Chapter 2 Project Alternatives

2.1 Project Description

This section describes the proposed action and the alternatives developed to meet the Purpose and Need of the Proposed Project, while avoiding or minimizing environmental impacts. The alternatives are the Build Alternative and the No Build Alternative.

The Proposed Project, located at the junction of State Route 241 (SR-241) and State Route 91 (SR-91) in the cities of Anaheim, Yorba Linda, and Corona, and the counties of Orange and Riverside, would provide improved access between SR-241 and SR-91, and is proposed to be a tolled facility. The proposed median-to-median connector project encompasses 12-ORA-241 (Post Mile [PM] 36.1/39.1), 12-ORA-91 (PM 14.7/18.9), and 08-RIV-91 (PM 0.0/1.5) for a total length of approximately 8.7 miles (mi).

The improvements for the connector include 5.9 mi in the cities of Anaheim and Yorba Linda and unincorporated Orange County, from south of Windy Ridge Wildlife Undercrossing on SR-241 to Coal Canyon Undercrossing on SR-91. The remaining 2.8 mi of the Proposed Project include signage improvements (advance signage) in the cities of Anaheim (1.2 mi), Yorba Linda (0.1 mi), and Corona (1.5 mi) and unincorporated Orange and Riverside counties, with exact placement of the signage pending the Final Design process. The Proposed Project is mostly within existing California Department of Transportation (Caltrans) right-of-way, with one partial acquisition required adjacent to eastbound SR-91. Construction access and staging areas would occur within existing Caltrans right-of-way and the partial acquisition adjacent to eastbound SR-91 as noted above.

The objectives of the Proposed Project are to implement the buildout of the Eastern Transportation Corridor (ETC), attain compatibility with the SR-91 mainline and *91 Express Lanes* configuration, improve operations and traffic flow between the *91 Express Lanes* and the SR-241 general purpose connectors, help achieve the Regional Mobility Plan goals of reducing emissions from transportation sources, and enhance the efficiency of the tolled system, thereby reducing congestion on the non-tolled system on the SR-91. The Proposed Project is needed to provide a direct connection between SR-241 and the *91 Express Lanes* to accommodate the buildout of the ETC as well as existing and future transportation demand.

2.2 Project Alternatives

The proposed median-to-median connector is a later phase of the ETC project, previously approved in 1994. It was originally evaluated as a SR-241/SR-91 high-occupancy vehicle (HOV) direct connector in the 1991 ETC Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS), 1992 ETC Final EIR, and the 1994 ETC Final EIS (all of which studied a broader Project Area with improvements on State Route 133 [SR-133], SR-241, and State Route 261 [SR-261]).

To implement this later phase of the ETC, this Draft Supplemental EIR/EIS has been prepared to:

- Focus on the northern end of the original project;
- Address changes to environmental conditions and regulatory requirements; and
- Address the extended Project Limits on SR-91 to the east; and
- Comply with 23 CFR 771.129(b): "*A written evaluation of the final EIS will be required before further approvals may be granted if major steps to advance the action (e.g., authority to undertake final design, authority to acquire a significant portion of the right-of-way, or approval of the plans, specifications, and estimates) have not occurred within three years after the approval of the final EIS."* Because the SR-241/SR-91 Express Lanes Connector design was postponed longer than 3 years after the ETC Final EIS approval, the median-to-median connector is required to be re-evaluated in compliance with NEPA.

This Draft Supplemental EIR/EIS includes a No Build and only one Build Alternative (Preferred Alternative) for the median-to-median connector for the following reasons:

- The median-to-median connector is a component of a previously approved project and alternative selected during the 1992 EIR Certification and 1994 Record of Decision (ROD) for the original ETC project;
- Various alternatives were studied for the previously approved project that included consideration of a reasonable range of potentially feasible alternatives; and
- There are limited locations for a median-to-median connector between SR-241 and SR-91.

2.2.1 Build Alternative (Two-Lane Tolled Express Lanes Connector): Identification of a Preferred Alternative

The Build Alternative would construct a two-lane express lane median-to-median connector between SR-241 and SR-91, which would connect lanes from the median of northbound SR-241 to the existing eastbound median *91 Express Lanes* and the reverse movement from the westbound median *91 Express Lanes* to the median of southbound SR-241. The connector would be tolled. The Build Alternative is shown in Figure 2.1.

The Build Alternative would merge into the existing Orange County Transportation Authority (OCTA) *91 Express Lanes* at Coal Canyon Undercrossing. The Riverside County Transportation Commission's (RCTC) SR-91 Corridor Improvement Project (CIP) will extend the express lanes on SR-91 east to Interstate 15 (I-15). The Build Alternative is compatible with the approved SR-91 CIP for both the initial and ultimate configurations, including the number and widths of the express lanes, express auxiliary lanes, and general purpose lanes.

On March 24, 2016, the Project Development Team evaluated the Build Alternative and the No Build Alternative to develop a recommendation to Caltrans for the Preferred Alternative. Due to the fact that there was only one Build Alternative, no systematic criteria were developed to compare the Build Alternative to the No Build Alternative. However, the reasons for selecting the Build Alternative as the Preferred Alternative include:

- Meeting the project Purpose and Need
- Consistency with the planned facility
- Consistency with regional transportation and air quality planning

In addition, the environmental impacts of the Build Alternative were in an acceptable range (all adverse environmental impacts can be avoided, minimized, or mitigated) when compared to the No Build Alternative. The Build Alternative would implement the selected alternative in the ETC Final EIR and ROD for the Final EIS. While the Build Alternative meets the Proposed Project's Purpose and Need, the identification of it as the Preferred Alternative was also based upon the following factors:

- Various alternatives were studied for the previously approved project that included consideration of a reasonable range of potentially feasible alternatives; and

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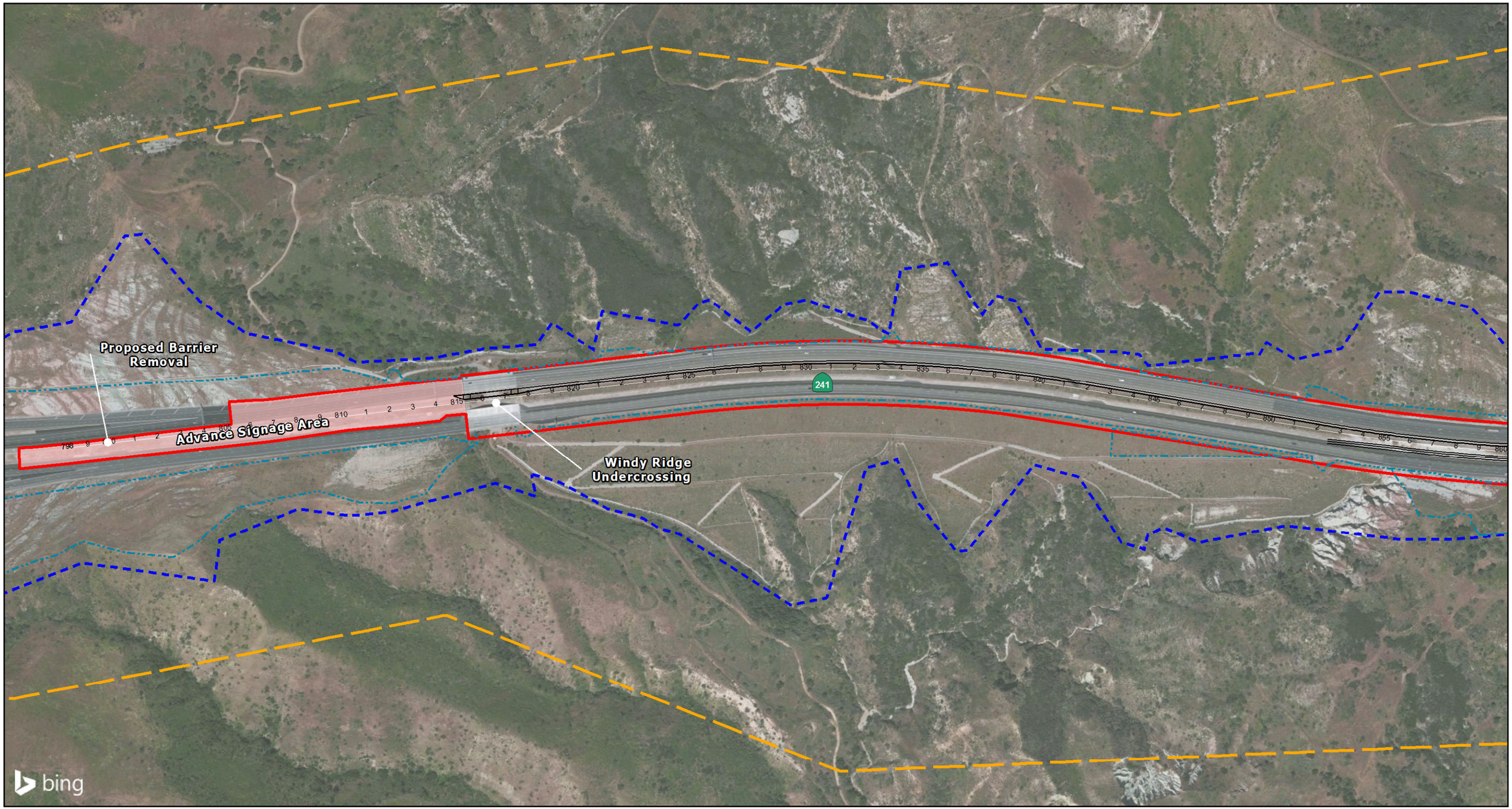

LEGEND

- Project Area (Physical Improvements)
- Advance Signage Areas
- ETC EIR/EIS Project Area
- Existing Caltrans Right-of-Way
- Proposed Right-of-Way
- Existing Wildlife Fencing
- Proposed Roadway
- Proposed Grading Limits (Slope and Access Road)
- Proposed Bridge Structure
- Proposed Retaining Wall
- Station Line
- Proposed Construction Access
- Proposed Construction Staging Area
- Proposed Biofiltration Swale
- Proposed Media Filter
- Proposed Storm Drain Pipe
- Proposed Storm Drain Swale
- Proposed Storm Drain Structure

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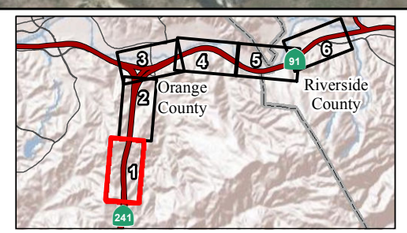

FIGURE 2.1
Sheet 1 of 6

SR-241/SR-91 Express Lanes Connector

Build Alternative (Preferred Alternative)

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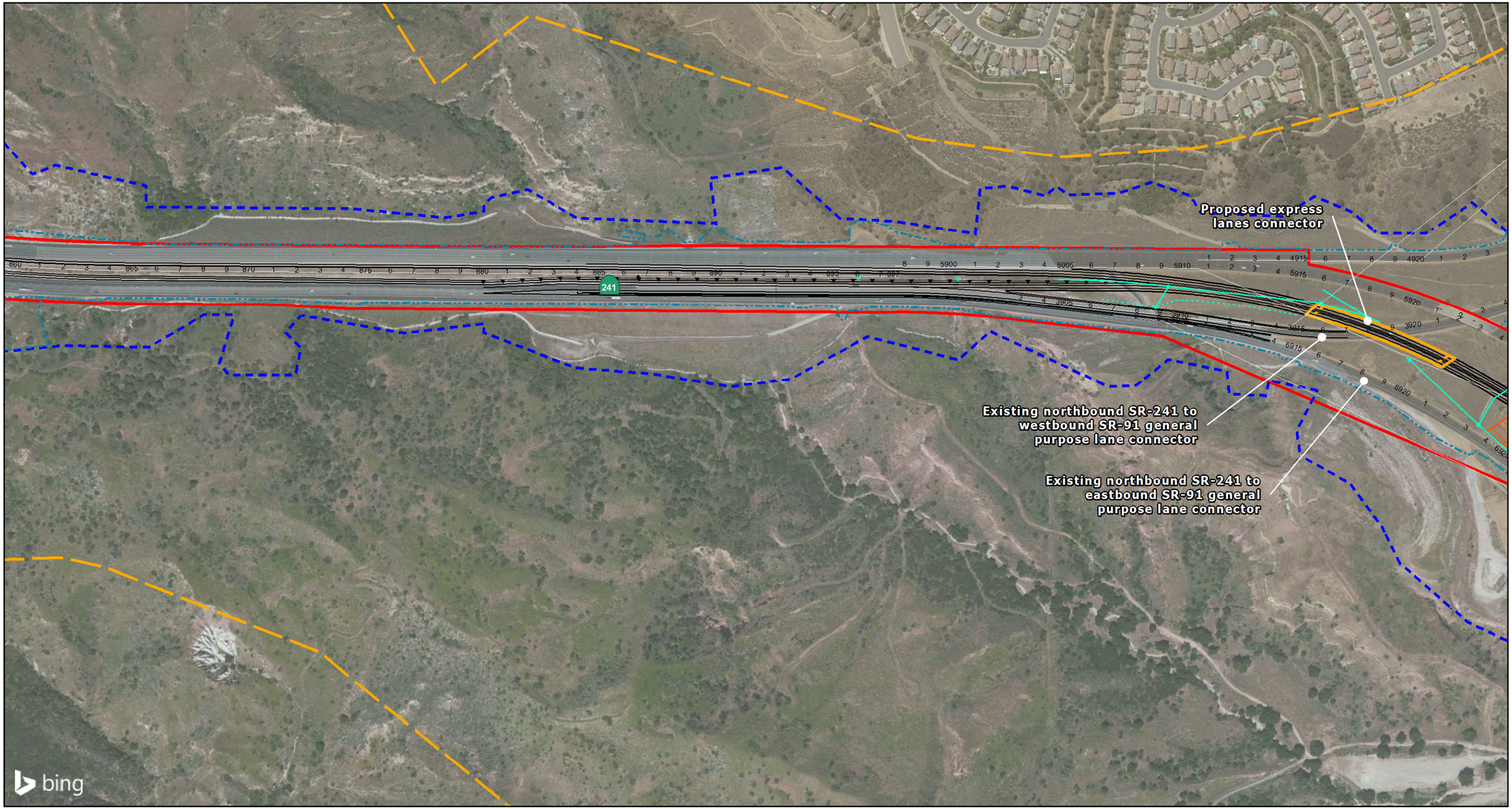

LEGEND

- Project Area (Physical Improvements)
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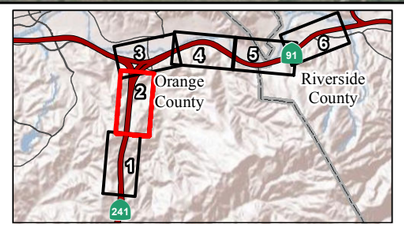

FIGURE 2.1
Sheet 2 of 6

SR-241/SR-91 Express Lanes Connector
Build Alternative (Preferred Alternative)

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Gypsum Canyon Rd

Advance Signage Area

Existing westbound SR-91 to southbound SR-241 general purpose lane connector

Existing northbound SR-241 to westbound SR-91 general purpose lane connector

Existing eastbound SR-91 to southbound SR-241 general purpose lane connector

Proposed express lanes connector

Existing northbound SR-241 to eastbound SR-91 general purpose lane connector

91

241

bing

LEGEND

- Project Area (Physical Improvements)
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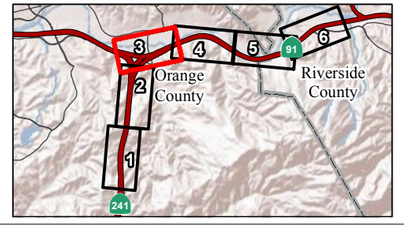

FIGURE 2.1
Sheet 3 of 6

SR-241/SR-91 Express Lanes Connector
Build Alternative (Preferred Alternative)

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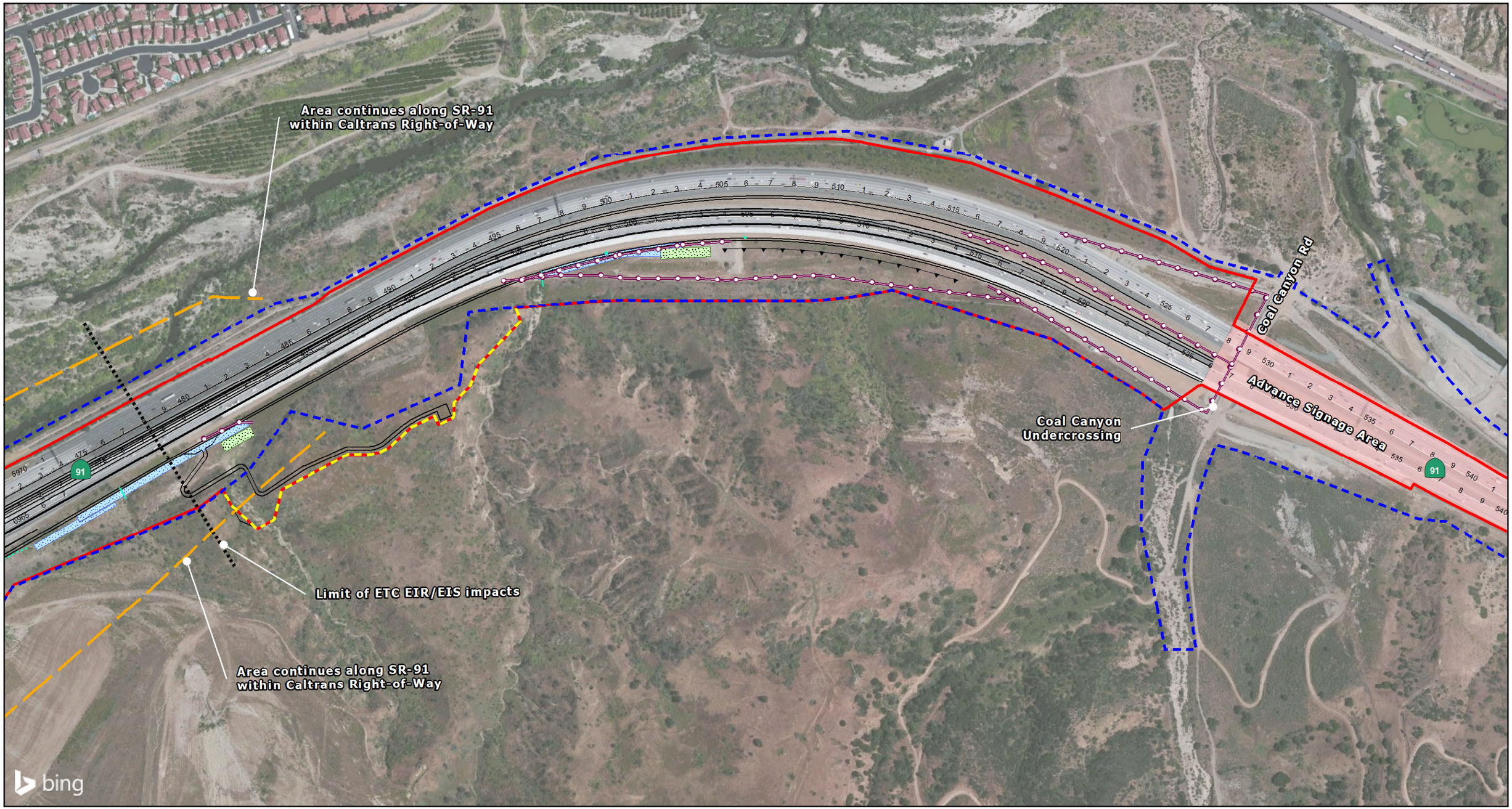

LEGEND

- Project Area (Physical Improvements)
- Advance Signage Areas
- ETC EIR/EIS Project Area
- Existing Caltrans Right-of-Way
- Proposed Right-of-Way
- Existing Wildlife Fencing
- Proposed Roadway
- Proposed Grading Limits (Slope and Access Road)
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- Proposed Media Filter
- Proposed Storm Drain Pipe
- Proposed Storm Drain Swale
- Proposed Storm Drain Structure

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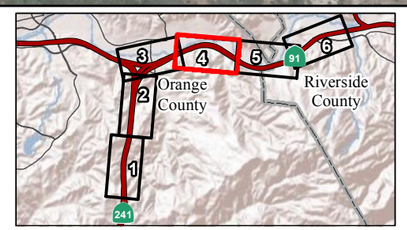

FIGURE 2.1
Sheet 4 of 6

SR-241/SR-91 Express Lanes Connector

Build Alternative (Preferred Alternative)

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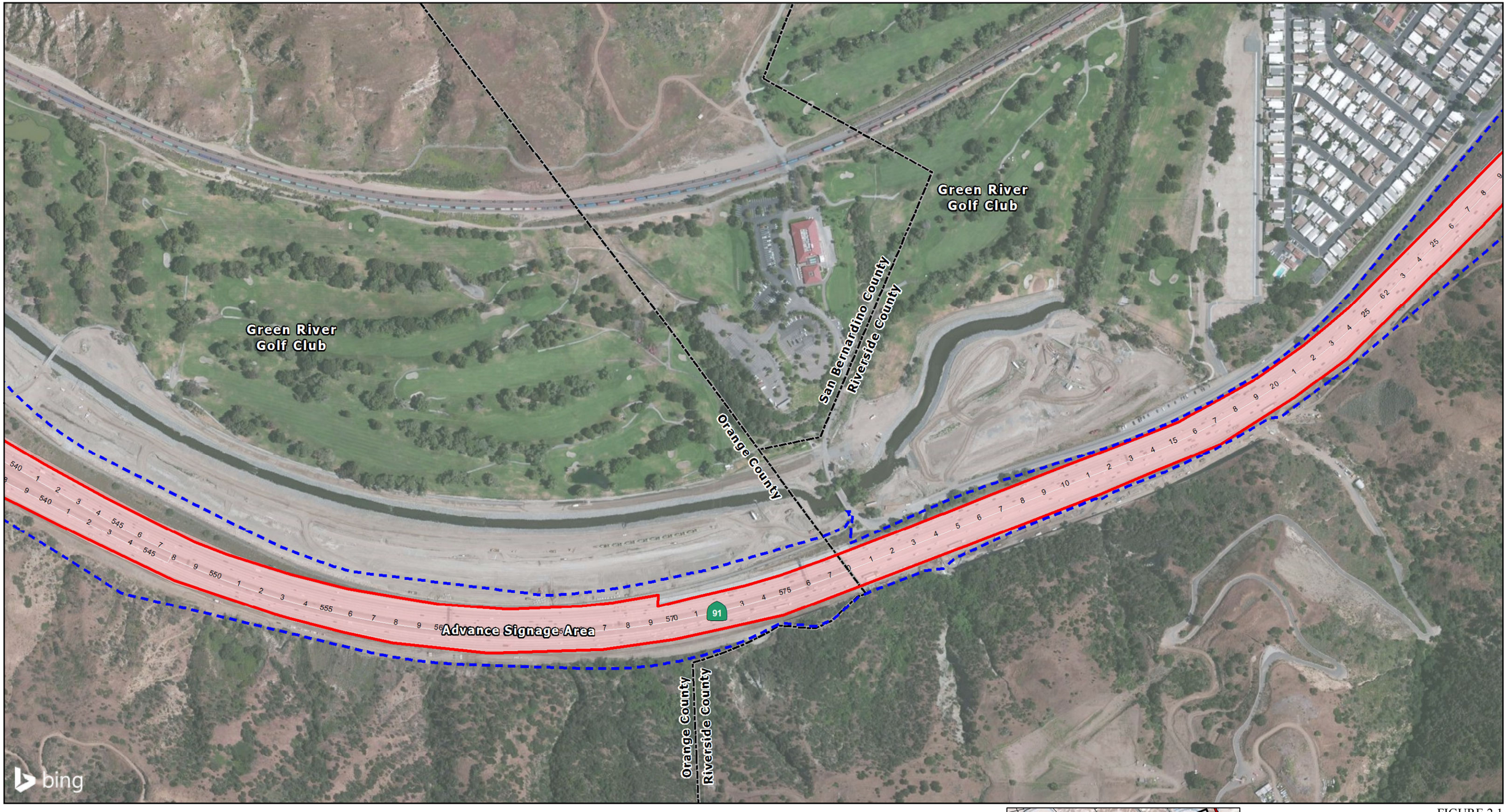

LEGEND

- Project Area (Physical Improvements)
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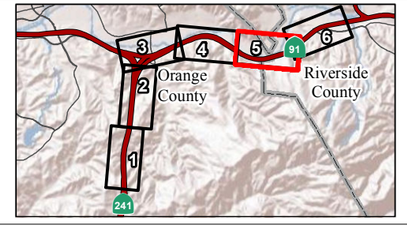

FIGURE 2.1
Sheet 5 of 6

SR-241/SR-91 Express Lanes Connector
Build Alternative (Preferred Alternative)

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LEGEND

- Project Area (Physical Improvements)
- Advance Signage Areas
- ETC EIR/EIS Project Area
- Existing Caltrans Right-of-Way
- Proposed Right-of-Way
- Existing Wildlife Fencing
- Proposed Roadway
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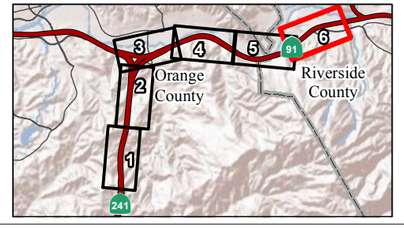

FIGURE 2.1
Sheet 6 of 6

SR-241/SR-91 Express Lanes Connector
Build Alternative (Preferred Alternative)

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- There are limited locations for a median-to-median connector between SR-241 and SR-91.

2.2.1.1 Design Features of the Build Alternative (Preferred Alternative)

The Build Alternative and limits of the impact area are depicted on Figure 2.1. The footprint of the Proposed Project (Project Area) includes areas for grading and construction and reconstruction of roadway and bridge facilities. The construction area includes access roads, material storage areas, and areas for the construction of water quality best management practices (BMPs).

The Build Alternative includes implementation of permanent facilities and temporary facilities/activities. Permanent facilities include:

- New lanes and roadway alignment on northbound SR-241, southbound SR-241, eastbound SR-91, and westbound SR-91;
- Striped buffers and channelizers;
- Ramp realignment;
- Bridge structures and bridge widenings;
- Graded slopes;
- Guard railing/barriers;
- Retaining walls;
- Advance signage;
- Water Quality BMPs;
- Drainage system improvements;
- Landscaping; and
- Transportation System Management (TSM)/Transportation Demand Management (TDM) Features.

Temporary activities and facilities include:

- Temporary restriping;
- Construction barriers;
- Detours and closures;
- Construction access and staging areas; and
- Utilities.

The following sections describe the permanent and temporary features of the Build Alternative in detail.

2.2.1.2 Permanent Project Features

New Lanes and Roadway Alignment

Improvements on Southbound SR-241

On southbound SR-241, an additional lane and shoulder would be provided by widening Windy Ridge Wildlife Undercrossing into the existing median and improving the highway median for approximately 10,000 feet (ft) to the north (Figure 2.1, Sheet 1).

Improvements on Northbound SR-241

Starting approximately 3,700 ft north of the Windy Ridge Wildlife Undercrossing, an additional lane and shoulder would be provided by widening into the existing highway median for approximately 5,000 ft. The two express (northbound and southbound) connector lanes would converge in the existing SR-241 median on fill for approximately 800 ft. The connector then spans over the existing northbound SR-241 to the westbound SR-91 general purpose lane connector and the SR-91/Gypsum Canyon Road interchange on two new bridge structures approximately 570 ft and 1,590 ft in length, respectively (to merge in the median of SR-91) (Figure 2.1, Sheets 2 and 3).

Improvements on Eastbound SR-91

To accommodate the addition of the median-to-median connector, eastbound SR-91 would be realigned to the south (Figure 2.1, Sheets 3 and 4). The northbound SR-241 to eastbound *91 Express Lanes* connector would continue on eastbound SR-91, ending approximately 1,000 ft west of Coal Canyon Undercrossing. An eastbound auxiliary express lane would be constructed within the *91 Express Lanes*. The proposed auxiliary express lane would begin approximately 2,000 ft east of Gypsum Canyon Road Undercrossing to Coal Canyon Undercrossing joining the initial phase of the SR-91 CIP at Coal Canyon Undercrossing. These improvements would provide a four-lane express lane facility, tapering down to three lanes between the connector and Coal Canyon Undercrossing. The number of existing eastbound SR-91 general purpose lanes would be maintained within the project limits. The eastbound *91 Express Lanes* would have a 4 ft buffer on the right separating the general purpose lanes, and a 4 ft buffer to the left separating the express connector lane. The buffers would transition to 0 ft to join the SR-91 CIP at the eastern terminus of the Project Limits (Figure 2.1, Sheets 3 and 4). Approximately 4,500 ft west of Coal Canyon Undercrossing, grading into an existing slope on the south side of SR-91 would be required to accommodate the realigned eastbound SR-91 lanes (Figure 2.1, Sheet 4). The grading would span approximately 1,300 ft along eastbound SR-91. A

maintenance access road would be provided along the edge of slope grading. These improvements would provide a four-lane express lane facility, tapering down to three lanes between the connector and Coal Canyon Undercrossing.

Improvements on Westbound SR-91

At the eastern terminus of the Project, the westbound *91 Express Lanes* would be restriped and the median widened to accommodate the addition of the express connector lane within the *91 Express Lanes* to the southbound SR-241 median-to-median connector. The connector lane would begin approximately 1,000 ft west of Coal Canyon Undercrossing and extend west for approximately 4,500 ft in the SR-91 median ending at the express lanes connector. The auxiliary express lane at the SR-91 CIP connection would be extended in the westbound direction ending 2,000 ft west of Coal Canyon Undercrossing. These improvements would provide a four-lane overlap section along westbound SR-91 for approximately 1,000 ft. This 1,000 ft overlap would accommodate weaving between traffic accessing the southbound SR-241 median-to-median connector and the westbound *91 Express Lanes*. The existing eastbound SR-91 lanes would be shifted to the south (Figure 2.1, Sheets 3 and 4).

Striped Buffers and Channelizers

The Build Alternative would provide a striped buffer with surface mounted channelizers to separate the SR-91 general purpose lanes from the *91 Express Lanes* and a new striped buffer with surface mounted channelizers to separate the eastbound express lane connector lane from the *91 Express Lanes*. The eastbound express lane buffers would taper from 0 to 4 ft and the westbound express lane buffers would taper from 0 to 2 ft.

Ramp Realignment

The SR-91/Gypsum Canyon Road eastbound on and off-ramps and the northbound SR-241 to eastbound SR-91 general purpose connector would be realigned to accommodate the SR-91 realignment due to the addition of the median-to-median connector. A design variation for this interchange is a roundabout configuration.

Bridge Structures and Bridge Widening

Two new overcrossing structures would be constructed as part of the express lanes connector and two existing bridges would be widened as follows:

- **SR-241/SR-91 Express Lanes Connector:** Two new structures would connect traffic from northbound SR-241 to eastbound SR-91 and from westbound SR-91

to southbound SR-241. Both directions of travel would be on one connector (Figure 2.1, Sheets 2 and 3).

- **Gypsum Canyon Undercrossing Widening:** On eastbound SR-91, the existing Gypsum Canyon Undercrossing would be widened to the south.
- **Windy Ridge Wildlife Undercrossing Widening:** On southbound SR-241, the Windy Ridge Wildlife Undercrossing would be widened to the east.

All structures would be constructed using a cast-in-place, pre-stressed, concrete box girder.

Graded Slopes

Manufactured fill slopes would not exceed a 4:1 ratio. Manufactured cut slopes would not exceed a 2:1 ratio. Graded slopes would be contoured consistent with the existing topography, and would be seeded with native plant species consistent with existing vegetation.

Guard Rails/Barriers

Additional pavement would be added on SR-241 between the existing lanes designated for the northbound SR-241 to the westbound SR-91general purpose connector and the existing lanes designated for the northbound SR-241 to the eastbound SR-91 general purpose connector to accommodate a barrier separation to prevent vehicles traveling in the northbound SR-241 to westbound SR-91 general purpose connector lanes to "queue jump" into the eastbound SR-91 general purpose connector lanes. This feature would improve traffic flow on the SR-241. Sufficient pavement width is proposed to accommodate a standard concrete barrier; however, initially, pavement delineation and signing will be implemented to delineate the separation. In the future, a standard concrete barrier will be installed if required.

As shown on Figure 2.1, Sheet 1, an existing barrier along the inside shoulder of north SR-241 (just south of the Windy Ridge Undercrossing) would be removed to allow for advance signage.

Retaining Walls

Four new retaining walls are required for the Proposed Project. One wall would be constructed in the median of SR-241 to support median widening and to accommodate the future addition of a southbound lane per the ETC ultimate plan (Figure 2.1, Sheet 2). This wall would be approximately 2,900 ft long and up to 15 ft high. Two mechanically stabilized earth retaining walls would be constructed in the median of SR-91 to support the connector as it transitions to an elevated structure

(Figure 2.1, Sheet 3). These walls would be approximately 1,350 ft long and up to 15 ft high, but views would be blocked by the existing structures associated with the junction of SR-241 and SR-91. One retaining wall would be constructed adjacent to eastbound SR-91, approximately 2,200 ft west of Coal Canyon Undercrossing and would be approximately 1,025 ft long and up to 28 ft high (Figure 2.1, Sheet 4). However, this retaining wall would face vacant land to the south; only the top 3 ft of the retaining wall cap would be visible from SR-91.

In the median of SR-91, a retaining wall barrier system would be constructed to replace the existing retaining wall barrier system to accommodate the realignment of eastbound SR-91 (Figure 2.1, Sheet 3). The replacement median retaining wall barrier system would be of the same type and height and would not change the current views.

Advance Signage

On SR-241 at the southern end of the project limits, signage would be modified approximately 0.2 mi south of the Windy Ridge Wildlife Undercrossing. In addition, signage improvements would also be made on SR-91 between Coal Canyon Undercrossing and Green River Road and west of SR-241 within the existing median and highway footprint. The advance signage areas are depicted on Sheets 1 and 3 through 6 of Figure 2.1.

Water Quality Best Management Practices

The Proposed Project would implement the Caltrans-approved Treatment and Design Pollution Prevention best management practices (BMPs) to remove pollutants of concern in stormwater runoff to the maximum extent practicable. Design Pollution Prevention BMPs proposed as part of the project include dikes, overside drains, ditches, berms, swales, modifications to the existing storm drain system, the preservation of existing vegetation, and replanting new slopes with appropriate native vegetation. Proposed Treatment BMPs include five biofiltration swales and strips and two media filters along eastbound SR-91. The locations of the treatment BMPs are shown on Sheets 3 and 4 of Figure 2.1.

Drainage Improvements

New drainage features would be constructed and existing features would be modified along SR-241 and within the junction of SR-241 and SR-91, as shown on Sheets 2 and 3 of Figure 2.1. The improvements include the construction of new drop inlets with connecting pipes, new guard rails with dikes, median drainage, and deck drains ; modification of existing drop inlets; replacement of edge drains along SR-241 and

SR-91 within the project limits; and removal or abandonment of existing drop inlets and existing culverts. The proposed drainage improvements would be linked to the existing drainage system and would preserve the existing drainage patterns as much as possible, including draining all storm water to the Santa Ana River. The drainage improvements are detailed below.

Widening within the SR-241 median would require reconstruction of the existing earthen swales and drop inlets, and segments of existing culverts would be removed. New drop inlets with connecting pipes would be constructed along the reconstructed earthen swales. In addition, segments of existing ditches and trapezoidal channels would be reconstructed.

The guard rails on the new SR-241/SR-91 median-to-median connector embankments and structures would include dikes to contain stormwater runoff. In addition, new pipes and new drop inlets would be constructed along the median barrier and outside shoulders. Drainage features along the connector would consist of deck drains that collect and convey runoff to the structure columns.

Additional drainage features would be constructed in the median of SR-91 and existing drop inlets and median culverts would be removed or abandoned. New "double" grate inlets, parallel pipe systems, and dikes would be constructed along the SR-91 median barrier to collect runoff. Existing drop inlets and culverts that are no longer needed would be removed or abandoned. In addition, new drop inlets and parallel pipes would be constructed at the edge of the pavement adjacent to the new retaining walls along SR-91. Along the stretch of eastbound SR-91, a 60-inch reinforced concrete pipe would require extension to the south.

Finally, new drop inlets and pipes would be constructed along the reconstructed ramps and connectors.

Landscaping

Replacement landscaping will be provided in the following areas: (1) the area between the SR-241 general purpose connector (northbound SR-241 to eastbound SR-91) and the SR-241 general purpose connector (westbound SR-91 to southbound SR-241); and (2) the slope and other vegetated areas on the south side of SR-91, within the disturbance limits.

TSM/TDM Features

TSM elements include ramp metering, auxiliary lanes, and traffic signal coordination. In addition, the Build Alternative proposes to have dynamic traffic management technology (toll pricing varies based on express lanes demand).

The addition of a median-to-median toll connector included in the Build Alternative is a TDM feature in and of itself because it would provide additional capacity for high-occupancy vehicles (HOVs) and buses. The Build Alternative would improve travel time, increase the efficiency of the freeway system within the traffic Study Area, and reduce congestion and delay.

Refer to Section 2.8.2 for additional discussion of TSM/TDM features.

Noise Attenuation

No feasible noise attenuation (sound barriers) has been identified for the Proposed Project.

Right-of-Way Acquisition

The Build Alternative would be constructed mostly within existing Caltrans right-of-way. However, one partial acquisition adjacent to eastbound SR-91 would be required. Approximately 5 acres of land on the slope approximately 3,600 ft west of Coal Canyon, on Assessor's Parcel Number 085-071-56 would be acquired. This parcel is currently part of the Irvine Ranch National Natural Landmark, owned by the County of Orange with a Conservation Easement held by The Nature Conservancy. The Conservation Easement allows for "necessary infrastructure improvement."

A maintenance access road would be constructed on this slope (Figure 2.1, Sheet 4).

Design Exceptions (Advisory and Mandatory)

The Build Alternative would require design exceptions. Design exceptions are necessary when the proposed design deviates from the standard design features in the Caltrans Highway Design Manual. For example, the design standard for a freeway travel lane is 12 ft; design exceptions would be requested for locations where the lane widths would be 11 ft to match the lane widths approved for the SR-91 CIP. The Build Alternative would require mandatory design exceptions for stopping sight distance, superelevation rate, minimum curve radius, travelway width, minimum shoulder width, and minimum ramp to local road intersection distance. In addition, the Build Alternative would require advisory design exceptions for superelevation transition, compound curve superelevation, compound curve, reversing curve, single

lane connector through lane drop, and side slopes. Descriptions of each of these terms are provided in Table 2.1, below.

Table 2.1 Design Exception Terms

Term	Definition
Mandatory Exceptions	
Stopping Sight Distance	The minimum distance required by the user, traveling at a given speed, to bring the vehicle to a stop after an object 0.5 ft high on the road becomes visible.
Superelevation Rate	The angle by which the outer edge of a curve on a road is banked above the inner edge.
Curve Radius	The minimum required radius of curve (ft) for a given design speed (mph).
Travelway Width	The width of the travel lane (no curb or gutter).
Shoulder Width	The minimum width of the inside or outside shoulder.
Ramp to Local Road Intersection Distance	The minimum distance (curb return to curb return) between ramp intersections and local road intersections.
Advisory Exceptions	
Superelevation Transition	The length required to transition the outside lane(s) of the roadway from a zero (flat) cross slope to full superelevation, or vice versa.
Compound Curve Superelevation	The superelevation diagram of a compound curve matching one of the two standard cases.
Compound Curve	Compound curves refers to the total arc length of the compound curve which should be not less than 500 ft.
Reversing Curve	Curves that reverse directions without connecting tangents long enough to accommodate the standard superelevation runoffs.
Lane Drop	The rate at which a lane is closed.
Single Lane Connector	The maximum length of a single lane freeway-to-freeway connector before a second lane should be provided for passing.
Side Slopes	The steepness of a slope. Slopes should be as flat as reasonable.

Source: FHWA *Highway Design Manual*.
FHWA = Federal Highway Administration
ft = foot/feet
mph = miles per hour

2.2.1.3 Temporary Project Features

Temporary Restriping

The existing number of through lanes on the mainlines of SR-241 and SR-91 would be maintained during construction by restriping the existing lanes using reduced lane widths and shifting traffic within those corridors to maintain the existing capacity. The *91 Express Lanes* would also be temporarily restriped to maintain two lanes in both the eastbound and westbound directions.

The eastbound off-ramp and eastbound loop on-ramp at Gypsum Canyon Road would be restriped to allow construction of the two realigned eastbound ramps. One lane would be maintained on the off-ramp, and two lanes would be maintained on the loop on-ramp. In addition, the existing northbound SR-241 to eastbound SR-91 connector would be restriped to maintain two lanes during construction of the eastbound SR-91 widening, as well as construction of the realigned northbound SR-241 to the eastbound SR-91 connector.

Construction Barriers

During construction, all work areas would be protected by temporary safety devices, such as Temporary Railing (Type K), Temporary Crash Cushions, and other safety features in accordance with federal, State, and local agency requirements.

Detours and Closures

Temporary detours and weekend or nighttime closures would be required at the Gypsum Canyon Road interchange on- and off-ramps and the northbound SR-241 to eastbound SR-91 connector and the northbound SR-241 to the westbound SR-91 connector.

Construction Access and Staging Areas

Construction access and staging areas would be located within the junction of SR-241 and SR-91 within existing Caltrans right-of-way as shown on Figure 2.1, Sheets 3 and 4.

The contractor would need access to the SR-91 median in order to construct the Build Alternative.

Coal Canyon Undercrossing

Coal Canyon Undercrossing is used by emergency and maintenance vehicles as a turnaround from eastbound to westbound only. Construction vehicles may use Coal Canyon as a similar turnaround. In addition, construction vehicles may access the median by entering from underneath the Coal Canyon Undercrossing. Temporary shoring and grading may need to be constructed to allow a drivable access route. This access option would be closely coordinated with Caltrans, OCTA, and RCTC. Any restrictions with respect to the timing of access would be clearly stated in the project specifications during the Final Design phase.

The following restrictions would apply to work along the Coal Canyon Undercrossing ramps and within the undercrossing:

- No parking or equipment storage
- Maintenance of the existing fence that separates the paved road from the dirt trail
- No work within the wildlife trail on the east side of the existing fence
- No nighttime work

Gypsum Canyon Undercrossing

Construction vehicles may access the median by entering from underneath Gypsum Canyon Undercrossing. To allow an opening for construction access, part of the existing bridge deck would be removed. Temporary shoring and grading may need to be constructed to allow a drivable access route. This access option would be closely coordinated with Caltrans, OCTA, and RCTC. Construction vehicles would access Gypsum Canyon Road using the SR-91 on- and off- ramps.

Scheduled Maintenance Access

OCTA has regularly scheduled maintenance activities for the *91 Express Lanes* every 3 weeks on Sunday mornings. This maintenance occurs from approximately 6:00 AM until 12:00 PM. The entire *91 Express Lanes* facility is shut down during this time. This would provide an opportunity to coordinate with OCTA for approval to use these closures to transport large construction equipment to the construction site in the median of SR-91 between the eastbound and westbound *91 Express Lanes*.

Express Lane Access

Construction vehicles that meet express lane requirements may enter the lanes, paying a toll as applicable. Coordination will be required with Caltrans and OCTA to create additional ingress/egress points into the median from the *91 Express Lanes* and whether to permit vehicles larger than the allowable express lane limitations.

Limited Lane Closure Access

It may be necessary to have temporary nighttime closures of the *91 Express Lanes* for construction activities such as erecting falsework, striping lanes, and installing median signs. These closures would be coordinated with Caltrans and OCTA during the Final Design phase.

Utilities

Two known utility conflicts have been identified as follows:

- Approximately 8,100 linear feet of Fiber Optic Lines (and manholes) owned by F/ETCA require relocation to accommodate the widening on eastbound SR-91.

- Approximately 150 linear feet of Underground Telephone lines owned by AT&T require relocation to accommodate the reconstruction of the eastbound SR-91 off-ramp and the eastbound SR-91 on- ramp at Gypsum Canyon Road.

Protection in place of existing utility facilities would also be necessary in areas where project construction activities would occur. Coordination with utilities would occur during Final Design.

2.2.2 No Build (No Action) Alternative

The No Build Alternative would maintain the current configurations of SR-241 and SR-91 in the Project Area. Under this alternative, no direct connector would be constructed between the SR-241 and *91 Express Lanes*. As discussed in Section 1.1.3.2, the SR-91 CIP will extend the existing *SR-91 Express Lanes* east from the Orange/Riverside County Line to I-15 in the City of Corona. Under the No Build Alternative, motorists traveling north on SR-241 would have to use the general purpose lane connector to eastbound SR-91 and then weave across several lanes to access the eastbound RCTC SR-91 express lanes at the merge area near Green River Road. Similarly, motorists traveling west in the RCTC SR-91 Express Lanes would have to exit at Green River Road (3.5 mi east of the junction of SR-241 and SR-91), merge across lanes, and use the general purpose lane connector to the southbound SR-241. In addition, under the No Build Alternative, motorists would not be prevented from inappropriately "queue jumping" from the existing northbound SR-241 to the westbound SR-91 connector lanes into the northbound SR-241 to the eastbound SR-91 connector lanes during congested traffic periods, thereby disrupting traffic flow on the northbound SR-241 connector to the eastbound SR-91 general purpose lanes during PM peak hours.

The No Build Alternative would increase traffic congestion and reduce vehicle throughput in the Project Area during peak periods.

Although smaller localized projects could be considered, approved, and implemented on their own merits, no other major corridor improvements would be implemented on the project segments of SR-241 and SR-91 under the No Build Alternative.

Because the No Build Alternative does not include the improvements proposed as part of the Build Alternative, the No Build Alternative provides a benchmark by which the public and decision-makers can compare the magnitude of the effects of the Build Alternative.

2.3 Anticipated Project Schedule

Final Design would overlap the environmental review schedule and would commence in mid-2016 and end in late-2017 (approximately 14 months). Construction is anticipated to last approximately 18 months beginning in mid-2018 through 2020.

2.4 Construction Staging

Construction would occur in two main stages: Stages 1 and 2. Stage 1 would occur in two phases identified as Stages 1A and 1B. The majority of the work would occur in Stage 1A. A Draft Transportation Management Plan (TMP) has been prepared for the project.

Stage 1A construction involves widening within the median of both the northbound and southbound SR-241 roadbeds as well as widening of eastbound SR-91 to the outside. Both the northbound and southbound SR-241 roadbeds would be re-striped to maintain the existing four-lane configuration. During this stage, a portion of the express lanes connector would also be constructed, as well as widening of the Windy Ridge Wildlife Undercrossing bridge. The SR-241/SR-91 express lanes connector south bridge would be constructed with falsework over the northbound SR-241 to westbound SR-91 connector and over eastbound SR-91.

Stage 1A also includes widening of the eastbound and westbound roadbed of SR-91. Eastbound and westbound SR-91 would be re-striped to maintain the same number of general purpose lanes, as well maintaining the two eastbound toll lanes. This also includes widening of the Gypsum Canyon Road Undercrossing bridge. Ramp work on Stage 1A at Gypsum Canyon Road involves re-striping the eastbound SR-91 off-ramp and the eastbound SR-91 on-ramp to allow construction of the two realigned eastbound SR-91 ramps. One lane would be provided on the off-ramp and two lanes on the on-ramp. Temporary pavement would be constructed at the intersection of the eastbound on-ramp and Gypsum Canyon Road to allow complete closure and construction of the eastbound direct on-ramp during this stage. The existing northbound SR-241 to eastbound SR-91 connector would be re-striped to provide two lanes during widening of the eastbound SR-91 as well as construction of the realigned northbound SR-241 to the eastbound SR-91 connector. The southern abutment for the express lanes connector north bridge could also be constructed in Stage 1A. The estimated duration for Stage 1A is 9 months.

Stage 1B construction involves completion of the remaining portions of the ramps, remaining portions of the northbound SR-241 to eastbound SR-91 connector and remaining portions of the eastbound SR-91 freeway lanes. Construction of these remaining portions would require temporary detours with weekend or nighttime closures of various portions of the ramps and the realigned northbound SR-241 to eastbound SR-91 connector. The estimated duration for Stage 1B is 4 months.

Stage 2 construction involves completion of the express lanes SR-241/SR-91 connector north bridge over falsework and construction of all the median work along SR-91 from Gypsum Canyon Road Undercrossing to Coal Canyon Undercrossing. Except for erection of falsework, no short term closures are needed. No long-term closures of either SR-241 or SR-91 are needed. The estimated duration for Stage 2 is 11 months.

The Proposed Project would involve cut and fill of soil. The earthwork quantities would be approximately 440,000 cubic yards of cut and 395,000 cubic yards of fill, with the excess 45,000 cubic yards to become the property of the contractor, who would use it for another project, store it in an approved location, or dispose of it at an approved facility. The net fill locations are the along the proposed median-to-median connector (the areas south and north of the northbound SR-241 to the eastbound SR-91 connector, as well as the touchdown point of the connector in the SR-91 median), and the SR-91/Gypsum Canyon Road ramps.

2.5 Estimated Cost

The total cost of the Proposed Project would be approximately $120 million. The estimated roadway cost is $78 million, and the right-of-way cost is approximately $2 million. The estimated structures cost is approximately $40 million.

2.6 Comparison of Alternatives

Table 2.2 provides a comparison between the Build Alternative and the No Build Alternative. The SR-241/SR-91 Express Lanes Connector was previously evaluated in the ETC Final EIR and Final EIS and is part of the selected alternative: Alternative 1 (Corridor with West Leg). This Supplemental Draft EIR/EIS has been prepared to focus on the northern end of the original project; address changes to environmental conditions and regulatory requirements; and address the extended Project Limits on SR-91 to the east.

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource		Build Alternative	No Build Alternative
Land Use		**Land Use Conversion** • Permanent conversion, through acquisition, of approximately 5 acres of land designated as parkland/reserve to transportation. • No temporary impacts. **Land Use Consistency** • Consistent with the goals, objectives, and policies of all surrounding communities' General Plans; the 2012 RTP/SCS; 2015 FTIP; the Orange County Central and Coastal NCCP/HCP; the Western Riverside MSHCP; the Orange County MPAH; and the Orange County LRTP. • No temporary impacts **Parks and Recreational Effects and Section 4(f) Use** *Gypsum Canyon Nature Preserve* • Permanent use: approximately 5 acres (preliminary de minimis finding for the use). • Temporary use: none. • Temporary minimal visual, dust, and noise proximity effects. *Weir Canyon Nature Preserve, Chino Hills State Park, Santa Ana River Trail/Bike Lane, Featherly Regional Park, Green River Golf Club, and other trails and fire roads* • No temporary or permanent use. • Temporary minimal visual, dust, and noise proximity effects. *Brush Canyon Park, Santiago Oaks Regional Park, Running Springs Elementary School Recreational Facilities* • No temporary or permanent use.	**Land Use Conversion** • No impacts **Land Use Consistency** • Inconsistent with several plans and policies to improve regional mobility. **Parks and Recreational Effects and Section 4(f) Use** • No impacts
Growth		No growth-related impacts	No growth-related impacts
Community Impacts	Community Character and Cohesion	*Temporary Impacts* • Minimal impacts due to construction noise and dust. • Closure of one lane in each direction on SR-241 and SR-91 at various times to construct the median-to-median connector and install advance signage. • Detours and weekend or nighttime closures at the	Accessibility to and mobility in the SR-241/ SR-91 interchange area would continue to deteriorate.

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource		Build Alternative	No Build Alternative
		SR-91/Gypsum Canyon Road interchange ramps to realign the ramps and construct bridge supports for the new connector. • Detours and weekend or nighttime closures at the existing northbound SR-241 to eastbound SR-91 connector to widen SR-91 to the south. • Construction lighting. *Permanent Impacts* • Long-term visual changes because of permanent alteration of existing visual environment at the junction of SR-241 and SR-91 (retaining walls, piers/supports, and buffers). • Improved access and circulation along SR-241 and SR-91 in the Project Area by providing a direct connection between SR-241 and the *91 Express Lanes*.	
	Relocation	*Temporary Impacts* • No impacts. *Permanent Impacts* • Partial acquisition of one undeveloped County of Orange-owned property (Assessor's Parcel Number 085-071-56). • No displacement or relocation of any residents or businesses.	No impacts
	Environmental Justice	*Temporary Impacts* • With implementation of Measures N-1, AQ-1 through AQ-5, TR-1, and V-1 through V-7, construction of the Build Alternative would not result in adverse impacts that are appreciably more severe or greater in magnitude on environmental justice populations than the adverse effects experienced by non-environmental justice populations. Therefore, the Build Alternative would not cause disproportionately high and adverse temporary effects on minority or low-income populations, as listed above. *Permanent Impacts* • Similar to the overall communities, environmental justice populations would receive no benefits by the reduction in	Similar to the overall communities, environmental justice populations would receive no benefits by the reduction in access and mobility in the Project Area.

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource		Build Alternative	No Build Alternative
		access and mobility in the Project Area. Operation of the Build Alternative would not result in adverse impacts that are appreciably more severe or greater in magnitude on environmental justice populations than the adverse effects experienced by non-environmental justice populations.	
Utilities and Emergency Services		**Utilities** *Temporary Impacts* • Utility disruptions could occur. *Permanent Impacts* • No impacts to utilities. **Emergency Services** *Temporary Impacts* • Delay in response time for emergency services. *Permanent Impacts* • May improve response times for emergency services using SR-241 and SR-91. • Emergency service providers would be able to use the express lanes connector when the general purpose lane connector is experiencing heavy traffic volumes and slow travel speeds.	**Utilities** • No impacts **Emergency Services** • Providers would not benefit from improved mobility and reduced traffic congestion.
Traffic and Transportation		*Temporary Impacts* • Detours and closures are expected to result in some delays to the traveling public. *Permanent Impacts* • Vehicle throughput in the SR-91 corridor would improve, vehicles miles traveled would increase, and travel time would decrease. • Traffic would shift from other regional routes (SR-91 between SR-55 and SR-241, SR-55, and surface streets) to SR-241 as a result of the additional capacity of the new connector. • The length of the northbound SR-241 to the eastbound SR-91 queue on the general purpose ramp would shorten in the PM	Temporary Impacts • No impacts Permanent Impacts • Overall, increased travel time, reduced speed, increased vehicle hours traveled, and increased queues in the SR-91 corridor study area.

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
	peak period. • The length of the queues would shorten at the SR-91 westbound mainline bottleneck between the Green River Road interchange and the *91 Express Lanes* ingress in the AM peak period. • There would be a reduction in friction due to fewer vehicles weaving from the northbound SR-241 to the eastbound SR-91 general purpose ramp to the RCTC SR-91 Express lanes. • There would be an increase in friction on eastbound SR-91, because more vehicles must exit the *91 Express Lanes* and enter the general purpose lanes and fewer cars can leave the general purpose lanes and enter the RCTC SR-91 Express Lanes due to the increase in traffic volumes on the express lanes connector.	
Visual and Aesthetics	*Temporary Impacts* • Sensitive viewers, including motorists and residents, would be exposed to views of cleared vegetation, graded slopes, construction vehicles, equipment, and other materials. • Periodic nighttime construction, and safety/security lighting would be used during some stages of construction. *Permanent Impacts* • The proposed median-to-median connector would appear similar to the existing general purpose lane connectors at the SR-241/SR-91 interchange because the new structure would be of similar profile as the existing structures and would be in the Caltrans right-of-way between the existing SR-241/SR-91 northbound-to-southbound connectors. • Motorists traveling on SR-91 would experience views of the express lane bridge connector and retaining walls, but views of open space and other visual resources in the vicinity of the SR-241/SR-91 interchange would not be obstructed. • Residents with high viewer sensitivity with views of the Project Area would experience permanent views of the proposed express lanes connector but the existing views of hillsides, ridgelines, and open space would not be obstructed.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
Cultural Resources	*Temporary Impacts* • Not applicable. *Permanent Impacts* • No impacts to known archaeological or historic resources. • Potential for impacts to previously unknown buried cultural materials or human remains.	No impacts
Water Quality and Storm Water Runoff	*Temporary Impacts* • Potential for soil erosion, sediment transport, release of hazardous materials, increased pollutants in runoff, groundwater dewatering. *Permanent Impacts* • Increase in impervious area by approximately 20.5 acres. • Potential increased pollutants in runoff due to increased impervious area and volume of runoff. • Proposed treatment BMPs would reduce pollutants.	No impacts
Geology, Soils, Seismic, and Topography	*Temporary Impacts* • Ground motion from seismic activities, liquefaction, and landslides. • Potential for unstable slopes and erosion. *Permanent Impacts* • Potential for seismic impacts to structures. • Potential for unstable slopes and erosion. • Potential for liquefaction. • Minor changes to topography.	No impacts
Paleontology	*Temporary Impacts* • Not applicable. *Permanent Impacts* • Potential to impact fossils and fossil-bearing formations.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
Hazardous Wastes and Materials	*Temporary Impacts* • Potential to encounter aerially deposited lead (unpaved areas adjacent to SR-91), asbestos-containing materials (Gypsum Canyon bridge structure 55-0506), chemically treated wood waste (guardrails, and landscape timber, etc.), and lead-based paint in traffic striping (SR-241 and SR-91). • Potential to rupture an unused petroleum pipeline with an unspecified location that may contain residual material that would need disposal. • Due to historical uses in the area, there is a potential to encounter unrecorded hazardous waste during construction. *Permanent Impacts* • No impacts other than routine use of hazardous materials associated with maintenance of a transportation facility.	No impacts
Air Quality	*Temporary Impacts* • Short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other construction activities. *Permanent Impacts* • No new regional vehicular emission impacts. • May have a beneficial effect in helping to reduce congestion on roads in the traffic Proposed Project vicinity.	May have an incremental detrimental effect due to no reduction of congestion on roadway links in the Proposed Project vicinity.
Noise	*Temporary Impacts* • Noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. However, construction noise would be short-term, intermittent, and overshadowed by local traffic noise. *Permanent Impacts* • Noise levels would increase by 3 dBA or less, which is barely perceptible to the human ear.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
Energy	*Temporary Impacts* • Indirect energy impacts from the manufacture of vehicles that would operate on the project facilities and be used for project construction. However, the Proposed Project would not, on its own, increase the manufacture of vehicles; therefore, the per-vehicle indirect energy impacts for the baseline (No Build) condition, the Build Alternative, and the existing condition would all be the same. • Energy costs associated with construction of roads and structures. *Permanent Impacts* • Total net change in VHT in 2017 would decrease by 726 VHT, indicating a slight increase in efficiency compared to the No Build Alternative. Therefore, vehicle fuel/energy consumption would be reduced. • A 0.3 percent reduction in direct energy use annually in 2040 due to reduction in VMT. • A 1.5 percent increase in maintenance-related permanent indirect energy consumption in 2040 due to increase in VMT.	• Temporary indirect impacts from the manufacture of vehicles that operate on SR-241 and SR-91. • Increase in VHT in 2017 and 2040, which will increase energy consumption when compared to the Build Alternative.
Natural Communities	*Temporary Impacts* • Impacts to 29.70 acres of coastal sage scrub. • Impacts to 23.68 acres of coastal sage scrub within the NCCP/HCP Plan Area. • Within the SR-91 right-of-way: impacts to approximately 6 acres in NCCP/HCP Plan Area and 0.02 acre of coastal sage scrub in Caltrans right-of-way outside the NCCP/HCP Plan Area. • Impacts to 8 coast live oak and 15 sycamore trees. • Impacts to Windy Ridge Wildlife Undercrossing. *Permanent Impacts* • Impacts to 10.41 acres of coastal sage scrub in Caltrans right-of-way in the NCCP/HCP Plan Area. • Impacts to 3.25 acres of coastal sage scrub outside Caltrans	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
	right-of-way in the NCCP/HCP Plan Area. • Impacts to 6 coast live oak trees.	
Wetlands and Other Waters	*Temporary Impacts* • Impacts to less than 0.53 acre of non-wetland USACE waters inside Caltrans right-of-way and less than 0.01 acres outside Caltrans right-of-way. • Potential for indirect impacts to functions and values of on-site drainages and downstream areas. • Impacts to approximately 1.01 acres of CDFW jurisdictional areas inside Caltrans right-of-way and approximately 0.03 acre outside Caltrans right-of-way. • Impacts to less than 0.53 acre of RWQCB jurisdictional areas inside Caltrans right-of-way and less than 0.01 acre outside Caltrans right-of-way. *Permanent Impacts* • Impacts to approximately 0.45 acre of USACE jurisdictional non-wetland waters inside Caltrans right-of-way and approximately 0.02 acre outside Caltrans right-of-way. • Impacts to approximately 0.66 acre of CDFW jurisdictional areas inside Caltrans right-of-way and approximately 0.20 acre outside Caltrans right-of-way. • Impacts to approximately 0.45 acre of RWQCB jurisdictional areas inside Caltrans right-of-way and approximately 0.02 acre outside Caltrans right-of-way.	No impacts
Plant Species	*Temporary Impacts* • Potential indirect impacts to California black walnut trees near the Gypsum Canyon off-ramp due to the potential for fuel spills from construction equipment and activities of construction equipment or personnel outside designated construction areas and ESAs in the vicinity of the trees. • Potential direct impacts to Coulter's Matilija poppy and potential temporary indirect impacts due to the potential for fuel spills from construction equipment and activities of construction equipment or personnel outside designated construction areas and ESAs.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
	Permanent Impacts • Potential direct impacts to 3 California black walnut saplings. • Coulter's Matilija poppies in the slope area south of SR-91 would be removed.	
Animal Species	*Temporary Impacts* • May redirect foraging golden eagles away from the borders of the BSA during construction. • Potential indirect impacts to species that occupy the coastal sage scrub and chaparral natural communities through the disturbance of potentially suitable habitat. • Impacts to special-status bat species including noise, dust, night lighting, and human encroachment, and reduced access to roost sites in the crevices of bridges and overhead structures. • Potential indirect impacts to grassland and open space species through the temporary loss of approximately 14.1 acres of potential habitat. • Direct impacts to nesting birds through vegetation clearing, grading, and tree removal. • Potential indirect impacts to nesting birds due to disturbances near trees occupied by nesting birds if tree trimming activities were to occur during the nesting season. *Permanent Impacts* • Indirect impacts to species that occupy coastal sage scrub and chaparral through the removal of potential suitable habitat. • Indirect impacts to special-status grassland animal species through potential habitat loss. • Potential indirect impacts to nesting birds due to loss of foraging and nesting habitat as a result of loss of vegetation or changes in habitat types.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
Threatened and Endangered Species	*Temporary Impacts* • Potential indirect impacts through the accumulation of dust on the leaves of any Braunton's milk-vetch plants in designated critical habitat. • Potential to impact thread-leaved brodiaea. • Potential to redirect foraging bald eagles, least Bell's vireo, and southwestern willow flycatcher away from the BSA. • Indirect impacts to coastal California gnatcatcher due to increased exposure to noise, vibration, dust, nighttime lighting, and human presence. • Direct impacts to coastal California gnatcatcher through habitat disturbance and removal. • Take of coastal California gnatcatcher in the NCCP/HCP Plan Area due to the loss of 11.85 acres of occupied habitat in the median of the SR-241/SR-91 interchange. • Take of designated coastal California gnatcatcher critical habitat in the NCCP/HCP Plan Area as a result of the loss of approximately 12.8 acres of designated critical habitat. • Take of designated coastal California gnatcatcher habitat outside the NCCP/HCP Plan Area due to impacts to 7.96 acres of critical habitat in Caltrans right-of-way. *Permanent Impacts* • Potential minor impacts to thread-leaved brodiaea habitat. • Indirect impacts to coastal California gnatcatcher as a result of increased exposure to noise, vibration, and dust. • Take of coastal California gnatcatcher in the NCCP/HCP Plan Area through the permanent loss of 2.98 acres of occupied habitat in the median of the existing SR-241/SR-91 interchange. • Take of designated coastal California gnatcatcher critical habitat in the NCCP/HCP Plan Area through the permanent loss of approximately 19.72 acres. • Take of designated coastal California gnatcatcher habitat outside the NCCP/HCP Plan Area as a result of impacts to 1.18 acres in Caltrans right-of-way.	No impacts

Table 2.2 Comparison of Impacts for the Project Alternatives

Resource	Build Alternative	No Build Alternative
	• Potential loss of a minimal amount (approximately 1 acre of chaparral) of potential foraging habitat for least Bell's vireo and southwestern willow flycatcher.	
Invasive Species	Potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, disturbances to soil surfaces, and improper removal and disposal of invasive species that result in the seed being spread along the highway.	No impacts
Cumulative Impacts	The Build Alternative, when considered with other cumulative projects as stated in Table 3.1.3, would contribute incrementally to cumulatively considerable impacts related to: • Potential permanent impacts to paleontological resources when excavations extend into fossiliferous formations. • Permanent and/or temporary removal of coastal sage scrub and grassland, which has the potential to result in adverse impacts to special-status plant and animal species.	No impacts
Climate Change	• The increase in average vehicle speeds in the Project Area by 2–4 miles per hour would decrease the average delay per vehicle by up to 20 percent, which would help offset the 3,400 to 7,800 increase in daily trips. • No substantial change to greenhouse gas emissions.	No impacts

BMPs = best management practices
BSA = Biological Study Area
Caltrans = California Department of Transportation
CDFW = California Department of Fish and Wildlife
dBA = A-weighted decibels
ESA = environmentally sensitive area
FTIP = Federal Transportation Improvement Program
LRTP = Long-Range Transportation Plan
MPAH = Master Plan of Arterial Highways
MSHCP = Multiple Species Habitat Conservation Plan
NCCP/HCP = *Natural Communities Conservation Plan/ Habitat Conservation Plan*
RCTC = Riverside County Transportation Commission
RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy
RWQCB = Regional Water Quality Control Board
SR-55 = State Route 55
SR-91 = State Route 91
SR-241 = State Route 241
USACE = United States
VMT = vehicle miles traveled
VHT = vehicle hours traveled
WR-MSHCP = *Western Riverside County Multiple Species Habitat Conservation Plan*

Therefore, the comparison in Table 2.2 focuses on the physical impacts of the Build Alternative when compared to the No Build Alternative, as well as the ability to meet the Purpose and Need of the Proposed Project.

After receiving comments from the public and reviewing agencies, a Final Supplemental EIR/EIS will be prepared. Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final Supplemental EIR/EIS will include responses to comments received on the Draft EIR/EIS. Upon approval of the Proposed Project, a Notice of Determination will be published for compliance with CEQA. Caltrans will issue a single document that consists of the Supplemental Final EIS and ROD pursuant to Pub. L. 112-141, 126 Stat. 405, Section 1319(b) unless it is determined that statutory criteria or practicability considerations preclude issuance of such a combined document.

2.7 Value Analysis

Based on the Proposed Project cost estimate and per Chapter 9 of the Project Development Procedures Manual (PDPM), a Value Analysis (VA) is required for the Proposed Project. A project-specific VA was conducted on May 19, 20, and 21, 2015. A total of eight VA recommendations were considered to address the following four functions: improve traffic operations, minimize maintenance, accommodate future expansion, and improve constructability. A Preliminary VA Report was distributed for the VA team members and stakeholders for review. A VA Implementation Meeting was held on July 8, 2015, to review individual implementation action recommendations for responses, develop consensus for each VA recommendation, document the responses to each design modification, and conclude decisions related to implementation. The Final VA Report was completed on October 1, 2015.

The VA recommendations are not needed to reduce substantial environmental impacts associated with the Proposed Project and would not expand the Project Area or result in substantial environmental impacts. Implementing these recommendations may save costs, and a decision regarding these will be made during Final Design. The change in performance was based on the comparison of each VA recommendation to the Build Alternative design. The criteria for performance evaluation was determined by the stakeholders and ranked by the stakeholders (F/ETCA, Caltrans, and OCTA). The performance criteria included: traffic operations, maintainability, environmental impacts, construction impacts, and accommodation of the future expansion of SR-91 at the junction of SR-241 and SR-91.

The VA recommendations have been analyzed as part of the Build Alternative. The eight VA recommendations are:

- Shorten southbound SR-241 express lane and eliminate Windy Ridge Wildlife Undercrossing widening;
- Move the northbound SR-241 Express Lane Connector to the eastbound SR-91 departure from No. 1 Lane to No. 3 lane; reduce SR-241/SR-91 southern overcrossing structure width;
- Use lightweight fill at approach and departure walls;
- Use lightweight fill as alternative to Type 1 retaining wall with level backfill;
- Eliminate eastbound SR-91 loop on-ramp at Gypsum Canyon Road to eliminate choke point and replace with a traditional signalized intersection or a roundabout;
- Revise SR-241/SR-91 Express Lanes Connector radius to minimize bridge span;
- Increase outrigger span length to allow future eastbound SR-91 widening; and
- Reduce structure length for Express Lanes Connector southern overcrossing.

2.8 Alternatives Considered But Eliminated From Further Discussion

This section discusses alternatives studied during preliminary studies and the Transportation System Management (TSM) and Transportation Demand Management (TDM) Alternatives considered for the Proposed Project but eliminated from further discussion.

2.8.1 Preliminary Studies

A total of six build alternatives for a new median-to-median connector ramp from SR-241 to SR-91 were considered during preliminary studies. Only the Build Alternative was found to be feasible. Each of the alternatives was evaluated with respect to the Proposed Project's Purpose and Need. Evaluation criteria included:

- Freeway Traffic Operations
- Local Impacts
- Toll Revenue
- Design/Safety
- Physical and Environmental Constraints
- Planning Consistency
- Construction Staging and Traffic Handling
- Cost

After the evaluation, the current Build Alternative (Alternative Concept 1 in the Feasibility Study and Project Study Report/Project Development Support [PSR/PDS]) was the recommended alternative to carry forward for evaluation in the Supplemental EIR/EIS as it best meets the Purpose and Need of the Proposed Project. The reasons why the remaining five build alternatives were considered but eliminated from further discussion during the Feasibility Study and the PSR/PDS phase are discussed below.

2.8.1.1 Feasibility Study Alternatives

The OCTA prepared the *91 Express Lanes Extension and State Route 241 Connector Feasibility Study* in March 2009. Initially, six Build Alternatives were studied in the feasibility study, and three of these were eliminated (Alternative Concepts 2, 5, and 6) during the screening process. The remaining three Alternative Concepts (Alternative Concepts 1, 3, and 4) were carried forward for more detailed evaluation in the PSR/PDS phase. Descriptions of the eliminated alternatives are provided below.

Alternative Concept 2

Alternative Concept 2 would have provided a four-lane High Occupancy Toll (HOT) median-to-median connector between SR-241 and the existing *91 Express Lanes*. This alternative is similar to Alternative Concept 4 except that no additional capacity would have been added to the *91 Express Lanes*. The additional traffic added to the *91 Express Lanes* would result in potential capacity deficiencies. Alternative Concept 4 rather than Alternative Concept 2 would allow the logical termination point for the proposed third express lane between SR-241 and State Route 71 (SR-71) to be determined based on needed capacity. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat compared to Alternative Concept 1. Therefore, this alternative concept was eliminated in favor of Alternative Concept 4.

Alternative Concept 5

Alternative Concept 5 would have provided a four-lane toll connector to the *91 Express Lanes*. Alternative Concept 5 is similar to Alternative Concept 4, except that the third express lane would extend to I-15. The section of SR-91 between SR-71 and I-15 is constrained by the Santa Ana River to the north and the hillside to the south, and adding a third Express Lane would result in significant right-of-way impacts in the City of Corona. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat, drainages, and Coal Canyon Undercrossing compared to Alternative Concept 1. The physical constraints were considered a fatal

flaw to the feasibility of Alternative Concept 5. Therefore, Alternative Concept 5 was not recommended for further consideration.

Alternative Concept 6

Alternative Concept 6 would have provided an SR-241/SR-71 direct toll connector for SR-241 and SR-71 traffic. This would have been a relatively high-cost concept and only focused on a specific part of the travel demand between SR-241 and SR-71. In addition, this alternative would have resulted in additional impacts to coastal sage scrub habitat compared to Alternative Concept 1. Given the physical challenges and cost of this concept, the other alternatives were viewed as more feasible. Therefore, Alternative Concept 6 was not recommended for further consideration.

2.8.1.2 PSR/PDS Alternatives

During preparation of the PSR/PDS (completed in January 2012), the remaining three build alternatives were evaluated, Alternative Concepts 3 and 4 were eliminated, and Alternative Concept 1 was carried forward for further evaluation in this Supplemental EIR/EIS. Descriptions of the two alternatives eliminated during the PSR/PDS phase are provided below.

Alternative Concept 3

Alternative Concept 3 included a reversible two-lane connector. Although the concept of a reversible connector was feasible from a design consideration, the additional traffic associated with a reversible connector would have been an issue for the *91 Express Lanes*. The two-lane connector would have provided sufficient capacity, but the concept would not have included any additional capacity on the critical segment of the *91 Express Lanes* east of SR-241. While the connector could be built, it would not have addressed the project objective of reducing traffic congestion. Therefore, Alternative Concept 3 was dropped from further consideration.

Alternative Concept 4

Alternative Concept 4 would have provided a four-lane connector and addressed the operational issues of the additional traffic in the *91 Express Lanes* by widening the *91 Express Lanes* to three lanes in each direction to approximately the SR-71 interchange. It would have provided a median-to-median connection and addressed issues of congestion relief, but the concept would have substantially higher costs and was not consistent with the ETC EIR/EIS. Construction of the additional *91 Express Lanes* would have been constrained by the Santa Ana River to the north and the hillside to the south. In addition, this alternative would have resulted in additional

impacts to coastal sage scrub habitat, drainages, and the Coal Canyon Undercrossing compared to Alternative Concept 1. Therefore, Alternative Concept 4 was dropped from further consideration.

2.8.2 Transportation System Management (TSM) and Transportation Demand Management (TDM) Alternatives

TSM consists of strategies to increase the efficiency of the existing transportation facilities; they are actions that increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. TSM also encourages automobile, public, and private transit; ridesharing programs; and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes such as pedestrian, bicycle, automobile, rail, and mass transit. Although TSM measures alone could not satisfy the Purpose and Need of the Proposed Project, several TSM measures have been incorporated into the Proposed Project as discussed in Section 2.2.1.2.

TDM focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. TDM facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation options in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Typical TDM activities reduce the amount of single-occupancy vehicle trips by providing funds to regional agencies that are actively promoting ridesharing, maintaining rideshare databases, and providing limited rideshare services to employers and individuals. Promoting mass transit and facilitating non-motorized alternative means of transportation are two such examples, but TDM strategies may also include reducing the need for travel altogether through initiatives such as telecommuting. In some cases, TDM may involve changing work schedules, resulting in a greater travel flexibility that produces a more even pattern of transportation network use and mutes the effect of morning and evening rush hours.

The addition of a median-to-median toll connector included in the Build Alternative is a TDM feature in and of itself because it would provide additional capacity for HOVs and buses. The Build Alternative would improve travel time, increase the efficiency of the freeway system within the traffic Study Area, and reduce congestion and delay.

TSM and TDM strategies have been and would continue to be provided in the Study Area. OCTA Intercounty Express Bus Route 794 and Riverside Transit Authority (RTA) Express Bus Route 216 currently operate on the project segment of SR-91. In addition, Metrolink operates commuter rail service between Orange and Riverside Counties on the BNSF railway tracks. OCTA encourages ridesharing by offering incentives for vanpools, some of which commute along SR-91. The Build Alternative would not permanently impact the bus line or ride sharers that use SR-91, including the *91 Express Lanes*.

TSM and TDM strategies alone do not satisfy the project Purpose of build out of the ETC, attaining of compatibility with the SR-91 mainline and express lanes, improving operations and traffic flow between the *91 Express Lanes* and the SR-241 general purpose connectors, helping achieve the Regional Mobility Plan goals of reducing emissions from transportation sources, and enhancing the efficiency of the tolled system, thereby reducing congestion on the non-tolled system on the SR-91. TSM/TDM alternatives on their own would not meet the Need for the Proposed Project because the Proposed Project would not provide a direct connection between SR-241 and the *91 Express Lanes*. As a result, TSM/TDM alternatives were eliminated from further consideration.

2.9 Permits and Approvals Needed

Table 2.3 identifies the permits and/or approvals that are or may be required prior to or during construction and/or operation of the Build Alternative.

Table 2.3 Permits and Approvals Needed

Agency	Permit/Approval	Status/When Required
Federal Highway Administration	Air Quality Conformity Analysis Determination	The Air Quality Conformity report will be submitted to FHWA after receipt of public comments on the Draft Supplemental EIR/EIS. FHWA will make a conformity determination prior to approval of the Final Supplemental EIR/EIS.
United States Fish and Wildlife Service	Section 7 Consultation for impacts to threatened and endangered species.	A new Biological Opinion will be obtained prior to approval of the Final Supplemental EIR/EIS.
United States Army Corps of Engineers	Section 404 Permit for filling or dredging of waters of the United States	A Nationwide Permit will be obtained during Final Design.
California Department of Fish and Wildlife	1602 Lake or Streambed Alteration Agreement for impacts to jurisdictional areas	An agreement will be obtained during Final Design.
State Water Resources Control Board	Caltrans NPDES Permit	Permit issued to Caltrans on September 19, 2012, for discharges from State right-of-way. The State Water Resources Control Board and Santa Ana Regional Water Quality Control Board will be notified of the project during Final Design pursuant to the permit requirements.
	Section 402 NPDES Permit (Construction Activity) for waste discharge requirements during construction	Permit Registration Documents, including an NOI, will be submitted at least 7 days prior to the start of construction.
Santa Ana Regional Water Quality Control Board	Section 401 Water Quality Certification for impacts to jurisdictional areas	Certification will be obtained during Final Design.
	Section 402 NPDES Permit (Groundwater Dewatering)	If groundwater dewatering is required, an NOI will be submitted at least 60 days prior to the start of construction.
Various Utilities	Encroachment Permits for protection-in-place and possible relocations	During Final Design
City of Anaheim	Potential Encroachment Permit	During Final Design
Orange County Parks	Concurrence on Section 4(f) De Minimis Determination	Caltrans has submitted a letter to OC Parks with the preliminary determination. Concurrence will be obtained during PA/ED during preparation of the Final Supplemental EIR/EIS
	Approval of land transfer (partial acquisition)	During right-of-way acquisition process.

EIR/EIS = Environmental Impact Report/Environmental Impact Statement
ETC = Eastern Transportation Corridor
FHWA = Federal Highway Administration
NOI = Notice of Intent
NPDES = National Pollutant Discharge Elimination System
PA/ED = Project Approval/Environmental Documentation

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