2. AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

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

- **Coastal Zone:** The proposed Project is not included in a coastal zone, and therefore is not subject to the federal Coastal Zone Management Act of 1972 (CZMA) or to the California Coastal Act of 1976.
- **Wild and Scenic Rivers:** Projects affecting Wild and Scenic Rivers are subject to the National Wild and Scenic Rivers Act (16 United States Code ([USC] 1271) and the California Wild and Scenic Rivers Act (CA Public Resources Code [PRC] Section 5093.50 et seq.). There are no State or federally designated or candidate rivers within the project area[2]. Therefore, the Project is not subject to the National Wild and Scenic Rivers Act (16 United States Code [USC] 1271) and the California Wild and Scenic Rivers Act (Pub. Res. Code sec. 5093.50 et seq.).
- **Farmlands/Timberlands:** The Project does not cross and is not near farmlands or timberlands, and therefore is not subject to the Farmland Protection Policy Act or the California Timberland Productivity Act of 1982.

2.1 Human Environment

2.1.1 Land Use

The land use section impact analysis is based upon the State Route 57 Northbound Improvement Project *Community Impact Assessment* (CIA) (June 2018).

2.1.1.1 Existing and Future Land Use

Existing Land Use

The Project is located in the cities of Orange and Anaheim in Orange County. The County of Orange is located along the Pacific Ocean between Los Angeles County to the north and northwest, San Bernardino County to the northeast, Riverside County to the east, and San Diego County to the southeast. Orange County stretches approximately 40 miles along the coast and extends inland approximately 20 miles, covering 798 square miles.

[2] National Wild and Scenic River System in the US, Wild and Scenic Rivers, https://nps.maps.arcgis.com/apps/MapJournal/index.html?appid=ba6debd907c7431ea765071e9502d5ac# accessed on February 16, 2018

The City of Orange and Anaheim are located in the middle north part of Orange County. The City of Orange is located south of Anaheim, east of Garden Grove, north of Santa Ana and west of Orange County unincorporated area. The City of Anaheim is located south of Yorba Linda, Placentia, Fullerton and Buena Park and north of Stanton, Garden Grove and Orange and west of Orange County unincorporated area.

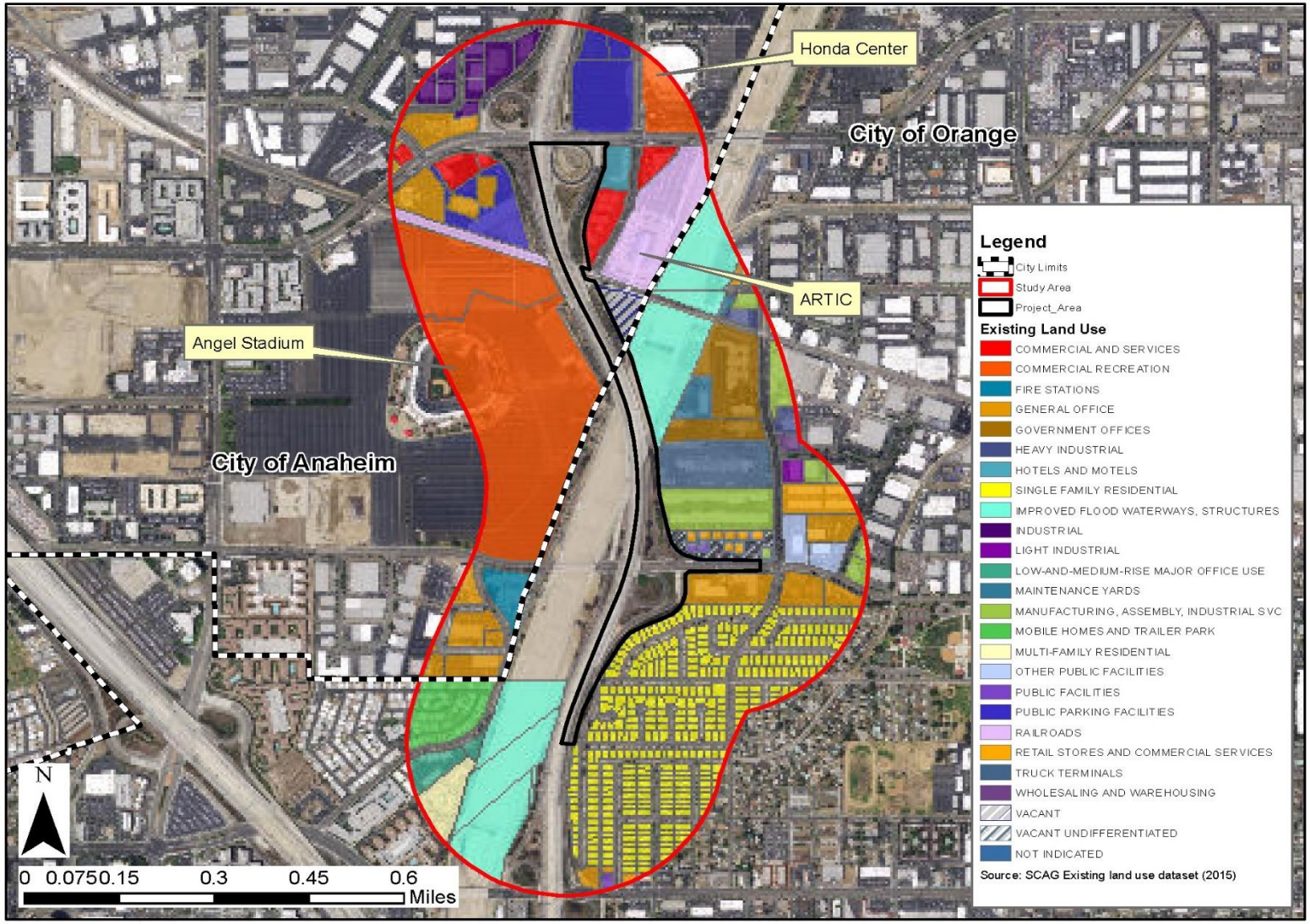
The project's 1-mile section of SR 57 has varied land uses adjacent to the freeway. The land use study area was delineated as a quarter-mile buffer around the Project and is identified in **Table 2-1: Existing Land Uses within the Study Area**. The total study area is approximately 337 acres, all of which are urban lands zoned mixed-use, commercial, residential, light industrial, and office (See **Figure 2-1: Existing Land Use within a quarter mile of the Study Area**). **Table 2-1** shows the total area of existing uses within the study area. Approximately 331of the acres in the study area are developed lands or public right-of-way. The 6 acres of undeveloped parcels include 2.5 acres in the City of Anaheim zoned for semi-public use, and 3.5 acres in the City of Orange zoned for office professional.

Table 2-1: Existing Land Uses within the Study Area

Land Use	Acres	Land Use	Acres
Commercial and Services	7.9	Mobile Homes and Trailer Park	7.4
Commercial Recreation	67.2	Multi-Family Residential	4.0
Fire Stations	3.2	Other Public Facilities	3.7
General Office	28.7	Public Facilities	0.7
Government Offices	11.6	Public Parking Facilities	15.8
Heavy Industrial	2.1	Railroads	16.8
Hotels and Motels	2.0	Retail Stores and Commercial Services	4.4
Improved Flood Waterways, Structures	41.3	Single Family Residential	50.2
Industrial	8.4	Truck Terminals	8.9
Light Industrial	0.9	Unknown	25.6
Low-and-Medium-Rise Major Office Use	3.2	Vacant	2.5
Maintenance Yards	2.7	Vacant Undifferentiated	3.5
Manufacturing, Assembly, Industrial SVC	13.7	Wholesaling and Warehousing	0.8
Total Acres in Study Area			337.0

Source: State Route 57 Northbound Improvement Project Community Impact Assessment (CIA) 2018.

Figure 2-1: Existing Land Use within a quarter mile of the Study Area



Source: CIA 2018.

At the south end of the Project are single-family residential land uses located east of SR 57 and south of Orangewood Avenue. In this area, the Santa Ana River is west of the freeway. Commercial and light industrial (freight shipping) land uses exist north of Orangewood Avenue and east of SR 57. At the point where SR 57 crosses over the Santa Ana River, land uses east of the freeway and west of the Santa Ana River include commercial development and the Anaheim Regional Transportation Intermodal Center (ARTIC). The freeway also passes over the Amtrak and Metrolink tracks at this location. Angel Stadium and a large parking lot are located west of SR 57. Along Katella Avenue and to the north, on both sides of the freeway, land uses are mixed commercial/office developments, including the city of Anaheim's Honda Center ice rink and concert venue.

Major employers in the area along SR 57 include: Kaiser Permanente, California Department of Media Relations, Orange County Children's Hospital, St. Joseph Hospital, UC Irvine Medical Center, Angel Stadium, and Disneyland.

Development Trend

City of Anaheim

Areas that have the greatest potential for future development due to available vacant land include areas located in the Platinum Triangle in the City of Anaheim. The Platinum Triangle is bounded by the Santa Ana River to the east, Cerritos Avenue to the north and Anaheim Way to the southwest.

Development activity within the study area was reviewed to determine whether any existing uses would be replaced. The City of Anaheim's development activity research tool, Andy's Map, was used to search current development activity within the study area. There is currently no development activity that would replace existing land uses within the land use study area (See **Table 2-2: Existing Zoning within the Study Area**). An approved conditional land use permit driven by ARTIC's efforts to provide commercial development within the facility will allow for the addition of a brewery and light beer manufacturing to occur at the ARTIC, which is currently a transportation facility use. This does not replace the existing land use (**Table 2-3: Development Activity within the Study Area**).

Table 2-2: Existing Zoning within the Study Area

City of Anaheim (from north to south)	City of Orange (from north to south)
Low density office	Recreation/open space
High intensity office	Light manufacturing
Public recreation	Office-professional
Industrial	Commercial-professional
Semi-public use	Single-family residential
General commercial	

Source: CIA 2018.

Table 2-3: Development Activity within the Study Area

Jurisdiction	Location	Development Type/Activity	Status	Change In Existing Land Use?
City of Anaheim	2400 Katella Ave	332,958 SF office space	Under Review	No
City of Anaheim	1725-1729 S. Douglass Road	10,000 SF improvement to existing plus 1,600 SF addition to industrial office building	Under Construction	No
City of Anaheim	2626 E. Katella Ave	Conditional use permit for brew pub/restaurant and onsite beer manufacturing at transit facility	Approved	No
City of Orange	606 N. Eckhoff Street	Request for office and storage at industrial building	Under Review	No

Source: CIA 2018.

City of Orange

Additionally, the proposed Project is located partially in the Eckhoff Street/Orangewood Avenue land use focus area identified in the City of Orange General Plan. The focus area is delineated by the Santa Ana river to the west, Orangewood Avenue to the south, Collins Channel to the North and Bitterbrush Channel to the east. The City of Orange General Plan encourages the "intensification and/or redevelopment of underutilized parcels" of the existing uses which largely consist of professional offices, commercial uses, warehouses, and distribution centers.

Development activity within the City of Orange was reviewed. There is currently no development activity listed in the city's Pending Land Use Application List (as of June 15, 2017) that would replace existing land uses (See **Table 2-2: Existing Zoning within the Study Area**). A request for office and storage at an existing industrial service building facility is currently under review; however, the request does not change the existing manufacturing, assembly and industrial service land uses (**Table 2-3: Development Activity within the Study Area**).

2.1.1.2 Consistency with State, Regional, and Local Plans

Regional Plans and Local Jurisdiction's general plans land use elements, transportation and recreation elements were reviewed to identify policies and goals relevant to the Project. The plans and policies considered for consistency evaluation are provided below.

Regional

Southern California Association of Governments 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy

On April 7, 2016, the SCAG adopted the 2016-2040 Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The 2016 RTP/SCS reflects the region's commitment to improve its mobility, sustainability and economy.

The proposed Project is included and consistent with the RTP. The identification number is 2M0735A. The Project is also included in the approved 2019 Federal Transportation Improvement Project (FTIP) under identification number ORA131303.

Orange County Transportation Authority's (OCTA) 2014 Long Range Transportation Plan

OCTA is now updating its Long-Range Transportation Plan. A Draft of the new plan (Designing Tomorrow, 2018) is available for review and comment on OCTA's website. The SR 57 Northbound Improvement Project is listed as an OC GO Committed Project in the draft 2018 LRTP. The draft plan forecasts needs for the 2040 design year, prioritizes planned projects, and identifies additional projects and strategies that address those needs, thereby providing safe and efficient mobility for the 2040 horizon.

Orange County General Plan

The Orange County General Plan focuses on the elements of the unincorporated areas – territories that are not located within a city – and addresses regional services and facilities such as parks, roads, flood control facilities, etc. These unincorporated areas are geographically and demographically diverse, with many parcels becoming developed and with increasing populations that allow them to be incorporated as cities. The Project is located within the City of Orange and the City of Anaheim, and therefore is not guided by the Orange County General Plan except through connections it may have to facilities and services in unincorporated areas. For the Project, these facilities and services include the Santa Ana River Trail, the Santa Ana River flood channel, and State Route 57 which connect to unincorporated areas in Orange County.

Orange County Transportation Authority M2 Natural Community Conservation Plan/ Habitat Conservation Plan

The Orange County Transportation Authority M2 Natural Community Conservation Plan/Habitat Conservation Plan (OCTA M2 NCCP/HCP) is a comprehensive regional Habitat Conservation Plan that was adopted in 2006. This Plan incorporates regional planning efforts from Caltrans, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, OCTA, local jurisdictions, and interested individuals and groups. The purpose of the OCTA M2 NCCP/HCP is to offset potential project-related effects on threatened and endangered species and their

habitats in a comprehensive manner. OCTA will be the sole Permittee receiving permits from the Wildlife Agencies with Caltrans included as a Participating Special Entity.

Local

The General Plans for the cities of Orange and Anaheim are the principal local policy documents for guiding future development in the two cities and all land use and zoning maps and diagrams need to be consistent with the general plans.

City of Orange General Plan

The City of Orange 2010 General Plan establishes a long-term vision for growth and change in the community through the year 2030. The General Plan establishes a road map for pursuit of the vision through a series of goals and policies that are used by City departments and decision makers in the review of development projects, identification of capital improvement projects, and more.

The General Plan includes "land use focus areas" that are identified by the city where future land use changes may occur. The Eckhoff Street/Orangewood Avenue land use focus area is partially located within the project study area. Land uses in the focus area include professional offices, commercial use, and warehouse and distribution centers. It is located within the City's Redevelopment Project Area and the City encourages "intensification and/or redevelopment of underutilized parcels." The land use plan for the area is consistent with citywide policies and the community vision.

City of Anaheim General Plan

The City of Anaheim General Plan was adopted in May 2004 and articulates the Anaheim Vision through the year 2025. Urban development in the area is also guided by The Platinum Triangle Master Land Use Plan, which brings high density, mixed-use, office, restaurant, and residential projects to replace older industrial developments.

2.1.1.3 Environmental Consequences

Temporary Impacts

Alternative 1- No Build

Under the No Build Alternative, no changes would be made to the existing environment. Therefore, no changes that would affect the land use of the area are expected to be associated with this Alternative and there would be no temporary impact.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Under all Build Alternatives, temporary use of space for construction staging area will be required within the Santa Ana River to widen the Santa Ana River Bridge. The construction area

would extend beyond Caltrans right of way. Construction staging and construction activities would be accommodated within Caltrans right of way with the exception of two temporary construction easements (TCEs) needed from a city-owned parcel and an Orange County Flood Control District (OCFCD)-owned parcel. All of the Build Alternatives would require an 1,803-square foot (0.04 acre) TCE from the City of Anaheim for access to an existing maintenance road. The city-owned parcel is within Caltrans access control, but the underlying fee owner is the City of Anaheim (ARTIC parking lot driveway off Douglas Road). The parcel leads to the maintenance road. At this time, an agreement exists between Caltrans and the City of Anaheim for maintenance of the freeway. A 1,803 square foot TCE (access only) from the City of Anaheim would be required to gain access to the existing maintenance road. All of the Build Alternatives would require a 78,800-square foot (1.8 acre) TCE from the OCFCD for access to the SR 57 bridge and installation of water diversion devices within the river to allow for construction on the pier walls beneath the bridge. Any incidental or unanticipated damage or disrepair that may result due to construction activities would be restored to pre-construction conditions.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not be consistent with all goals and policies identified in state, regional, and local plans and programs as described in **Table 2-4: Consistency with State, Regional, and Local Plans**.

The No Build Alternative does not follow the Federal Transportation Improvement Program (FTIP) plan since there would be no construction of a Mixed Flow (MF) lane northbound between Orangewood Avenue and Katella Avenue. The No Build Alternative does not align with state, regional, and local plans.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

All project improvements under the three Build Alternatives would occur within existing Caltrans right of way with the exception of a revised highway easement from OCTA over the Southern California Regional Rail Authority (SCRRA) (also known as Metrolink) railroad tracks. There is an existing highway easement between the State and OCTA for the Stadium Overhead across the OCTA property that includes rail service operated by Metrolink/SCRRA. The project would require revising the existing highway easement to expand the area incuded in the easement (an additional 1,359 square feet [0.03 acres] for Alternatives 2 (Preferred Alternative) and 2B or an additional 3,290 square feet [0.08 acre] for Alternative 2A). The revised highway easement would provide the State the same rights to the expanded area as exist for the area that is currently covered by the existing highway easement.

Table 2-4: Consistency with State, Regional, and Local Plans

Goal/Policy	Alternative Consistency Analysis	
	1 No Build	2 (Preferred Alt.)/2A/2B Build
State/Regional/Local Plans		
SCAG Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS)		
Goal 2: Maximize mobility and accessibility for all people and goods in the region.	Existing and future mobility is anticipated to further be degraded in this segment of the freeway without implementation of the Project.	Build Alternatives would relieve existing and future northbound congestion, thereby, improving mobility.
Goal 4: Preserve and ensure a sustainable regional transportation system.	Short- and long-term conditions of the freeway would continue to worsen without implementation of the proposed Project.	The Build Alternatives would increase freeway capacity by removing an existing bottleneck. It is anticipated to improve the regional transportation system.
Goal 5: Maximize the productivity of our transportation system.	Short and long-term conditions of the freeway would continue to worsen without implementation of the proposed Project.	There is a 0.75-mile gap where there are only four GP lanes. The build alternative would establish lane continuity which would improve the freeway operation, reduce congestion and maximize the capacity of the existing highway.
OCTA Long Range Transportation Plan		
Deliver on commitments, improve transportation system performance, and support sustainability.	Congestion and existing conditions would continue to worsen without implementation of the proposed Project.	Build Alternatives would remedy existing operational problems, nonstandard design and lane discontinuity which would maximize the efficiency and capacity of the freeway
Orange County General Plan		
Goal 1: Provide a useful, enjoyable, safe, and efficient public regional riding and hiking trail system to meet the needs and desires of the citizens of the entire County.	The no build alternative would not impact the regional hiking trail system.	Build Alternatives would not permanently impact the regional hiking trail system.
Goal 2: Create trail linkages between open space and recreation facilities, between community, municipal, state, and federal trail systems, and between the trail systems of surrounding counties.	The no build alternative would not impact the regional hiking trail system.	Build Alternatives would not permanently impact the regional hiking trail system.

Table 2-4: Consistency with State, Regional, and Local Plans (continued)

Goal/Policy	Alternative Consistency Analysis	
	1 No Build	2A/2B/2C Build
OCTA M2 Natural Community Conservation Plan/ Habitat Conservation Plan		
Chapter 5: Conservation Strategy	Under the No Build Alternative, no changes to the existing roadways would occur in the project area.	All Build Alternatives will implement applicable conservation strategies/avoidance and minimization measures.
City of Orange General Plan		
Goal 2.0: Provide an effective regional transportation network.	Congestion and existing conditions would continue to worsen without implementation of the proposed Project.	The Build Alternatives would increase freeway capacity by removing an existing bottleneck and implementing lane continuity. It is anticipated to provide a more effective transportation network.
Policy 2.3: Cooperate with and support local and regional agencies' efforts to improve regional arterials and transit in order to address increasing traffic congestion.	Congestion and short and long term existing conditions would continue to worsen without implementation of the proposed Project.	The Build Alternatives would relieve congestion and improve mobility on the project segment of northbound SR 57 (PM 11.5 to PM 12.5)
City of Anaheim General Plan		
Goal 1.2: Support improvements to highways passing near and through the City.	Short and long-term conditions of the freeway would continue to worsen without implementation of the proposed Project.	The Build Alternatives would improve freeway operation by eliminating existing nonstandard design features and maximizing freeway capacity.
Goal 2.3: Improve regional access for City residents and workers.	Short and long-term conditions of the freeway would continue to worsen without implementation of the proposed Project.	The Build Alternatives would reduce congestion by establishing lane continuity and would improve regional access through improve operations on SR 57.
Goal 15.1: Establish The Platinum Triangle as a thriving economic center that provides residents, visitors and employees with a variety of housing, employment, shopping and entertainment opportunities that are accessed by arterial highways, transit systems, and pedestrian promenades.	Without implementation of the proposed Project, access and congestions on SR 57 would continue to worsen.	The Project is consistent with the General Plan Elements and is identified in the city's Planned Roadway Network, at the time of the revised plan program.

Source: SCAG, 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy 2016; OCTA, 2014 Long Range Transportation Plan 2014; Orange County Public Works, General Plan 2005; City of Orange, General Plan 201; City of Anaheim, General Plan: Land Use 2004.

None of the Build Alternatives open new areas for development. The proposed improvements would not lead to changes in land use or density, therefore no land use or growth-related impacts are expected. The purpose of the Build Alternatives is to relieve existing congestion and improve operational nonstandard design features such as non-standard median widths, stopping sight-distances on horizontal curves, and weaving lengths between ramps. Additionally, the improvements are intended to address the lack of lane continuity (missing GP lane gap between Orangewood Avenue and Katella Avenue) and insufficient mainline capacity. The Build Alternatives are not expected to lead to changes in land use and density, therefore no land use impacts are expected. All Build Alternatives fulfill the FTIP plan with the addition of the MF lane northbound between Orangewood Avenue and Katella Avenue and align with state, regional, and local plans. The Build Alternatives would be consistent with all the state, regional, and local plans and programs listed in the previous section and described in **Table 2-4: Consistency with State, Regional, and Local Plans**. Therefore, none of the alternatives would result in a change to existing land use.

2.1.1.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed Project alternatives do not conflict with any applicable state, regional, or local programs, plans or policies, and would not affect existing or future land use. No avoidance, minimization, or mitigation measures are required.

2.1.2 Parks and Recreational Facilities

2.1.2.1 Regulatory Setting

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

2.1.2.2 Affected Environment

Public parks, trails, and other recreational facilities that were identified in the *Community Impact Analysis* (June 2018), as being located within 0.5 mile of the project limits are presented in **Table 2-5: Parks, Trails, and Other Recreational Facilities within 0.5-mile of the Project Limits** and **Figure A-1: Resources Considered for Section 4(f) Analysis** found in Appendix A, Section 4(f) resources. Further analysis on parks and recreational facilities is included in Appendix A, Section 4(f) Resources.

El Camino Real Park

El Camino Real Park is located about a half mile east of the project study area. The park is owned and operated by the city of Orange. Park amenities include four baseball fields, six tennis

courts, two basketball courts, two volleyball courts, six handball courts, a tot-lot, a community room and a large picnic pavilion.

Table 2-5: Parks, Trails, and Other Recreational Facilities within 0.5-mile of the Project Limits

Name	Jurisdiction	Location	Approx. Distance from the Project	Type	Amenities
Santa Ana River Trail	Orange County	West side of the Santa Ana River between Katella Avenue and Orangewood Avenue within the project corridor	0 mile	Trail and Bike Path	14-miles in Orange County; Trail; Bicycle and Pedestrian Path; Equestrian Trail
El Camino Real Park	City of Orange	East of the corridor just south of Orangewood Avenue	0.4 mile	Local Park	18.67-Acre; Tennis courts (6), Baseball Fields (4), Volleyball Courts (2), Racquetball Courts (6), Basketball Courts (2), Restrooms, Picnic Pavilion, Children's Play Area, Community Building

Source: CIA 2018.

Santa Ana River Trail/Bicycle Path

The Santa Ana River Trail/Bicycle Path (SART) is a National Recreational Trail that extends along the Santa Ana River from Huntington Beach to San Bernardino County. The Orange County segment of the trail begins at the Huntington Beach Bicycle trail and ends at the Orange/Riverside County line. Within the project boundary, the trail is located along the top of the river's west levee crossing under SR 57 between Orangewood Avenue and Katella Avenue. The SART/Bicycle Path is wheelchair accessible and serves pedestrians, bicyclists and equestrians. The trail/bike path features an existing Class I bicycle facility within the project area that is 12 feet wide, asphalt paved and marked by two white paint boundaries, with a dashed yellow paint marker separating the southbound and northbound lanes. The trail/bike path is part of the regional Orange County Loop and has a direct connection to ARTIC, which encourages multimodal forms of transportation. There is limited vegetation along the trail (primarily along the SR 57 embankment west of the trail) and the shoulders of the trail are unpaved dirt.

2.1.2.3 Environmental Consequences

Temporary Impacts

Alternative 1- No Build

Under the No Build Alternative, there is no construction involved; therefore, no existing and planned parks or recreation facilities in the area would be affected and no direct or indirect adverse impacts on parks, recreational facilities would occur.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Temporary construction easements are required from OCFCD for work within the Santa Ana River associated with widening the freeway bridge deck and extending the supporting pier walls, and from the city of Anaheim for access across the city-owned parcel near the ARTIC parking lot located south of the railroad tracks off Douglass Road. None of these easements would affect El Camino Real Park.

The proposed Project (all Build Alternatives) includes widening the Santa Ana River Bridge, which would entail modifying the bridge embankments, extending the pier walls beneath the bridge, and widening the bridge deck. Widening the bridge would require erecting temporary support structures (falsework) to hold bridge components in place while it is being constructed. The falsework would need to span the SART/Bicycle Path where the bridge crosses over the trail. In addition to erection of the falsework, construction crews and equipment would need to periodically cross the SART/Bicycle Path to gain access to the riverbed and freeway bridge structure. To gain access to the riverbed and bridge, construction crews would use an existing maintenance road located at the toe of slope along the northbound SR 57 embankment to cross the SART/Bicycle Path **(Figure 2-2: Maintenance Road Access**). The maintenance road is within Caltrans right of way and leads to a gate with access to the SART/Bicycle Path and the west levee of the river (~PM 12.1). The maintenance road provides the closest and most efficient path of access to the river and bridge. Equipment crossing(s) the SART/Bicycle Path would be managed by flagmen to ensure trail user safety and continued access. In addition to equipment crossing(s) falsework to support the bridge structure during reconstruction would need to be installed (and later dismantled) over the SART/Bicycle Path. To install and tear down the falsework, the trail would be temporarily closed for a period of 12 hours at the beginning and end of the 9-month construction period. During construction, the trail would remain open to users during public access hours (7 a.m. – 6 p.m. Nov. 1 to Feb 28 and 7 a.m. – 9 p.m. Mar. 1 to Oct 31). The temporary closures would occur during non-public access hours. In the unlikely event of extended closure hours, and/or day time closures, the trail/bike path users will be directed to use a detour route as shown in **Figure 2-3: SART/Bicycle Path Detour Plan**. Modification of the freeway bridge deck and pier walls is expected to last 9 months (36 weeks) with access to the river across the SART/Bicycle Path needed for the duration of the 36-week construction period.

Figure 2-2: Maintenance Road Access

Source: WSP, August 2018

Following construction, areas used for construction purposes would be returned to their original uses. Any incidental or unanticipated damage or disrepair that may result due to construction activities would be restored to pre-construction conditions; therefore, the Project would not result in permanent impacts to the SART/Bicycle Path.

To minimize temporary construction-related impacts to the trail, during the Design and Construction Phases, a Traffic Management Plan (TMP) will be coordinated with Orange County Parks (OC Parks) and Orange County Flood Control District (OCFCD) for temporary construction-related impacts to the Santa Ana River Trail (SART) and bike path. The TMP is considered a living document, subject to change as required by changing circumstances. The TMP will address safety for trail and bike path users, during and throughout construction, and will be coordinated with the cities of Orange and Anaheim. Any related conditions from OCFCD and OC Parks will be addressed in the TMP. In addition, measures PF-LU-1, PF-LU-2 and PF-LU-3 will be incorporated into the project to minimize impacts to the trail and ensure trail user safety.

Figure 2-3: SART/Bicycle Path Detour Plan

Source: CIA 2018.

The SART/Bicycle Path was evaluated relative to the requirements of Section 4(f). Caltrans made a de minimis determination for the SART that the project would not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f). Caltrans received written concurrence from OC Parks on February 7, 2019. See Appendix E: SART 4(f) Concurrence Letter.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not result in the acquisition a public park or recreation facility and would not cause changes to access or the operation of parks and recreation facilities within the study area.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Project improvements would primarily be located within the existing freeway right of way, which does not intersect El Camino Real park boundaries. A revised highway easement from OCTA (property owner) over the SCRRA railroad tracks is required for widening the bridge over the railroad tracks (Alternatives 2 [Peferred Alternative] and 2B) or for constructing a new bridge structure (Alternative 2A). The park is not located near the proposed improvements and therefore, would not be affected by the Project.

None of the Build Alternatives would result in the acquisition of land in use as a public park, and would not cause changes to access or the operation of parks and recreation facilities within the study area.

2.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

No additional avoidance, minimization, or mitigation measures are required.

2.1.3 Growth

2.1.3.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that

environmental documents "…discuss the ways in which the proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

2.1.3.2 Affected Environment

The information used in this section is based on the *Community Impact Assessment* (June 2018).

Regional Setting

The population of Orange County has steadily increased from 2010 and is projected to continue to increase through the year 2045. (See **Table 2-6: Population and Employment Trends, 2010-2045**.) Population growth is an important factor in determining future travel demand. Increases in population, housing, and employment, as projected by SCAG in the 2016–2040 RTP/SCS, result in greater demand for transportation facilities and services. According to the 2016–2040 RTP/SCS, increased travel demand results in congestion on roadways if capacity does not keep up with the demand. The County of Orange, City of Anaheim, and City of Orange all include a growth element in their general plans, outlining policies to be implemented for transportation and services to manage growth.

Table 2-6: Population and Employment Trends, 2010-2045

	2010	2016	2025	2045
Population				
Anaheim	336,265	358,136	372,275	413,775
Orange	136,386	141,420	145,232	155,589
Orange County	3,010,232	3,183,011	3,351,315	3,595,775
Employment				
Anaheim	148,400	163,400	209,332	257,689
Orange	64,200	70,000	99,393	107,536
Orange County	1,387,400	1,538,000	1,855,034	2,015,300

Sources: ALMIS, Major Employers in Orange County 2017; Caltrans, 2016a; California Department of Finance (DOF) 2016, 2017; CEDD, 2016b, CEDD, 2016c; SCAG, 2016.

The proposed Project may result in a change in travel patterns for some drivers in the area, as the configuration of some ramps may be changed from their existing geometry. Accessibility to the SR 57 mainline is currently along Orangewood Avenue and Katella Avenue within the project boundaries and will continue to be along these corridors. The improvement of traffic flow along the SR 57 northbound mainline is expected to improve travel time for drivers using that route. However, the proposed Project itself would not cause development to occur in the region.

Project Setting

The project corridor passes through the cities of Anaheim and Orange and is designed to improve traffic flow through these two cities where the missing fifth GP lane is located between the Katella Avenue and Orangewood Avenue interchanges. The 2016–2040 RTP/SCS project list identifies a number of transportation improvement projects along SR 57 and freeways nearby to accommodate the projected transportation demand from the growth and infill development that is anticipated to continue into the future in this region. The Project is one in a series of projects designed to improve congestion and capacity through OCTA's OC Go transportation improvement projects program.

The existing lack of both the auxiliary lane and the fifth GP lane within the 0.75-mile freeway segment of the Project results in excessive lane changes and congestion. Increased traffic volumes and limited capacity within the corridor have caused mobility and congestion issues. Recent modeling analysis using 2016 traffic count data showed acceptable levels of service (LOS) C and D for the northbound freeway analysis; however, continued population and employment growth for Orange County is anticipated to further degrade the freeway LOS within this segment of the freeway by 2045 with unacceptable LOS E and F.

2.1.3.3 Environmental Consequences

Temporary Impacts

No improvements to SR-57 within the project limits would be implemented under the No Build Alternative. Therefore, the No Build Alternative would not result in temporary growth-inducing impacts.

Alternatives 2 (Preferred Alternative), 2A, & 2B - Build Alternatives

Any potential growth-related impacs of the Build Alternative would be permanent. There would be no temporary growth-inducing impacts under either of the build alternatives.

Permanent Impacts

Alternative 1 - No Build

The No Build Alternative would maintain current freeway geometry and accessibility, which will most likely decrease mobility due to congestion in the area as population continues to grow. Anticipated growth within the county would not be accommodated and overall performance of the mainline would continue to decline.

Alternatives 2 (Preferred Alternative), 2A, & 2B - Build Alternatives

As described above, the regional project area has experienced population, housing, and employment growth in recent decades. This growth is associated with existing and future land uses, development,

and economic growth. The region is projected to continue to experience population growth, which is expected to occur with or without implementation of the proposed Project.

Based on the criteria for performing a "first-cut screening" as described above, the likely growth potential for the proposed Project is analyzed below.

- How, if at all, does the Project potentially change accessibility?

Travel routes would not change substantially nor would general accessibility to the system change. Some minor changes to the ramps are proposed that are expected to result in enhanced safety, queuing, and improved merge/diverge movements. Improvements at project intersections are expected to help prevent deterioration of the level of service at the arterials as well. Ramps to the SR 57 mainline on Orangewood Avenue and Katella Avenue will be changed from existing geometry, but will not impact accessibility from these streets because the number of access points to SR 57 will not be removed.

These ramp changes would result in negligible to no change in travel time to get on northbound SR 57 from Orangewood Avenue and Katella Avenue. Additionally, this change in access would be more than offset by improvements from the project's addition of a fifth northbound general-purpose lane, safety enhancements from improvements to merge and diverge movements within the freeway segment, and congestion relief. Once completed, the Project would be expected to benefit access and circulation by relieving congestion, decreasing travel time, and improving the level of service along the Project segment of northbound SR 57 (Traffic Operations Analysis Report, March 2018). Bicycle and pedestrian facility continuity and access would not change from existing conditions.

- How, if at all, do the project type, project location, and growth-pressure potentially influence growth?

The Project itself is not anticipated to influence growth through its goals of relieving existing and future congestion and improving mobility along the one-mile project corridor. The Project is located within a built-out urban area with little to no vacant land to develop. Therefore, future growth would most likely be due to the potential for infill development and increase in land use density which will not occur adjacent to the Project during its construction according to project development lists (see **Table 2-70: Cumulative Projects List)**.

- Is project-related growth reasonably foreseeable as defined by NEPA?

Reasonably foreseeable future projects are those that are likely to occur in the future and will add to the cumulative impact on a particular resource. As discussed above, the proposed Project would not influence growth because the Project would not directly result in any changes to land use or encourage changes in population density. Growth in the region is anticipated to occur whether or not the Project is constructed. While the Project would result in some improvements in accessibility due to reductions in travel times, these improvements would not influence growth directly in an already built-out area.

- If there is project-related growth, how, if at all, will that impact resources of concern?

As discussed above, the proposed Project would not result in project-related growth. Accordingly, no resources of concern would be impacted.

Based on the above first-cut screening analysis, no further analysis with respect to growth is required for this Project.

2.1.3.4 Avoidance, Minimization, and/or Mitigation Measures

None of the proposed Build Alternatives would influence the location, type, or rate of future growth and development; therefore, no avoidance, minimization, and/or mitigation measures are needed.

2.1.4 Community Impacts

2.1.4.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Protection Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration in its implementation of NEPA (23 United States Code [USC] 109[h]) directs that final decisions on Projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

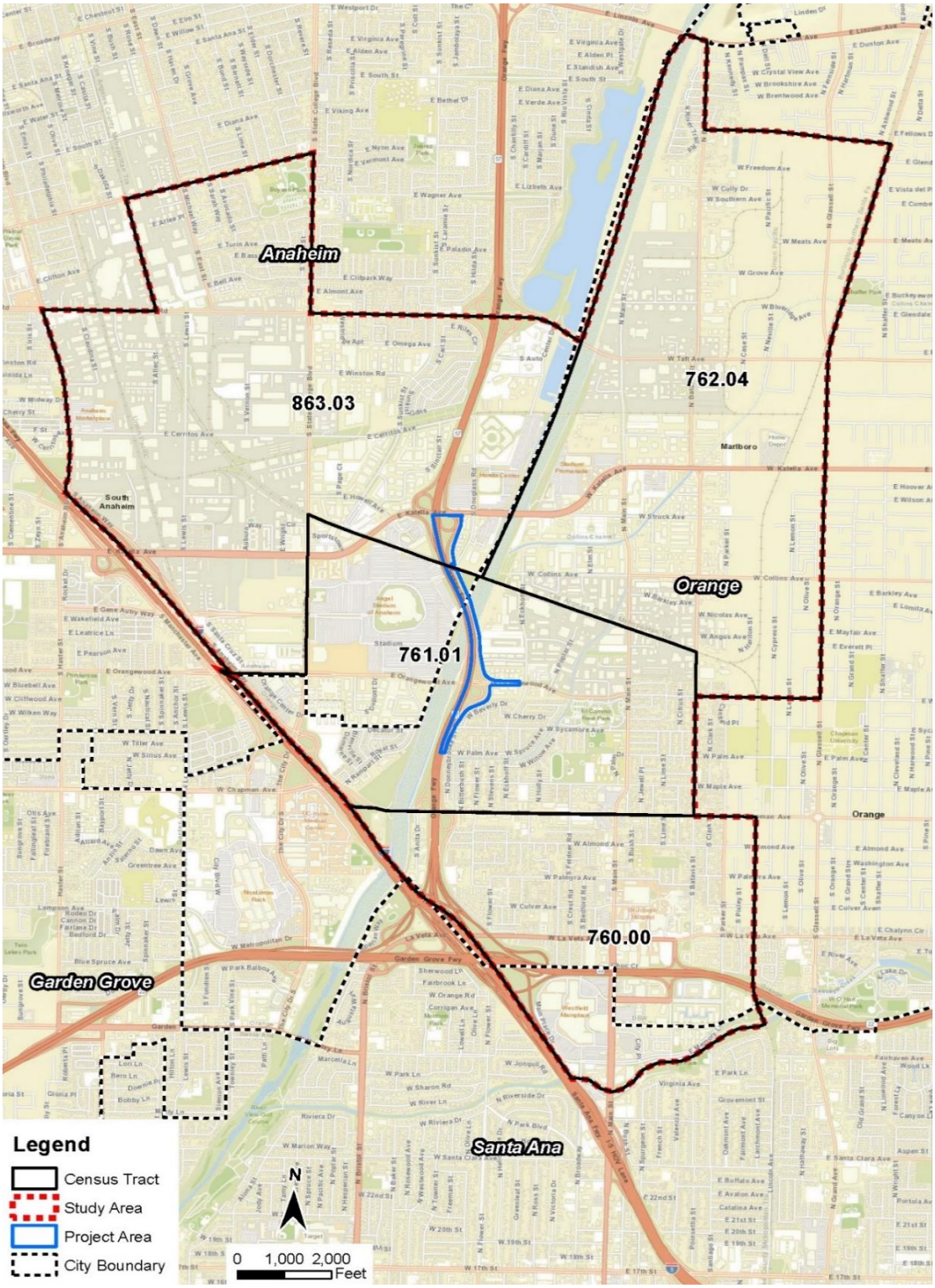
Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether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

Affected Environment

Information and analysis in this section is based on the August 2018 *Community Impact Assessment* prepared for the Project. The study area is the area in proximity to the proposed Project, which includes the populations and communities most likely to experience the potential impacts from the physical improvements associated with the Project. The study area includes all Census Tracts within approximately one-half mile of the project area. The population and housing study area includes four U.S. Census tracts[3] within the cities of Anaheim and Orange. See **Figure 2-4**: **Population and Housing Study Area**. The study area is a diverse mix of residential, commercial, industrial, recreational, and business areas. Neighborhoods are present throughout the study area. Destination venues such as Angel Stadium and Honda Center influence the active character of the surrounding neighborhoods and local streets.

[3] The U.S. Census provides data at various scales ranging from individual blocks on up to states and the country as a whole. However, the smaller the scale of data the more likely there is inherent error in American Community Survey (ACS) data estimates. For this study area, ACS sample survey data margins of error at the block group level exceed 50 percent. Therefore, U.S. Census data are provided at the census tract level to increase the accuracy of the data.

Figure 2-4: Population and Housing Study Area



Source: U.S. Census Bureau, Cartographic Boundary Shapefiles - Census Tracts 2017. https://www.census.gov/geo/maps-data/data/cbf/cbf_tracts.html

Community character and cohesion was evaluated using a community profile that consists of demographic characteristic, housing characteristics, economic and business conditions, and location of community services and facilities.

Demographic Characteristics

As shown in **Table 2-7: Population and Housing Demographic Data in and around the Study Area** below, about two-thirds of individuals in the study area census tracts identify as Hispanic or Latino and/or as a non-white, except in census tract 762.04 where nearly 80 percent of individuals identify as a minority.

In Orange County, 56 percent of individuals identify as a minority. Study area census tracts generally have a lower percentage of elderly and youth than the county, except in census tract 762.04 where over 30 percent of individuals are under 18 years old. Similarly, study area census tracts have a lower percentage of low-income individuals than the county, except in census tract 762.04 where approximately 26 percent of individuals are low-income. Disabled individuals over 18 years old and unemployment rates for individuals over 16 years old are similar to rates in the county. Median household incomes in the study area are similar to the county average of approximately $76,500, with census tract averages ranging between approximately $60,100 and $78,000.

Housing

Though land uses immediately bordering SR 57 are generally commercial and light industrial, there are two residential neighborhoods within a quarter mile of the Project, both within the City of Orange: a single-family subdivision south of Orangewood Avenue east of SR 57 and the 1970s-style Park Royale Mobile Home Park west of the Santa Ana River between Orangewood and Chapman Avenues near Angel Stadium. As shown on **Figure 2-5: Mobile Home Parks near the Project Area**, one additional mobile home park is near the project area: the 55+ adult-only Sunkist Gardens Mobile Home Park at the north end of the Project near the Honda Center. Apartment complexes are also scattered throughout the study area. Higher-density housing units tend to reside near the mixed-use sections of the study area, such as the current and planned complexes in the Platinum Triangle. Single family residential neighborhoods tend to surround the schools and parks in the study area, such as at the south end of the Project east of SR 57 around Portola Middle School, El Camino Real Park, and Sycamore Park.

Table 2-8: Household Characteristics in and Around the Study Area shows that the study area is made up of around 60 percent family households, except for census tract 762.04 where over 80 percent of households are occupied by families, compared to approximately 70 percent family households in the county. Fewer houses are owner-occupied in the study area than in Orange County, especially in census tract 762.04 where only 30 percent of units are owner-occupied compared to 59 percent in the county. Median home values for owner-occupied units in the study area are less than in Orange County. Vacancy rates in the study area are similar to that of the county.

Table 2-7: Population and Housing Demographic Data in and around the Study Area

	Geography						
	Tract 760.00	**Tract 761.01**	**Tract 762.04**	**Tract 863.03**	**City of Anaheim**	**City of Orange**	**Orange County**
2010 Census Data (Individuals)							
Total Population	8,371	8,933	4,492	6,212	336,265	136,386	3,010,232
Total Minority[1]	60%	67%	79%	66%	73%	53%	56%
Hispanic[2] or Latino	45%	46%	69%	44%	53%	38%	34%
Race[3]	35%	42%	46%	43%	47%	33%	39%
Black or African American Alone	3%	3%	2%	3%	3%	2%	2%
American Indian and Alaskan Native Alone	1%	1%	2%	1%	1%	1%	1%
Asian Alone	11%	16%	7%	17%	15%	11%	18%
Native Hawaiian and Pacific Islander Alone	0.3%	0.4%	0.4%	0.3%	0.5%	0.3%	0.3%
Some Oher Race Alone	16%	17%	30%	17%	24%	15%	14%
Two or more races	4%	5%	5%	5%	4%	4%	4%
Elderly (65+)	11%	6%	5%	10%	9%	11%	12%
Youth (<18)	20%	20%	31%	19%	27%	24%	24%
2011-2015 ACS Data[4] (Individuals)							
Total Population	8,442	10,045	4,560	6,707	341,542	133,331	3,078,518
Low-income[5]	12%	10%	26%	9%	17%	13%	13%
Disabled (18+)	8%	8%	7%	12%	10%	9%	10%
Unemployed (16+)	10%	11%	10%	5%	9%	8%	8%
2011-2015 ACS Data[4] (Households)							
Total Households	3,108	3,468	1,131	2,463	99,670	42,680	1,009,353
Median Income	$61,120	$77,702	$61,366	$73,495	$60,752	$78,513	$76,509

1. Minority refers to a person who identifies as any race other than White and/or identifies as Hispanic or Latino. A breakdown of minority by Hispanic or Latino and race is provided as well. Hispanic or Latino and race percentages do not add up to the total minority percentages because an individual who identifies as both a Hispanic or Latino and a race other than White is counted in both the Hispanic or Latino and race percentages but is only counted once under the total minority percentages.
2. Hispanic or Latino is independent of race and is the only ethnic minority option available on the 2010 U.S. Census (e.g., a person can be white and Latino, and would thus be a minority under Hispanic or Latino but would not be a minority under race).
3. Race minority refers to any race option on the 2010 U.S. Census other than White and regardless of Hispanic or Latino identification. A breakdown of minority by race is provided as it is collected by the 2010 U.S. Census.
4. ACS data are population estimates, so the data have inherent margins of error that can vary from small to large. As a result, ACS data may vary in accuracy, but it is the best data available for these demographics.
5. Low-income includes individuals considered "below the poverty level" by the U.S. Census Bureau, which derives poverty data using income thresholds based on family size (from one person to nine or more people) that are cross-classified by presence and number of family members under 18 years old. Unrelated individuals and two-person families are further differentiated by age of reference person. Poverty status is determined by comparing a person's total family income with the poverty threshold appropriate for that person's family size and composition. If the total income for that person's family is less than the threshold appropriate for that family, the person is considered "below the poverty level" (U.S. Census Bureau 2017).
Sources: U.S. Census Bureau 2010 (Table P5, P12), 2016 (Table B17201, BB25077)

Figure 2-5: Mobile Home Parks near the Project Area

Source: CIA 2018.

Table 2-8: Household Characteristics in and Around the Study Area

	Geography						
	Tract 760.00	Tract 761.01	Tract 762.04	Tract 863.03	City of Anaheim	City of Orange	Orange County
2010 Census Data							
Owner-occupied	42%	36%	30%	47%	48%	59%	59%
Renter-occupied	58%	64%	70%	53%	52%	41%	41%
2011-2015 ACS Data[1]							
Family Households	59%	61%	83%	62%	75%	72%	72%
Median Value[2]	$332k	$402k	$419k	$345k	$431k	$534k	$554k
Vacant Housing Units	5%	4%	3%	6%	5%	4%	5%

[1.] ACS data are population estimates, so the data have inherent margins of error that can vary from small to large. As a result, ACS data may vary in accuracy, but it is the best data available for these demographics.
[2.] Median home value collected for owner-occupied units only.
Sources: U.S. Census Bureau 2010 (Table H11) and 2016 (Table B11016, BB25077, B11016)

Economic Conditions

Employment and Income

Orange County economic forecasts anticipate continued job growth, especially in construction, education and health, and professional and business services. The most recent census data estimate median county income at just over $76,500, as previously shown in **Table 2-7: Population and Housing Demographic Data in and around the Study Area**. Employment and population are expected to continue to grow into the foreseeable future. **Table 2-9: Home Values Near the Project and in Orange County** shows that unemployment rate in the community study area ranges between 5 to 11 percent.

Table 2-9: Home Values Near the Project and in Orange County

	Geography						
	Tract 760.00	**Tract 761.01**	**Tract 762.04**	**Tract 863.03**	**City of Anaheim**	**City of Orange**	**Orange County**
2011-2015 ACS Data[1]							
Less than $149,999	7%	1%	11%	16%	8%	6%	2%
$150,000-$199,999	10%	0%	0%	9%	2%	2%	1%
$200,000-$249,999	0%	42%	14%	4%	0%	0%	33%
$250,000-$299,999	0%	56%	30%	5%	0%	0%	33%
$300,000-$499,999	70%	1%	31%	61%	53%	34%	10%
$500,000-$749,999	12%	1%	13%	5%	27%	39%	11%
$750,000 and Over	2%	0%	2%	0%	10%	19%	9%
Median Value[2]	$332k	$402k	$419k	$345k	$431k	$534k	$554k

[1]. ACS data are population estimates, so the data have inherent margins of error that can vary from small to large. As a result, ACS data may vary in accuracy but it is the best data available for these demographics.
[2]. Home values and median home values collected for owner-occupied units only.
Sources: U.S. Census Bureau 2016 (Table BB25075)

Business Activity

A wide variety of businesses of various sizes and type operate in the community study area. Major employers near the Project and surrounding area include Kaiser Permanente, California Department of Media Relations, Orange County Children's Hospital, St. Joseph Hospital, University of California Irvine Medical Center and Disneyland. There are multiple businesses in the project area, including Orangewood Corporate Plaza near the Orangewood Avenue/SR 57 intersection. Orangewood Corporate Plaza features "freeway access" on its current website. Across the street from Orangewood Corporate Plaza, is another business park. Additionally, various nearby businesses include freight and industrial supply companies, consulting businesses, and medical/social service providers.

Also in the area are the venues Angel Stadium and Honda Center, as well as businesses such as banks, restaurants, nonprofits, and markets. ARTIC, a regional transportation hub in Anaheim, serves area residents, commuters, and visitors.

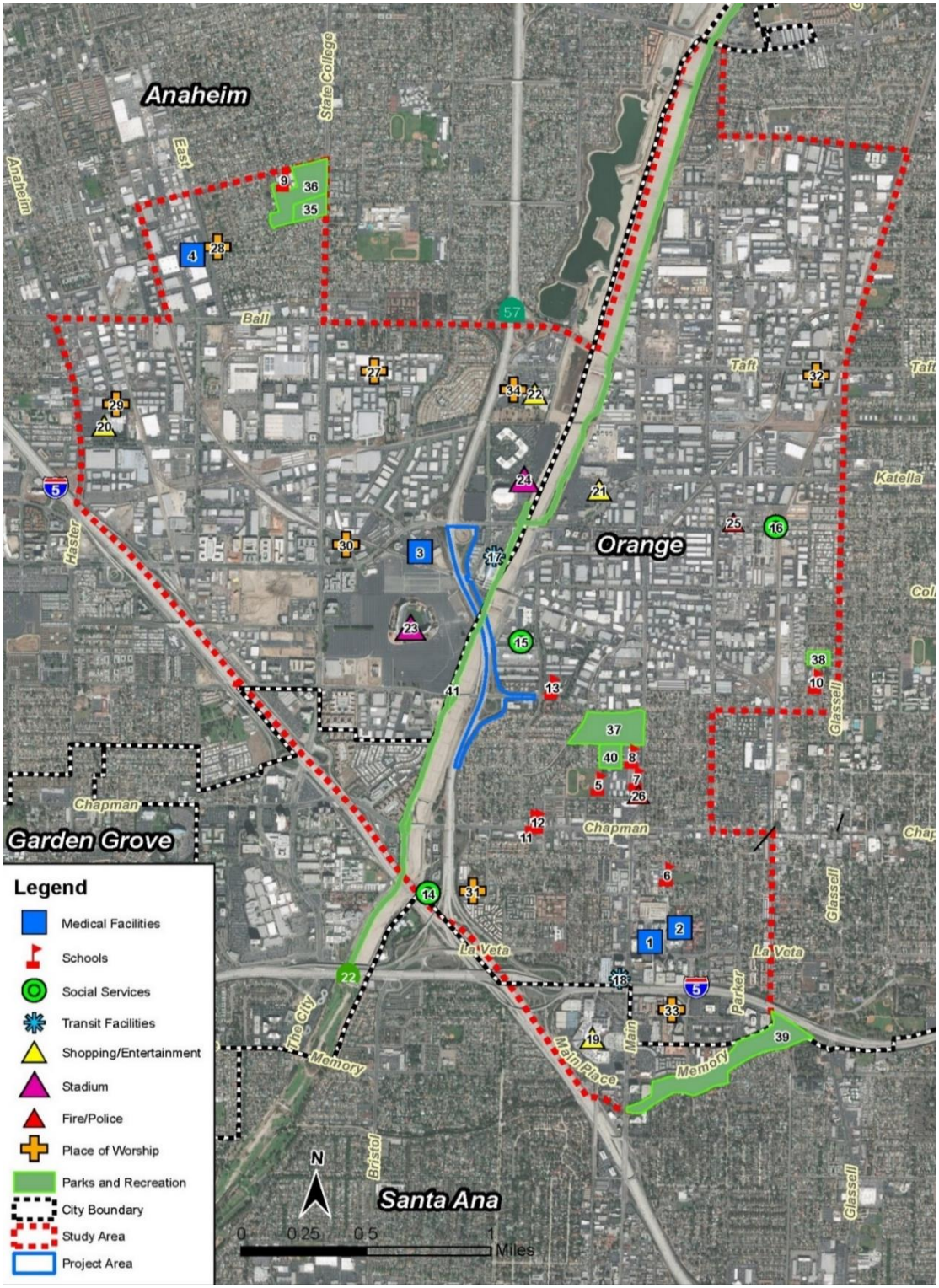
Fiscal Conditions

Property tax is derived from the assessed value of real property and allocated tax rates throughout Orange County. shows the assessed value of homes within the four census tracts intersecting within approximately a half-mile of the project area within Orange County. In the census tracts near the Project, 85 to 99 percent of homes are valued at less than $500,000, compared to 80 percent of homes in Orange County valued at less than $500,000. The median home value in the census tracts is lower than in the county, ranging from about $332,000 to $419,000, compared to $554,000 in Orange County. In summary, home values near the Project are generally lower than home values elsewhere in the county.

Community Facilities

Community facilities were determined by analyzing the Land Use study area. A variety of community facilities, such as the Orange County Social Services Agency Children and Family Services, serve the area near the Project. There are also numerous churches, schools, and parks, some of which are immediately adjacent to, or within, the community study area. Multiple medical facilities are near the Project, including major hospitals like St. Joseph Hospital and Children's Hospital of Orange County (CHOC) and minor facilities such as a dialysis center, ambulance service, blood testing lab, and orthopedic clinic. These facilities are mapped in **Figure 2-6: Community Facilities near the Project Area**, and listed in **Table 2-10: Community Facilities near the Project Area**.

Figure 2-6: Community Facilities near the Project Area



Source: CIA 2018. U.S. Census Bureau, Cartographic Boundary Shapefiles - Census Tracts 2017. https://www.census.gov/geo/maps-data/data/cbf/cbf_tracts.html

Table 2-10: Community Facilities near the Project Area

ID	Medical Facilities	21	Stadium Promenade
1	Children's Hospital of Orange County	22	The Phoenix Club
2	Saint Joseph Hospital	ID	**Stadium Promenade**
3	Kerlan-Jobe Orthopedic Clinic	23	Angel Stadium of Anaheim
4	Kaiser Permanente	24	Honda Center
ID	**Schools**	ID	**Fire/Police**
5	Portola Middle School	25	Orange Police Department
6	West Orange Elementary School	26	Orange City Fire Station #5
7	Far Horizons Montessori School	ID	**Places of Worship**
8	Sycamore Elementary School	27	The Overflowing Church
9	Theodore Roosevelt Elementary School	28	Church of Power Christian Fellowship
10	Richland Continuation High School	29	Calvary Chapel Anaheim Church & School
11	Pacific West College of Law	30	Saddleback Church Anaheim
12	South Coast College - Orange County Campus	31	St. John Maron Maronite Catholic Church
13	Azusa Pacific University - OC Regional Center	32	Church of Scientology Mission of Newport
ID	**Social Services**	33	Saint Matthew Ecumenical Catholic Church
14	Children's Home Society of California	34	Church of Southland
15	Orange County Social Service Agency	ID	**Parks and Recreation**
16	Social Service Organization - Mary's Kitchen	35	Anaheim Tennis Center
ID	**Transit Facilities**	36	Boysen Park
17	ARTIC	37	El Camino Real Park
18	OCTA	38	Killefer Park
ID	**Shopping/Entertainment**	39	Santiago Park
19	Main Place Mall	40	Sycamore Park
20	Anaheim Marketplace	41	Santa Ana River Trail

Source: CIA 2018

Environmental Consequences

Temporary Impacts

Alternative 1- No Build

No project construction work would occur under the No Build Alternative and thus it would not result in temporary construction impacts or require capital expenditure. The No Build Alternative would maintain current freeway geometry and not impact neighborhoods, communities, community character, or access.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Impacts from project construction under all Build Alternatives would be temporary in nature and limited to potential delays and detours from construction. None of the Build Alternatives would change population characteristics, housing character, or economic conditions. The Project would not change the urban character of the area, instead maintaining the character of the existing visual environment through landscaping and land use. The Project would not divide neighborhoods, or affect community cohesion because construction would remain primarily within existing right of way and not require relocations or property acquisitions that would displace residents or businesses. Project construction activities would not likely change economic forecasts or access, operations, and types of business activities in the study area.

All Build Alternatives would result in temporary, short-term construction-related impacts to access and circulation on local streets (Orangewood Avenue, Douglass Road and Katella Avenue).

Construction of the Build Alternatives may require short-term lane closures of northbound SR 57 mainline lanes. The existing number of lanes operating on northbound SR 57 would be maintained except during nighttime or off-peak periods where traffic may be shifted and limited to a few open lanes.

Weekend (55 hour) closure of the eastbound Orangewood on-ramp and northbound Katella off-ramp would be required under all Build Alternatives to accommodate shifting the Orangewood on-ramp east and for widening or building the Katella off-ramp. Under the Preferred Alternative, the westbound Orangewood on-ramp would also be closed (55-hour weekend closure) to accommodate shifting the ramp east. During weekend ramp closures, traffic would utilize alternative on- and off-ramps and detours on local streets.

Orangewood Avenue and Douglass Road are anticipated to require full nighttime closures for setting up and taking down falsework. Temporary lanes closures and traffic shifting could occur periodically along Orangewood Avenue to move traffic around construction activities. Detours routes would be provided for all temporary ramp or street closures. Detour routes would be signed and communicated to local residents and businesses, particularly local event venues. Special consideration of local events would be handled through the TMP and contingency

planning. During the Design Phase, the TMP would be coordinated with the cities of Orange and Anaheim Public Works Department or City Traffic Engineer to minimize impacts to local residents and businesses. Advance information and public awareness campaigns would help to reduce short-term delays and detours. During and throughout Construction, every effort would be made to maintain access to private parking lots along Orangewood. Private parking lots would be accessible both day and night for clients to local businesses and area visitors during events at nearby venues.

During project construction, the Build Alternatives could temporarily delay or detour how vehicles move to or from community facilities in the project area; however, short-term delays and detours would be managed through motorist awareness campaigns, incident and demand management, contingency plans, as well as other measures outlined in the Project's TMP. There is potential for delays, detours and/or closures along the SART/Bicycle Path. Access to the SART/Bicycle Path would be maintained for pedestrians, cyclists and equestrians throughout construction unless otherwise specified by the project TMP. As described in Air Quality Section 2.2.6 of this document, short-term degradation of air quality may occur during construction due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities, and construction equipment emissions. Construction related air quality effects would be greatest during site preparation, which may impact the community temporarily. Caltrans Standard Specifications (Section 14-9.03) requires the use of water or dust palliative compounds to reduce potential fugitive dust associated with site preparation. Construction activities could produce temporary greenhouse gas emissions from the operation of heavy-duty trucks and construction equipment. These emissions would be temporary and limited to the immediate area surrounding the construction site. Some phases of construction, particularly asphalt paving, may result in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

As described in the Noise Section 2.2.7 of this document, construction noise would be short-term and may intermittently dominate the noise environment in the immediate area of construction. However, these effects would diminish with distance from the source and are not expected to substantially adversely affect residents or other sensitive receptors due to distance from the source, intervening topography, structures, and/or soundwalls that would block noise sources, and the temporary nature of construction activities. Construction activities are required to comply with Caltrans standards for noise controls, as well as local noise ordinances, that help to ensure work activities do not exceed specified noise levels.

Aesthetics Section 2.1.9 describes the project specific Aesthetics and Landscape Master Plan that would be developed to address landscaping and corridor theming if applicable. The Plan would include measures to preserve existing vegetation and mature trees within the State's existing Right of Way (ROW) where feasible and to revegetate disturbed areas and maintain the existing visual character of the community. These measures would help preserve the existing visual quality and community character.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not directly impact community resources and would not affect community character and cohesion. Under the No Build Alternative existing and projected future increases in traffic congestion would not be addressed and the level of service would continue to decline on the 1-mile segment of SR 57.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

All Build Alternatives are designed to improve traffic flow and safety by providing lane continuity via the fifth northbound GP lane, improving merge and diverge movements within the freeway segment, and providing congestion relief. The proposed improvement would be considered a benefit to the community by enhancing traffic movement on this major north-south highway. No residences would be displaced due to the Build Alternatives as the improvements will be within the right of way of the existing SR 57 geometry. The Project would not cause a new bisection of communities, change the urban nature or aesthetic quality of the study area, create new physical barriers (e.g., new fencing), or separate residents from community facilities. No private business parking would be affected. None of the Build Alternatives would relocate, change access to, or remove parking for any community facilities. Sidewalks at intersections impacted by the Project would be constructed according to ADA standards to maintain access for all community members. Access to neighborhoods, and businesses would not be altered and would be maintained under all Build Alternatives. No driveways would be altered as a result of the Project. Bicycle and pedestrian facility continuity and access would not change from existing conditions. Existing curb ramps at all crosswalks within the project limits that are affected by the Project will be reconstructed to Caltrans latest standards (2015 Revised Standard Plan RSP A88A) to maintain access for all community members. Where required, sidewalks, curbs and gutters would be re-constructed to meet current ADA standards (28 CFR 35.151), which would be benefit the community.

Improvements could benefit the quality of life for residents in the study area by decreasing travel time to work, community resources, recreation, and other destinations.

Alternatives 2A, & 2B – Build Alternatives (only)

Alternatives 2A and 2B would eliminate the Orangewood Avenue on-ramp and direct westbound traffic traveling on Orangewood Avenue to a new left turn lane that would provide access to the same loop ramp that eastbound traffic would use. Orangewood Avenue would be restriped in the westbound direction, including the existing striped median, to provide for dual westbound left-turn lanes. The second left-turn lane would accommodate the redirected traffic from the closed westbound ramp. This modification would not substantially alter local traffic patterns on Orangewood Avenue.

These proposed changes would not affect accessibility to the northbound SR 57 from Orangewood Avenue and would result in a negligible increase in travel time due to the installation of traffic/ramp signals. The closure of the Orangewood Avenue on-ramp under Alternatives 2A and 2B is not anticipated to impact existing housing or housing development, change access to community services and facilities, or result any changes that would affect community character and cohesion.

Avoidance, Minimization, and/or Mitigation Measures

The project's TMP will be implemented to reduce and minimize any construction related impacts to businesses and community facilities. With the implementation of the measures within the TMP, as well as those found within Aesthetics, Air Quality, and Noise Sections, no other measures are required.

2.1.4.2 Relocations and Real Property Acquisitions

Regulatory Setting

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

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

Affected Environment

According to the *Community Impact Assessment* (August 2018) conducted for this Project, no relocations for households and businesses are anticipated. Land use adjacent to the Project is varied along the SR 57 within the project boundary. At the south end of the Project are single-family residential land uses located east of SR 57 and south of Orangewood Avenue. In this area, the Santa Ana River is west of the freeway. Commercial and light industrial (freight shipping) land uses exist north of Orangewood Avenue and east of SR 57. At the point where SR 57 crosses over the Santa Ana River, east of the freeway and west of the Santa Ana River, land uses include commercial development and ARTIC. The freeway also passes over the Amtrak and Metrolink tracks at this location.

Refer to Section 2.1.1.1 for existing and future land use maps and Section 2.1.4.1 for information on housing profiles and a description of businesses in the study area.

Environmental Consequences

Temporary Impacts

Alternative 1- No Build

The No Build Alternative would not result in any changes or construction to the area and therefore it would not result in any relocations or real property acquisition.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Widening and strengthening the Santa Ana River Bridge would require modifying the existing pier walls beneath the bridge within the existing highway easement. To gain access to the pier walls construction vehicles would have to enter the riverbed via an existing maintenance road located at the toe of slope along the NB SR 57 embankment. The maintenance road is within Caltrans right of way and leads to a gate on the west levee of the Santa Ana River Trail/Bicycle Path with access down into the riverbed. Access to the maintenance road would require crossing a small parcel that is within Caltrans access control, but the underlying fee owner is the City of Anaheim (ARTIC parking lot driveway off Douglas Road). The parcel leads to the maintenance road. At this time, an agreement exists between Caltrans and the City of Anaheim for maintenance of the freeway. A 1,803 square foot TCE (access only) from the City of Anaheim would be required to gain access to the existing maintenance road.

Likewise, work within the river would require use of a parcel owned by the Orange County Flood Control District (OCFCD). Portions of the affected parcel are within Caltrans existing highway easement. A 78,800 square foot TCE from OCFCD (in addition to the area already included in the existing highway easement) would be required to work within the river.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not result in any changes or construction to the area and therefore it would not result in any relocations or real property acquisition.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Widening and strengthening the Stadium OH Bridge would require a revised highway easement over the existing railroad (RR) tracks from OCTA (property owner) to the Caltrans (freeway owner). Alternatives 2 (Preferred Alternative) and 2B would require a 1,359-square foot expansion of the highway easement and Alternative 2A would require a 3,290-square foot expansion of the highway easement. The expansion of the highway easement would provide Caltrans the same rights to the expanded area as exist for the area that is currently covered by the existing highway easement.

All right of way related activities will be performed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as Amended.

Avoidance, Minimization, and/or Mitigation Measures

All of the Build Alternatives would require real property acquisitions. Areas affected by temporary construction easements would be returned to previous use upon completion of construction. Therefore, avoidance, minimization, and/or mitigation measures are not required.

2.1.4.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2018, this was $25,100 for a family of four[4].

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

Affected Environment

Analysis of environmental justice impacts is a two-step process; the first is determining the presence of protected populations (minority or low-income populations), and the second is determining if the Project has a disproportionate adverse impact to minority and/or low-income populations.

Minority Population

Minority populations include American Indian, Asian or Pacific Islander, Black, and Hispanic population groups. **Table 2-11**: **Population and Housing Demographic Data of Population and Housing Study Area Census Tracts**, provides the percentage of racial demographics within the county, cities, and census tracts included in the study area.

Orange County's percent of Hispanic population is low in comparison to census tract groups within the study area. Orange County has a 34 percent Hispanic population while the lowest

[4] https://aspe.hhs.gov/poverty-guidelines

percentage of all census tracts within the study area is 44 percent. Hispanic populations in the study area census tracts range from 44.0 to 69.0 percent. The highest percentage being 69, is found in census tract 762.04.

Table 2-11: Population and Housing Demographic Data of Population and Housing Study Area Census Tracts

	Tract 760.00	Tract 761.01	Tract 762.04	Tract 836.03	City of Anaheim	City of Orange	Orange County
Total Population	8,371	8,933	4,492	6,212	336,265	136,386	3,010,232
Total minority[6] (%)	60%	67%	79%	66%	73%	53%	56%
Hispanic or Latino[7] (%)	45%	46%	69%	44%	53%	38%	34%
Race Minority [8] (%)	35%	42%	46%	43%	47%	33%	39%

Source: U.S. Census Bureau 2010 (Table P5, P12), 2016 (Table B17201, BB25077).

Low Income Population

The poverty level according to the Department of Health and Human Services for the Federal Fiscal Year 2018 guidelines is $25,100 for a family of four[5]. The median household income for all community study area groups shown in **Table 2-8: Household Characteristics in and Around the Study Area** is above the Department of Health and Human Services Threshold. The U.S. Census Bureau 2010 weighted average poverty threshold for individuals was used for the purpose of identifying low-income population within the study areas. According to Census estimates, poverty threshold for individuals is the income of $12,140. **Table 2-12: Income of Population in the Study Area** provides the percentage of individuals below poverty levels within census tracts and the cities and the county represented in the project study area.

Table 2-12: Income of Population in the Study Area

	Tract 760.00	Tract 761.01	Tract 762.04	Tract 863.03	City of Anaheim	City of Orange	Orange County
Individuals with Income Below Poverty Levels (%)	12%	10%	26%	9%	17%	13%	13%
Median Household Income ($)	$61,120	$77,702	$61,366	$73,495	$60,752	$78,513	$76,509

Sources: U.S. Census Bureau 2010 (Table P5, P12), 2016 (Table B17201, BB25077)

According to **Table 2-12: Income of Population in the Study Area**, 17 percent of individuals in the city of Anaheim have income below the poverty level. The city of Orange has 13 percent. **Table 2-12** also shows census tract 762.04 has almost triple the percentage of individuals with income below poverty levels than census tract 863.03.

[5] https://aspe.hhs.gov/poverty-guidelines

In addition, pockets of higher concentrations of minority and low-income populations likely exist at scales smaller than the census tract level, such as in the various mobile home parks and multi-family housing units as described in the Community Impacts Section 2.1.4.2, Housing.

Environmental Consequences

Temporary Impacts

Alternative 1- No Build

No construction is proposed under the Build Alternative; therefore, it would not directly impact low income and minority populations or the community as a whole.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternative

The proposed Project would have both adverse and beneficial impacts, as discussed in previous sections of this chapter. Environmental justice populations in the study area would experience these impacts as part of the general population and not specifically as a group. Project construction could cause temporary delays and detours on and around SR 57 in the study area, but these impacts would not be disproportionately borne by any low-income or minority individuals.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not directly impact low income and minority populations, but could result in indirect adverse impacts by not addressing existing and projected future increases in traffic congestion on the 1-mile segment of SR 57. As a result, travel to, from, and within the study area could be delayed for people who rely on SR 57 to get around, including environmental justice populations. However, these impacts would affect study area populations regardless of race, ethnicity, or income; therefore, the No Build Alternative would not result in disproportionate adverse impacts to environmental justice populations.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternative

None of the Build Alternatives would result in relocations or be expected to impact community cohesion, land use, public services, emergency services, or other community components. The planned improvement is located within existing Caltrans right of way and would not divide any community, affect or alter its character, or have the potential to disrupt any community activities.

The proposed Project would be expected to improve traffic congestion and safety conditions for all users and would not exclude the protected populations from the project's benefits. Closure of the Orangewood Avenue on-ramp under Alternatives 2A and 2B would result in minimal impacts because westbound access to SR 57 from Orangewood Avenue would be maintained via

the existing loop ramp currently used by drivers traveling east on Orangewood Avenue. Sidewalks at intersections impacted by the Project would be constructed according to ADA standards and there would be no impact to public transportation, a service transit dependent populations often rely on to access jobs, social networks, recreation, and other important facilities. Furthermore, the expected decreases in traffic congestion and delay as a result of the Project would be a net benefit for all community members traveling to, within, and from the study area, including environmental justice populations.

Overall, adverse and beneficial impacts from the Project would not be expected to be disproportionately experienced by environmental justice populations. Though minority and low-income populations exist within the study area, they are located throughout the study area and do not appear to be concentrated where they could disproportionately bear project impacts.

Avoidance, Minimization, and/or Mitigation

Based on the above discussion and analysis, the Build Alternatives would not cause disproportionately high and adverse effects on any minority or low-income environmental justice populations in accordance with the provisions of Executive Order 12898. No further environmental justice analysis is required.

2.1.5 Utilities/Emergency Services

2.1.5.1 Affected Environment

This section was prepared based on the Draft Project Report which uses a variety of informational sources including: Caltrans as-built plans, Right of Way Data Sheets, and Utility Plans. The Emergency Services section is based on the *State Route 57 Northbound Improvement Project Community Impact Assessment* (June 2018).

Many public utilities are located within the project area (i.e., the area disturbed during construction or in the freeway right of way). These include communication, electrical, water, and solid waste/sewer lines. Most of the existing utility lines are located within public right of way. Local jurisdictions along the project corridor provide public services. Additionally, there are private service providers. Descriptions of utilities, emergency service providers, and the Project's potential operational effects are described below.

Utilities

The major suppliers for utilities in the project area are listed in **Table 2-13: Utilities Serving the SR-57 Project Corridor** below. Utility infrastructure in the project study area includes storm drains, water lines, sewer lines, fiber optic cables and electric power.

Table 2-13: Utilities Serving the SR-57 Project Corridor

Utility Category	Utility Owner in the Project Area
Electricity	• Southern California Edison • City of Anaheim
Water	• City of Orange • Orange County Water District • City of Anaheim • Orange County Sanitation District
Sewer	• City of Anaheim • Orange County Sanitation District
Storm Drainage	• City of Orange • City of Anaheim • Orange County Flood Control Division (Santa Ana River)
Communication (Telephone, Cable, and Fiber Optics)	• Southern California Edison • MCI • AT&T • Caltrans

Source: Caltrans, SR 57 Utility As-Built Exhibit 2017.

Emergency Services

Fire Protection to the City of Anaheim and City of Orange is provided by the City of Anaheim Fire Department and the City of Orange Fire Department respectively. The closest stations are listed in **Table 2-14: Fire Stations in a 1-mile buffer of the project area**. Only stations located within a mile of the proposed project area are listed.

Table 2-14: Fire Stations in a 1-mile buffer of the project area

Station Number	Jurisdiction	Address	Distance
Station #07	City of Anaheim	2222 East Ball Road, Anaheim	4,400 feet
Station #05	City of Orange	1345 West Maple Avenue, Orange	3,900 feet
Station #06	City of Orange	345 City Drive South, Orange	1 mile

Source: City of Anaheim Fire Department, City of Orange Fire Department 2018.

Police Protection for the project site area is provided by the Orange Police Department located at 1107 North Batavia Street, Orange, approximately 1 mile east of the proposed project area and by the Anaheim Police Department, Main Station, located at 425 South Harbor Boulevard, Anaheim, located approximately 2.8 miles from the proposed project area.

Police services on freeways in California, including SR-57, are provided by the California Highway Patrol. The nearest California Highway Patrol office is located at 2031 East Santa Clara Avenue, in the City of Santa Ana approximately 3.0 miles east of the study area.

In addition to larger medical facilities like St. Joseph Hospital, several smaller medical services near the Project also provide ambulance service.

2.1.5.2 Environmental Consequences

Temporary Impacts

Alternative 1- No Build

Under the No Build Alternative, there would be no improvement to or construction on SR-57. Therefore, the No Build Alternative would not result in temporary effects on utilities and emergency services.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Utilities

No utility relocations outside of Caltrans right of way are required. Existing utilities are primarily located under the existing cross streets, transverse to the freeway right of way. None of the streets will be substantially modified to the point that any of the existing utilities would be affected. Utilities noted within Orangewood Avenue (fiber optics) and within the Santa Ana River Bridge (sewer and groundwater replenishment) would be protected in their original locations under all Build Alternatives, except for Caltrans-owned and -operated fiber optics/electric lines within the freeway right of way that would be relocated within Caltrans right of way. Existing utility service would be maintained through and after project construction.

Emergency Services

All Build Alternatives would require partial closure of the freeway and full and partial closure of the northbound Orangewood on-ramps and northbound Katella Avenue off-ramp. Roadway closures would be required to set-up and take down falsework for the bridge structures at Orangewood Avenue (bridge No. 55 0481) and at Douglass Avenue (bridge No. 55 0399). Partial freeway closures (one lane closure at most in the northbound direction only) would be required for the installation of K-rail and concrete operations. Pavement markings would be completed overnight and would not result in a full closure of the freeway.

Full and partial ramp closures are anticipated for the ramp improvements at Orangewood Avenue and Katella Avenue. Full closure of the ramps would only occur during the overnight period which is between 10:00 p.m. and 5:00 a.m. During closure of the ramps, detour routes would be provided to direct traffic to adjacent ramps per the project TMP.

Partial freeway and partial and full ramp closures for construction of the Build Alternatives, could result in delays for emergency services providers to/from emergency scenes. During ramp closures, detour routes would be identified, coordinated and approved by Caltrans and the affected local agencies prior to the closure per the project TMP. Emergency providers, as well as fire and police departments shall be notified in advance about the detour routes and the planned closures. During partial lane closures and ramp closures, a changeable message sign could be

used to provide information that can be accessible for travelers to make informed decisions regarding their travel plans. To minimize impacts, full ramp closures will only occur at nighttime. Reasonable access would be provided to law enforcement and emergency services as required. The project TMP provides incident management, construction strategies, demand management, alternative route and detour strategies, as well as a contingency plan to address construction related effects to travel patterns and access. The TMP addresses traffic delays and provides for public notification of closures, detours and potential delays to assist in minimizing impacts to emergency access and response times.

Permanent Impacts

Alternative 1- No Build

The No Build Alternative would not result in permanent effects on utilities and emergency services.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

After project completion, operational improvements are expected to reduce congestion along the Project corridor, which in turn could improve response times for emergency services that use SR 57 to move throughout the area. Since the Project would not affect population growth or residential developments, there would be no change in demand for emergency services as a result of the Project.

Under Alternatives 2A and 2B the existing westbound Orangewood Avenue on-ramp would be closed. Westbound traffic that used the ramp would be redirected to a new second left-turn lane. The SR 57 northbound loop on-ramp would be realigned to accommodate the westbound left turn movements and the westbound Orangewood Avenue approach leg would be configured with dual left turn lanes to accommodate the future left turn volumes. Closure of the westbound Orangewood ramp would improve the weaving distance between the Orangewood on-ramp and Katella Avenue off-ramp, which would improve traffic operations in this segment of the freeway, including access by emergency vehicles. Closure of the westbound Orangewood Avenue on-ramp is not expected to create delays in emergency response times as described in Section 2.1.6, Traffic and Transportation.

2.1.5.3 Avoidance, Minimization, and/or Mitigation Measures

The Build Alternatives would not result in temporary or permanent utility or emergency services related impacts. No avoidance, minimization or mitigation measures are required.

2.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.1.6.1 Regulatory Setting

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

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.1.6.2 Affected Environment

Information for this section was prepared using the Traffic Operations Analysis Report (April 2018).

Study Area

The Study Area includes all freeway segments and interchange ramps (i.e., merge/diverge areas and weaving segments) on northbound SR 57 from immediately south of the Chapman Avenue loop on-ramp to immediately north of the Katella Avenue direct on-ramp. The analysis also includes the ramp terminus intersections at all interchanges within the study area, and arterial intersections that are in the immediate vicinity.

Methodologies

The proposed Project is scheduled to be open to traffic in 2025. The design year for design of the proposed Build Alternatives is 2045. Therefore, the traffic analysis was conducted for the following future conditions:

- Existing Conditions – (2016)
- Alternative 1 (No Build) – Opening Year (2025)
- Alternative 1 (No Build) – Design Year (2045)

- Alternatives 2 (Preferred Alternative), 2A, 2B (Build Alternatives) – Opening Year (2025)
- Alternative 2 (Preferred Alternative), 2A, 2B (Build Alternatives) – Design Year (2045)

Forecasted Traffic Volumes

Opening Year (2025)

Opening Year refers to the year that the construction period ends and the Project is open to operation. Opening Year is used to determine the direct impacts the Project would have on traffic versus the existing conditions. The Opening Year (2025) traffic forecasts for the No Build Alternative were developed based on the forecasts from the latest version of the Orange County Traffic Analysis Model (OCTAM) 2035 Constrained Model which is consistent with SCAG 2012 Regional Transportation Plan (RTP). OCTAM was further developed using post-processing procedure to include traffic growth due to programmed or planned future cumulative (related) development projects. The 2025 freeway and intersection turning movement volumes were estimated by applying an overall compounded growth factor of 3.6 percent used in the *Platinum Triangle Expansion Project Traffic Study*. Similar to Alternative 1, the 2025 traffic forecasts for the Preferred Alternative were also developed using OCTAM. The OCTAM 2035 Constrained Model network was updated by including the Preferred Alternative geometry assumptions which are the sixth general purpose lane for SR 57 northbound mainline segment from Orangewood off-ramp to Katella off-ramp and the second lane for the Katella off-ramp. Since the year 2025 was not explicitly available from OCTAM, the traffic volumes for this analysis year were estimated. The 2025 freeway and intersection turning movement volumes were also estimated by applying an overall compounded growth factor of 3.6 percent. The 2025 intersection and freeway mainline traffic forecasts for Alternatives 2A and 2B are the same as the Preferred Alternative, except for the SR 57 northbound off-ramp intersections at Orangewood Avenue due to the proposed closure of the SR 57 northbound direct on-ramp under 2A and 2B Alternatives. The closure of this northbound direct on-ramp will shift westbound Orangewood Avenue traffic currently turning right onto northbound SR 57 to a left turn onto the SR 57 northbound loop on-ramp. The SR 57 northbound loop on-ramp would be realigned to accommodate the westbound left turn movements and the westbound Orangewood Avenue approach leg would be configured with dual left turn lanes to accommodate the future left turn volumes. Closure of the SR 57 northbound direct on-ramp would eliminate the two, successive adjacent on-ramps along the freeway mainline at the Orangewood Avenue interchange.

Design Year (2045)

The design year refers to the year that the facility would efficiently accommodate traffic demands. The design year takes into consideration regional land use changes, and other regional improvements in order to reflect the cumulative effect the Project has on the facility and its traffic.

The 2045 traffic forecasts for No Build were also developed using the same methodology outlined in the previous section. The 2045 freeway mainline volumes were estimated using a compound growth rate of 4.9 percent derived from OCTAM, while the 2045 intersection turning movements were estimated using the *Platinum Triangle Expansion Project Traffic Study* growth factor. The 2045 traffic forecasts for the Preferred Alternative were also developed using the same methodology. The 2045 freeway mainline volumes were estimated using a compound growth rate of 5.3 percent derived from OCTAM, while the 2045 intersection turning movements were estimated using the *Platinum Triangle Expansion Project Traffic Study* growth factor. The 2045 intersection and freeway mainline traffic forecasts for Alternatives 2A & 2B are the same for the intersections except for the SR 57 northbound off-ramp at Orangewood Avenue due to the proposed closure of the SR 57 northbound direct on-ramp.

Basic Freeway Segments and HOV Lane

Directional peak hours volumes on basic freeway segments were analyzed using the methodology contained in "Chapter 11 – Basic Freeway Segments" of the Highway Capacity Manual (2010), with calculations performed using the HCS2010 software version 6.90. The LOS criteria for basic freeway segments is presented in **Table 2-15: Basic Freeway Segments LOS Criteria**.

Table 2-15: Basic Freeway Segments LOS Criteria

Level of Service	Density (pc/ln/mil)
A	< 11
B	> 11 to 18
C	> 18 to 26
D	> 26 to 35
E	> 35 to 45
F	> 45

Source: TRB, HCM 2010.

The high-occupancy vehicle (HOV) lane was evaluated as a separate facility and was not included in the analysis of the basic freeway segments. The *Highway Capacity Manual (2010)* does not offer a detailed approach on how to analyze the level of service for an HOV lane. Since no method is available, Caltrans' guidelines for HOV facilities were considered to evaluate the performance of the HOV lane. Caltrans recommends a maximum HOV facility volume of 1,600 vehicles per hour per lane for a one-lane buffer-separated HOV facility. This HOV capacity, which is lower than the capacity for a general-purpose freeway lane, reflects Caltrans' desire for HOV facilities to operate at level of service that is better than LOS E.

Freeway Merge and Diverge Segments

Peak hour volumes along the ramp merge and diverge areas were analyzed based upon the methodology documented in "Chapter 13 – Freeway Merge and Diverge Segments" of the *Highway Capacity Manual (2010)*, with calculations performed using the *HCS2010* software version 6.90. The LOS criteria for freeway merge and diverge segments is presented in **Table 2-16: Freeway Merge and Diverge Segments LOS Criteria**.

Table 2-16: Freeway Merge and Diverge Segments LOS Criteria

Level of Service	Density (pc/ln/mil)
A	< 10
B	> 10.1 to 20
C	> 20.1 to 28
D	> 28.1 to 35
E	> 35
F	Demand exceeds capacity

Source: TRB, HCM 2010.

Freeway Weaving Segments

Peak hour volumes along the weaving segments were analyzed using the methodology contained in "Chapter 12 – Freeway Weaving Segments" of the *Highway Capacity Manual (2010)*, with calculations performed using the *HCS2010* software version 6.90. The HOV lane was treated as a separate facility and was not included in the analysis. The LOS criteria for weaving segments is presented in **Table 2-17: Freeway Weaving Segments LOS Criteria**.

Table 2-17: Freeway Weaving Segments LOS Criteria

Level of Service	Density (pc/ln/mil)
A	< 10
B	> 10 to 20
C	> 20 to 28
D	> 28 to 35
E	> 35 to 43
F	> 43

Source: TRB, HCM 2010.

Intersection Operations

Each study intersection was analyzed to determine peak hour operations and levels of service. The LOS for signalized and unsignalized intersections is generally based on delay values using the *Highway Capacity Manual (2010)* methodology. These values are calculated using the average delay (in seconds) per approaching vehicle. **Table 2-18: Signalized Operations LOS Criteria and Definitions** and **Table 2-19: Unsignalized Intersections LOS Criteria** present the LOS definition for signalized and unsignalized (stop-controlled) intersections, respectively. The *Synchro* software version 8.0 was used to analyze peak hour intersection traffic operating conditions. This is a widely accepted tool used to calculate LOS based on the delay methodology presented in the *Highway Capacity Manual (2010)*, which is the industry standard for analyzing traffic intersection operating conditions.

Table 2-18: Signalized Operations LOS Criteria and Definitions

Level of Service	Average Vehicle Delay (Seconds)	Definition
A	≤ 10	EXCELLENT. No vehicle waits longer than one red light and none of the approach signal phases are fully used.
B	> 10 to 20	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	> 20 to 35	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	> 35 to 55	FAIR. Delays may be substantial during portions of the peak hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	> 55 to 80	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source: TRB, Interim Materials on Highway Capacity Transportation Research Circular No. 212 1980; TRB, HCM 2010.

Table 2-19: Unsignalized Intersections LOS Criteria

Level of Service	Average Vehicle Delay (in seconds)
A	< 10
B	> 10 to 15
C	> 15 to 25
D	> 25 to 35
E	> 35 to 50
F	> 50

Source: TRB, HCM 2010.

Intersection Control Evaluation (ICE)

Caltrans Traffic Operations Policy Directive 13-02, *Intersection Control Evaluation (ICE)* is a directive issued by Caltrans for all highway intersection projects, including both new construction and intersection improvements. The purpose of the directive is to provide a more balanced or holistic approach to the consideration and selection of access strategies and concepts during transportation planning, project identification, and initiation processes that contemplate the addition, expansion, or "full control" of intersections. In relation to this Project, ICE analysis focused on the existing SR 57/Orangewood Avenue interchange (currently operating under signalized conditions for a conventional diamond and loop-ramp operation) under yield-controlled (roundabout), and signalized-control (diverging diamond) scenarios.

ICE analysis consists of a two-step process, 1) Access Strategy and Configuration Assessment/Screening, and 2) Engineering Analysis.

The objective of step one (Access Strategy and Configuration Assessment/Screening) is to identify access solution concepts meriting further consideration. This approach focuses the expenditure of engineering resources on access strategies and configurations that should meet the transportation purpose and need consistent with system performance goals, the project context (including the needs and values of local communities), and financial constraints. This normally requires a planning-level capacity analysis to identify the preliminary size or footprint of the intersection. The footprint is usually based on the number and length of the approach lanes for a specific control strategy during the project design period or service life. The preliminary footprint evaluation determines if specific strategies are context-appropriate and practical to implement.

The objective of step two (Engineering Analysis) is to evaluate access alternatives. Step two evaluation activities include, but are not limited to:

- Intersection traffic control warrant studies
- Project alternative capacity, operational and safety analysis
- Design performance checks focused on accommodating the vehicle design, pedestrians, and bicyclists
- Economic analysis based on project cost estimates, including life-cycle cost considerations
- Consultations with and recommended by the District ICE Coordinator, functional unit personnel, and ICE Technical Assistance Program (TAP) personnel.

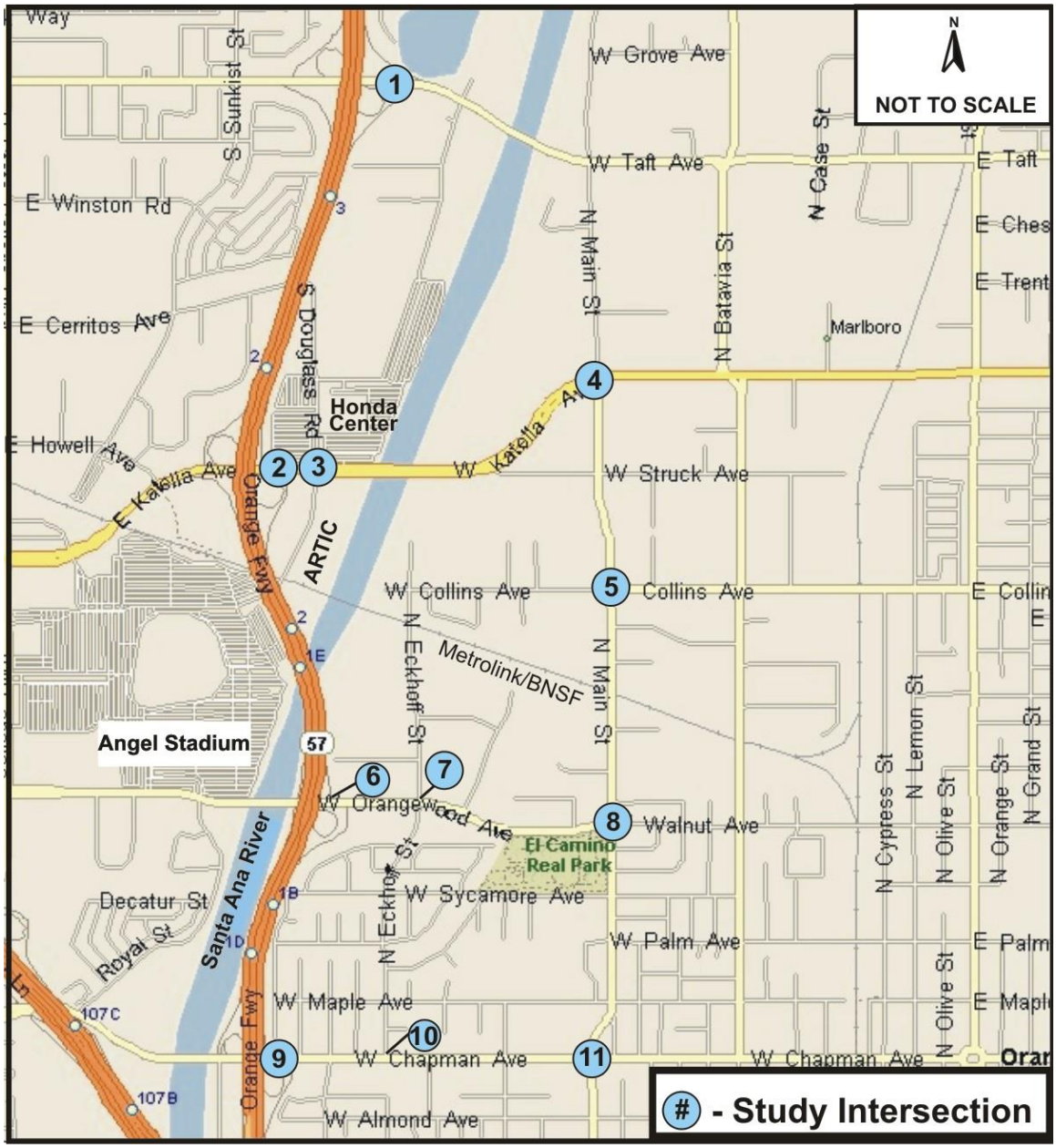
The result of step two activities is an engineering estimate and comparison of the system performance impacts, benefits, and costs expected over the design or service life of each control strategy and the No Build scenario.

Existing Conditions (2016)

Traffic Volumes

Intersection turning movement traffic counts were collected at the 11 study intersections on a typical weekday in May of 2016 when schools were in session and there were no morning or evening events at the adjacent venues. Study intersections and volumes are shown in **Figure 2-7: Study Intersections**.

Figure 2-7: Study Intersections



Source: TOAR 2018.

The counts were conducted during a two-hour morning peak period from 7:00 to 9:00 AM and during a two-hour afternoon peak period from 4:00 to 6:00 PM. Note that all SR 57 northbound on-ramps from Chapman Avenue to Ball Road operate as free right turns without stopping at the adjacent signalized intersection.

Freeway mainline and HOV lane volumes were collected from the Caltrans Performance Measurement System (PeMS) database[6]. Historical PeMS volume data for typical weekdays (Tuesday, Wednesday, and Thursday) during the month of October 2016 were extracted and averaged to obtain the AM and PM peak hour freeway mainline and HOV lane volumes. The data obtained from PeMS was taken during the October 2016 period because the percent observed was 100 percent and the average speeds during the AM and PM peak hours were 68.2 and 66.3 miles per hour, respectively. This confirms that the reported volumes took place during normal flow conditions and not during slow congested conditions. Consequently, the freeway mainline AM and PM peak hour volumes along the freeway segment between the Katella Avenue northbound off-ramp and the Katella Avenue northbound loop on-ramp were taken from PeMS and used to calculate the remainder of the AM and PM peak hour northbound freeway mainline volumes within the study area. Volumes were also obtained from the PeMS database for the same October 2016 time period. The existing freeway mainline and ramp peak hour volumes are summarized in **Table 2-20**: **Existing (2016) Freeway Mainline and Ramp Traffic Volumes**.

Table 2-20: Existing (2016) Freeway Mainline and Ramp Traffic Volumes

Segment Location	Peak Hour	Mixed-Flow	HOV
South of Chapman Avenue loop on-ramp	AM PM	7,720 5,600	440 540
Chapman Avenue loop on-ramp	AM PM	550 590	-
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	7,820 6,190	440 540
Chapman Avenue direct on-ramp	AM PM	270 330	-
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	8,090 6,520	440 540
Orangewood Avenue off-ramp	AM PM	530 220	-

[6] PeMS provides ten years of data for historical analysis. It integrates a wide variety of information from Caltrans and other local agency systems including: traffic detectors, incidents, lane closures, toll tags, census traffic counts, vehicle classification, weight-in-motion, and roadway inventory.

Table 2-20: Existing (2016) Freeway Mainline and Ramp Traffic Volumes (continued)

Segment Location	Peak Hour	Mixed-Flow	HOV
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	7,560 6,300	540 690
Orangewood Avenue loop on-ramp	AM PM	390 470	-
Orangewood Avenue loop on-ramp to Orangewood direct on-ramp	AM PM	7,950 6,770	540 690
Orangewood direct on-ramp	AM PM	190 310	-
Orangewood direct on-ramp to Katella Avenue off-ramp	AM PM	8,140 7,080	540 690
Katella Avenue off-ramp	AM PM	990 550	-
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	7,150 6,530	590 810
Katella Avenue loop on-ramp	AM PM	370 470	-
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM PM	7,520 7,000	590 810
Katella Avenue direct on-ramp	AM PM	140 310	-
North of Katella Avenue direct on-ramp	AM PM	7,660 7,310	650 1000

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

Basic Freeway Segments and HOV Lane

Table 2-21: Existing (2016) Basic Freeway Segment Analysis summarizes the existing weekday AM and PM peak hour levels of service for the Study Area freeway segments. The Study Area freeway segments are currently operating at satisfactory levels of service during both the AM and PM peak hours.

Table 2-21: Existing (2016) Basic Freeway Segment Analysis

Segment Location	Peak Hour	Existing (2016)	
		Density (pc/mi/ln)	LOS
South of Chapman Avenue loop on-ramp	AM	25.2	C
	PM	19.2	C
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM	22.3	C
	PM	17.7	B
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM	23.1	C
	PM	18.6	C
Orangewood Avenue off-ramp to lane drop	AM	21.6	C
	PM	18.0	C
Lane drop to Orangewood Avenue loop on-ramp	AM	26.4	D
	PM	21.6	C
Orangewood Avenue loop on-ramp to Orangewood Avenue direct on-ramp	AM	28.1	D
	PM	23.2	C
Katella Avenue off-ramp to lane addition	AM	33.1	D
	PM	29.1	D
Lane addition to Katella Avenue loop on-ramp	AM	24.7	C
	PM	22.4	C
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM	26.2	D
	PM	24.1	C
North of Katella Avenue direct on-ramp	AM	26.8	D
	PM	25.3	C

Source: TOAR 2018.

Existing AM and PM peak hour volume-to-capacity ratios for the HOV lanes segments are summarized in **Table 2-22: Existing (2016) HOV Lane Analysis**. As shown in the table, all HOV segments are currently operating within capacity.

Table 2-22: Existing (2016) HOV Lane Analysis

Segment Location	Peak Hour	Existing (2016) V/C Ratio
South of Chapman Avenue loop on-ramp	AM PM	0.28 0.34
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	0.28 0.34
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	0.28 0.34
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	0.34 0.43
Orangewood Avenue loop On-Ramp to Orangewood Avenue direct on-ramp	AM PM	0.34 0.43
Orangewood Avenue direct on-ramp to Katella Avenue off-ramp	AM PM	0.34 0.43
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	0.37 0.51
Katella Avenue loop on-ramp to Katella Avenue Direct on-ramp	AM PM	0.37 0.51
North of Katella Avenue direct on-ramp	AM PM	0.41 0.63

Source: TOAR 2018.

Freeway Weaving Segments

Table 2-23: Existing (2016) Weaving Segment Analysis summarizes the existing weekday AM and PM peak hour levels of service for the Study Area freeway weaving segment. The Study Area freeway weaving segment is currently operating at satisfactory levels of service D during both the AM and PM peak hours.

Table 2-23: Existing (2016) Weaving Segment Analysis

Segment Location	Peak Hour	Existing (2016) Density (pc/mi/ln)	LOS
Orangewood Avenue direct on-ramp to Katella Avenue off-ramp	AM PM	33.2 28.7	D D

Source: TOAR 2018.

Freeway Merge and Diverge Segments

Table 2-24: Existing (2016) Freeway Merge and Diverge Segment Analysis summarizes the Existing weekday AM and PM peak hour level of service for the Study Area freeway merge and diverge segments. The Study Area freeway merge and diverge segments are currently operating at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours.

Table 2-24: Existing (2016) Freeway Merge and Diverge Segment Analysis

Segment Location	Peak Hour	Merge/ Diverge	Existing (2016)	
			Density (pc/mi/ln)	LOS
Chapman Avenue loop on-ramp	AM PM	Merge	21.9 18.9	C B
Chapman Avenued irecto n-ramp	AM PM	Merge	20.4 18.0	C B
Orangewood Avenue off-ramp	AM PM	Diverge	28.1 23.2	D C
Orangewood Avenue loop on-ramp	AM PM	Merge	26.5 24.3	C C
Katella Avenue loop on-ramp	AM PM	Merge	24.3 23.9	C C
Katella Avenue direct on-ramp	AM PM	Merge	23.4 23.4	C C

Source: TOAR 2018.

Intersection Levels of Service

Table 2-25: Existing (2016) Intersection LOS Analysis summarizes the existing weekday AM and PM peak hour level of service for the Study Area intersections. The intersections are currently operating at satisfactory levels of service, except for North Eckhoff Street and Chapman Avenue intersections in both the AM and PM peak hours.

An off-ramp queuing analysis was also performed for the ramp terminus intersections to verify that ramp queues will not affect mainline operations. The queue lengths were evaluated using the *Synchro* software version 8.0, which accounts for 50^{th} and 95^{th} percentile queue lengths. The analysis indicated that all off-ramp intersections have adequate storage length.

Table 2-25: Existing (2016) Intersection LOS Analysis

Intersection	Peak Hour	Traffic Control Type	Existing (2016)	
			Delay	LOS
SR 57 Northbound Off-Ramp / Ball Road	AM	Signal	21.7	C
	PM		22.9	C
SR 57 Northbound Off-Ramp / Katella Avenue	AM	Signal	14.0	B
	PM		11.6	B
Douglass Road / Katella Avenue	AM	Signal	40.2	D
	PM		24.5	C
Main Street / Katella Avenue	AM	Signal	28.6	C
	PM		28.2	C
Main Street / Collins Avenue	AM	Signal	24.3	C
	PM		28.0	C
SR 57 Northbound On-Off Ramps / Orangewood Avenue	AM	Signal	30.6	C
	PM		20.8	C
North Eckhoff Street / Orangewood Avenue	AM	Signal	16.7	B
	PM		24.9	C
Main Street / Orangewood Avenue	AM	Signal	26.4	C
	PM		26.0	C
SR 57 Northbound Off-Ramp / Chapman Avenue	AM	Signal	10.7	B
	PM		13.8	B
North Eckhoff Street / Chapman Avenue	AM	One-Way Stop	43.5	E
	PM		78.8	F
Main Street / Chapman Avenue	AM	Signal	38.6	D
	PM		33.6	C

Source: TOAR 2018.

Pedestrian and Bicycle Facilities

Sidewalks in the Study Area are largely continuous and crosswalks are present at most intersections. Existing and proposed bicycle facilities in the Study Area are guided by the City of Anaheim's *Bicycle Master Plan* (2017), the *City of Orange Bikeways Master Plan Update* (2001), and the Orange County Transportation Authority's (OCTA) *2009 Commuter Bikeways Strategic Plan*.

The Santa Ana River Trail, an approximately 50-mile[7] Class I bike path along the Santa Ana River, is the only existing bicycle facility within the immediate vicinity of the Study Area. Other facilities adjacent to the Study Area include Class II bike lanes on Sunkist and Batavia Streets, a Class III bike route on Taft Avenue, and a Class I bike path along the Anaheim Coves (Anaheim Coves Trail).

[7] TrailLink. *Santa Ana River Trail.* (https://www.traillink.com/trail/santa-ana-river-trail/)

There are also a number of proposed bicycle facilities within the Study Area, including Class I bike paths along the Union Pacific Railroad right-of-way, the Bitterbush Channel, and Collins Channel, and Class II and Class III facilities proposed adjacent and perpendicular to the Study Area on Douglass Road, and Orangewood, Cerritos, and Katella Avenues. Existing and proposed bicycle facilities within the Study Area are presented in **Figure 2-8: Existing and Proposed Bicycle Facilities**. These bicycle facilities are not a part of this project, but are proposed by the cities of Anaheim and Orange.

2.1.6.3 Environmental Consequences

Temporary Impacts

Alternative 1- No Build

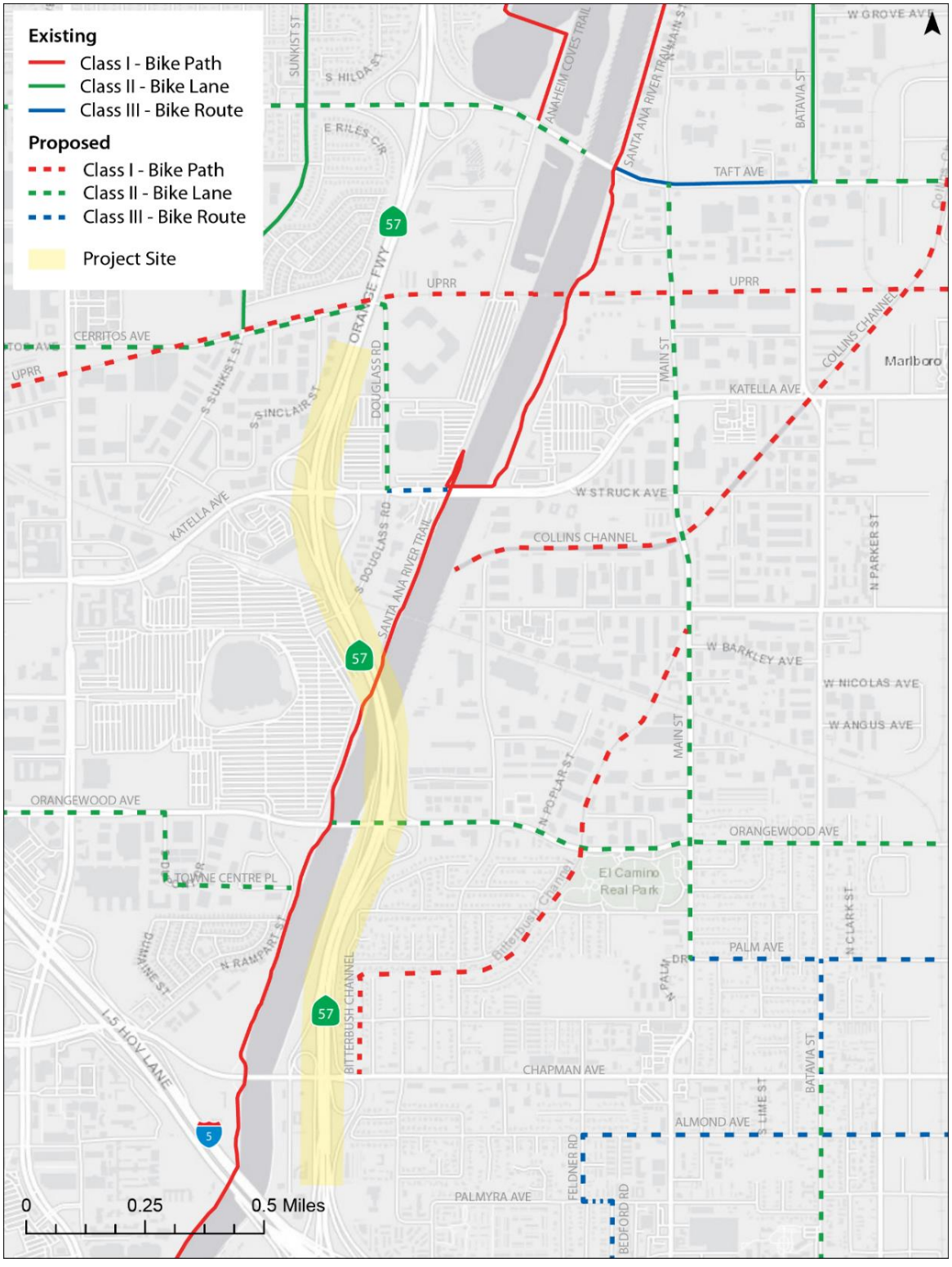
Under the No Build Alternative, no improvements are proposed and the freeway geometry would remain the same as existing conditions. Existing and projected future increases in traffic congestion would not be addressed with this alternative and the level of service would continue to decline in the future. The No Build Alternative would require no capital expenditure.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Construction of the Build Alternatives (Alternative 2 (Preferred Alternative), 2A, and 2B) is planned to require about 24 months, starting in January 2023, and ending in December 2025. The construction work zone (disturbed soil area) would be about 9.2 acres. Two temporary construction easements would be required from adjacent private property owners (1802.09 sq. ft. from City of Anaheim and 78,800 sq. ft. from OCFCD for access to an existing maintenance road and to accommodate access and construction within the river, respectively). Construction laydown or staging areas are anticipated to be accommodated within the existing freeway right of way. All Build Alternatives would result in temporary, short-term construction impacts to access and circulation, including detours and delays. Some of the short-term construction impacts are detailed below:

- **Full Facility Closures –** Full closures are anticipated for setting up and taking down false work for structures on Orangewood Avenue and Douglass Road. No full freeway closures on SR 57 are anticipated. Full ramp closures will only occur at nighttime to minimize impacts to motorists. Special consideration will be placed on closures for this Project due to the nearby Angel Stadium, Honda Center, ARTIC, and Phoenix Club.
- **Lane Modifications –** Lane modifications may be implemented to include: reduced lane widths, lane closures, reduced shoulder widths, shoulder closures, and lane shifts.

Figure 2-8: Existing and Proposed Bicycle Facilities



Source: City of Anaheim, Bicycle Master Plan (2017); OCTA, 2009 Commuter Bikeways Strategic Plan; City of Orange, Bikeways Master Plan Update (2001); City of Orange, Trails Map (2012); OCTA Bikeways Map (2015).

- **Mainline Lane Closures –** Existing number of lanes operating on SR 57 will be maintained except during nighttime or off-peak periods intermittently due to various construction activities including K-rail operations, concrete pouring, modifications to existing overhead sign panels, installation of vehicle detection systems, and installations of pavement striping. K-rail and concrete operations will require at most one lane closure on right side. Pavement markings will be completed as a nighttime operation closing half of the freeway at a time.
- **Ramp Closures/Relocation –** To allow room for ramp improvements or widening, partial and full closure of some ramps are proposed. Ramps would remain open while the number of lanes at the ramp may be reduced due to construction. These ramps include all northbound on- and off-ramps at Orangewood and Katella Avenues. During ramp closures, traffic would be detoured to adjacent ramps.
- **Other Closures –** Eastbound Orangewood Avenue right lane will be closed during parts of the loop on-ramp construction. This lane is a ramp entrance only, and will not affect throughput on Orangewood Avenue.

A TMP was prepared for the Project that includes strategies and measures to avoid and minimize disruption to local access, roadways, and bike and pedestrian facilities during construction. Temporary roadway, ramp, bike and pedestrian closures would be coordinated with Caltrans and the project team and would be limited to nighttime or off-peak hours. Detour routes would avoid routing traffic through local streets in communities and neighborhoods that are adjacent to the closure. Detour routes would be identified, coordinated, and approved by Caltrans and the affected local agencies prior to the closure. Advance planning, detour strategies, and public notifications would be provided for each full facility closure. A contingency plan would also be prepared for high-impact closures. The contingency plan would identify operations, equipment, processes, and materials that may fail and cause delayed opening of lane closures. The plan would also identify key operational decision points with a timeline listing the expected completion time of each critical path activity, as well as list and describe any and all standby equipment and secondary material suppliers to be available to complete the operations in the event of equipment failure or unexpected loss of material. In addition, emergency providers and police departments would be notified in advance about all planned closures and detour routes. Upon construction completion, detour signage and traffic signal timings would be restored to preconstruction conditions.

The TMP would be updated as needed during the design and construction phases of the Project. Bicycle and pedestrian access would be maintained during construction except during temporary short-term closures, most or all of which would happen at night. Transit routes would not be impacted. The TMP is considered a living document, subject to change as required by changing circumstances. Access to the SART/Bicycle Path would also be maintained for pedestrians, cyclists and equestrians throughout construction unless otherwise specified by the project TMP.

There is potential for flaggers, detours and/or closures to be incorporated into the TMP. Construction of any of the Build Alternatives could result in temporary construction-related delays and detours for transit users, however such impacts would be experienced by all NB SR-57 travelers. Bus routes that run along or adjacent to the project boundary, such as the 50 and 53, would be unlikely to change, be rerouted, or have bus stops changed due to construction. Delays may occur to bus routes adjacent to these boundaries due to construction limiting traffic lanes for construction purposes, but such delays and detours would be temporary and minimized by implementation of the project TMP. Katella Avenue is the closest local road to the Project that has bus routes running, whereas Orangewood Avenue does not host any bus routes.

Permanent Impacts

Alternative 1- No Build

Under the No Build Alternative, existing and projected future increases in traffic congestion would not be addressed and the level of service would continue to decline in the future. The No Build Alternative would require no capital expenditure.

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

Opening Year (2025)

Basic Freeway Segments

Table 2-26: Basic Freeway Segment LOS Summary (2025) summarizes the weekday AM and PM peak hour levels of service for the Study Area freeway segments under 2025 conditions. The Study Area freeway segments are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives.

The basic freeway segments under the Build Alternative scenarios will generally maintain existing LOS, however, there will be a slight degradation in LOS (from C to D) on the Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp segment during the AM peak hour for all Build Alternatives.

Some of the segments under the Build Alternative scenarios cannot be analyzed consistently from existing to future conditions, resulting in the (-) cells in **Table 2-26: Basic Freeway Segment LOS Summary (2025)**. For example, if the existing lane currently operates as a weave lane and has its configuration changed to a basic lane in the future, there is an analytical inability to provide an operational comparison between the two types of lanes. An example illustrating this includes the Katella Avenue off-ramp to lane addition segment that is currently operating at an unsatisfactory LOS E. In all Build Alternatives, a future configuration different from its existing configuration prevents the comparison of a level of service.

Table 2-26: Basic Freeway Segment LOS Summary (2025)

Segment Location	Peak Hour	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A & 2B	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
South of Chapman Avenue loop on-ramp	AM PM	27.2 19.9	D C	27.7 19.9	D C	27.7 19.9	D C
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	24.0 18.4	C C	24.4 18.4	C C	24.4 18.4	C C
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	25.4 19.4	C C	26.1 19.4	D C	26.1 19.4	D C
Orangewood Avenue off-ramp to lane drop	AM PM	23.7 18.7	C C	-	-	-	-
Lane drop to Orangewood Avenue loop on-ramp	AM PM	29.5 22.5	D C	-	-	-	-
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	-	-	24.4 18.8	C C	24.4 18.8	C C
Orangewood Avenue loop on-ramp to Orangewood Avenue direct on-ramp	AM PM	32.8 25.4	D C	26.5 21.0	D C	-	-
Katella Avenue off-ramp to lane addition	AM PM	38.9 33.1	E D	-	-	-	-
Lane addition to Katella Avenue loop on-ramp	AM PM	27.6 24.6	D C	-	-	-	-
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	-	-	27.6 24.8	D C	27.6 24.8	D C
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM PM	30.4 27.9	D D	30.4 28.1	D D	30.4 28.1	D D
North of Katella Avenue direct on-ramp	AM PM	31.2 29.8	D D	31.2 30.0	D D	31.2 30.0	D D

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Project -Build scenario.
Source: TOAR 2018.

HOV Lanes

Table 2-27: HOV Lane Summary (2025) summarizes the weekday AM and PM peak hour levels of service for the Study Area HOV lanes under 2025 conditions. The Study Area HOV lanes are anticipated to operate at satisfactory levels of service during both the AM and PM peak hours for all Build Alternatives.

The HOV lanes under the Build Alternative scenarios will generally maintain existing levels of service. The Orangewood Avenue direct on-ramp to Katella Avenue off-ramp is removed in the Alternatives 2A and 2B scenario.

Table 2-27: HOV Lane Summary (2025)

Segment Location	Peak Hour	No Build V/C Ratio	Alternative 2 (Preferred Alternative) V/C Ratio	Alternatives 2A and 2B V/C Ratio
South of Chapman Avenue loop on-ramp	AM PM	0.31 0.34	0.31 0.36	0.31 0.36
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	0.31 0.34	0.31 0.36	0.31 0.36
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	0.31 0.34	0.31 0.36	0.31 0.36
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	0.37 0.44	0.38 0.46	0.38 0.46
Orangewood Avenue loop on-ramp to Orangewood Avenue direct on-ramp	AM PM	0.37 0.44	0.38 0.46	0.38 0.46
Orangewood Avenue direct on-amp to Katella Avenue off-ramp	AM PM	0.37 0.44	0.38 0.46	-
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	0.40 0.54	0.40 0.54	0.40 0.54
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM PM	0.40 0.54	0.40 0.54	0.40 0.54
North of Katella Avenue direct on-ramp	AM PM	0.44 0.66	0.44 0.66	0.44 0.66

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

Freeway Weave Segment

Table 2-28: Freeway Weave Segment LOS Summary (2025) summarizes the weekday AM and PM peak hour levels of service for the Study Area freeway weave segment under 2025 conditions. The Study Area freeway weave segment is anticipated to operate at satisfactory levels of service D or better during both the AM and PM peak hours for all Build Alternatives.

Table 2-28: Freeway Weave Segment LOS Summary (2025)

Segment Location	Peak Hour	No Build		Alternative 2 (Preferred Alternative)		Alternative 2A		Alternative 2B	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Orangewood Avenue Direct On-Ramp to Katella Avenue Off-Ramp	AM	37.7	E	31.6	D	34.0	D	34.3	D
	PM	31.9	D	26.2	C	28.9	D	28.9	D

Source: TOAR 2018.

The freeway weave segment under the Build Alternative scenarios is expected to experience improved LOS for both AM and PM peak hours. The segment currently operates at an unsatisfactory LOS E during the AM peak hour, and is expected to improve to a satisfactory LOS D, under all Build Alternative scenarios. The segment's existing PM peak hour LOS D is expected to improve to LOS C under the Preferred Alternative, with densities also improving under Alternatives 2A and 2B. The LOS and density forecasted for the Preferred Alternative is better than the forecast for Alternatives 2A and 2B. Since the LOS for all three build alternatives in 2025 is D or better, all build alternatives are considered acceptable in urban areas where the LOS is required to be D or better.

Freeway Merge and Diverge Segments

Table 2-29: Freeway Merge and Diverge Segment LOS Summary (2025) summarizes the weekday AM and PM peak hour level of service for the Study Area freeway merge and diverge segments under 2025 conditions. The Study Area freeway merge and diverge segments are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives.

The freeway merge and diverge segments under the Build Alternative scenarios will generally maintain existing LOS. LOS improvements are expected on the Orangewood Avenue loop on-ramp segment for both Build Alternative scenarios. For the Preferred Alternative, the LOS will improve from an existing LOS D to LOS C during the AM peak hour, and the segment will be completely removed under Alternatives 2A and 2B.

Table 2-29: Freeway Merge and Diverge Segment LOS Summary (2025)

Segment Location	Peak Hour	Merge/ Diverge	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A and 2B	
			Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Chapman Avenue loop on-ramp	AM PM	Merge	23.4 19.7	C B	23.9 19.8	C B	23.9 19.8	C B
Chapman Avenue direct on-ramp	AM PM	Merge	22.3 18.6	C B	23.3 18.8	C B	23.3 18.8	C B
Orangewood Avenue off-ramp	AM PM	Diverge	30.0 24.0	D C	30.6 24.1	D C	30.6 24.1	D C
Orangewood Avenue loop on-ramp	AM PM	Merge	30.4 27.3	D C	27.2 25.3	C C	-	-
Katella Avenue loop on-ramp	AM PM	Merge	27.7 27.5	C C	27.8 27.6	C C	27.8 27.6	C C
Katella Avenue direct on-ramp	AM PM	Merge	26.2 26.5	C C	26.2 26.6	C C	26.2 26.6	C C

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

Intersections

Table 2-30: Intersection LOS Summary (2025) summarizes the weekday AM and PM peak hour level of service for the Study Area intersections under 2025 conditions. The Study Area intersections are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives, with the exception of the following:

- Alternative 2 (Preferred Alternative): North Eckhoff Street and Chapman Avenue (AM and PM peak hours)
- Alternatives 2A and 2B: North Eckhoff Street and Chapman Avenue (AM and PM peak hours)

The intersections under the Build Alternative scenarios will generally maintain existing LOS. The one-way stop at North Eckhoff Street and Chapman Avenue is currently operating at LOS F for both AM and PM peak hours, delay is expected to worsen under Build Alternative scenarios.

Table 2-30: Intersection LOS Summary (2025)

Intersection	Peak Hour	Traffic Control Type	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A and 2B	
			Delay	LOS	Delay	LOS	Delay	LOS
SR 57 Northbound Off-Ramp / Ball Road	AM PM	Signal	21.6 23.6	C C	21.6 23.6	C C	21.6 23.6	C C
SR 57 Northbound Off-Ramp / Katella Avenue	AM PM	Signal	13.1 9.2	B A	14.6 9.4	B A	14.6 9.4	B A
Douglass Road / Katella Avenue	AM PM	Signal	28.8 23.6	C C	32.2 24.0	C C	32.2 24.0	C C
Main Street / Katella Avenue	AM PM	Signal	32.3 32.0	C C	32.8 31.7	C C	32.8 31.7	C C
Main Street / Collins Avenue	AM PM	Signal	24.3 28.2	C C	24.3 27.9	C C	24.3 27.9	C C
SR 57 Northbound On-Off Ramps / Orangewood Avenue	AM PM	Signal	26.1 14.3	C B	20.8 12.4	C B	20.1 22.2	C C
North Eckhoff Street / Orangewood Avenue	AM PM	Signal	19.2 25.3	B C	19.8 25.6	B C	19.6 25.6	B C
Main Street / Orangewood Avenue	AM PM	Signal	32.3 27.4	C C	33.4 27.3	C C	33.4 27.3	C C
SR 57 Northbound Off-Ramp / Chapman Avenue	AM PM	Signal	9.3 16.5	A B	9.4 16.8	A B	9.4 16.8	A B
North Eckhoff Street / Chapman Avenue	AM PM	One-Way Stop	110.6 OVF	F F	149.5 OVF	F F	149.5 OVF	F F
Main Street / Chapman Avenue	AM PM	Signal	44.3 35.7	D D	44.4 35.6	D D	44.4 35.6	D D

Note: Delay – average vehicle delay in seconds; unsignalized intersection delay for stop-controlled approach
Source: TOAR 2018.

Basic Freeway Segments

Table 2-31: Basic Freeway Segment LOS Summary (2045) summarizes the weekday AM and PM peak hour levels of service for the Study Area freeway segments under 2045 conditions. The Study Area freeway segments are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives, with the exception of the following:

- Alternative 2 (Preferred Alternative): North of Katella Avenue Direct On-Ramp (AM peak hour)
- Alternatives 2A and 2B: North of Katella Avenue Direct On-Ramp (AM peak hour)

Table 2-31: Basic Freeway Segment LOS Summary (2045)

Segment Location	Peak Hour	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A and 2B	
		Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
South of Chapman Avenue loop on-ramp	AM PM	30.4 21.6	D C	31.0 21.7	D C	31.0 21.7	D C
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	26.4 20.0	D C	26.9 20.1	C C	26.9 20.1	C C
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	28.0 21.0	D C	29.0 21.2	D C	29.0 21.2	D C
Orangewood Avenue off-ramp to lane drop	AM PM	26.0 20.3	C C	-	-	-	-
Lane drop to Orangewood Avenue loop on-ramp	AM PM	33.3 24.6	D C	-	-	-	-
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	-	-	26.9 20.5	D C	26.9 20.5	D C
Orangewood Avenue loop on-ramp to Orangewood Avenue direct on-ramp	AM PM	**37.6** 28.1	**E** D	29.6 23.0	D C	-	-
Katella Avenue off-ramp to lane addition	AM PM	46.3 38.0	F E	-	-	-	-
Lane addition to Katella Avenue loop on-ramp	AM PM	31.0 27.2	D D	-	-	-	-
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	-	-	31.0 27.6	D D	31.0 27.6	D D
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM PM	34.5 31.2	D D	34.7 31.7	D D	34.7 31.7	D D
North of Katella Avenue direct on-ramp	AM PM	**35.5** 33.7	**E** D	**35.6** 34.2	**E** D	**35.6** 34.2	**E** D

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

The basic freeway segments under the Build Alternative scenarios will generally maintain existing LOS, however, Build Alternatives are expected to improve unsatisfactory LOS for the Orangewood Avenue loop on-ramp to Orangewood Direct on-ramp and Katella Avenue off-ramp to lane addition segments. The former is currently operating at LOS E and D for the AM and PM peak hours, respectively, and will be improved to LOS D and C under the Preferred Alternative, and removed under Alternatives 2A and 2B. The latter is currently operating at LOS F and E for the AM and PM peak hours, respectively, and will be removed under Build Alternative scenarios.

HOV Lanes

Table 2-32: HOV Lane Summary (2045) summarizes the weekday AM and PM peak hour levels of service for the Study Area HOV lanes under 2045 conditions. The Study Area HOV lanes are anticipated to operate at satisfactory levels of service during both the AM and PM peak hours for all Build Alternatives, with the exception of the following:

- Alternative 2 (Preferred Alternative): North of Katella Avenue Direct On-Ramp (AM peak hour)
- Alternative 2A and 2B: North of Katella Avenue Direct On-Ramp (AM peak hour)

Table 2-32: HOV Lane Summary (2045)

Segment Location	Peak Hour	No Build	Alternative 2 (Preferred Alternative)	Alternatives 2A and 2B
		V/C Ratio	V/C Ratio	V/C Ratio
South of Chapman Avenue loop on-ramp	AM PM	0.34 0.38	0.34 0.39	0.34 0.39
Chapman Avenue loop on-ramp to Chapman Avenue direct on-ramp	AM PM	0.34 0.38	0.34 0.39	0.34 0.39
Chapman Avenue direct on-ramp to Orangewood Avenue off-ramp	AM PM	0.34 0.38	0.34 0.39	0.34 0.39
Orangewood Avenue off-ramp to Orangewood Avenue loop on-ramp	AM PM	0.40 0.48	0.41 0.50	0.41 0.50
Orangewood Avenue loop on-ramp to Orangewood Avenue direct on-ramp	AM PM	0.40 0.48	0.41 0.50	-
Orangewood Avenue direct on-ramp to Katella Avenue off-ramp	AM PM	0.40 0.48	0.41 0.50	0.41 0.50
Katella Avenue off-ramp to Katella Avenue loop on-ramp	AM PM	0.43 0.58	0.44 0.59	0.44 0.59
Katella Avenue loop on-ramp to Katella Avenue direct on-ramp	AM PM	0.43 0.58	0.44 0.59	0.44 0.59
North of Katella Avenue direct on-ramp	AM PM	0.48 0.72	0.48 0.72	0.48 0.72

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

The HOV lanes under the Build Alternative scenarios will generally maintain existing levels of service. The Orangewood Avenue direct on-ramp to Katella Avenue off-ramp is removed in the Alternatives 2A and 2B scenario. The North of Katella Avenue direct on-ramp will continue to operate above capacity for Build Alternatives.

Freeway Weave Segment

Table 2-33: Freeway Weave Segment LOS Summary (2045) summarizes the weekday AM and PM peak hour levels of service for the Study Area freeway weave segment under 2045 conditions. The Study Area freeway weave segment is anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives, with the exception of the following:

- Alternatives 2A and 2B: Orangewood Avenue Direct On-Ramp to Katella Avenue off-ramp (AM peak hour)

Table 2-33: Freeway Weave Segment LOS Summary (2045)

		No Build		Alternative 2 (Preferred Alternative)		Alternative 2A		Alternative 2B	
Segment Location	Peak Hour	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Orangewood Avenue Direct On-Ramp to Katella Avenue Off-Ramp	AM	1.035	F	35.0	D	38.1	E	38.3	E
	PM	35.3	E	29.1	D	32.3	D	32.4	D

Source: TOAR 2018.

The freeway weave segment under the Build Alternative scenarios is expected to experience improved densities for both AM and PM peak hours. The segment currently operates at an unsatisfactory LOS F during the AM peak hour and LOS E during the PM peak hour. The segment is expected to improve to a satisfactory LOS D, during both peak hours under the Preferred Alternative. Alternatives 2A and 2B are also expected to improve PM peak hour LOS from LOS E to LOS D, while also improving LOS in the AM peak hour from LOS F to LOS E. The LOS and density forecasted for the Preferred Alternative is better than the forecast for Alternatives 2A and 2B. Since the Preferred Alternative is forecasted to operate at LOS D, the Preferred Alternative is considered acceptable in urban areas where the LOS is required to be D or better. Alternatives 2A and 2B operate at LOS E in the AM peak hour which does not meet the threshold of acceptability.

Freeway Merge and Diverge Segments

Table 2-34: Freeway Merge and Diverge Segment LOS Summary (2045) summarizes the weekday AM and PM peak hour levels of service for the Study Area freeway merge and diverge segments under 2045 conditions. The Study Area freeway merge and diverge segments are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives.

The freeway merge and diverge segment under the Build Alternative scenarios will generally maintain existing levels of service. The Orangewood Avenue loop on-ramp is removed in the Alternatives 2A and 2B scenario.

Table 2-34: Freeway Merge and Diverge Segment LOS Summary (2045)

Segment Location	Peak Hour	Merge/ Diverge	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A and 2B	
			Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS	Density (pc/mi/ln)	LOS
Chapman Avenue loop on-ramp	AM PM	Merge	26.1 20.8	C C	26.6 21.0	C C	26.6 21.0	C C
Chapman Avenue direct on-ramp	AM PM	Merge	24.0 20.1	C C	25.1 19.7	C C	25.1 19.7	C C
Orangewood Avenue off-ramp	AM PM	Diverge	32.3 25.9	D C	33.0 26.0	D C	33.0 26.0	D C
Orangewood Avenue loop on-ramp	AM PM	Merge	33.3 28.9	D D	29.1 26.6	D C	-	-
Katella Avenue loop on-ramp	AM PM	Merge	30.5 29.4	D D	30.7 29.7	D D	30.7 29.7	D D
Katella Avenue direct on-ramp	AM PM	Merge	28.9 29.2	D D	28.9 29.4	D D	28.9 29.4	D D

Note: (-) denotes a segment/ramp that doesn't exist in the No Build scenario or in a Build scenario.
Source: TOAR 2018.

Intersections

Table 2-35: Intersection LOS Summary (2045) summarizes the weekday AM and PM peak hour levels of service for the Study Area intersections under 2045 conditions. The Study Area freeway segments are anticipated to operate at satisfactory levels of service (LOS D or better) during both the AM and PM peak hours for all Build Alternatives, with the exception of the following:

- Alternative 2 (Preferred Alternative): North Eckhoff Street and Chapman Avenue (AM and PM peak hours)
- Alternatives 2A and 2B: North Eckhoff Street and Chapman Avenue (AM and PM peak hours)

Table 2-35: Intersection LOS Summary (2045)

Intersection	Peak Hour	Traffic Control Type	No Build		Alternative 2 (Preferred Alternative)		Alternatives 2A and 2B	
			Delay	LOS	Delay	LOS	Delay	LOS
SR 57 Northbound Off-Ramp / Ball Road	AM	Signal	22.0	C	22.0	C	22.0	C
	PM		24.5	C	24.5	C	24.5	C
SR 57 Northbound Off-Ramp / Katella Avenue	AM	Signal	14.0	B	14.3	B	14.3	B
	PM		9.5	A	9.7	A	9.7	A
Douglass Road / Katella Avenue	AM	Signal	30.2	C	31.3	C	31.3	C
	PM		25.0	C	24.5	C	24.5	C
Main Street / Katella Avenue	AM	Signal	34.0	C	34.1	C	34.1	C
	PM		34.0	C	32.9	C	32.9	C
Main Street / Collins Avenue	AM	Signal	26.0	C	25.9	C	25.9	C
	PM		30.3	C	29.5	C	29.5	C
SR 57 Northbound On-Off Ramps / Orangewood Avenue	AM	Signal	25.9	C	20.0	B	20.3	C
	PM		13.9	B	11.9	B	20.9	C
North Eckhoff Street / Orangewood Avenue	AM	Signal	19.4	B	20.7	C	20.5	B
	PM		27.0	C	22.4	C	27.44	C
Main Street / Orangewood Avenue	AM	Signal	37.5	D	38.5	D	38.5	C
	PM		30.2	C	30.4	C	30.4	C
SR 57 Northbound Off-Ramp / Chapman Avenue	AM	Signal	9.4	A	9.5	A	9.5	A
	PM		14.7	B	15.0	B	15.0	B
North Eckhoff Street / Chapman Avenue	AM	One-Way	OVF	F	OVF	F	OVF	F
	PM	Stop	OVF	F	OVF	F	OVF	F
Main Street / Chapman Avenue	AM	Signal	51.6	D	51.7	D	51.7	D
	PM		39.4	D	39.2	D	39.2	D

Note: Delay – average vehicle delay in seconds; unsignalized intersection delay for stop-controlled approach
Source: TOAR 2018.

The intersections under the Build Alternative scenarios will generally maintain existing LOS. The SR 57 northbound on-off ramps/Orangewood Avenue intersection is expected to improve from LOS C to LOS B during the AM peak hour for the Preferred Alternative, however the North Eckhoff Street/Orangewood Avenue intersection under the same scenario hour is expected to degrade from LOS B to LOS C. The Main Street/Orangewood Avenue intersection is expected to improve from LOS D to LOS C during the AM peak hour under Alternatives 2A and 2B scenarios. The one-way stop at North Eckhoff Street and Chapman Avenue is currently operating at LOS F for both AM and PM peak hours, delay is expected to worsen under Build Alternative scenario.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facility continuity and access would not change from existing conditions. The project would not preclude future additions of bicycle lanes in the project area. Sidewalks and intersections rebuilt as a result of the Project would be completed to current standards, including ADA.

Summary

The basic freeway segments for all Build Alternatives would operate at satisfactory levels of service (LOS D or better) for the opening (2025) and design (2045) years except for the segment north of the Katella Avenue on-ramp, which would operate at LOS E in the AM for the design year under all Build Alternatives. This is an improvement compared to Alternative 1, the No Build, where one segment operates at LOS E in the opening year (2025) and three segments operate at LOS E or F in the design year (2045). The HOV lane segments are anticipated to operate below capacity for all Build and No-Build Alternatives for both opening and design years. The study freeway weave segment is anticipated to operate at satisfactory levels of service (LOS D or better) for the opening and design years with the exception for the Orangewood Avenue to Katella Off-Ramp segment under Alternative 2A and 2B, which would operate at LOS E in the AM for the design year. This is also an improvement compared to Alternative 1, the No Build, where the weave segment would operate at LOS E or F in both the opening (2025) and design (2045) year. Lastly, the study area intersections are anticipated to operate at satisfactory levels of service (LOS D or better) during the AM and PM peak hours for all Build Alternatives, except for North Eckhoff Street and Chapman Avenue during both the AM and PM peak hours for all Build and No Build Alternatives for both opening and design year.

2.1.6.4 Avoidance, Minimization, and/or Mitigation Measures

The main purpose of the project is to complete the missing gap in the fifth general purpose lane to provide lane continuity and add capacity. Closing the gap in the fifth general purpose lane would help relieve existing and future congestion, as well as improve mobility within the corridor. In addition, the project also proposes to improve existing nonstandard features, which result in bottlenecks, traffic slowing and weaving challenges within the project segment of SR 57.

The proposed project would not worsen the existing HOV lane condition nor does it improve it. Therefore, the project would have no effect on the existing HOV lanes. Likewise, the project would not worsen existing conditions for the basic freeway segments, freeway weave segment and study intersections, and in some instances, would improve operations. Therefore, the project would have no effect or a beneficial effect on the basic freeway segments, freeway weave and study intersections.

Therefore, no additional avoidance, minimization, and/or mitigation measures are needed.

2.1.7 Visual/Aesthetics

2.1.7.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

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

2.1.7.2 Affected Environment

This section was prepared with information presented in the *Visual Impact Assessment* (May 2018) that was prepared for this Project. This section details the existing visual resources of the project site, potential impacts caused by the Project on existing resources, and any measures that may be able to mitigate impacts.

The project corridor is partially included in segments of SR 57 that are Caltrans Classified Landscaped Freeways, according to the December 14, 2016 list published by Caltrans. Those segments are PM 11.5 to PM 12.02 and PM 12.11 to PM 12.5 in Orange County. The segment between PM 12.02 and PM 12.11 (total of 0.08 miles or 422 feet) is not included in the listing.

A Classified Landscaped Freeway is a section of freeway with planting that meets the criteria of the Outdoor Advertising Regulations and is used in the control and regulation of outdoor advertising displays. To qualify for classification planting must be:

- Within State right of way
- Continuous (no gaps greater than or equal to 200-feet)
- Ornamental
- At least 1,000-feet in length
- On at least one side of the freeway
- Requires reasonable maintenance

Visual Setting

The project corridor is a highway that cuts through an urban landscape, bounded by features of the built environment such as surface parking lots, large buildings, and the concrete banks of the Santa Ana River. The background views as seen from the corridor include the San Bernardino and Saddleback Mountain formations.

Landscape Units

Landscape units represent areas that have similar visual features and visual character (of the natural and built environment). Based on the existing land uses and site reconnaissance, one landscape unit has been identified for the project area; the "Urban Developed Landscape Unit." For the visual impact analysis three key viewpoints were identified to be representative of the "Urban Developed Landscape Unit", of the overall or typical visual conditions of the project area and the proposed Project, and of the viewer groups identified.

Viewers

Motorists (Local Roads)

This viewer type within the Neighbors group consists primarily of area residents and nearby commuters who work locally and use local roads for their trips, but would also include some tourists who may be using local roads to access gas, food, and entertainment. This group comprises a moderately high number of viewers traveling on local roads in the project corridor. These viewers are traveling at slower speeds than highway users, which allows them some opportunity to view the surrounding scenery, although not for a long duration. Area residents and local commuters on local roads would have a high level of familiarity with the SR 57 mainline and the northbound on- and off-ramps and the bridge structures in the project area; they have frequent exposure to the project area and would be aware of changes to the visual environment.

Tourists would have a low level of familiarity with SR 57 in the project area; they have infrequent exposure and would be less aware of changes to visual resources.

Residents

This viewer type within the Neighbors group consists of a relatively small number of area residents that live in the nearby West Side and Camino Real neighborhoods. From their homes, Residents have very limited views of SR 57 and the project area because their residences are separated from the corridor by vacant right of way land, tall landscaping trees, a sound wall, and the neighboring business/office park to the north. Residents would have a high level of familiarity with local views, including the project area, and a stronger sense of ownership than the residents of the surrounding communities.

Recreationists

This viewer type within the Neighbors group consists of area residents and the general public who would be using the parks and trails near the project area, including the Angel Stadium and Honda Center which were considered in this analysis as "public recreation," and the Santa Ana River Trail which is part of a larger trail system that extends from Huntington Beach to the Orange/Riverside county line. Due to the public recreational opportunities, this group comprises a moderate to high quantity of viewers traveling to and through the project area via foot, bicycle, vehicle, bus, and train. Recreationists at the stadiums are more likely focused on the activity at these venues and not the surrounding area and therefore may be less sensitive to changes in the visual environment. Recreationists along the river trail would be more sensitive to scenic quality but not as sensitive when compared to a more pristine, less urban scenic experience.

Highway Users

This viewer group consists of the general public using the SR 57 corridor which includes: motorists traveling within and through the project corridor; commuters traveling through the corridor for work with various Orange County destinations; truck freight drivers transporting goods to the cities of Orange and Anaheim; and tourists traveling to destinations such as Disneyland, Angel Stadium, and popular coastal towns. Because motorists using SR 57 are traveling at higher speeds, they are generally paying more attention to traffic and are less aware of the surrounding visual environment. In addition, their view of the project area and project corridor is for a brief duration. Freight drivers and tourists have infrequent exposure to the project area and would be less aware of changes to visual resources. Local residents and commuters on SR 57 have a higher level of familiarity with the project area.

Visual Character and Quality

Character

The existing visual character of the project corridor is dominated by the SR 57 right of way and its connections to arterials, such as Orangewood Avenue, in the region's transportation network. The visual character of SR 57 is an urban highway; it is a wide linear element of the landscape with a continuity that flows through and beyond the project area.

The SR 57 right of way serves as a defining line or edge to the abutting cities of Anaheim and Orange, as does the Santa Ana River and trail. Land uses adjacent to SR 57 within the project corridor provide a variety of urban visual patterns that range in form and scale from the large expanse of public recreational space at Angel Stadium, to medium-sized light industrial and business commercial park areas, and to smaller scale single-family residential homes. Within the project area the foreground of views (0 to 1/2-mile from the viewer) from SR 57 include the roadway itself and the changing scale and pattern of adjacent land uses. The middle ground (1/2-mile to 5 miles from the viewer) and background (greater than 5 miles from the viewer) of views are more expansive and include the San Bernardino Mountains and Saddleback Mountain to the north and west of the project area.

Within the project corridor there is some existing vegetation, primarily located alongside SR 57 at the Orangewood Avenue interchange. This ornamental landscaping is dominated by non-native plants and species, such as the Peruvian Pepper Tree, Tree of Heaven, Treasure flower, and Mexican fan palm, that are cultivated to serve decorative purposes.

Quality

From the project area, views of the mountains, landmarks, natural landforms and urban fabric combine to provide a moderately vivid and memorable image. Visual quality is measured using three criteria: vividness, intactness, and unity.

For adjacent land uses SR 57 serves as a visual and physical boundary, or edge, to the east-west direction. At the same time, in the north-south direction it unifies elements of the landscape, such as transitions in cities and the land use pattern. The importance of the compositional harmony of SR 57 with the existing landscape is recognized by the City of Anaheim's policy, as stated in the Regulatory Setting section, to ensure that all public facilities fit well in their surroundings.

Scenic Resources

The SR 57 project area is not within a designated scenic highway, which exempts it from the Caltrans' Standard Environmental Reference Scenic Resource Evaluation. The segment of SR 57 located approximately 7 miles north of the project area (north of SR 90 within Orange County) is eligible to be designated as a state scenic highway.

Scenic resources as seen from the project corridor include the background views of the San Bernardino Mountains and Saddleback Mountain, and the foreground views of the Santa Ana River, Angel Stadium, and ARTIC. Views of the mountains are often obscured by local climatic conditions, such as fog and clouds.

Key Views

For the visual impact analysis three key viewpoints were identified to be representative of the "Urban Developed Landscape Unit", of the overall or typical visual conditions of the project area and the proposed Project, and of the viewer groups identified. Key Viewpoint 3 – From SR 57 Loop on-ramp.

Key viewpoint 3 is from the perspective of the highway users on the SR 57 loop on-ramp, looking north. Visible in the skyline is the ARTIC station

Figure 2-9: Project Corridor Key Viewpoints, shows the existing visual conditions at the three Key Viewpoints.

Key Viewpoint 1 - ARTIC Station Platform

Key viewpoint 1 is from the perspective of neighbors and recreationists on the ARTIC station platform, looking northwest at the SR 57 platform. The SCRRA railroad tracks, SR 57 platform, and the sky is visible from this existing viewpoint.

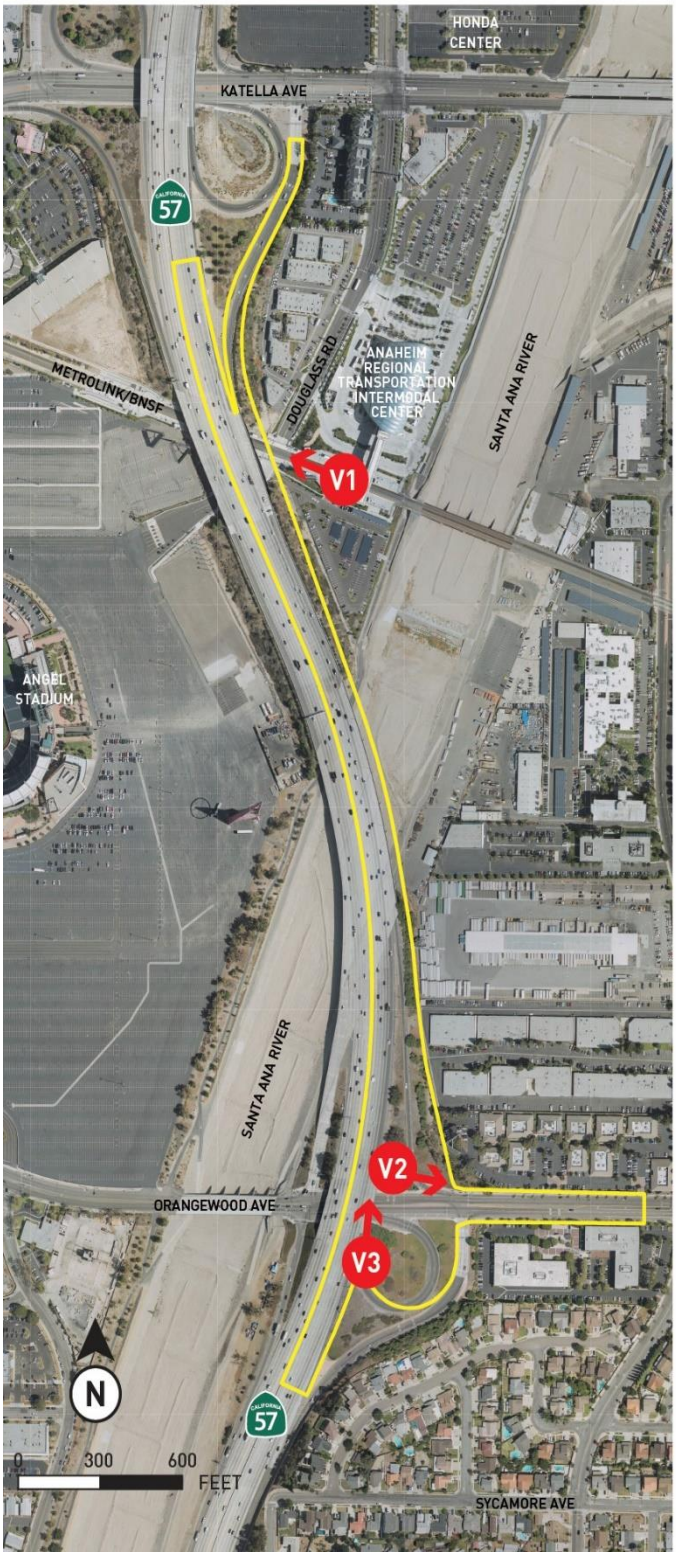
Key Viewpoint 2 – From Northbound SR 57 Auxiliary Lane

Key viewpoint 2 is from the perspective of the highway users, neighbors, and motorists (local roads) on the northbound SR 57 auxiliary lane, looking east. West Orangewood Avenue is the main roadway that is visible, with the northbound SR 57 loop on-ramp for traffic travelling east on Orangewood Avenue and the northbound SR 57 on-ramp for traffic travelling west on Orangewood Avenue also visible.

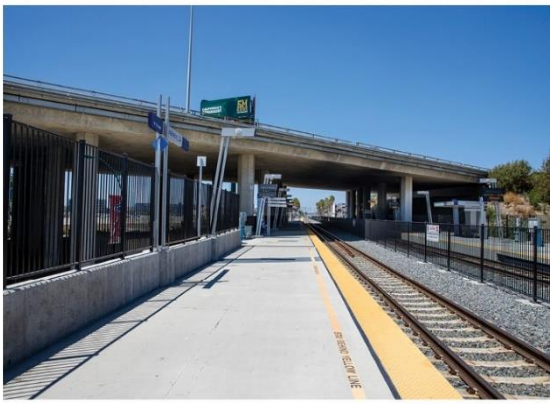
Key Viewpoint 3 – From SR 57 Loop On-Ramp

Key viewpoint 3 is from the perspective of the highway users on the SR 57 loop on-ramp, looking north. Visible in the skyline is the ARTIC station.

Figure 2-9: Project Corridor Key Viewpoints

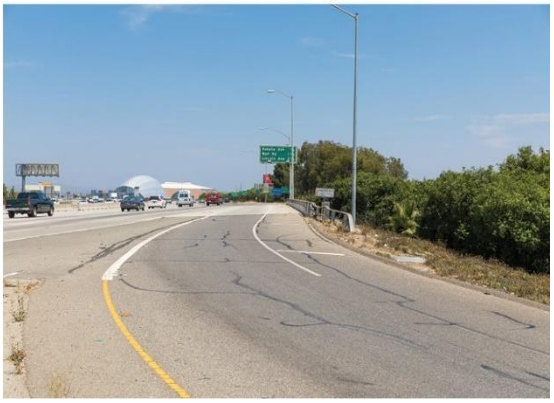


Key Viewpoint 1
ARTIC station platform, looking northwest



Key Viewpoint 2
From northbound SR 57 auxiliary lane, looking east

Key Viewpoint 3
From SR 57 loop on-ramp, looking north



Source: Visual Impact Assessment (VIA) 2018.

2.1.7.3 Environmental Consequences

Temporary Impacts

Alternative 1 - No Build

No construction or physical changes are proposed under the No Build Alternative; therefore, no changes to the existing visual environment within the project limits are expected. Maintenance and operation activities, such as weed abatement, removal of dead vegetation, tree trimming, etc., would continue as usual and may have a minimal effect on the visual environment (typically, a positive effect).

Alternative 2 (Preferred Alternative), 2A, & 2B – Build Alternatives

During construction, the presence of equipment, workers, material stockpiles, debris, lighting and signage would introduce new elements into the visual environment that may detract from the visual quality and character of the area. Demolition activities including vegetation clearing and grading would reduce intactness and visual quality. Dust from demolition activities could affect visibility and views, as could light and glare emanating from construction lighting or reflecting off signage or machinery. Brightly colored, and potentially reflective signs or lighting serve an important safety purpose for construction workers and the public; however, they can also add a visually distracting element to views. The movement of large, typically bright yellow construction vehicles would also add a visually distracting element. Potential traffic congestion associated with work areas could also intrude upon views. These temporary impacts would reduce intactness and unity of existing views, which would have a moderate impact on visual quality; however, these impacts would be temporary. In addition, general construction specifications requiring dust control, litter removal, landscape preservation and replacement would help to maintain good housekeeping on site and minimize construction related impacts to visual quality and character. Once construction is complete, the site would be returned to preconstruction condition including new and replacement plantings.

Permanent Impacts

Alternative 1 – No Build

No construction would occur therefore; the No Build would not alter or impact the current visual or aesthetic.

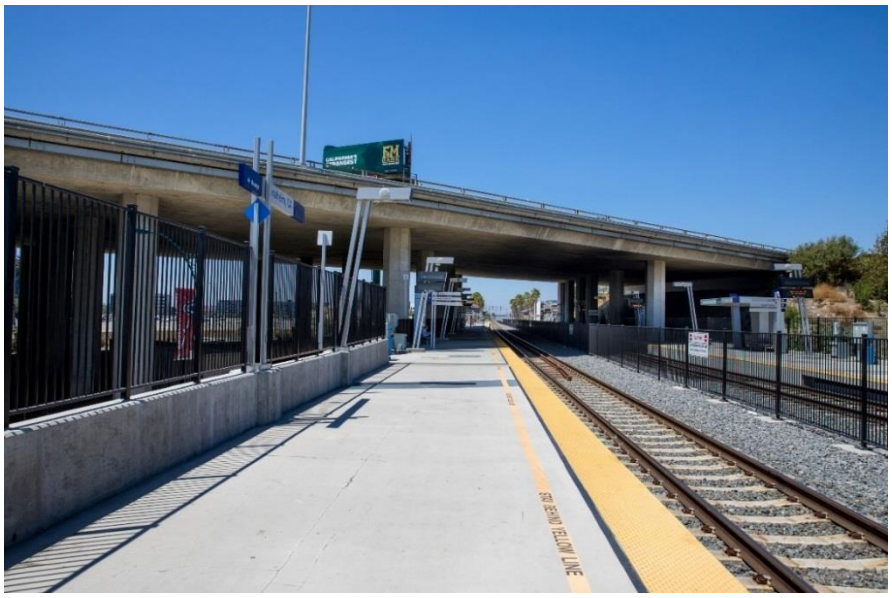
Alternative 2 (Preferred Alternative), 2A, 2B – Build Alternatives

Visual changes associated with all Build Alternatives include widening the outside northbound side of the freeway from the Orangewood loop on-ramp to just north of the Katella Avenue northbound off-ramp and realignment of the Orangewood Avenue northbound loop ramp. Under the Preferred Alternative would also realign the Orangewood Avenue northbound ramp. Under Alternatives 2A and 2B the ramp would be removed. Under Alternative 2A a new northbound off-ramp at Katella Avenue would be constructed. The freeway widening, new ramp and changes to the Orangewood Avenue on-ramps would be at the same or similar grade to the existing freeway and ramps. Visual changes at Key Viewpoints are illustrated and described below.

Key Viewpoint 1 - ARTIC Station Platform

As shown in **Figure 2-10: Photo-simulation of Alternatives 2 and 2B for Key Viewpoint 1**, the freeway widening at the Stadium OH bridge proposed for Alternatives 2 (Preferred Alternative) and 2B would have a slightly increased bridge mass and scale as compared to the existing view. From the viewpoint of the Neighbors and Recreationists standing on the ARTIC station platform, there is minimal visual change.

Figure 2-10: Photo-simulation of Alternatives 2 and 2B for Key Viewpoint 1



Existing condition photograph taken from the ARTIC station platform, looking northwest

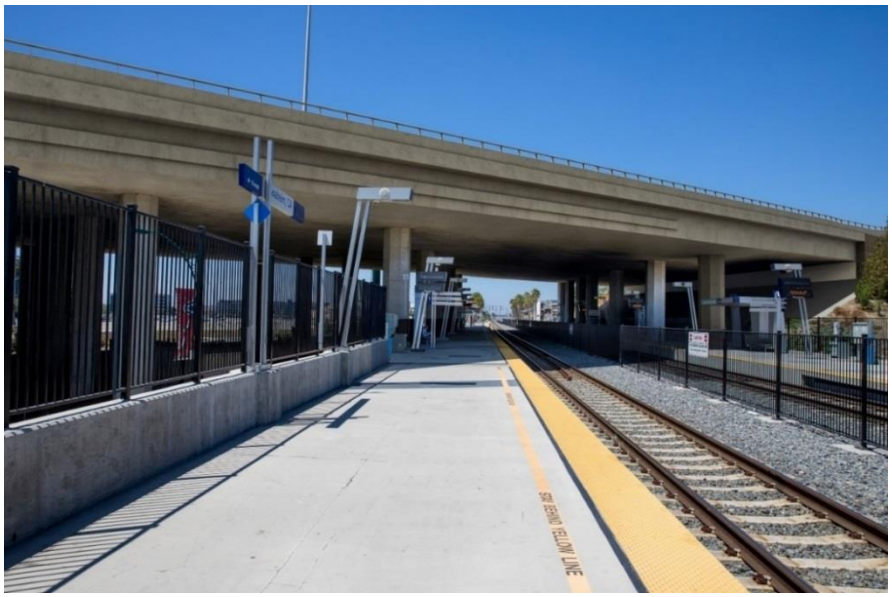


Photo-simulation condition with the proposed widening at the Stadium OH bridge
Source: VIA 2018.

As shown in **Figure 2-11: Photo-simulation of Alternative 2A for Key Viewpoint 1**, the photo simulation of the new bridge structure proposed for Alternative 2A, adds a new structure adjacent to the existing bridge, increases the visual mass, scale and dominance of SR 57 as viewed from the platform. The widened bridge notably expands the area under the bridge that is overcast by shadows as compared to the existing view.

Figure 2-11: Photo-simulation of Alternative 2A for Key Viewpoint 1

Existing condition photograph taken from the ARTIC station platform, looking northwest

Photo-simulation condition with the proposed new bridge structure

Source: VIA 2018.

Both the widened SR 57 bridge structure and new bridge structure would continue to be at the same or similar height as the existing bridge structure and therefore, would not block views of scenic vistas from the ARTIC station platform.

Key Viewpoint 2 – From Northbound SR 57 Auxiliary Lane

Figure 2-12: Photo-simulation of Alternative 2 (Preferred Alternative) for Key Viewpoint 2 shows the reconfiguration of the Orangewood Avenue westbound on-ramp to northbound SR 57 to have a 90-degree angle intersection with Orangewood Avenue proposed under the Preferred Alternative. The ramp is moved east of its current location to reduce the curvature of the on-ramp. Similarly, the westbound loop on-ramp access would be relocated eastward opposite the new location of the access to the on-ramp.

Proposed changes to the SR 57 on-ramps and to Orangewood Avenue are consistent with the existing visual character of both the highway and the local arterial road. No new structures would be added that block or alter existing views.

Figure 2-12: Photo-simulation of Alternative 2 (Preferred Alternative) for Key Viewpoint 2

Existing condition photograph taken from the northbound SR 57 auxiliary lane, looking east

Photo-simulation condition with proposed reconfiguration of Orangewood Avenue westbound on-ramp

Source: VIA 2018.

Figure 2-13: Photo-simulation of Alternatives 2A and 2B for Key Viewpoint 2 shows the Orangewood Avenue westbound on-ramp removed as part of the changes proposed under Alternatives 2A and 2B. Like the Preferred Alternative, the westbound loop on-ramp access would be relocated eastward to have a 90-degree angle intersection with Orangewood Avenue under Alternatives 2A and 2B.

Visually, the comparison of views for this location for all Build Alternatives shows minimal changes other than to the existing roadway geometry.

Figure 2-13: Photo-simulation of Alternatives 2A and 2B for Key Viewpoint 2

Existing condition photograph taken from the northbound SR 57 auxiliary lane, looking east

Photo-simulation condition with the proposed removal of the Orangewood Avenure westbound on-ramp

Source: VIA 2018.

Key Viewpoint 3 – From SR 57 Loop On-Ramp

As shown in **Figure 2-14: Photo-simulation of All Build Alternatives for Key Viewpoint 3**, all of the Build Alternatives would result in modifications to the landscaping adjacent to SR 57 and lane restriping. To maintain the Classified Landscaped Freeway designation the Project would replace landscaping that is disturbed in accordance with the qualifications for classification. There are no major differences for all the Build Alternatives as compared to the existing view in terms of mass or scale.

Figure 2-14: Photo-simulation of All Build Alternatives for Key Viewpoint 3

Existing condition photograph taken from the northbound SR 57 loop on-ramp, looking north

Photo-simulation condition with all proposed Build Alternatives
Source: VIA 2018.

As shown in the photo simulation, the widening of SR 57 would be at the same grade as the existing roadway and would not block or alter views of the surrounding area from SR 57 such as the Santa Ana River, Santa Ana River Trail and bike path, or the San Bernardino and Saddleback Mountains. No new structures are added that block or alter existing views. All of the Build Alternatives are consistent with the existing visual character and would have a low resource change at Key Viewpoint 3.

Overall, the resource change and viewer response of the Build Alternatives would result in moderate-low visual impact for the three key viewpoints assessed.

The Build Alternatives would re-pave and re-stripe the freeway, which would match the portions of SR 57 north and south of the project area and provide integrity in the material and color within the project area; thereby improving the intactness of the freeway. Vegetation removed as part of the Project would be replaced in compliance with the Project's Aesthetic and Landscape Master Plan. Mature trees within State's right of way would be retained as feasible to assist in maintaining visual quality and community character. Notably, the tall, mature trees that screen SR 57 from the views of residential viewers (center right of **Figure 2-10: Photo-simulation of Alternatives 2 and 2B for Key Viewpoint 1** and **Figure 2-11: Photo-simulation of Alternative 2A for Key Viewpoint 1**) would be maintained. Areas disturbed during construction would be revegetated with similar plantings to existing and would be maintained with a permanent irrigation system.

Context Sensitive Solutions

- Context sensitive solutions will be considered to help reflect the unique character of the community, reduce the visual effects of the Project and provide compatibility with existing resources and features. Contextual elements such as retaining walls, bridge abutments, lighting, landscaping and slopes will be considered for application of context sensitive solutions. The following context sensitive solutions are considered a part of the Build Alternatives and include standard construction and design practices that are typically implemented as part of the part of the project design and construction to avoid or minimize visual impacts:
- During construction, lighting would be shielded and/or focused on work areas to minimize ambient spillover into adjacent areas.
- Grading cuts and fills would be contoured to visually blend with the surrounding landscape to the extent practical.
- The color and aesthetic treatment of the highway and associated structures, such as retaining walls, medians, bridge abutments and columns would be applied consistently with other highway structures in the project vicinity.

- The Project would retain as much existing vegetation as possible, particularly mature trees that are located between the highway and adjacent land uses.

2.1.7.4 Avoidance, Minimization, and/or Mitigation Measures

In addition to the use of context sensitive solutions to help reduce potential impacts to visual quality and character, OCTA and Caltrans have elected to include the following measures to further reduce the visual effects of the Project:

AV -1: Replace in kind disturbed landscaping within the existing Classified Landscape Freeway segments from PM 11.5 to PM 12.02 and PM 12.11 to PM 12.5 to maintain the designation. New landscape plantings shall be consistent with the existing landscaping within the project area. A permanent irrigation system will be provided for landscape plantings.

AV - 2: In coordination with Caltrans' Landscape Architecture Unit, develop a Project Aesthetics and Landscape Master Plan for the Project. The master plan would discuss measures to preserve existing plants, preserve the freeway status, revegetate disturbed areas, address corridor themes including structure aesthetics, and screen or enhance project elements.

2.1.8 Cultural Resources

2.1.8.1 Regulatory Setting

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

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department Projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA

have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties (in Section 4(f) terminology—historic sites). See Appendix A for specific information about Section 4(f).

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

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

2.1.8.2 Affected Environment

This section of the environmental document discloses the project's effects, or impacts, on cultural resources listed in or eligible for listing in the NRHP and/or the CRHR, how those impacts were determined, and whether and how impacts can be avoided or lessened. Information in this section is compiled from the *Archeological Survey Report* (ASR) (May 2018), *Historic Property Survey Report* (HPSR) (May 2018), and tribal consultation (see records of correspondence in **Table 4-1: Native American Tribes, Groups, and Individuals Contacted for the Project** and in the HPSR).

Area of Potential Effects (APE)

In accordance with Section 106 Programmatic Agreement Stipulation VIII.A, the APE was established with Caltrans District 12's archaeologist and project manager. The APE for the project was established on May 21, 2018, in consultation with Cheryl Sinopoli, PQS Prehistoric Archaeology, and Simin Arazbegi, Project Manager.

The Project is composed of both a Direct and Indirect APE. The Direct APE measures 39.35 acres and encompasses all areas that may be directly and physically impacted by the Project. The Direct APE consists of the Project Limits of Disturbance plus a 10-foot buffer. The Indirect APE is a 100-foot buffer around the Direct APE and incorporates whole parcels where the buffer intersects a parcel. However, because only roadway striping would occur at the southern terminus, the direct and indirect APEs are coincident at this location.

The vertical APE is the maximum depth of any project-related ground disturbing work. The maximum depth of ground disturbance is approximately 10 to 12 feet for the construction of pier walls in the Santa Ana River.

Methodology

A search for archaeological and historical records was completed at the South Central Coastal Information Center (SCCIC) of the California Historical Resources Inventory System (CHRIS) located at the State University of California, Fullerton on March 28, 2017. The record search covered a one-mile radius around the APE boundary.

In addition to the SCCIC records search, a records review that included the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), California Historical Resources Inventory System (CHRIS), California Historical Landmarks (CHL), and California Points of Historical Interest (CPHI) was conducted. A Sacred Land File search was also requested from the Native American Heritage Commission (NAHC) in March of 2017 and returned with no results of Native American sacred lands or cultural resources within a one-mile radius of the APE.

University of California Davis National Resources Conservation Service California Soils Resource Lab (UCD SoilWeb) soils maps and the United States Department of Agriculture National Resources Conservation Service (USDA-NRCS) soils descriptions, and geologic maps, both available online, were utilized for assessment of potential subsurface site preservation. Archeologists also completed an intensive-level pedestrian survey of the accessible areas of the APE in July of 2017.

Native American Consultation

- The Native American Heritage Commission (NAHC) was contacted initially in March 2017 (updated in August) for a search of the Sacred Lands File. The results were negative. Subsequently, Caltrans contacted the NAHC for a CEQA Tribal Consultation

List (AB52) in September 2017. As a result, 21 Tribes, Groups, or Individuals were sent Tribal Consultation letters by Caltrans District 12 via certified mail on September 29, 2017, to meet the requirements of AB52 and Section 106. Only four responses were received from the initial letter and follow-up attempts by phone or email conducted in October 2017. These responses are summarized below:

- Gabrielino/Tongva San Gabriel Band of Mission Indians, Anthony Morales, Chairperson. Letter received on October 23, 2017 with a request that the tribe be retained to conduct Native American monitoring due to the consideration of potential culturally sensitive areas within the project location.
- Juaneno Band of Mission Indians Acjachemen Nation, Joyce Perry, Tribal Manager. Response letter on October 14, 2017 indicated no comments or concerns.
- Gabrielino Tongva Indians of California Tribal Council, Robert Dorame, Chairperson. Requested a digital version of the letter be sent to him on October 23, 2017. No additional response was received following the information being sent.
- Gabrielino Band of Mission Indians-Kizh Nation, Andrew Salas, Chairperson. Consultation was established beginning October 11, 2017 and continued to May 8, 2018. Chairperson Salas provided information regarding the correct placement of the Village of Hutukngna (var. spelling) which is outside the APE, as well as, additional information such as maps and articles regarding the overall project vicinity. Based on the consultation and provided evidence, it was determined that the potential to encounter cultural resources on this Project as proposed would be low given that SR-57 is mostly comprised of artificial fill in this area and the excavation required within the Santa Ana River is unlikely to yield cultural resources given the riverwash is considered too active. As such, Caltrans has sought to address the Tribe's concerns in good faith and after reasonable effort, was unable to come to agreement regarding the project area's sensitivity. Caltrans recognizes that the results will not appease Chairman Salas' concerns, and provided Chairman Salas the opportunity to monitor construction activities, but it would be on a volunteer basis and unpaid given Caltrans' policy is to have Native American monitoring in the following circumstances:
    - During all Caltrans archaeological excavations at prehistoric or historic Native American sites, including Extended Phase I, Phase II and Phase III studies, and:
    - During construction or related activities at known site locations or in areas where there is a high probability that there may be a buried archaeological site based on the geomorphology of the area.
- No further comments were received.

Historic Resources

One historic built environment resource, the former BNSF Railroad (P-30-176663), intersects the APE at the Stadium OH Bridge. Construction will occur within the OCTA right of way (widening of the overhead above the railroad), however, the project will not impact the railroad as a historic resource.

The following four bridge structures are within the APE and are listed as Caltrans Category 5 (Not Eligible for the NRHP) in Caltrans Historic Bridge Inventory:

- Santa Ana River Bridge
- Orangewood Avenue UC
- Stadium OH
- Katella Avenue
- The four bridge structures do not require evaluation or are exempt from evaluation because they meet the criteria set forth in the Section 106 Programmatic Agreement Attachment and were not eligible for inclusion in the National Register of Historic Places or California Historical Landmark.

2.1.8.3 Environmental Consequences

Temporary Impacts

Alternative 1 – No Build

No changes to the existing conditions are associated with the No Build; therefore, no impacts to any known or potential cultural resources are anticipated.

Alternative 2 (Preferred Alternative), 2A, & 2B - Build Alternatives

All proposed improvements under the three Build Alternatives would be accommodated within the existing Caltrans right of way with the exceptions noted below under each alternative discussion. No displacements of existing land uses would occur and no utility relocations are required. For Alternatives 2 (Preferred Alternative), 2A, and 2B, it is assumed that 1,803-square feet (0.04 acre) of TCE (access only) from the city of Anaheim (property owner) and 78,800-square feet (1.8 acre) of TCE from OCFCD (property owner) would be required to gain access to the existing maintenance road and riverbed, respectively. For the Preferred Alternative and Alternative 2B, widening the Stadium OH Bridge would require revising the existing highway easement to expand it by an additional 1,359-square feet (0.03 acre) for work over the existing RR tracks from the OCTA (property owner) to the state (Caltrans, freeway owner). For Alternative 2A, the new bridge structure would require revising the existing highway easement to expand it by an additional 3,290-square feet (0.08 acre) for work over the existing RR tracks.

The revised highway easement for all three Build Alternatives would be permanent with rights to access and maintain the freeway from beneath the widened or new structure.

Although widening existing structures or adding new structures under the Build Alternatives would require excavation, the SR 57 is on artificial fill that is about 20 feet in depth. The potential for encountering cultural resources is low. Maximum depth of excavation for extending the pier walls in the Santa Ana River would be about 10 to 12 feet. The potential for encountering cultural resources in the Santa Ana River is low. Other than the pier walls, less than 5 feet of ground disturbance is planned for the primary purpose of artificial fill and potential pile driving for bridge-work. This includes 3 to 5 feet for freeway embankments and slopes and 1 to 2 feet for roadbeds. No archaeological resources were previously recorded and none were observed during the field survey in the proposed project site.

Given the historic hydrogeologic setting of the Santa Ana River section in the project boundary, the riverwash sediments would be too active to contain buried archaeological deposits. The previous disturbances within the river from construction of the existing freeway and annual ground disturbing activities conducted by the OCFCD as well as the lack of prehistoric archaeological resources in the vicinity of the river result in a low potential for subsurface archaeological deposits within this segment of the Santa Ana River.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

Pursuant to California Public Resources Code (PRC) 7050.5(b), in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27491 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains. Pursuant to PRC 7050.5(c) if the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendent (MLD). At this time, the person

who discovered the remains would contact the District Environmental Branch Chief so that they may work with the MLD on the respectful treatment and disposition of the remains.

Widening the overhead bridge will consist of crane-placed precast girders over the railroad within the OCTA right of way at the existing pedestrian platforms. This activity will span over the railroad and thus will not impact the railroad's integrity as a historic resource. Furthermore, the bridge retrofit work would occur within the bridge deck. Four Caltrans bridges were identified in the APE and would be affected by the Project, however, none of the bridges are eligible for listing in the NRHP. No historic built environment resources would be impacted by this Project.

Permanent Impacts

Alternative 1 – No Build

No changes to the existing conditions are associated with the No Build; therefore, no impacts to any known or potential cultural resources are anticipated.

Alternative 2 (Preferred Alternative), 2A, 2B – Build Alternatives

The APE is within an urban environment and has been completely disturbed by construction of SR 57, existing roads, modern commercial and residential development, and urban infrastructure. Four bridge structures are within the APE and all are listed as Category 5 (Not Eligible for the NRHP) in Caltrans Historic Bridge Inventory. However, they are considered to be ineligible for the NRHP listing and excluded from evaluation because they meet the criteria set forth in the Section 106 Programmatic Agreement Attachment. Widening the overhead bridge will consist of crane-placed precast girders over the railroad within the OCTA right of way at the existing pedestrian platforms. This activity will span over the railroad and thus will not impact the railroad's integrity as a historic resource. The finding for this Project, for the purposes of Section 106, is No Historic Properties Affected.

No prehistoric resources were identified in the APE through the record searches, Native American consultation, and the field survey.

2.1.8.4 Avoidance, Minimization, and/or Mitigation Measures

Standardized project measures to reduce potential impacts to cultural resources can be found in Section 1.3.1.1, Other Project Elements.