate access for all users, including pedestrians, bicyclists, motorists, and emergency vehicles.

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-118.49683263571445 34.008400497267374, -118.49736853228445 34.00843476058816, -118.49781735304605 34.008575528090795, -118.49816460121878 34.00878768165011, -118.49847206166068 34.00909990224645, -118.49861185676433 34.009342772965056, -118.49867219207601 34.0095153208809, -118.49870962097314 34.00987262422472, -118.49863472834234 34.010225820111344, -118.49845261672469 34.01055083863857, -118.49821291305838 34.01079624699074, -118.49643921710963 34.01222523518715, -118.49578877147971 34.01258798969697, -118.49538401211456 34.01271056444656, -118.49484730286406 34.012734838459544, -118.49442898282626 34.01264948952878, -118.49396653439847 34.01242135955183, -118.49374041712065 34.0122287915166, -118.49354043289291 34.01198872379166, -118.49340064771486 34.011745847647795, -118.49332044750199 34.01148492822044, -118.49330170362333 34.01130589252771, -118.49332647235772 34.011037351806294, -118.49341367511079 34.01077799500299, -118.4935599602342 34.01053778893331, -118.49380520927059 34.01028792002594, -118.49573148181818 34.00873927298779, -118.49619992514202 34.008519819788056, -118.49683263571445 34.008400497267374)))

Project Counties: Los Angeles, CA

Endangered Species Act Species List

There are a total of 3 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Birds	**Status**	**Has Critical Habitat**	**Condition(s)**
Coastal California gnatcatcher *(Polioptila californica californica)* Population: Entire	Threatened	Final designated	
western snowy plover *(Charadrius nivosus ssp. nivosus)* Population: Pacific coastal pop.	Threatened	Final designated	
Flowering Plants			
Gambel's watercress *(Rorippa gambellii)*	Endangered		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: September 22, 2017
Consultation Code: 08ECAR00-2017-SLI-1435
Event Code: 08ECAR00-2017-E-03228
Project Name: Santa Monica Pier Bridge Replacement

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2017-SLI-1435

Event Code: 08ECAR00-2017-E-03228

Project Name: Santa Monica Pier Bridge Replacement

Project Type: TRANSPORTATION

Project Description: Rehab/replace SM pier bridge.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.00998771804994N118.49664026731155W



Counties: Los Angeles, CA

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Birds

NAME	STATUS
Coastal California Gnatcatcher *Polioptila californica californica* There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Western Snowy Plover *Charadrius alexandrinus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final designated** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Flowering Plants

NAME	STATUS
Gambel's Watercress *Rorippa gambellii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4201	Endangered

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

Appendix C
Photo Log

Appendix C **Photo Log**

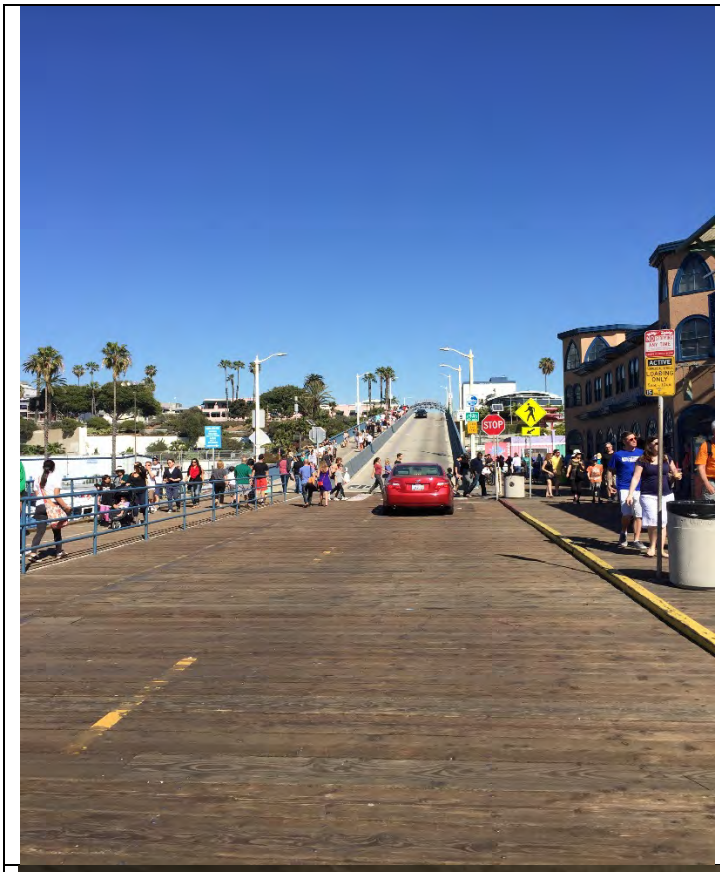
	**Photo 1** **Date:** 2-15-16 **Description:** Pier Bridge and wooden pier. Photo facing east.
	**Photo 2** **Date:** 2-15-16 **Description:** Underside of pier bridge depicting hinges traffic/use underneath pier bridge.

	**Photo 3** **Date:** 2-15-16 **Description:** Close up of hinge under pier bridge depositing nesting material.
	**Photo 4** **Date:** 2-15-16 **Description:** Northern portion of BSA composed of a highly developed and high traffic pier bridge and beach parking lot.

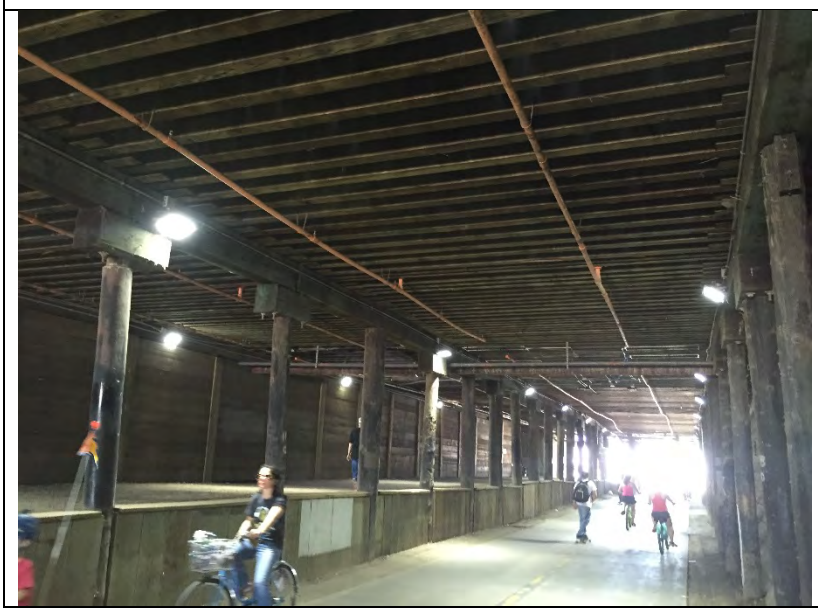
	**Photo 5** **Date:** 2-15-16 **Description:** Representative ornamental vegetation immediately adjacent to pier bridge.
	**Photo 6** **Date:** 2-15-16 **Description:** Pedestrian/bike path under wooden portion of the pier. Wooden rafters and light fixtures contain active nesting by rock pigeon (*Columba livia*). Crevice habitat within the wooden rafters is present. High foot/bike traffic exist within this path.

	**Photo 7** **Date:** 2-15-16 **Description:** Sandy beach and shore immediately north of the Santa Monica Pier.
	**Photo 8** **Date**: 2-15-16 **Description:** Sandy beach and shore immediately south of the Santa Monica Pier.

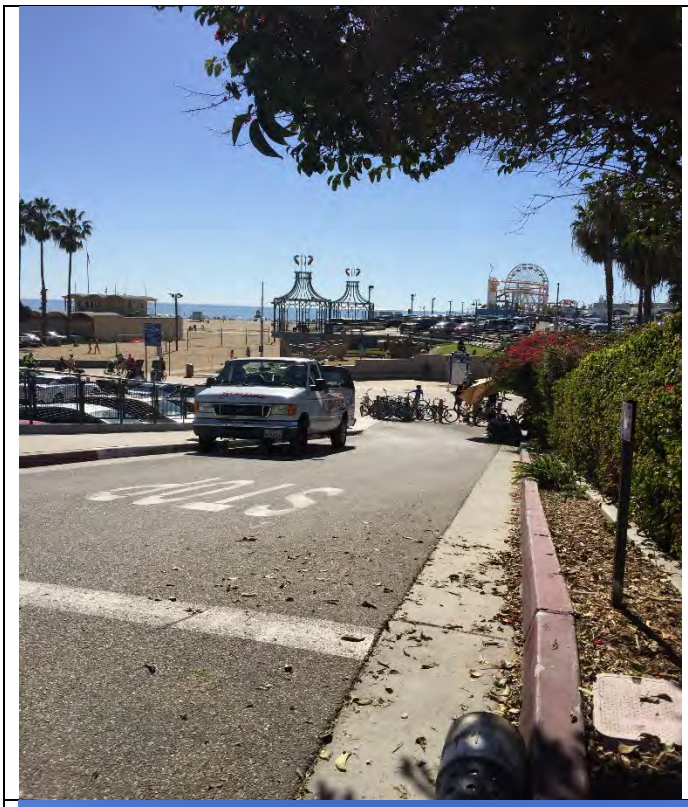
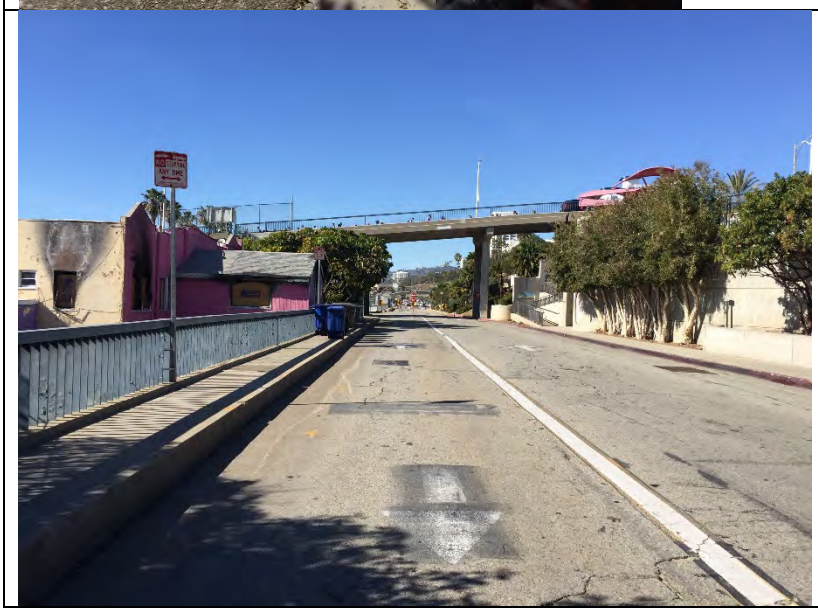
	**Photo 9** **Date**: 2-15-16 **Description:** Southern portion of BSA taken from top of Moss Ave.
	**Photo 10** **Date**: 2-15-16 **Description:** Santa Monica Pier Bridge and surrounding developed landscape. Photo facing north.

	**Photo 11** **Date**: 2-15-16 **Description:** BSA south of Santa Monica Pier Bridge and surrounding developed landscape. Photo facing south.
	**Photo 12** **Date**: 2-15-16 **Description:** BSA south of Santa Monica Pier Bridge and surrounding developed landscape. Photo facing south.

Appendix D
Species Occurrence Tables

Table 1: Sensitive Plant Species Potentially Occurring or Known to Occur in the Biological Study Area

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Aborina maritima red sand-verbena	-/-/4.2/S3S4	Perennial herb found in coastal dunes. Elevation range: 0–300 feet. Blooms: February–November.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Arenaria paludicola marsh sandwort	FE/SE/1B.1/S1	Marshes and swamps. Typically located in dense mats of emergent marsh vegetation. Elevation range: 485–3,965 feet. Blooms: May–August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Astragalus brauntonii Braunton's milk-vetch	FE/-/1B.1/S2	Closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland. Often in recent burns or disturbed areas on gravelly clay soils that overlie granite or limestone. Elevation range: 10–2,075 feet. Blooms: January–August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Astragalus pycnostachyus var. *lanosissimus* Ventura Marsh milk-vetch	FE/SE/1B.1/S1	Coastal salt marsh, coastal dune, and coastal scrub. Typically located within reach of high tide protected by barrier beaches and near seeps on sandy bluffs. Elevation range: 1–115 feet. Blooms: June–October.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Astragalus tener var. *titi* coastal dunes milk-vetch	FE/SE/1B.1/S1	Coastal prairie. Located on moist sandy depressions within coastal prairie. Elevation range: 1–165 feet. Blooms: March–May.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Atriplex parishii Parish's saltscale	-/-/1B.1/S1	Alkali meadows, vernal pools, chenopod scrub, and playas. Typically located on alkali flats with finely textured soils. Elevation range: 80–6,160 feet. Blooms: June–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Atriplex serenana* var. *davidsonii Davidson's brittlescale	-/-/1B.2/S1	Coastal bluff scrub and coastal scrub. Located on alkaline soils. Elevation range: 30–650 feet. Blooms: April–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Berberis nevinii Nevin's barberry	FE/SE/1B.1/S1	Chaparral, cismontane woodland, coastal scrub, and riparian scrub. Located on sandy or gravelly soils. Elevation range: 800–2,500 feet. Blooms: March-June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Calandrinia breweri Brewer's calandrinia	-/-/4.2/S34	Chaparral and coastal scrub. Located on sandy or loamy soils, often in disturbed areas. Elevation range: 30–3,695 feet. Blooms: March–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
California macrophylla round-leaved filaree	-/-/1B.1/S2	Clay soils within cismontane woodland and valley and foothill grasslands. Elevation range: 49–3,900 feet. Blooms: March–May.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Calachortus catalinae Catalina mariposa lily	-/-/4.2/S4	Found in chaparral, cismontane woodland, coastal scrub, and valley and foothill woodland. Elevation range: 49–2,300 feet. Blooming period: February–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Calachortus clavatus var. *gracilis* slender mariposa lily	-/-/1B.2/S2S3	This is a perennial herb that typically blooms from March to June and occurs in chaparral, coastal scrub, and valley and foothill grassland communities. It is found in shaded foothill canyons that range from 1,180–3,280 feet. It is limited in distribution to Los Angeles County.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Calochortus plummerae Plummer's mariposa-lily	-/-/4.2/S4	Marshes and swamps and riparian scrub. Historically associated with wetland and marshy places but possibly in drier situations as well. Possibly located on silty loam and alkaline. Elevation range: 0–65 feet. Blooms: April–May	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Calystegia felix lucky morning-glory	-/-/3.1/SH	Historically associated with wetland and marshy places but possibly occurs in drier areas as well. Possibly silty loam and alkaline soils in meadows and seeps (sometimes alkaline) and riparian scrub (alluvial). Elevation range: 90–650 feet. Blooms: March–September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Camissoniopsis lewisii Lewis's evening primrose	-/-/3/S4	Coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland on sandy or clay soils. Elevation range: 0–975 feet. Blooms: March–May, sometimes June.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Centromadia parryi ssp. *australis* southern tarplant	-/-/1B.1/S2	Marshes and swamps margins and valley and foothill grassland. Often located on disturbed sites near the coast on alkali soils. Elevation range: 0–1,385 feet. Blooms: May–November	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Cercocarpus betuloides var. *Blancheae* island mountain mahogany	-/-/4.3/S4	Found in closed-cone coniferous forest and chaparral habitat. Elevation range: 98–2,000 feet. Blooming period: February–May.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Chaenactis glabriuscula var. *orcuttiana* Orcutt's pincushion	-/-/1B.1/S1	Coastal bluff scrub and coastal dunes. Located on sandy soils. Elevation range: 0–330 feet. Blooms: January–August.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Chenopodium littoreum coastal goosefoot	-/-/1B.2/S2	Coastal dunes. Elevation range: 30–95 feet. Blooms: April–August.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Chloropyron maritimum ssp. *maritimum* salt marsh bird's-beak	FE/SE/1B.2/S1	Coastal dune, marsh and swamp, coastal salt marsh, and wetland. Located on the higher zones of salt marshes. Elevation range: 0–100 feet. Blooms: May–October.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Chorizanthe parryi var. *fernandina* San Fernando Valley spineflower	FC/SE/1B.1/S1	Coastal scrub and valley and foothill grassland. Located on sandy soils. Elevation range: 490–4,000 feet. Blooms: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Convolvulus simulans small-flowering morning-glory	-/-/4.2/S4	Coastal scrub and valley and foothill grassland. Located on sandy soils. Elevation range: 490–4,000 feet. Blooms: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Deinandra minthornii Santa Susana tarplant	-/-/1B.2/S2	This deciduous shrub can be found at elevations from 919 to 2,493 feet in rocky chaparral and coastal scrub communities of Ventura and Los Angeles Counties. The typical blooming period is July to November.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Deinandra paniculata paniculate tarplant	-/-/4.2/S4	Coastal scrub, valley and foothill grassland, and vernal pools. Typically located on vernally mesic sites, sometimes in vernal pools or on mima mounds near them. Elevation range: 80–3,055 feet. Blooms: April–November.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Dichondra occidentalis western dichondra	-/-/4.2/S3S4	Chaparral, cismontane woodland, valley and foothill grassland, and coastal scrub. Located on sandy loam, clay, and rocky soils. Elevation range: 160–1,625 feet. Blooms: January–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Dithyrea maritima beach spectaclepod	-/ST/1B.1/S1	Coastal dunes and coastal scrub. Located at seashores on sand dunes and sandy places near the shore. Elevation range: 10–165 feet. Blooms: March–May.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Dodecahema leptoceras slender-horned spineflower	FE/SE/1B.1/S1	Chaparral, cismontane woodland, and costal alluvial fan scrub in sandy soils. Elevation range: 600–2,200 feet. Blooms: April–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Dudleya blochmaniae ssp. *Blochmaniae* Blochman's dudleya	-/-/1B.1/S2	Coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland rocky, often in clay or serpentinite soils. Elevation range: 15–1,300 feet. Blooms: April–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Dudleya cymosa ssp. *ovatifolia* Santa Monica dudleya	FT/-/1B.2/S1	Chaparral and coastal scrub. Located in canyons on sedimentary conglomerates on primarily north-facing slopes. Elevation range: 485–5,430 feet. Blooms: March–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Dudleya multicaulis many-stemmed dudleya	-/-/1B.2/S2	Chaparral, coastal scrub, and valley and foothill grassland. Located in heavy, often clay soils or on grassy slopes. Elevation range: 45–2,560 feet. Blooms: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Eryngium aristulatum var. *parishii* San Diego button-celery	FE/FE/1B.1/S1	Coastal scrub, valley and foothill grassland, and vernal pools on mesic soils. Elevation range: 60–1,800 feet. Blooms: April–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Erysimum insulare island wallflower	-/-/1B.3/S3	Coastal bluffs and dunes. Elevation range: 0–900 feet. Blooms: March–July.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Erysimum suffrutescens suffrutescent wallflower	-/-/4.2/S3.2	Coastal bluff scrub, coastal scrub, and valley and foothill grassland. Located on coastal dunes and bluffs. Elevation range: 0–490 feet. Blooms: January–July.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Helianthus nuttallii ssp. *Parishii* Los Angeles sunflower	-/-/1A/SH	Coastal salt and freshwater marshes and swamps. Elevation range: 30–5,445 feet. Blooms: August–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Hordeum intercedens vernal barley	-/-/3.2/S3S4	Coastal dunes, coastal scrub, valley and foothill grassland, and vernal pools. Located on saline flats and depressions. Elevation range: 15–3,240 feet. Blooms: March–June.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Horkelia cuneata ssp. *puberula* mesa horkelia	-/-/1B.1/S1	Chaparral, cismontane woodland, and coastal scrub. Located on sandy or gravelly sites. Elevation range: 225–2,625 feet. Blooms: February–September.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Juglans californica Southern California black walnut	-/-/4.2/S3.2	This deciduous tree blooms from March to August in alluvial soils of cismontane woodland, chaparral, and coastal scrub between 164 and 2,952 feet. Known from Los Angeles, Orange, Riverside, Santa Barbara, San Bernardino, San Diego, and Ventura Counties.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Juncus acutus* ssp. *Leopoldii southwestern spiny rush	-/-/4.2/S3.2	Coastal dunes, meadows and seeps, and coastal salt marshes. Located on mesic, alkaline seeps, and coastal salt. Elevation range: 10–2,925 feet. Blooms: May–June.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields	-/-/1B.1/S2	Coastal salt marshes, playas, valley and foothill grassland, and vernal pools. Typically located on alkaline soils in playas, sinks, and grasslands. Elevation range: 1–3,955 feet. Blooms: February–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Lilium humboldtii ssp. *Ocellatum* ocellated Humboldt lily	-/-/4.2/S3	Openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, and riparian woodlands. Elevation range: 90–5,500 feet. Blooms: March–August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Linanthus concinnus San Gabriel linanthus	-/-/1B.2/S3	Rocky areas and openings in chaparral, lower montane coniferous forest, and upper montane coniferous forest. Elevation range: 4,500–8,500 feet. Blooms: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Malacothamnus davidsonii Davidson's bush mallow	-/-/1B.2/S2	Chaparral, cismontane woodland, coastal scrub, and riparian woodland. Elevation range: 607–2,800 feet. Blooms: June–January.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Monardella hypoleuca ssp. *hypoleuca* white-veined monardella	-/-/1B.3/S2S3	Found in chaparral and cismontane woodland. Located on dry slopes. Elevation range: 164–5,000 feet. Blooming period: April– December.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Nama stenocarpum mud nama	-/-/2B.2/S1S2	Marshes and swamps. Located on lake shores, streams banks, and intermittently wet areas. Elevation range: 15–1,620 feet. Blooms: January–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Rorippa aka. Nasturtium gambelii Gambell's watercress	FE/ST/1B.1/S1	Brackish and freshwater marshes and swamps. Located on lake and stream margins at or immediately above the water line. Elevation range: 15–1,075 feet. Blooms: April–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Navarretia fossalis spreading navarretia	FT/-/1B.1/S1	Vernal pools, chenopod scrub, marshes, swamps, and playas. Located on hardpan soils and in swales, depressions, and pools. Elevation range: 95–4,225 feet. Blooms: April–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Navarretia prostrata prostrate vernal pool navarretia	-/-/1B.1/S2	Found in mesic conditions within coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), and vernal pools. Elevation range: 45–2,270 feet. Blooms: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Orcittia californica California Orcutt grass	FE/SE/1B.1/S1	Vernal pools. Elevation range: 45–2,145 feet. Blooms: April–August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Phacelia hubbyi Hubby's phacalia	-/-/4.2/S4	Found in gravelly, rocky, talus soil in chaparral, coastal scrub, and valley and foothill grassland habitat. Elevation range: 0–3,280 feet. Blooming period: April–July.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Phacelia ramosissima* var. *austrolitoralis south coast branching phacelia	-/-/3.2/S3.2	Chaparral, coastal dunes, coastal scrub, and coastal salt marshes. Located on sandy, sometimes rocky soils. Elevation range: 20–975 feet. Blooms: March–August.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Phacelia stellaris Brand's star phacelia	-/-/1B.1/S1	Coastal scrub and coastal dunes. Located in open areas. Elevation range: 1–1,300 feet. Blooms: March–June.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Potentilla multijuga Ballona cinquefoil	-/-/1A/SX	Perennial herb found in brackish meadows and seeps. Elevation range: 0–10 feet. Blooms: June–August.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Pseudognaphalium leucocephalum white rabbit-tobacco	-/-/2B.2/S2	Riparian woodland, cismontane woodland, coastal scrub, and chaparral. Elevation range: 0–6,825 feet. Blooms: July–December.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale
Quercus dumosa Nuttall's scrub oak	-/-/1B.1/S3	This evergreen shrub blooms from February to August at elevations from 49 to 1,312 feet. It inhabits sandy soils and clay loam in coastal scrub, chaparral, and closed-cone coniferous forests. It can be found along the coasts of Santa Barbara, Orange, and San Diego Counties.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Sidalcea neomexicana salt spring checkerbloom	-/-/2B.2/S2	Alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, and Mojavean desert scrub. Located on alkali springs and marshes. Elevation range: 45–4,960 feet. Blooms: March–June.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Suaeda esteroa estuary seablite	-/-/1B.2/S2	Coastal salt marshes and swamps. Located on clay, silt, and sand substrates. Elevation range: 0 – 15 feet. Blooms: May – January.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Suaeda taxifoluia woolly seablite	-/-/4.2/S2S3	Coastal bluff scrub, coastal dunes, and margins of coastal salt marshes. Elevation range: 0–165 feet. Blooms: January–December.	HP	Potentially suitable habitat is present but only within the sandy habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Symphyotrichum defoliatum San Bernardino aster	-/-/1B.2/S2	Meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, and grassland. Located in mesic grassland near ditches, streams, and springs. Elevation range: 5–6,630 feet. Blooms: July–November.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Symphyotrichum greatea Greata's aster	-/-/1B.3/S3	Chaparral, cismontane woodland. Located in mesic canyons. Elevation range: 975–6,535 feet. Blooms: June–October.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Thelypteris puberula var. *sonorensis* Sonoran maiden fern	-/-/2B.2/S2.2?	This rhizomatous perennial herb inhabits seeps and streams in meadows, from Southern California south to Sonora, Mexico, and east to Arizona. In California, it is known from Santa Barbara, Los Angeles, Riverside, and San Bernardino Counties, at elevations from about 164 to 2,001 feet. This fern is rare to uncommon in California but more common outside the state.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name Common Name	Status[a] FED/STATE/ CNPS/CNDDB	General Habitat Description	Specific Habitat[b] Present/ Absent	Rationale

[a] Status Codes

Federal

FE = Federally listed; Endangered
PE = Proposed Endangered
FT = Federally listed; Threatened
FC = Federal Candidate for Listing
FSC = Federal Species of Concern
D = Delisted

State

SE = State listed; Endangered
CE = Candidate Endangered
ST = State listed; Threatened
CT = Candidate Threatened
R = Rare (Native Plant Protection Act)
SSC = California Species of Special Concern
CFP = California Fully Protected Species
WL = Watch List

CNPS Rare Plant Rank (CRPR)

1A = Plants presumed extinct in California
1B = Plants rare, threatened, or endangered in California and elsewhere
2 = Plants rare, threatened, or endangered in California but more common elsewhere
3 = Plants about which we need more information
4 = Limited distribution (Watch List)

CNPS CRPR Threat Codes

0.1 = Seriously endangered in California
0.2 = Fairly endangered in California
0.3 = Not very endangered in California

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology that was originally developed by the Nature Conservancy, now maintained and recently revised by NatureServe. The state rank (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter plus number score that reflect a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity (often five or fewer populations) or because of factor(s) such as very steep declines that make it especially vulnerable to extirpation from the state.

S2 = Imperiled – Imperiled in the state because of rarity related to a very restricted range, very few populations (often 20 or fewer), steep declines, or other factors that make it very vulnerable to extirpation from the state.

S3 = Vulnerable – Vulnerable in the state because of a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to extirpation from the state.

S4 = Apparently Secure – Uncommon but not rare in the state; some cause for long-term concern because of declines or other factors.

S5 = Secure – Common, widespread, and abundant in the state.

SH = All sites are historical; the element has not been seen for at least 20 years but suitable habitat still exists.

SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3).
- By adding a "?" to the rank (e.g., S2? represents more certainty than S2S3 but less certainty than S2).

[b] Habitat Presence/Absence Codes

P = The species is present and was observed during survey efforts.

HP = Habitat is or may be present within project footprint. The species may be present. Focused survey is warranted.

HPB = Habitat is or may be present within 200 feet of study area (BSA). The species may be present. Focused survey is warranted.

HA = No habitat present and no further work needed.

Gray Highlight = No potential to occur in the BSA.

Table 2: Sensitive Vegetation Communities Potentially Occurring or Known to Occur in the Biological Study Area

Vegetation Community	Presence in Study Area
California Walnut Woodland	Not present
Riversidean Alluvial Fan Sage Scrub	Not present
Southern Cottonwood Willow Riparian Forest	Not present
Southern Dune Scrub	Not present
Southern Coast Live Oak Riparian Forest	Not present
Southern Coastal Salt Marsh	Not present
Southern Sycamore Alder Riparian Woodland	Not present

Table 3: Sensitive Animal Species Potentially Occurring or Known to Occur in the Biological Study Area

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Agelaius tricolor tricolored blackbird (nesting colony)	-/E&SSC/S1S2	Range is restricted to the Central Valley and surrounding foothills, coastal and some inland localities in Southern California, and scattered sites in Oregon, western Nevada, central Washington, and western coastal Baja California. Breeds in dense colonies and may travel several miles to secure food for their nestlings. Males defend small territories within colonies and mate with one to four females. They are itinerant breeders, nesting more than once at different locations during the breeding season.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Aglaothorax longipennis Santa Monica shieldback katydid	-/-/S1S2	Occurs nocturnally on chaparral and canyon stream bottom vegetation and also on introduced ice plant (*Mesembryantheum* sp.). Only one population is known, and it was identified at the mouth of Big Rock Canyon in 1975.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Anaxyrus californicus arroyo toad	FE/CSC/S2S3	Inhabits washes, arroyos, sandy river banks, riparian areas with willows, sycamores, oaks, and cottonwoods. Specialized habitat needs, including exposed sandy stream sides with stable terraces for burrowing, with scattered vegetation for shelter, and areas with quiet water or pools that are free of predatory fish, with sandy or gravel bottoms without silt for breeding. Adults typically breed in overflow pools adjacent to the inflow channel of third-order or greater predator-free streams. Adult estivation sites are typically in stream terraces or uplands with friable soils, usually near active use areas but potentially more than 0.5 mile away. Young toads require moderately vegetated sandbars.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Anniella pulchra pulchra silvery legless lizard	-/CSC/S3	Occurs in moist, warm loose soil with plant cover and sparsely vegetated areas with beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas and dunes that has been stabilized with bush lupine and mock heather often indicates suitable habitat. Found under surface objects such as rocks, boards, driftwood, and logs. Sometimes found in suburban gardens in Southern California. Soil characteristics, as well as requirements for soil moisture and relatively cool microclimates (about 93°F, maximum), limit distribution.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Antrozous pallidus pallid bat	-/CSC/S3	This bat species is widely distributed in the southwestern United States and northern Mexico. It is locally common across most of California, except in the far northwest and in higher portions of the Sierra Nevada. Habitats utilized include a wide variety of grasslands, shrublands, woodlands, and forests, including mixed conifer forest. Appears to be most common in open, dry, rocky lowlands. Roosts are in caves, mines, and crevices in rocks, buildings, and trees. This is a colonial species that forages low over open ground, often picking up beetles and other species of prey off the ground.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Aspidoscelis tigris stejnegeri coastal whiptail	-/-/S2S3	Habitats include a disturbed coastal sage scrub-chaparral mix and cleared areas of chaparral with a sandy/rocky substrate.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Athene cunicularia burrowing owl	-/CSC/S3	Level, open, dry, heavily grazed, or low grassland or desert vegetation with available burrows. In coastal Southern California, a substantial fraction of burrowing owls are found in microhabitats that have been highly altered by humans, including flood control and irrigation basins, dikes, banks, abandoned fields surrounded by agriculture, and road cuts and margins. Several factors in combination probably explain distribution of the species on local scales (e.g., vegetation density, availability of suitable prey, availability of burrows or suitable soil, disturbance).	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Bombus crotchii Crotch bumble bee	-/-/S1S2	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Brachtramphus marmoratus marbled murrelet	**(Nesting) FT/SE/S1**	This small seabird nests in trees in older coastal forests throughout most of its range in North America and Asia. In summer, forages primarily in bays, inlets, fjords (rarely in protected harbors), and open ocean within 3 miles of shore (Alaska: 30 miles). Usually in widely dispersed concentrations (singles or pairs of birds). Seems to prefer shallow water, usually < 200 feet deep but known to forage in water up to 1,300 feet deep in fjords and 185 miles offshore, generally in areas with underwater sills, shelf edges, or strong tidal currents.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Branchinecta lynchi vernal pool fairy shrimp	T/-/-	Restricted to seasonal vernal pools. Vernal pool fairy shrimp prefer cool water in pools with low to moderate levels of dissolved solids, are unpredictable, and often short lived.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Brennania belkini Belkin's dune tabanid fly	-/-/S1S2	Found in exposed sandy substrates within southern foredune and southern dune scrub plant communities. Adults fly from late May to early July and breed only on coastal sand dunes.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Buteo swainsoni Swainson's hawk	**(Nesting) -/ST/S3**	This slim relative of the common red-tailed hawk nests primarily in low-intensity agricultural areas of the western United States, migrating through Central America to Argentina and Brazil each fall and spring.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Carolella busckana Busck's gallmoth	-/-SH	El Segundo sand dunes.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Charadrius alexandrinus nivosus western snowy plover	**(Nesting) FT/CSC/S2**	Breeds primarily above the high-tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, found on beaches, which are used for nesting. Found on other beaches in manmade salt ponds and on estuarine sand and mud flats.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Cicindela hirticollis gravida sandy beach tiger beetle	**(Nesting) -/-/S1**	Breeds primarily above the high-tide line on coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries. In winter, found on beaches, which are used for nesting. Found on other beaches in manmade salt ponds and on estuarine sand and mud flats.	HP	Potentially suitable habitat is present but only within the sandy beach habitat found along the western edge of the BSA. Project activities are not anticipated in or immediately adjacent to this habitat.
Cicindela senilis frosti senile tiger beetle	-/-/S1	Found in the middle to upper parts of salt marshes. The beetle has a bimodal flight period in early spring and late fall (CNDDB 2015).	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Coelus globosus globose dune beetle	-/-/S1S2	Inhabitant of coastal sand dune habitat, typically vegetated foredunes and sand hummocks, from Bodega Head in Sonoma County south to Ensenada, Mexico.	HP	Potentially suitable habitat is present but only in the sandy beach habitat along the western edge of the BSA, although potential is extremely low because of a lack of vegetation. Project activities are not anticipated in or immediately adjacent to this habitat.
Danaus plexippus monarch butterfly	-/-/S2S3	Winter roost sites extend along the coast from northern Mendocino County to Baja California, Mexico. Roosts located in wind-protected tree groves (e.g., eucalyptus, Monterey pine, cypress) (CNDDB 2015).	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Diadophis punctatus modestus San Bernardino ringneck snake	-/-/S2?	Elevation range for the species as a whole is from sea level to about 7,000 feet. Prefers moist, open, rocky areas within valley foothill, mixed chaparral, and annual grassland habitats where it preys on salamanders, frogs, lizards, snakes, and earthworms.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Empidonax traillii extimus southwestern willow flycatcher	**(Nesting) FE/SE/S1**	Occurs in riparian habitats along rivers, streams, or other wetlands where dense growths of willows, arrowweed, buttonbush, tamarisk, Russian olive, or other plants are present, often with a scattered overstory of cottonwood, etc. Throughout their range, the riparian habitats tend to be rare, widely separated, and small and/or linear locales that are separated by vast expanses of arid lands. Nests in thickets of trees and shrubs, approximately 13 to 23 feet or more in height, with dense foliage from approximately 13 feet aboveground and often a high canopy cover percentage. Following modern changes in riparian plant communities, still nests in native vegetation where available but has been known to nest in thickets that are dominated by tamarisk and Russian olive. Virtually always nests near surface water or saturated soil.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Emys marmorata western pond turtle	-/CSC/S3	Found in ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches with abundant vegetation and either rocky or muddy bottoms in woodland, forest, and grassland. In streams, prefers pools to shallower areas. Logs, rocks, cattail mats, and exposed banks are required for basking. May enter brackish water and even seawater.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Eucosma henne Henne's eucosman moth	-/-/S1	Endemic to the Los Angeles/El Segundo Dunes in Los Angeles County. Species was collected from and identified at the dunes in 1984. Larvae are stem and root borers of *Phacelia ramosissim.*	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Eucyclogobius newberryi tidewater goby	**FE/CSC/S2S3**	Found primarily in waters of coastal lagoons, estuaries, and marshes. Historical range from mouth of the Smith River, Del Norte County, to northern San Diego County. The species is benthic in nature, living at the bottom of shallow, brackish bodies of water, such as lagoons and lower stream reaches where the water is fairly still but not stagnant. Prefers water with high dissolved oxygen levels and salinities of less than 10 parts per thousand.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Eumops perotis californicus western mastiff bat	**-/CSC/S3S4**	Primarily a cliff-dwelling species. Maternity colonies of 30 to several hundred (typically fewer than 100) roost generally under exfoliating rock slabs (e.g., granite, sandstone, columnar basalt). It has also been found in similarly crevices in large boulders and buildings. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 9.8 feet below the entrance for flight. Forages in broad open areas.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Euphilotes battoides allyni El Segundo blue butterfly	**FE/-/S1**	Historical range is the entire Los Angeles/ El Segundo Dunes area and the northwestern Palos Verdes Peninsula in southwestern Los Angeles County. Currently distributed on three remnant habitats within its former range that support coastal sand dunes with coast buckwheat (*Eriogonum parvifolium*). All life stages depend on sea cliff buckwheat (*Eriogonum parvifolium*) and possibly loose sand.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Lasionycteris noctivagans silver-haired bat	-/-/S3S4	Primarily a coastal and montane forest dweller, feeding over streams, ponds, and open brushy areas. Roosts in hollow trees, beneath exfoliating bark, and in abandoned woodpecker holes but rarely under rocks. Needs drinking water.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Lasiurus cinereus hoary bat	-/-/S4?	The hoary bat is the most widespread North American bat. May be found at any location in California, although distribution is patchy in southeastern deserts. This common, solitary species winters along the coast and in Southern California, with breeding inland and north of the winter range. Habitats that are suitable for bearing young include all woodlands and forests with medium to large-size trees and dense foliage. Hoary bats have been recorded from sea level to 13,200 feet. During migration in Southern California, males are found in foothills, deserts, and mountains; females are found in lowlands and coastal valleys.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Lasiurus xanthinus western yellow bat	**-/CSC/S3**	Some populations may be migratory, although some individuals appear to be present year-round. Species probably do not hibernate. Associated with water features in open grassy areas and scrub as well as canyon and riparian situations. Thought to be non-colonial. Individuals usually roost in trees, hanging from the underside of a leaf. Commonly found in the southwestern United States, roosting in the skirt of dead fronds in both native and nonnative palm trees.	HP	Suitable roosting habitat is present within the BSA in the large palm trees.
Laterallus jamaicensis coturniculus California black rail	**-/ST/S1**	Occurs in tidal salt marshes that are associated with a heavy growth of tule and pickleweed; also occurs in brackish marshes or freshwater marshes at low elevations. Restricted primarily to the San Francisco Bay, with smaller numbers in wetlands from the Salton Sea area to Arizona. This species has essentially disappeared from coastal wetlands in coastal Southern California and central California, although small populations have recently been discovered about 100 miles south of the U.S. border in northwestern Baja California.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Microtus californicus stephensi south coast marsh vole	**-/CSC/S1S2**	Occurs in the area of tidal marshes in Los Angeles, Orange, and southern Ventura Counties.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Neotoma lepida intermedia San Diego desert woodrat	-/CSC/S3S4	Occurs in two disjunct areas in California: northeastern California from eastern Modoc County to southeastern Lassen County and most of Southern California from Mono County south through the Mojave desert and from northern Tulare County south to the San Bernardino Mountains. Occurs in a variety of shrub and desert habitats, typically with rock outcrops, boulders, cacti, and/or areas of dense undergrowth.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Nyctinomops femorosaccus pocketed free-tailed bat	**-/CSC/S3**	Occurs in a variety of arid areas in Southern California, including pine-juniper woodlands, desert scrub, palm oasis, desert wash, and desert riparian. Prefers rocky areas with high cliffs for roosting.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Nyctinomops macrotis big free-tailed bat	**-/CSC/S3**	In Southern California, found in low-lying arid areas. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Onychobaris langei Lange's El Segundo Dune weevil	**-/-/S1**	Known from El Segundo Dunes.	HP	Potentially suitable Low quality habitat present but very low likelihood of species being present.
Oncorhynchus mykiss irideus Southern California steelhead	**FE/CSC/S1**	Migrates into freshwater streams when sandbars breach during winter and spring rains. Occurs in coastal streams with water temperatures < 60°F. Needs cool, clear water with in-stream cover. Spawns in tributaries to large rivers or streams that are directly connected to the ocean. Spawning habitat consists of gravel substrates that are free of excessive silt. Thrives when the dissolved oxygen concentration is at least 7 parts per million. In streams, deep low-velocity pools are important wintering habitats. Has been extirpated from at least 12 Southern California streams: San Luis Rey River, San Mateo Creek, Santa Margarita River, Rincon Creek, Maria Ygnacio River, Los Angeles River, San Gabriel River, Santa Ana River, San Onofre Creek, San Juan Creek, San Diego River, and Sweetwater River.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Onychomys torridus ramona southern grasshopper mouse	-/CSC/S3	Wide variety of dry to moderately dry scrub, grassland, and woodland habitats across Southern California, exclusive of the more mesic coastal areas from Ventura County north.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Panoquina errans wandering (= saltmarsh) skipper	-/-/S2	Distributed along a narrow coastal strip from Santa Barbara and Ventura to San Diego County. Often associated with a host plant, saltgrass (*Distichlis spicata*)	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Passerculus sandwichensis beldingi Belding's savannah sparrow	**-/SE/S3**	Locally common non-migratory resident of coastal saltmarsh. It is an obligate breeder in middle-elevation saltmarsh, nearly always characterized by pickleweed (*Salicornia* spp.), either in tidal situations or nearby non-tidal alkaline flats. Although the majority of its subsistence stems from the saltmarsh and closely adjacent mudflat, individuals, particularly post-breeding birds, can be found foraging in a wide variety of habitats, including upper marsh, adjacent ruderal and ornamental vegetation, open beach and mudflat, and even dirt and gravel parking lots.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Pelecanus occidentalis californicus California brown pelican	**(Nesting colony/ communal roosts) D/D/S3**	This widely known pelican is the largest bird that occurs regularly along our shorelines, with a wingspan of about 7 feet. Foraging along the coast, in brackish lagoons, and up to 100 miles out to sea, it is not found inland, except at the Salton Sea in Imperial and Riverside Counties, locally in small numbers along the Colorado River, and occasionally following prey for short distances up larger rivers coastally. Nests on offshore islands.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Perognathus longimembris brevinasus Los Angeles pocket mouse	**-/CSC/-**	Occurs in lower elevation grassland, alluvial sage scrub, and coastal sage scrub in the coastal basins of Southern California, from coastal areas through the San Jacinto and Temecula Valleys to Warner Pass and Temecula, excluding the San Fernando Valley. The known elevational range is from 548 to 2,657 feet.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Perognathus longimembris pacificus Pacific pocket mouse	**FE/CSC/S1**	An obligate resident of fine-grained sandy soils in coastal strand, coastal dunes, river and marine alluvium, and coastal sage scrub in proximity to the ocean. Has never been collected more than 2 miles from the coast or above 600 feet. It appears that occurrences are closely associated with loose or friable soils that permit burrowing.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Phrynosoma blainvillii coast horned lizard	**-/CSC/S3S4**	Found in a wide variety of vegetation communities, from grasslands and shrublands to woodlands, including coniferous forests. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (*Pogonomyrmex* spp.); and the availability of both sunny basking spots and dense cover for refuge.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Polioptila californica californica California gnatcatcher	**FT/CSC/S2**	Generally prefers open sage scrub with California sagebrush (*Artemisia californica*) as a dominant or co-dominant species. Nest placement is typically in areas with less than a 40% slope gradient. Monogamous pairs tend to stay in the same locale. Both parents build the nest, incubate, and care for young.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Rallus longirostris levipes Light-footed clapper rail	**FE/SE/S1**	This subspecies of the large and widespread clapper rail is restricted to the lower elevations of coastal marshes with active tidal flow and dense pickleweed and/or cordgrass thickets, from Port Hueneme in Ventura County (formerly to Santa Barbara County) south to Bahia de San Quintin, Baja California, Mexico. No substantial seasonal movements occur, although rare individuals wander away from known breeding locales.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Rana draytonii California red-legged frog	**FT/CSC/S2S3**	Occurs locally on the western slopes of the Sierra Nevada and the coastal foothills the length of the state, up to about 4,920 feet. Inhabits pools of streams, marshes, and ponds. Adults feed on a wide variety of aquatic prey and will move up to 1 mile through riparian communities under wet conditions, such as rainfall. They prefer shorelines with extensive vegetation and are vulnerable to the introduction of exotic competitors.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Riparia riparia bank swallow (nesting)	**(Nesting) -/ST/S2**	Historically, this species bred interruptedly along the entire coast of California as well as in the Central Valley and Great Basin portions of the state. Currently, the species breeds only in Northern California, primarily in the Sacramento Valley and far northeastern portions of the state, with a few colonies in coastal counties from Monterey through Del Norte County. This species is uncommon to fairly common migrants in spring and fall at the Salton Sea in Riverside and Imperial Counties and at other large lakes and wetlands in desert regions. They are rare migrants elsewhere in California.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Socalchemmis gertschi Gertsch's socalchemmis spider	-/-/S1	Found in sage scrub, chaparral, oak woodland, and coniferous forest, generally in rocky outcrops or talus slopes (moveable rocks with spaces or cracks) in non-arid climates.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Sorex ornatus salicornicus Southern California saltmarsh shrew	**-/CSC/S1**	Occurs in coastal marshes in Los Angeles, Orange and Ventura Counties. Based on other studies of shrews, may require dense ground cover and nesting sites that are above the mean high tide and free from inundation.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale
Sternula antillarum browni California least tern	**(Nesting colony) FE/SE/S2**	Nests on sandy upper ocean beaches, open barren sites, and occasionally mudflats. Forages on adjacent surf line, estuaries, or the open ocean. Colonies are located near the ocean shoreline (within 0.5 mile), typically on nearly flat, loose sandy substrates with lightly scattered short vegetation and debris, although some colonies have been located on hard-packed surfaces, even unused asphalt. Colony sites must provide access to the shoreline for juveniles and must be relatively free of predators or the colony may abandon breeding efforts before completion.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Streptocephalus woottoni Riverside fairy shrimp	**FE/-/S1S2**	Found in shallow depressions that contain a soil layer of clay hard pan. Discontinuously distributed along coastal Southern California and northern Baja California.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Taxidea taxus American badger	**-/CSC/S3**	Commonly found in treeless areas, including tallgrass and shortgrass prairies, grass-dominated meadows and fields within forested habitats, and shrub-steppe communities.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Thamnophis hammondi two-striped garter snake	-/CSC/S3S4	Endemic to coastal Southern California, from the Santa Clara River valley south to northern San Diego County. Maximum known elevation is about 2,270 feet. Restricted to marsh and upland habitats near permanent water with good strips of riparian vegetation where adequate prey and refuge can be found.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Trigonoscuta dorothea dorothea Dorothy's El Segundo Dune weevil	-/-/S1	Distributed only along coastal Southern California, from Point Dume to Point Fermin. Associated with southern dune scrub plant community.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Tryonia imitator mimic tryonia (= California brackishwater snail)	-/-/S2	Inhabits coastal lagoons, estuaries, and salt marshes, from Sonoma County south to San Diego County (CNDDB 2015).	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.
Vireo bellii pusillus least Bell's vireo	**(Nesting) FE/SE/S2**	Nesting elevation ranges from below sea level to at least 4,100 feet. The subspecies winters in southern Baja California. Selects dense vegetation low in riparian zones for nesting.	HA	No suitable habitat is present within the BSA. This species is not expected to occur. No further constraint is present.

Scientific Name/ Common Name	Status[a] FED/STATE/ CNDDB	General Habitat Description	Habitat Present	Potential/Rationale

[a] Status Codes

Federal

E = Federally listed; Endangered
PE = Proposed Endangered
T = Federally listed; Threatened
FC = Federal Candidate for Listing
FSC = Federal Species of Concern
D = Delisted

State

E = State listed; Endangered
CE = Candidate Endangered
T = State listed; Threatened
CT = Candidate Threatened
R = Rare (Native Plant Protection Act)
SSC = California Species of Special Concern
CFP = California Fully Protected Species
WL = Watch List
D = Delisted

Note: The California Natural Diversity Database (CNDDB) uses the same ranking methodology that was originally developed by the Nature Conservancy, now maintained and recently revised by NatureServe. The state rank (S-rank) refers to the imperilment status only within California's state boundaries. It is a reflection of the overall status of an element through its state range. The state rank represent a letter plus number score that reflect a combination of Rarity, Threat, and Trend factors, with weighting being heavier on Rarity than the other two.

S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity (often five or fewer populations) or because of factor(s) such as very steep declines that make it especially vulnerable to extirpation from the state.

S2 = Imperiled – Imperiled in the state because of rarity related to a very restricted range, very few populations (often 20 or fewer), steep declines, or other factors that make it very vulnerable to extirpation from the state.

S3 = Vulnerable – Vulnerable in the state because of a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to extirpation from the state.

S4 = Apparently Secure – Uncommon but not rare in the state; some cause for long-term concern because of declines or other factors.

S5 = Secure – Common, widespread, and abundant in the state.

SH = All sites are historical; the element has not been seen for at least 20 years but suitable habitat still exists.

SX = All sites are extirpated.

Uncertainty about the rank of an element is expressed in two major ways:

- By expressing the ranks as a range of values (e.g., S2S3 means the rank is somewhere between S2 and S3).
- By adding a "?" to the rank (e.g., S2? represents more certainty than S2S3 but less certainty than S2).

[b] Habitat Presence/Absence Codes

P = The species is present and was observed during survey efforts.

HP = Habitat is or may be present within project footprint. The species may be present. Focused survey is warranted.

HPB = Habitat is or may be present within 200 feet of study area (BSA). The species may be present. Focused survey is warranted.

HA = No habitat present and no further work needed.

Gray Highlight = No potential to occur in the BSA.

Appendix E
National Marine Fisheries Service Letter

National Marine Fisheries Service Species List

Reppun, Erika D@DOT

From: Jay Ogawa - NOAA Federal <jay.ogawa@noaa.gov>
Sent: Wednesday, January 13, 2016 9:33 AM
To: Reppun, Erika D@DOT
Subject: Re: Species List for Santa Monica Pier Bridge Project BHLO-5107(033)

This email responds to the California Department of Transportation's (Caltrans) December 21, 2015, request for a list of threatened or endangered species under jurisdiction of NOAA's National Marine Fisheries Service that are present within the area of the Santa Monica Bridge Replacement Project in Los Angeles County. The action areas are within the federally endangered Southern California Coast Distinct Population Segment of steelhead (*Oncorhynchus mykiss*), and this species is not expected to be present in the vicinity of the project area. Additionally, the identified location is not designated critical habitat for endangered steelhead.

NMFS appreciates the opportunity to provide technical assistance to Caltrans. Please contact Jay Ogawa at (562) 980-4061 or via email atjay.ogawa@noaa.gov if you have a question concerning this letter or if you require additional information.

On Tue, Jan 12, 2016 at 12:51 PM, Reppun, Erika D@DOT <erika.reppun@dot.ca.gov> wrote:

Hello Jay,

I have attached the species list request letter for the Santa Monica Pier Bridge Project (BHLO-5107(033)) as requested. The return receipt I received for the letter is dated 12/21/15.

Please let me know if you need anything else to prepare the list.

Thank you,

Erika Reppun

Associate Environmental Planner - Biologist

Caltrans - District 7

erika.reppun@dot.ca.gov

(213) 897-1949

--

Jay Ogawa
Fisheries Biologist
NOAA Fisheries West Coast Region
U.S. Department of Commerce
Office: (562) 980-4061
jay.ogawa@noaa.gov
www.westcoast.fisheries.noaa.gov



Anaya, Mario

From: Shaikh, Mohammed@DOT <mohammed.Y.shaikh@dot.ca.gov>
Sent: Friday, September 22, 2017 2:59 PM
To: nmfswcrca.specieslist@noaa.gov
Cc: Enwedo, Michael C@DOT
Subject: Santa Monica Pier Bridge Replacement

Federal agency: Federal Highway Administration - California Division
Federal agency address: 650 Capitol Mall, Suite 4-100, Sacramento, CA 95814-4708
Non-federal agency representative (if any): California Department of Transportation
Non-federal agency representative (if any) address: 100 S Main Street, MS 16A, Los Angeles CA 90012
Project title: Santa Monice Pier Bridge Replacement
Point-of-Contact: Mohammed Shaikh, mohammed.y.shaikh@dot.ca.gov, 213-897-0665

Quad Name **Beverly Hills**
Quad Number **34118-A4**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) -
CC Chinook Salmon ESU (T) -
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) -
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) - **X**
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat -
CC Chinook Salmon Critical Habitat -
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat -
SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -

CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) - X
Range White Abalone (E) - X

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) - X
Olive Ridley Sea Turtle (T/E) - X
Leatherback Sea Turtle (E) - X
North Pacific Loggerhead Sea Turtle (E) - X

ESA Whales

Blue Whale (E) - X
Fin Whale (E) - X
Humpback Whale (E) - X
Southern Resident Killer Whale (E) - X
North Pacific Right Whale (E) - X
Sei Whale (E) - X
Sperm Whale (E) - X

ESA Pinnipeds

Guadalupe Fur Seal (T) - X
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH -
Chinook Salmon EFH -
Groundfish EFH - X
Coastal Pelagics EFH - X

Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds
See list at left and consult the NMFS Long Beach office
562-980-4000

MMPA Cetaceans - **X**

MMPA Pinnipeds - **X**

Thank you,
Mohammed Shaikh
Senior Environmental Planner
NEPA Assignment Coordinator D7 & D12
Office of NEPA Assignment and Environmental Compliance
Division of Local Assistance
(213) 897-0665
(213) 897-0685 FAX

Anaya, Mario

From: NMFSWCRCA Specieslist - NOAA Service Account <nmfswcrca.specieslist@noaa.gov>
Sent: Friday, September 22, 2017 4:04 PM
To: Shaikh, Mohammed@DOT
Subject: Auto reply - NMFS CA Species List Re: Santa Monica Pier Bridge Replacement

Thank you for using NMFS' California Species List. Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you have used the tools and followed the steps outlined on the California Species List Tools webpage (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

Anaya, Mario

From: NMFSWCRCA Specieslist - NOAA Service Account <nmfswcrca.specieslist+canned.response@noaa.gov>
Sent: Friday, September 22, 2017 4:04 PM
To: Shaikh, Mohammed@DOT
Subject: Re: Santa Monica Pier Bridge Replacement

Thank you for using NMFS' California species list, providing information for ESA, MSA, and MMPA resources under the jurisdiction of NMFS. Messages sent to this email address are not responded to directly. For questions, please contact Darren Howe by phone at 707-575-3152 or by email at darren.howe@noaa.gov.

Appendix N

Heal the Bay Aquarium Species List

Report Date
11/3/2021

Census

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

Population as of End of Day - 11/3/2021

SCYPHOZOA

Aurelia aurita	
MOON JELLYFISH	0.0.36
Chrysaora pacifica	
SEA NETTLE	0.0.14

ANTHOZOA

Anthopleura sola	
AGGREGATING ANEMONE	0.0.23
Balanophyllia elegans	
ORANGE CUP CORAL	0.0.1
Corynactis californica	
STRAWBERRY FALSE CORAL	0.0.200
Metridium senile	
CLONAL PLUMOSE ANEMONE	0.0.100
Pachycerianthus fimbriatus	
TUBE-DWELLING ANEMONE	0.0.1
Urticina lofotensis	
WHITE-SPOTTED ROSE ANEMONE	0.0.1
Urticina piscivora	
FISH-EATING ANEMONE	0.0.1

GASTROPODA

Aplysia californica	
CALIFORNIA BROWN SEA HARE	0.0.4
Cypraea spadicea	
CHESTNUT COWRIE	0.0.19
Haliotis rufescens	
RED ABALONE	0.0.24
Kelletia kelletii	
KELLET'S WHELK	0.0.55
Megastraea undosa	
WAVY TURBAN SNAIL	0.0.7
Melibe leonina	
LION NUDIBRANCH	0.0.12
Norrisia norrisi	

Census

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

NORRIS SNAIL	0.0.20
CEPHALOPODA	
Octopus bimaculatus	
PACIFIC TWINSPOT OCTOPUS	0.0.3
CRUSTACEA	
Lysmata californica	
CATALINA CLEANER SHRIMP	0.0.13
Pachygrapsus crassipes	
STRIPED SHORE CRAB	0.0.2
Paguristes ulreyi	
HERMIT CRAB	0.0.5
Pagurus samuelis	
BLUEBAND HERMIT	0.0.21
Panulirus interruptus	
SPINY LOBSTER	1.0.2
STELLEROIDEA	
SERPENT STARS/BASKET STARS	0.0.23
Asterina miniata	
BAT STAR	0.0.30
Astropecten armatus	
ARMOURED SEA STAR	0.0.1
Henricia leviuscula	
PACIFIC BLOOD SEA STAR	0.0.1
Pisaster brevispinus	
SHORT-SPINED SEA STAR	0.0.8
Pisaster giganteus	
GIANT-SPINED SEA STAR	0.0.10
Pisaster ochraceus	
OCHRE SEA STAR	0.0.23
Pycnopodia helianthoides	
SUNFLOWER SEA STAR	0.0.1
ECHINOIDEA	
Dendraster excentricus	
SAND DOLLAR	0.0.7

Census

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

Strongylocentrotus franciscanus	
GIANT RED SEA URCHIN	0.0.9
Strongylocentrotus pallidus	
WHITE SEA URCHIN	0.0.1
Strongylocentrotus purpuratus	
PURPLE SEA URCHIN	0.0.11
HOLOTHUROIDEA	
Parastichopus parvimensis	
WARTY SEA CUCUMBER	0.0.31
CHONDRICHTHYES	
Cephaloscyllium ventriosum	
SWELL SHARK	5.5.13
Heterodontus francisci	
HORN SHARK	1.4.0
Triakis semifasciata	
LEOPARD SHARK	1.1.0
Urobatis halleri	
HALLER'S ROUND RAY	0.1.1
OSTEICHTHYES	
Anisotremus davidsonii	
XANTIC SARGO	0.0.4
Archoplites interruptus	
SACRAMENTO PERCH	0.0.13
Chromis punctipinnis	
BLACKSMITH	0.0.4
Embiotoca jacksoni	
BLACK SURFPERCH	0.0.1
Girella nigricans	
OPALEYE	0.0.1
Gymnothorax mordax	
CALIFORNIA MORAY	0.0.4
Halichoeres semicinctus	
ROCK WRASSE	0.0.1
Hippocampus ingens	
PACIFIC SEAHORSE	0.1.0

Census

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

Hypsypops rubicundus	
GARIBALDI	0.0.2
Lythrypnus dalli	
BLUEBAND GOBY	0.0.2
Medialuna californiensis	
PACIFIC HALFMOON	0.0.2
Micrometrus minimus	
DWARF REEFPERCH	0.0.25
Oxyjulis californica	
SENORITA WRASSE	0.0.2
Paralabrax clathratus	
KELP BASS	0.0.1
Paralabrax nebulifer	
BARRED SAND BASS	0.0.2
Paralichthys californicus	
CALIFORNIA HALIBUT	0.0.4
Porichthys notatus	
PLAINFIN MIDSHIPMAN	0.0.1
Rhinogobiops nicholsii	
BLACKEYE GOBY	0.0.1
Sarpa salpa	
SALEMA SEABREAM	0.0.8
Scorpaena	
SCORPIONFISH	0.0.1
Scorpaena guttata	
CALIFORNIA SCORPIONFISH	0.0.1
Sebastes diploproa	
SPLITNOSE ROCKFISH	0.0.8
Sebastes hopkinsi	
SQUARESPOT ROCKFISH	0.0.1
Sebastes paucispinis	
BOCACCIO	0.0.2
Sebastes rubrivinctus	
FLAG ROCKFISH	0.0.9
Sebastes serriceps	

Census

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

TREEFISH	0.0.1
Semicossyphus pulcher	
CALIFORNIA SHEEPHEAD WRASSE	0.1.0
Stereolepis gigas	
GIANT SEABASS	0.0.2

CENSUS SUMMARY

Taxon: Not specified; Sub-taxa: Yes; Enclosure: All; Sub-enclosures: Yes; Possession Status: Any possession status; Ownership Status: Any ownership status; Responsible Roles: All; Collection: All;

Population as of End of Day - 11/3/2021

	Order Count	Family Count	Species Count	Subspecies Count	Individual Count	Group Count	Population
ANTHOZOA	4	5	7	7	2	7	0.0.327 (327)
CEPHALOPODA	1	1	1	1	1	1	0.0.3 (3)
CHONDRICHTHYES	3	4	4	4	1	18	7.11.14 (32)
CRUSTACEA	1	5	5	5	0	8	1.0.43 (44)
ECHINOIDEA	2	2	4	4	0	8	0.0.28 (28)
GASTROPODA	5	7	7	7	1	19	0.0.141 (141)
HOLOTHUROIDEA	1	1	1	1	0	5	0.0.31 (31)
OSTEICHTHYES	6	16	27	28	4	49	0.2.103 (105)
SCYPHOZOA	1	2	2	2	0	6	0.0.50 (50)
STELLEROIDEA	3	4	7	8	1	13	0.0.97 (97)
TOTALS	**27**	**47**	**65**	**67**	**10**	**134**	**8.13.837 (858)**

Appendix O

Location Hydraulic Study

Appendix O

Location Hydraulic Study

LOCATION HYDRAULIC STUDY - Minimal Encroachment

Local Agency: City of Santa Monica	Date: 4/26/2022
Federal Aid Project ID#: BHLO-5107(033)	Local Agency Project Engineer: Omeed Pour

Section A - Project Description:

The City of Santa Monica (City), in coordination with the California Department of Transportation (Caltrans), is proposing to replace the Santa Monica Pier Bridge (Pier Bridge). The Pier Bridge was constructed in 1939, is approximately 487’ long, and was recently determined to have a sufficiency rating of 8.2 out of a possible 100. The proposed Santa Monica Pier Bridge Replacement Project (Project) will include replacement of the existing, seismically deficient Pier Bridge with a new bridge meeting current seismic standard.

Through the environmental process, and due to extensive coordination with stakeholders, as well as analyzing potential impacts to adjacent resources, the City narrowed the list of potential alternatives to those that are essentially replace-in-kind, having nearly the same geometry as the existing bridge. The FEMA Flood Insurance Rate Map (FIRM) attached shows that approximately a quarter of the structure is within the Special Flood Hazard Area (SFHA). The scope of the Project is to demolish the existing structure, then construct the replacement structure within the existing alignment, and with a similar profile. The limits of the new bridge will match those of the existing bridge, and the new bridge will not create any new impacts.

There are no impacts anticipated within the FEMA SFHA due to the following reasons:

- The limits of the new bridge will match those of the existing bridge,
- The new bridge will have the same layout and profile as the existing bridge,
- The bridge alignment will remain transvers to the direction of a potential flood from the Pacific Ocean.

Section B - FEMA MAP:

Attached

Question	Yes	No
1. Is the proposed action a longitudinal encroachment of the base floodplain?	☐	☑
2. Are the risks associated with the implementation of the proposed action significant?	☐	☑
3. Will the proposed action support probable incompatible floodplain development?	☐	☑
4. Are there any significant impacts on natural and beneficial floodplain values?	☐	☑
5. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain.	☐	☑
6. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q)?	☐	☑

By signing below, I confirm that this form was completed by a Registered Engineer with Hydraulic Experience as it relates to the proposed project's scope of work and that the proposed project poses no significant / minimal encroachment towards any base floodplain.



Signature - Local Agency Project Engineer

4/26/2022

Date



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS

- NO SCREEN Areas of Minimal Flood Hazard Zone X
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- E 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- B Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from digital orthophotography collected by the Coastal Service Center and U.S. Department of Agriculture Farm Service Agency. Coastal Service Center Imagery was flown in 2011 and was produced with a sub-meter ground sample distance. Department of Agriculture imagery was flown in 2014 and was produced with a 1-meter ground sample.

SCALE

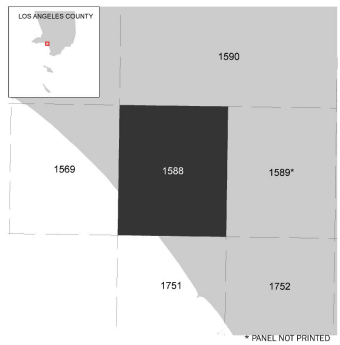
Map Projection:
Universal transverse Mercator Zone 11N; North American Datum 1983;
Western Hemisphere; Vertical Datum: NAD 83

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA

And Incorporated Areas

PANEL 1588 OF 2350

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES, CITY OF	060137	1588	G
SANTA MONICA, CITY OF	060159	1588	G

VERSION NUMBER
2.3.3

MAP NUMBER
06037C1588G

EFFECTIVE DATE
APRIL 21, 2021

Appendix P

Environmental Commitment Record

Environmental Commitments Record (ECR)

DIST-CO-RTE: 7-LA-SMCA **PM/PM:** N/A **EA/Project ID.:** BHLO-5107 (033)
Project Description: Santa Monica Pier Bridge Replacement Project
Date (Last modification): 11.23.2022 (Final EIR/EA)
Environmental Planner: Michael Enwedo **Phone No.:** (213) 335-0060
Construction Liaison: TBD **Phone No.:** TBD
Resident Engineer: TBD **Phone No.:** TBD

PERMITS

Permit	Agency	Application Submitted	Permit Received	Permit Expiration	Permit Requirement Completed by:	Permit Requirement Completed on:	Comments
Coastal Development Permit	California Coastal Commission	TBD					Application will be submitted during PS&E phase of project
NPDES Permit	Los Angeles Regional Water Quality Control Board	TBD					Application will be submitted during PS&E phase of project
Certificate of Appropriateness	City of Santa Monica Landmarks Commission	TBD					Application will be submitted during PS&E phase of project
Encroachment Permit	Caltrans District 7	TBD					Application will be submitted during PS&E phase of project

ENVIRONMENTAL COMMITMENTS

PA&ED

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Cultural Resources	Approval/concurrence for finding of effect and memorandum of agreement	DEIR/EA pg. 1-75	Yes	District PQS Principal Architectural Historian	Submit HPSR and Finding of Effect documentation to SHPO	Prior to certification of Final EIR/EA				Yes

PS&E/BEFORE RTL

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Other	**UES-1.** Prior to construction activities that could affect utility services on the pier, the City of Santa Monica project manager and construction contractor shall coordinate with utility owners to develop a plan to maintain continuous essential services to the pier during construction.	DEIR/EA pg. 2.1-27	Yes	City of Santa Monica Project Manager and Construction Contractor	Construction	TBD				Yes
Cultural Resources	**CR-5.** All modifications to the Pier deck that are visible will be reconstructed and replaced in kind so as to maintain the historic character of the Pier, with new materials matching the original/old design, color, texture, and other visual qualities. All such work shall be accurately reproduced, based on historical, pictorial, and physical documentation and evidence. A Certificate of Appropriateness, approved by the City of Santa Monica Landmarks Commission, is also required.	DEIR/EA pg. 2.7-68	Yes	City of Santa Monica Project Manager and Engineering Consultant	Obtain Certificate of Appropriateness from City of Santa Monica Landmarks Commission	TBD				Yes
Cultural Resources	**CR-6.** To ensure a compatible replacement bridge avoids significant adverse effects to adjacent historic resources and their historic setting, the new bridge design shall follow guidance and direction provided in the Pier District Design Guidelines. In consideration of the proportions, window	DEIR/EA pg. 2.1-68	Yes	City of Santa Monica Project Manager and Engineering Consultant	Engineering Consultant shall follow Pier District Design Guidelines when developing	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	placement, and alignment with elements of Looff's Hippodrome and surrounding historic resources, the following features shall be studied: landings and horizontal structure lines; building openings; visible joint lines and glazing mullions.				final design for the selected alternative					
Stormwater	**WQ-1.** The proposed project will comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4 (Order No. R4-2021-0105, NPDES No. CAS004004) and the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) (Order No. 2022-0027-DWQ, NPDES No. CAS000002) and any subsequent permits in effect at the time of construction.	DEIR/EA pg. 2.9-12	Yes	City of Santa Monica Project Manager and Construction Contractor	Comply with associated NPDES permits	TBD				Yes
Water Quality	**WQ-2.** The proposed project will comply with the Construction General Permit by preparing and implementing a Stormwater Pollution Prevention Plan (SWPPP) to address issues related to construction activities, pieces of equipment, and materials that have the potential to affect water quality and risk levels. The SWPPP will identify the sources of pollutants that may affect the quality of stormwater and include Best Management Practices (BMPs), such as sediment controls, catch basin inlet protection, construction materials management, and non-stormwater BMPs, to control pollutants. All work must conform to the construction site BMP requirements specified in the latest edition of the California Department of Transportation *Construction Site Best Management Practices Manual* to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, waste management, materials handling, and other non-stormwater BMPs.	DEIR/EA pg. 2.9-12	Yes	City of Santa Monica Project Manager and Construction Contractor	Prepare SWPPP	TBD				Yes
Other	**GEO-1.** The following actions shall be incorporated into the project: • Removal of unsuitable subgrade soils and replacement with engineered fill, • Use of coated or non-metallic (i.e., concrete or polyvinyl chloride [PVC]) pipes that are not susceptible to corrosion, • Construction of foundations using sulfate-resistant concrete, • Support of structures on deep-pile foundation systems, • Densification of compactable subgrade soils with in-situ techniques, and • Placement of moisture barriers above and around expansive subgrade soils to help prevent variations in soil moisture content, where applicable.	DEIR/EA pg. 2.10-3	Yes	City of Santa Monica Project Manager and Construction Contractor	Incorporate GEO-1 actions into the project	TBD				Yes
Hazardous Waste	**HAZ-2.** In accordance with hazardous waste concerns relative to the final project design plans, the following shall be provided to the Caltrans Office of Environmental Engineering for informational purposes:	DEIR/EA pg. 3-57	Yes	City of Santa Monica Project Manager and Engineering Consultant	Supply final project design plans to Caltrans Office of	TBD				No

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	• Final construction documents and plans for the preferred alternative, • A hazardous waste Sampling and Analysis Plan, and • A Site Investigation Report for ADL, which shall be performed to determine the extent of possible contamination within the state right-of-way. The detailed construction document/plans shall include design features and information showing proposed structure/foundation work (i.e., footing/pile types, pile lengths, maximum excavation depths) and the new right-of-way. Based on the detailed construction document/plans, the following shall also be submitted to Caltrans Office of Environmental Engineering for informational purposes: • Sampling and Analysis Plan (including a Health and Safety Plan) for soil and groundwater (including ADL), • Asbestos-Containing Material and Lead-Based Paint Survey Work Plan for bridge demolition work (discussed above in HAZ-1), and • Draft and Final Site Investigation Report, Asbestos-Containing Material Report, and Lead-Based Paint Survey Report. Based on the Site Investigation Report and investigative results, the City will be required to prepare the necessary construction plans and specifications for remediation of hazardous materials (including soil and groundwater) as necessary. The specifications shall comply with current Caltrans Standard Special Provisions (SSPs) and Standard Plans. In addition, the City shall review and incorporate Caltrans SSPs for work related to: • Disturbance of material containing hazardous waste with concentrations of ADL, • Removal of material containing hazardous waste with concentrations of ADL, • Removal of yellow traffic stripes and pavement markings with hazardous waste residue, • Disturbance of existing paint on bridges, • Removal of treated wood waste, and • Removal of traffic stripes and pavement markings containing lead.				Environmental Engineering					

ROW/PURCHASING

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Other	The City continue to coordinate with Heal the Bay to ascertain the particulars of their operations and specific replacement-property needs. The proposed partial acquisition and temporary displacement would comply with the appropriate requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. An Adjacent Structures	Relocation Impact Memo pg. 5	No	City of Santa Monica Planning Staff	Prepare Adjacent Structures Monitoring Plan and continue to meet with Heal the Bay Aquarium Staff	On-going				No

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	Monitoring Plan, mitigation measure CR-3, will be prepared for the project and include the monitoring of the aquarium for impacts due to construction vibration.									

PRE-CONSTRUCTION

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Other	**TRA-1.** A Construction Traffic Impact Mitigation Plan shall be prepared and implemented prior to construction to provide for traffic and parking capacity management during construction. This plan shall be subject to approval by the City Engineer and/or the City Traffic Engineer. The approved mitigation plan shall be posted on the project site for the duration of construction and be produced upon request. The plan shall include, but not be limited to, the following: • Implement a public information program to advise motorists of impending and ongoing construction activities (e.g., use of media listings/notifications, the City website and related agency websites, portable message signs, informational signs at the construction site, a telephone hotline to record comments/complaints during construction); • Obtain approval from the City, or Caltrans, if required, for construction-related vehicular detours or construction work requiring encroachment into public rights-of-way or any other street use (e.g., haul routes for earth, concrete, construction materials, equipment); • Provide safety precautions for pedestrians and bicyclists through measures such as the installation of protection barriers and signage that indicates pedestrian and bicycle detours where existing facilities would be affected; • Ensure the timely notification of construction schedules for all affected agencies (e.g., City Police Department, Fire Department, and Public Works Department; Planning Division of the Community Development Department; affected transit agencies [Santa Monica Big Blue Bus and Metro]; and all property owners and residential and commercial tenants within a radius of 500 feet); • Schedule pre-construction meetings with affected agencies to plan the proper methods for controlling traffic through work areas; • Schedule and expedite work so as to cause the least amount of disruption and interference with the adjacent vehicular and pedestrian traffic flow, including, to the extent feasible, the avoidance of full closures on Moomat Ahiko Way, Appian Way, and Ocean Front Walk during months of peak activity at the pier; • Prepare a detailed traffic control plan for work zones that includes, at a minimum, parking and travel lane configurations; warning, regulatory, guide, and directional signage; and area sidewalks, bicycle lanes, and parking	DEIR/EA pg. 3-60	Yes	City of Santa Monica Project Manager and Construction Contractor	Prepare a Construction Traffic Impact Mitigation Plan	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	lanes. The plan shall include specific information regarding project construction activities that may disrupt normal pedestrian and traffic flows and measures to address disruptions. • Monitor traffic conditions during construction and, if needed, assign traffic control officers to direct vehicular traffic and pedestrians; • Limit the queuing of trucks to on-site locations and limit truck queuing on City streets; • Restrict the storage of construction material and equipment to designated work areas; • Provide a construction-period parking plan that minimizes the use of public streets for parking. This may include use of a remote location with shuttle transport to the site; • If feasible and safe, as determined by the City and Caltrans, ensure that Moomat Ahiko Way remains open during major events and activities at Santa Monica Pier; and Unless required by the City and Caltrans, ensure that the California Incline remains open during the construction period for the proposed project.									
Cultural Resources	**CR-3.** Prior to the start of construction, the City shall prepare an Adjacent Structure Monitoring Plan (Monitoring Plan) to safeguard adjacent historic resources, including the Looff's Hippodrome and the locally designated buildings at 1601–1619 Ocean Front Walk, during construction from damage due to vibration, demolition, excavation, and general construction activities and to mitigate the possibility of settlement due to the removal of soil. The Monitoring Plan will define protective measures specific to individual historic resources; assign monitoring responsibilities; install and maintain construction fencing for screening and security; and ensure safe public circulation and access during construction. Any protective measures shall be designed and installed in such a way that they are completely reversible with no impacts on historic resources. As part of the Monitoring Plan, prior to construction the project site and adjacent historic resources will be photographed to record their existing pre-construction condition and character-defining features to be kept on file with the publicly accessible property records at the City of Santa Monica. The Monitoring Plan shall be prepared by a qualified and California-licensed Professional Engineer who is approved by the City of Santa Monica. The Monitoring Plan shall be developed in conjunction with a qualified architectural historian, historic architect, or historic preservation professional who satisfies the Secretary of the Interior's Professional Qualification Standards in their respective field(s), pursuant to 36 CFR 61. All monitoring shall be conducted to the extent allowed by the property owners. The Monitoring Plan shall include performance standards that specify: All new construction work will be performed so that adjacent buildings and resources, including Looff's Hippodrome and	DEIR/EA pg. 2.7-67	Yes	City of Santa Monica Project Manager and Engineering Consultant	Prepare Adjacent Structure Monitoring Plan	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	1601–1619 Ocean Front Walk buildings, will not be adversely affected. A qualified and California-licensed Professional Engineer will develop monitoring recommendations, based on preconstruction surveys and photo documentation of existing conditions of adjacent historic resources. Monitoring may include the use of vibration monitors, elevation and lateral monitoring points, crack monitors, or other instrumentation determined necessary to protect adjacent buildings and structures from construction-related damage. Vertical and horizontal movement will be determined by a California-licensed land surveyor or qualified professional engineer, and vibration thresholds will be maintained to levels below that which could damage adjacent buildings. If thresholds are met, or if noticeable structural damage becomes evident to the project contractor, work shall stop until feasible steps to reduce vibratory levels have been undertaken and minimization measures have been implemented to stabilize adjacent building and prevent construction-related damage. Any damage to historic finish materials at nearby buildings shall be repaired in consultation with the affected property owner and a qualified preservation consultant and, if warranted, in a manner that meets the Secretary of the Interior's Standards. If necessary, as determined by a California-licensed Professional Engineer, a shoring plan will be developed to protect adjacent historic resource from excavation or general construction procedures. The shoring plan will be developed by the contractor and submitted to the City of Santa Monica for review.									
Cultural Resources	**CR-4.** Prior to any construction starting, the Pier Sign Preservation Plan shall be prepared and implemented to ensure the protection of the Pier Sign throughout the construction phase.	DEIR/EA pg. 2.7-68 and Pier Sign Protection Plan	Yes	Preservation Architect	Prepare Pier Sign Preservation Plan	TBD				Yes
Cultural Resources	Submit full plan check set of construction drawings including details for work on the Pier Sign to Caltrans PQS	Finding of No Adverse Effect pg. 7-2	No	City of Santa Monica Planning Staff, District Architectural Historian PQS	Submit project plans to District Architectural Historian PQS	TBD				No
Cultural Resources	Solicit for qualified Historic Preservation Architect to review Monitoring Plan and Pier Sign plans, implement the Plans, and propose and inform the Contractor of specifications to ensure Standards-compliant work	Finding of No Adverse Effect pg. 7-2	No	City of Santa Monica Project Manager	Solicit for qualified Historic Preservation Architect	TBD				No
Cultural Resources	Solicit for qualified and licensed Engineer to perform pre-construction survey and prepare Monitoring Plan	Finding of No Adverse Effect pg. 7-2	No	City of Santa Monica Project Manager	Solicit for qualified and licensed Engineer	TBD				No
Cultural Resources	Carry out pre-construction survey and documentation of existing conditions, establish vibration thresholds for incorporation into Monitoring Plan	Finding of No Adverse Effect pg. 7-2	No	Consultant Engineer	Prepare pre-construction documentation of existing vibration thresholds	TBD				No
Cultural Resources	Prepare Monitoring Plan including specifications for monitoring procedures and equipment, vibration thresholds, and with input from Historic Preservation Architect regarding Standards-compliant work	Finding of No Adverse Effect pg. 7-2	Yes	Consultant Engineer, Historic Preservation Architect	Prepare Monitoring Plan	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Cultural Resources	Prepare Pier Sign Report including conditions assessment, documentation, and specifications for work	Finding of No Adverse Effect pg. 7-2	Yes	Consultant Engineer, Historic Preservation Architect	Prepare Pier Sign Report	TBD				Yes
Cultural Resources	Prepare detailed construction plan set based on Engineer's specifications and recommendations in Monitoring Plan; submit to Caltrans PQS for review and comment	Finding of No Adverse Effect pg. 7-2	No	Consultant Engineer, Historic Preservation Architect	Submit construction plan set to District Architectural Historian PQS for comment	TBD				No
Cultural Resources	Prepare detailed construction plan set for work on the Pier Sign based on the Historic Preservation Architect's specifications and recommendations; submit to Caltrans PQS for review and comment	Finding of No Adverse Effect pg. 7-2	No	Consultant Engineer, Historic Preservation Architect	Submit construction plan set specific to the Pier Sign to District Architectural Historian PQS for comment	TBD				No
Hazardous Waste	**HAZ-1.** Prior to demolition work associated with the proposed improvements, ACBM and LBP surveys would be conducted to determine the presence of these materials. If discovered on site, asbestos and LBP hazards shall be abated in accordance with South Coast Air Quality Management District Rule 1403 prior to any demolition or bridge rehabilitation activities.	DEIR/EA pg. 2-12.10	Yes	Construction Contractor	Perform preconstruction surveys for ACBM and LBP	TBD				Yes
Biology	**BIO-2.** To avoid impacts on bats that may be roosting in palm trees within the project area, direct impacts on unmanicured palms with dead fronds shall be avoided during construction, and activities that cause high levels of vibration and/or noise, within 500 feet, shall also be avoided. If it is not possible to avoid direct impacts (e.g., tree removal, tree disturbance, tree trimming), as well as indirect impacts (e.g., noise, vibration), a qualified bat biologist shall survey the trees in the project area (i.e., conduct acoustic nighttime surveys) prior to disturbance to determine whether bats are roosting. A copy of all survey results shall be forwarded to Caltrans' Division of Environmental Planning. If bats are present, the bat biologist shall monitor construction activities to ensure that bats are not affected. The qualified bat biologist may also provide other avoidance measures to ensure that impacts are avoided and minimized.	DEIR/EA pg. 3-52	Yes	Qualified Consultant Biologist	Perform surveys for tree roosting bats prior to removal and monitor for impacts if present	TBD				Yes
Biology	**BIO-3.** A qualified bat biologist who is also familiar with crevice-dwelling bird species shall survey the project disturbance limits and the Pier Bridge in early summer, prior to construction, to assess the potential for the bridge's use for bat roosting, bat maternity roosting, and bird roosting/nesting (maternity roosts and nests generally form in spring). The qualified bat biologist shall also perform preconstruction surveys within 2 weeks of construction because bat and bird roosts can change seasonally. These surveys will include a combination of structure inspections, exit counts, and acoustic surveys. A copy of all survey results shall be forwarded to Caltrans' Division of Environmental Planning and the City.	DEIR/EA pg. 3-52	Yes	Qualified Consultant Biologist	Perform preconstruction bats 2 weeks prior to construction	TBD				Yes
Biology	**BIO-5.** Within 7 days of the commencement of construction activities (if between January 15 and September 1), a qualified biologist shall perform a nesting bird survey to determine	DEIR/EA pg. 3-52	Yes	Qualified Consultant Biologist	Perform preconstruction surveys for birds 7	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	whether there are active migratory bird nests within 200 feet of the project footprint and raptor nests within 500 feet of the project footprint. If present, this survey shall identify the species and, to the degree feasible, nesting stage (e.g., incubation of young, feeding of young, near fledging). Nests shall be mapped to the nearest location feasible without causing disturbance (close encroachment may cause nest abandonment). If active nests of non-listed migratory birds are found, construction shall not occur within a buffer until the nesting attempt has been completed and/or abandoned because of non-project-related reasons. The buffer distance for non-listed migratory birds shall be determined by the project biologist, depending on the species' requirements, sensitivity to disturbance, and project activities. Construction shall not occur within 500 feet of a raptor's nest until the nesting attempt has been completed and/or abandoned because of non-project-related reasons. If a nest of a special-status migratory bird (either federal or state listed or non-listed) is found, an appropriate buffer distance shall be determined, based on the species' nesting requirements and sensitivity to disturbance, in consultation with the appropriate wildlife agencies (i.e., CDFW and/or USFWS), depending on the species' status. A copy of all survey results and any agency coordination shall be forwarded to Caltrans' Division of Environmental Planning and the City.				days prior to construction					

CONSTRUCTION

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Other	**LU-1:** The historic pier sign itself shall be maintained and preserved in kind. Repairs shall be performed, as needed, to preserve the sign's longevity and historic aesthetic. New support structures, to accommodate widening of the bridge, shall be constructed and designed to match the existing historic context and aesthetic of the bridge. All designs for the support structures shall be approved by a certified architectural historian, in concurrence with California Department of Transportation personnel and the State Historic Preservation Officer.	DEIR/EA pg. 3-59	Yes	Construction Contractor	Follow protocol set forth in the Pier Sign Protection Plan				Specifics of how the Pier Sign shall be handled see measures related to cultural resources within this ECR.	Yes
Cultural Resources	**CR-1.** If human remains are discovered during construction, California Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains and the county coroner shall be contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission, which will then notify the most likely descendent. At that time, the person who discovered the remains will contact the District 7 Division of Environmental Planning to work with the most likely descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code Section 5097.98 are to be followed, as applicable.	DEIR/EA pg. 2.7-67	Yes	Construction Contractor, Qualified Consultant Archeologist	Stop work if human remains are discovered and contract District staff	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Cultural Resources	**CR-2.** If buried cultural resources, such as flaked or ground stone, historic debris, building foundations, or non-human bone, are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures. Treatment measures typically include developing avoidance strategies, capping with fill material, or mitigating impacts through data recovery programs such as excavation or detailed documentation.	DEIR/EA pg. 2.7-67	Yes	Construction Contractor, Qualified Consultant Archeologist	Stop work if buried cultural resources are discovered and contact District staff	TBD				Yes
Paleontology	**PAL-1.** Because of the paleontological potential of the older Quaternary alluvium, a qualified vertebrate paleontologist shall be retained by the City or construction contractor to oversee monitoring during earthmoving activities with the potential to affect this formation. Excavations can be monitored by a qualified paleontological monitor under the supervision of the qualified paleontologist. Deep-drilled, poured-in-place concrete shafts will be monitored only if possible (e.g., during initial clearing and grading of the shaft sites). Monitoring of earthwork in the older Quaternary alluvium will reduce potential impacts to a less-than-significant level. Monitoring may be reduced if the potentially fossiliferous unit described herein is, upon exposure and examination by qualified paleontological personnel, determined to have low potential for containing fossil resources. The paleontological monitor shall be equipped to salvage fossils as they are unearthed to avoid construction delays and remove samples of sediments that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor shall have authority to temporarily divert grading away from exposed fossils to recover the fossil specimens professionally and efficiently and collect associated data. All efforts to avoid delays in project schedules shall be made. To prevent construction delays, paleontological monitors shall be equipped with the necessary tools for the rapid removal of fossils and retrieval of associated data. This equipment shall include handheld global positioning system receivers, digital cameras, and cell phones as well as a tool kit with specimen containers, matrix sampling bags, field labels, field tools (e.g., awls, hammers, chisels, shovels, etc.), and plaster kits. At each fossil locality, field data forms shall be used to record pertinent geologic data, stratigraphic sections shall be measured, and appropriate sediment samples shall be collected and submitted for analysis. Fossils collected, if any, shall be transported to a paleontological laboratory for processing where they shall be prepared to the point of curation, identified by qualified experts, listed in a database to facilitate analysis, and then deposited in a designated paleontological curation facility such as the LACM. Following analysis, a report of findings with an appended itemized inventory of specimens shall be prepared. The report and inventory, when submitted to the appropriate lead agency,	DEIR/EA pg. 2.11-4	Yes	City of Santa Monica Project Manager, Construction Contractor, and Qualified Consultant Paleontological Monitor	City or Construction Contractor shall obtain a qualified vertebrate paleontologist to oversee monitoring during earthmoving activities with the potential to affect Quaternary alluvium	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	along with confirmation of the curation of recovered specimens into an established, accredited museum repository, shall signify completion of the program to mitigate impacts on paleontological resources.									
Cultural Resources	Implement Monitoring Plan and Pier Sign Preservation Plan specifications	Finding of No Adverse Effect pg. 7-2	Yes	Construction Contractor, Historic Preservation Architect	Implement Monitoring Plan and Pier Sign Preservation Plan specifications	TBD				Yes
Cultural Resources	Securely label all disassembled Pier Sign components with identifying location and contact information and retain and store components safely in a secure location that is shared with City staff	Finding of No Adverse Effect pg. 7-2	Yes	City of Santa Monica Planning Staff, Construction Contractor, Historic Preservation Architect	Label and store Pier Sign components	TBD				Yes
Cultural Resources	Implement maintenance and repairs to the Pier Sign as outlined in Pier Sign Report and reviewed by Caltrans PQS	Finding of No Adverse Effect pg. 7-3	Yes	Historic Preservation Architect	Implement maintenance and repairs to the Pier Sign as outlined in Pier Sign Report	TBD				Yes
Cultural Resources	Read monitoring equipment and check for evident structural damage; implement minimization measures if thresholds met and/or damage observed	Finding of No Adverse Effect pg. 7-3	Yes	Construction Contractor, Historic Preservation Architect	Throughout construction contractor shall check for evident structural damage; implement minimization measures if thresholds met and/or damage observed	TBD				Yes
Cultural Resources	Submit changes to the scope of work not covered in the FNAE to Caltrans PQS for review prior to the work beginning	Finding of No Adverse Effect pg. 7-3	No	City of Santa Monica Project Manager, Construction Contractor, District Architectural Historian PQS	Submit changes to the scope of work to District Architectural Historian PQS	TBD				No
Cultural Resources	50% Project walk-through: conduct inspection midway through construction to determine if the FNAE conditions including Pier Sign specifications are being met	Finding of No Adverse Effect pg. 7-3	No	City of Santa Monica Project Manager, District Architectural Historian PQS	Perform 50% Project walk-through	TBD				No
Hazardous Waste	**HAZ-3.** Although contaminated soil is unlikely to be present on the project site, the contractor shall observe exposed soil for odor and/or visual evidence of contamination during excavation activities. If odiferous, stained, or discolored soil is discovered by the contractor during excavation or grading activities, all work shall stop, and an investigation shall be designed and performed to verify the presence and extent of contamination at the site. A qualified and approved environmental consultant shall perform the review and investigation. Results shall be reviewed and approved by the applicable local and state agencies prior to construction. The investigation shall include collecting samples for laboratory analysis and quantifying contaminant levels within the proposed excavation and surface	DEIR/EA pg. 3-57	Yes	Construction Contractor	Observe exposed soil for odor and/or visual evidence of contamination during excavation activities	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	disturbance areas. Subsurface investigation shall determine appropriate procedures for worker protection and hazardous material handling and disposal procedures appropriate for the project site.									
Hazardous Waste	**HAZ-4.** Areas with contaminated soil that has been determined to be hazardous waste shall be excavated by personnel who have been trained through the Occupational Safety and Health Administration–recommended 40-hour safety program (29 Code of Federal Regulations 1910.120), with an approved plan for excavation, control of contaminant releases to the air, and off-site transport or on-site treatment. Health and safety plans prepared by a qualified and approved industrial hygienist shall be developed to protect the public and all workers in the construction area. Health and safety plans shall be reviewed and approved by the appropriate local and state agencies.	DEIR/EA pg. 3-58	Yes	Construction Contractor	Areas with contaminated soil that has been determined to be hazardous waste shall be excavated by personnel who have been trained through the Occupational Safety and Health Administration–recommended 40-hour safety program with an approved plan for excavation	TBD				Yes
Hazardous Waste	**HAZ-5.** Should construction activities result in the removal of yellow or white painted or thermoplastic traffic stripes, the age of the traffic striping shall be determined. If lead or chromium is present in the materials at or above specified hazardous waste levels, it shall be appropriately captured and transported, then disposed of at a permitted Class I disposal facility in California. In addition, a project-specific Lead Compliance Plan shall be required to prevent or minimize worker exposure to lead while handling materials containing lead. Attention shall be directed to Title 8, California Code of Regulations, Section 1532.1, Lead.	DEIR/EA pg. 3-58	Yes	Construction Contractor	Contractor shall dispose of thermoplastic traffic stripes determined to contain lead or chromium at a permitted Class I disposal facility in California	TBD				Yes
Hazardous Waste	**HAZ-6.** Although there is no evidence that groundwater in the vicinity of the pier contains contaminants, excavations below the elevation of groundwater could experience strong seepage and require dewatering. The contractor shall observe groundwater for visual evidence of contamination or unusual odors. The contractor shall comply with all applicable regulations and permit requirements for construction dewatering. This may include laboratory testing, treatment of contaminated groundwater, or other disposal options.	DEIR/EA pg. 3-58	Yes	Construction Contractor	The contractor shall observe groundwater encountered for visual evidence of contamination or unusual odors	TBD				Yes
Air Quality	**AQ-1.** To reduce particulate matter exhaust emissions, the City (or its contractors) shall ensure that all off-road diesel-powered equipment rated at 50 brake horsepower and greater used during construction shall meet EPA Tier 4 emissions standards, or better, except construction equipment for which such emissions control technology is not available	DEIR/EA pg. 2.13-20	Yes	Construction Contractor	All off-road diesel-powered equipment rated at 50 brake horsepower and greater used during construction shall meet EPA Tier 4 emissions standards	TBD				Yes
Air Quality	Most construction-related impacts on air quality are short term and, therefore, do not result in long-term adverse conditions. Implementation of the following avoidance and minimization measures, some of which may also be required for other purposes, such as stormwater pollution control, would reduce any air quality impacts resulting from construction activities:	DEIR/EA pg. 2.13-20	Yes	Construction Contractor	Comply with air quality provisions outlined within this ECR	TBD				Yes

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
	• The construction contractor must comply with Caltrans Standard Specifications in Section 14-9 (2018). • Section 14-9-02 specifically requires the contractor to comply with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. • Water or dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions generally must meet a “no visible dust” criterion, either at the point of emission or at the right-of-way line, depending on local regulations. • Soil binder will be spread on any unpaved roads used for construction purposes and on all project construction parking areas. • Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low-sulfur fuel, as required by California Code of Regulations Title 17, Section 93114. • A dust control plan will be developed, documenting sprinkling, temporary paving, speed limits, and timely revegetation of disturbed slopes, as needed, to minimize construction impacts on existing communities. • Equipment and material storage sites will be located as far away from residential, and park uses as practicable. Construction areas will be kept clean and orderly. • Environmentally sensitive areas, or their equivalent, will be established near sensitive air receptors. Within these areas, construction activities involving extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible. • Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used. • All transported loads of soils and wet materials will be covered before transport or adequate freeboard (i.e., the space from the top of the material to the top of the truck) will be provided to minimize emissions of dust (particulate matter) during transportation. • Dust and mud deposited on paved public roads due to construction activity and traffic will be promptly and regularly removed to decrease particulate matter. • To the extent feasible, construction traffic will be scheduled and routed so as to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times. Mulch will be installed, or vegetation planted as soon as practical after grading to reduce windblown particulate in the area. Be aware that certain methods of mulch placement, such as straw blowing, may themselves cause dust and visible emissions; therefore, it may be necessary to use controls, such as dampened straw.									

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Biology	**BIO-1.** All construction-related work, including staging, storage, and access, shall be limited, to the greatest extent feasible; shall occur within the project limits; and shall not encroach upon the sandy beach habitat adjacent to the project area	DEIR/EA pg. 3-52	Yes	Construction Contractor	Avoid sandy beach habitat adjacent to project area	TBD				Yes
Biology	**BIO-4.** If recommended by the qualified bat biologist, to avoid indirect disturbance of bats and birds while roosting in areas that would be subject to or adjacent to impacts from construction activities, any portion of a structure that is deemed by a qualified bat biologist to have potential bat or bird roosting habitat, in areas where the young have the ability to fly and may be affected by the proposed project, shall have temporary bat/bird eviction and exclusion devices installed under the supervision of the qualified bat biologist prior to the initiation of construction activities. Eviction and subsequent exclusion will be conducted during the fall (September or October) to avoid trapping flightless young inside during the summer months or hibernating/overwintering individuals during the winter. Such exclusion efforts are dependent on weather conditions, take a minimum of 2 weeks, and must be continued to keep the structures free of bats and birds until the completion of construction. All eviction and/or exclusion techniques shall be coordinated between the qualified bat biologist and the appropriate resource agencies (e.g., CDFW). Work shall cease around any active bat maternity colony until such time that the young have the ability to fly, as determined by a qualified bat biologist.	DEIR/EA pg. 3-53	Yes	Construction Contractor and Qualified Consultant Biologist	Install exclusionary devices for birds and bats if deemed necessary	TBD				Yes
Biology	**BIO-6.** Construction equipment shall be inspected and cleaned prior to mobilization to the project site to minimize the importation of nonnative plant material. Eradication strategies (e.g., weed control) shall be implemented should an invasion of nonnative plant species occur.	DEIR/EA pg. 3-54	Yes	Construction Contractor	Inspect construction equipment prior to mobilization for nonnative plant species	TBD				Yes
Other	**UES-2.** Both before construction begins and thereafter, the City of Santa Monica project manager and construction contractor shall regularly notify and coordinate with the Santa Monica Police Department and Santa Monica Fire Department during project design and scheduling, particularly in regard to any street or lane closures related to the proposed project.	DEIR/EA pg. 2.4-9	No	City of Santa Monica Project Manager and Construction Contractor	Regularly notify local police and fire departments of street closures	TBD				Yes
Noise	**Condition of Approval NOI-1.** A Construction Noise Management Plan shall be prepared and approved by the City. The Plan shall outline measures that would be used to reduce noise levels. Measures shall include: • Construction noise in excess of the limits identified in SMC 4.12.110(b) at sensitive receptors shall occur between the hours of 10 a.m. and 3 p.m. Monday through Friday in accordance with SMC 4.12.110(d). • The construction contractor(s) shall ensure that construction equipment is properly maintained and in working order per manufacturer specifications and that all construction equipment is equipped with manufacturer approved mufflers and baffles. • The construction contractor(s) shall place noise generating construction equipment and located construction staging areas away from sensitive uses, to the extent practical.	FEIR/EA pg. 3-41	Yes	City of Santa Monica Project Manager and Construction Contractor	Develop Construction Noise Management Plang	TBD				No

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	• All stationary construction equipment will be located and oriented, so that emitted noise is directed away from sensitive receptors nearest the Project Sites. • Construction equipment will be turned off when not in use and will not be left idling. • Heavily loaded trucks shall be routed away from residential streets, conforming to the City's recommended haul route corridors. • Construction activities shall be scheduled so as to avoid operating several pieces of high noise-generating equipment simultaneously, to the extent practical. • The construction contractor(s) shall implement noise attenuation measures, which include temporary noise barriers and/or noise blankets placed between noise-generating construction equipment and activities and the off-site noise sensitive receptors (specifically residences), where noise levels have the potential to exceed the levels identified in SMC Section 4.12.110(b). The noise barriers and/or blankets shall be of sufficient density or design to provide a minimum of 40 dB Standard Transmission Class (STC).									

POST-CONSTRUCTION

Category	Task and Brief Description	Source	Included in PS&E package	Responsible Branch/Staff	Action to Comply	Due Date	Task Completed by	Task Completed on	Remarks	Mitigation for significant impacts under CEQA?
Biology	**BIO-7.** After construction, species with a high or moderate rating on Cal-IPC's California Invasive Plant Inventory, including any Cal-IPC-listed species of ice plant, shall not be planted in any revegetated areas.	DEIR/EA pg. 3-54	Yes	Construction Contractor	Plant species with high or moderate rating on Cal-IPC's California Invasive Plant Inventory, including any Cal-IPC-listed species of ice plant, shall not be planted in any revegetated areas	TBD				Yes
Cultural Resources	100% Project walk-through: conduct post-construction inspection to determine if the requirements of the Pier Sign Preservation Plan were met; identify challenges and accomplishments; and include updated photographs of the Pier Sign to file with SHPO and the City	Finding of No Adverse Effect pg. 7-3	No	City of Santa Monica Project Manager, Construction Contractor, District Architectural Historian PQS	Conduct 100% Project walk-through	TBD				No