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NO SCALE

LEGEND

- EXISTING EXPRESS LANE
- GENERAL PURPOSE LANE
- AUXILIARY LANE
- RAMP/CONNECTOR IMPROVEMENTS
- OTHER PLANNED PROJECTS (EB LANE ADDITION)
- EXISTING

NOTE : REFER ALSO TO APPENDIX L, PROJECT FEATURES, WHICH PROVIDES DETAILED PRELIMINARY DESIGN PLANS ON AN AERIAL PHOTOGRAPH BASE FOR THE TWO BUILD ALTERNATIVES AND THEIR DESIGN VARIATIONS.

State Route 91 Corridor Improvement Project
 Project Features in the State Route 241 Interchange Area
 12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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Permanent Improvements at the Orange/Riverside County Line Under Alternative 1

Existing SR-91 narrows in the vicinity of the Orange/Riverside County line in the area bounded by hills to the south and the Santa Ana River to the north. Under Alternative 1, the SR-91 centerline would be shifted north at this location with all the widening occurring on the north side of SR-91. The feasibility of this configuration depends on the Corps Reach 9 Phase 2B project to realign the Santa Ana River low flow channel to the north, which is currently under construction and would accommodate the widening of SR-91 under Alternative 1. This Corps project is described in more detail and shown on a figure in Section 2.3.9, Related Projects and Other Projects in the Vicinity of the SR-91 CIP.

Widening SR-91 to the north in this area is preferred because widening into the hillside on the south side of SR-91 would require extensive excavation and/or retaining walls. In addition, widening to the north allows Alternative 1 to use improvements associated with the recently completed SR-91 Eastbound Lane Addition Project. That project is described in detail later in Section 2.3.9.1, Approved or In-process Projects.

Permanent Improvements at Green River Road Under Alternative 1

Under Alternative 1, the existing ramps at the Green River Road interchange would be modified to accommodate the widening on SR-91. In addition, the westbound off-ramp would be realigned with a new railroad overhead structure, as shown on Figure 2-5. The longer ramp provided at this location under Alternative 1 would improve the geometry of the ramp and increase its storage capacity.

Permanent Improvements at SR-71 Under Alternative 1

Under Alternative 1, the inner westbound auxiliary lane that exits at SR-241 would begin at the SR-71/SR-91 interchange, which is an extension of the south-to-west connector ramp. Alternative 1 would realign the southbound SR-71 to the westbound SR-91 connector and widen part of the southbound SR-71 to eastbound SR-91 connector.

As discussed in detail later in Section 2.3.9, another project proposed in the SR-71/SR-91 interchange would affect the design of the project at this location. Those planned improvements include reconfiguring the existing east-to-north loop ramp to a direct flyover connector. Alternative 1 is designed to be compatible with the

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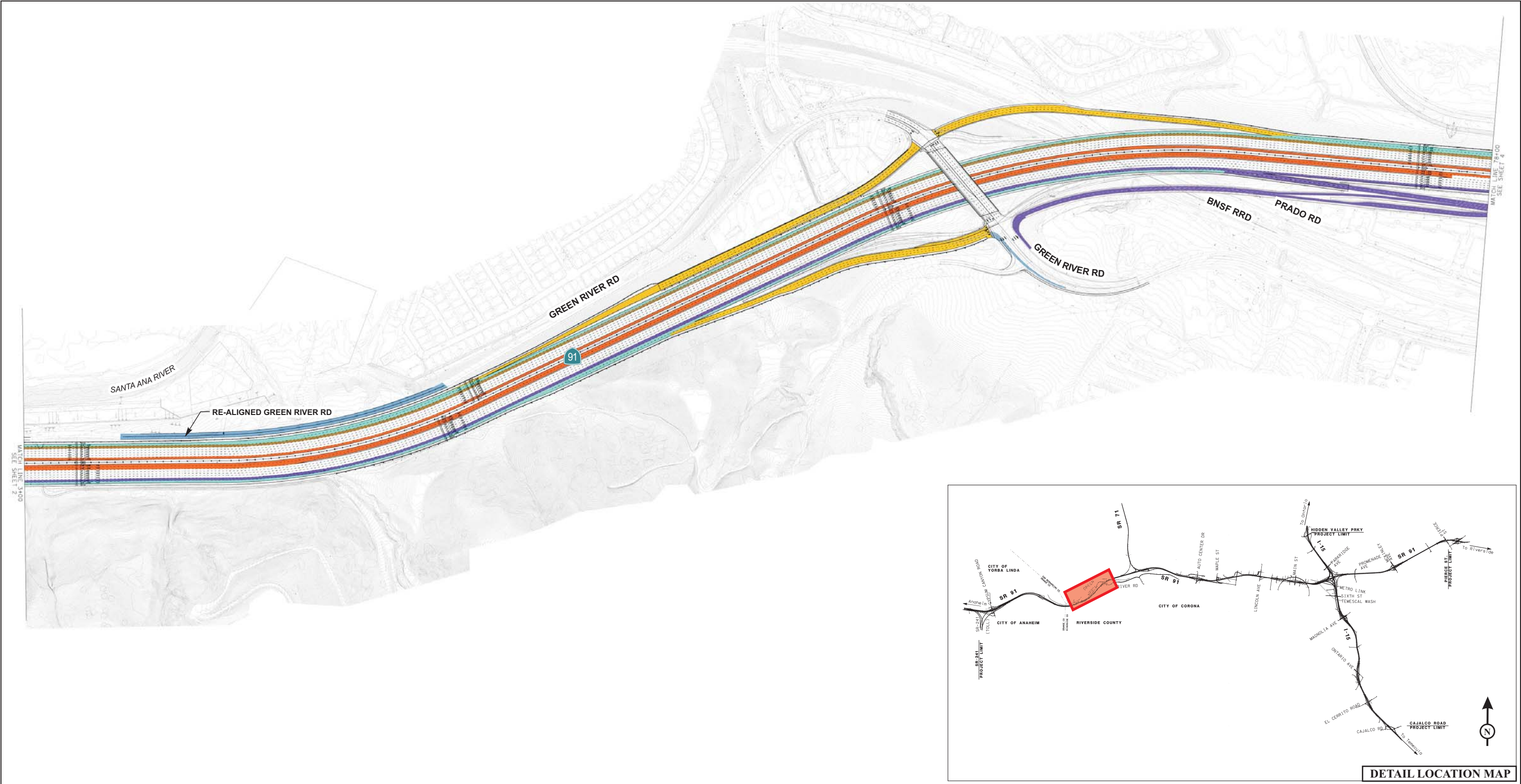


FIGURE 2-5

State Route 91 Corridor Improvement Project
Project Features at Green River Road

12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

NO SCALE

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improvements proposed as part of that SR-71/SR-91 interchange improvement project.

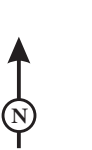
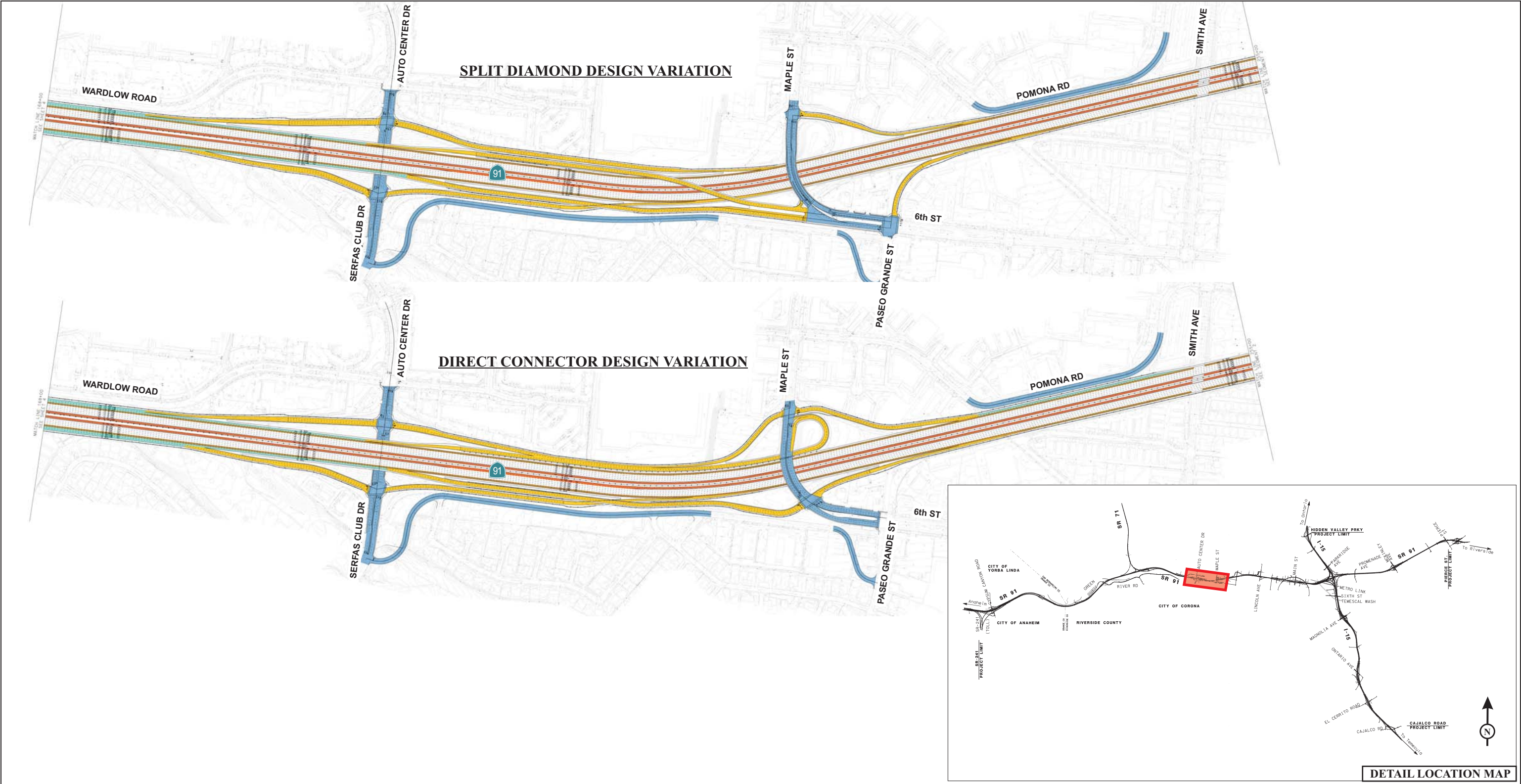
Permanent Improvements at Auto Center Drive/Maple Street Under Alternative 1

Two design variations are under consideration between Auto Center Drive (which is Serfas Club Drive south of SR-91) and Maple Street (which is Sixth Street south of SR-91) under Alternative 1. Both design variations would maintain the existing diamond interchange configuration on the west side of Auto Center Drive (eastbound off-ramp and westbound on-ramp), adjusting the ramps as necessary to accommodate the SR-91 mainline widening in each direction. In the southeast quadrant of the interchange, the eastbound on-ramp from Auto Center Drive would be grade-separated (braided) under the eastbound off-ramp to Maple Street. The existing Frontage Road on the south side of SR-91 that connects Auto Center Drive to Maple Street would be realigned and shifted farther south to accommodate the additional freeway lanes and the braided ramps. These two design variations and the braided ramp configuration represent different approaches for addressing the closely spaced ramps at Auto Center Drive and Maple Street. These two streets are currently about 0.6 mi apart at their intersections with SR-91.

The two design variations at this interchange, as shown on Figure 2-6, would affect the configuration of the westbound Auto Center Drive off-ramp and differ markedly at the Maple Street interchange as follows:

- **Split Diamond Design Variation:** For the Split Diamond design variation, direct westbound access to Auto Center Drive would be replaced with access provided by a new westbound one-way frontage road that would connect from Maple Street opposite the westbound off-ramp intersection. Auto Center Drive traffic would be directed to exit SR-91 at the Maple Street westbound off-ramp, using the new frontage road to access Auto Center Drive. The existing westbound loop on-ramp from Maple Street would be mostly unchanged under this design variation except that it would join the new frontage road prior to merging with the mainline SR-91 travel lanes, as shown on Figure 2-6.
- **Direct Connector Design Variation:** For the Direct Connector design variation, the westbound on-ramp from Maple Street would be a western extension of Sixth Street, south of SR-91, with a flyover separation structure that would lead to a merge with the SR-91 mainline travel lanes. Direct westbound access would be maintained to Auto Center Drive, but the realigned ramp would begin just after

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NO SCALE

I:\PAZ0701\G\Project Features\Alt 1\Auto Center Dr.cdr (7/25/11)

- LEGEND**
- EXISTING HOV LANE
 - GENERAL PURPOSE LANE
 - AUXILIARY LANE
 - RAMP/CONNECTOR IMPROVEMENTS
 - LOCAL ROAD IMPROVEMENTS

NOTE : REFER ALSO TO APPENDIX L, PROJECT FEATURES, WHICH PROVIDES DETAILED PRELIMINARY DESIGN PLANS ON AN AERIAL PHOTOGRAPH BASE FOR THE TWO BUILD ALTERNATIVES AND THEIR DESIGN VARIATIONS.

FIGURE 2-6

State Route 91 Corridor Improvement Project
 Project Features at Auto Center Drive/Maple Street

12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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Table 2.14 Alternative 1 Design Variation Combinations

Alternative	Auto Center Drive/Maple Street Interchange	Lincoln Avenue Interchange
1a	Split Diamond design variation	Tight Diamond design variation
1b	Split Diamond design variation	Hook Ramp design variation
1c	Direct Connector design variation	Tight Diamond design variation
1d	Direct Connector design variation	Hook Ramp design variation

Source: *Project Report* (September 2011).

the Maple Street overcrossing to accommodate the new westbound on-ramp from Maple Street. The existing eastbound diamond on-ramp from Maple Street would be replaced in this design variation by a hook on-ramp that would meet Sixth Street opposite Paseo Grande Road, as shown on Figure 2-6.

The two design variations at Auto Center Drive/Maple Street and the two design variations at Lincoln Avenue (described below) would result in four combinations of design variations in Alternative 1, as shown in Table 2.14.

Permanent Improvements at Lincoln Avenue/Grand Boulevard Under Alternative 1

The two design variations at Lincoln Avenue under Alternative 1 would substantially modify the existing configuration of this interchange as shown on Figure 2-7. In both design variations, the westbound ramps would be changed to a tight diamond configuration, which would eliminate the design constraints of the existing hook ramps. The existing north side frontage road in the northwest quadrant would be moved outward to accommodate the GP lane addition on SR-91 and the ramp modifications. The westbound ramps would be the same in each design variation.

The existing westbound on-ramp and eastbound off-ramp to and from Grand Boulevard would create an operational deficiency on mainline SR-91 due to their close spacing to the Lincoln Avenue ramps. This spacing does not meet the current Department interchange spacing, per the Department's Design Information Bulletin (DIB) 9, Number 77 – Interchange Spacing (January 31, 1995). To improve this operational deficiency, the Grand Boulevard ramps would be removed and replaced with improved local access to the Lincoln Avenue interchange ramps.

On the north side of SR-91, a new frontage road will extend from West Grand Boulevard to join with the existing west frontage road west of Lincoln Avenue.

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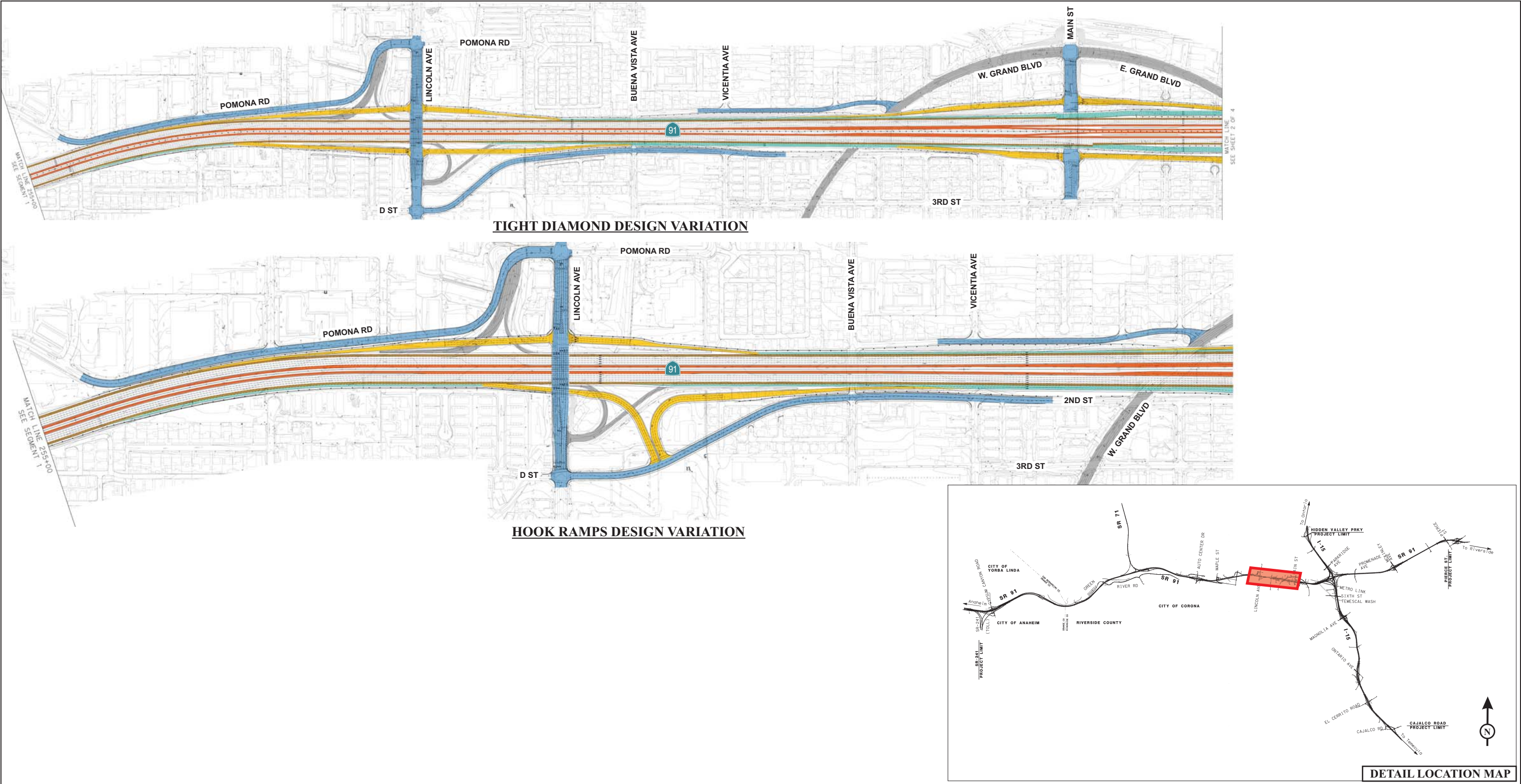


FIGURE 2-7

State Route 91 Corridor Improvement Project
Project Features at Lincoln Avenue/Grand Boulevard

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

NO SCALE

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On the south side of SR-91, a new frontage road will extend from Lincoln Avenue opposite “D” Street and join with Second Street at Buena Vista Avenue, which would continue to West Grand Boulevard.

The two design variations at Lincoln Avenue/Grand Boulevard under Alternative 1, shown on Figure 2-7, are:

- **Tight Diamond Design Variation:** The Tight Diamond design variation would convert the eastbound Lincoln Avenue ramps to a tight diamond configuration, similar to the design of the westbound ramps as shown on Figure 2-7.
- **Hook Ramps Design Variation:** For this design variation, the eastbound ramps would be similar to the existing configuration, but would be changed to a hook ramp pattern that would connect to the new frontage road rather than connecting directly to Lincoln Avenue, as shown on Figure 2-7.

Permanent Improvements at Main Street/I-15 Under Alternative 1

As shown on Figure 2-8, the existing diamond interchange configuration on the west side of Main Street would be maintained (eastbound off-ramp and westbound on-ramp) under Alternative 1, adjusting the ramps as necessary to accommodate the SR-91 mainline widening in each direction. Diamond interchange ramps will also be constructed on the east side of Main Street. The Main Street eastbound on-ramp and westbound off-ramp to and from the I-15 connectors would be combined within a collector-distributor road that would be barrier-separated from SR-91 to eliminate the weaving conflicts that currently exist between this local interchange and the system interchange. The Main Street eastbound on-ramp traffic to SR-91 would split from I-15 traffic and braid under the I-15 collector-distributor road before merging onto eastbound SR-91. The Main Street westbound off-ramp traffic from SR-91 would exit into the collector-distributor road and merge with traffic from the I-15 connectors before exiting to Main Street.

Permanent Improvements on SR-91 McKinley Street/Pierce Street under Alternative 1

Under Alternative 1, the ramps at the McKinley Street interchange would be altered to accommodate the SR-91 mainline widening, which would require only minimal changes in the configuration of this interchange. As shown on Figure 2-9, the outer eastbound GP lane on SR-91 would continue through the McKinley Street interchange and terminate farther east at the succeeding Pierce Street eastbound off-ramp. The westbound GP lane on SR-91 would originate at the Pierce Street on-ramp.

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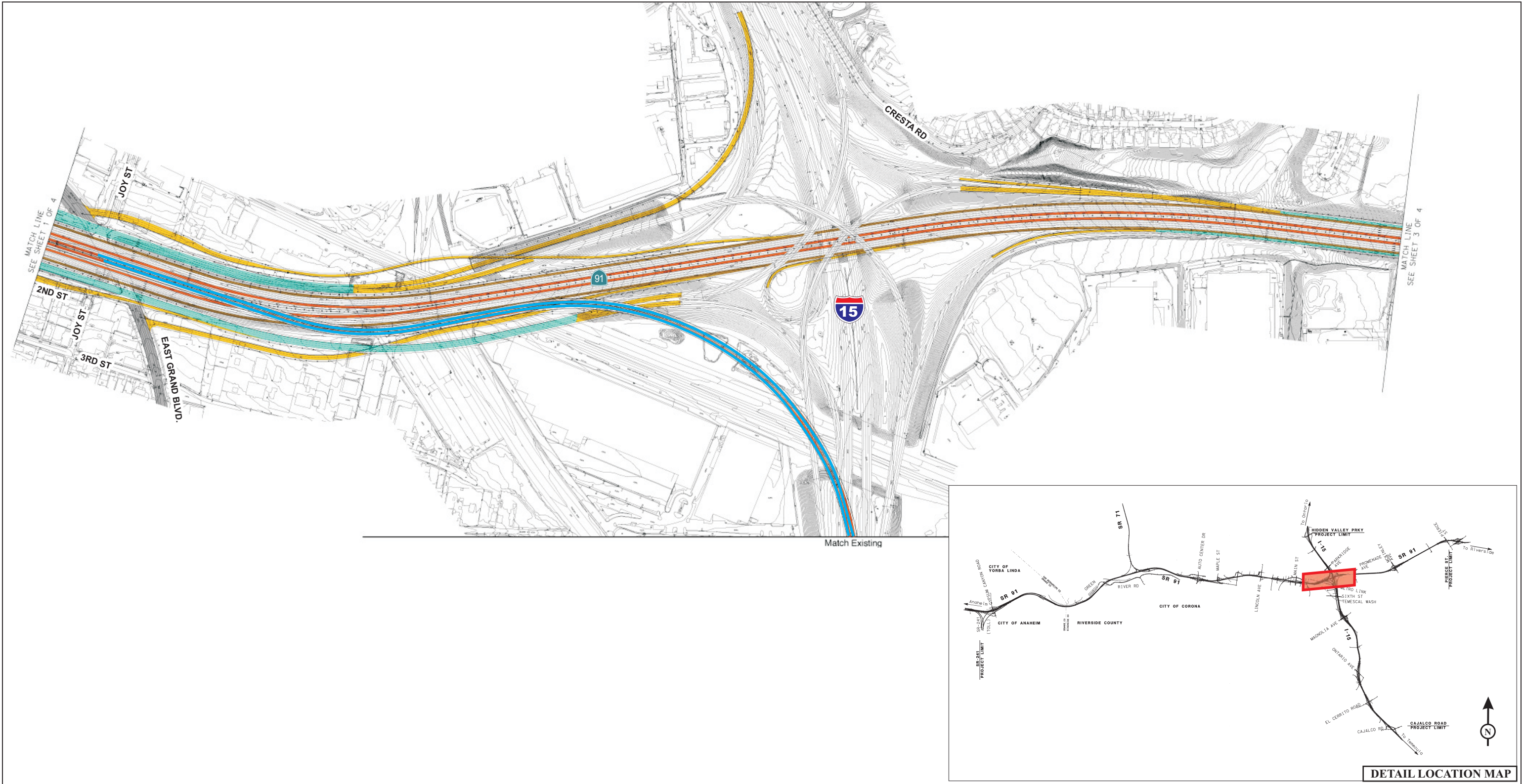


FIGURE 2-8

NO SCALE

LEGEND

- GENERAL PURPOSE LANE
- AUXILIARY LANE
- RAMP/CONNECTOR IMPROVEMENTS
- SR-91/I-15 CONNECTOR
- EXISTING

NOTE : REFER ALSO TO APPENDIX L, PROJECT FEATURES, WHICH PROVIDES DETAILED PRELIMINARY DESIGN PLANS ON AN AERIAL PHOTOGRAPH BASE FOR THE TWO BUILD ALTERNATIVES AND THEIR DESIGN VARIATIONS.

State Route 91 Corridor Improvement Project
 Project Features at Main Street
 12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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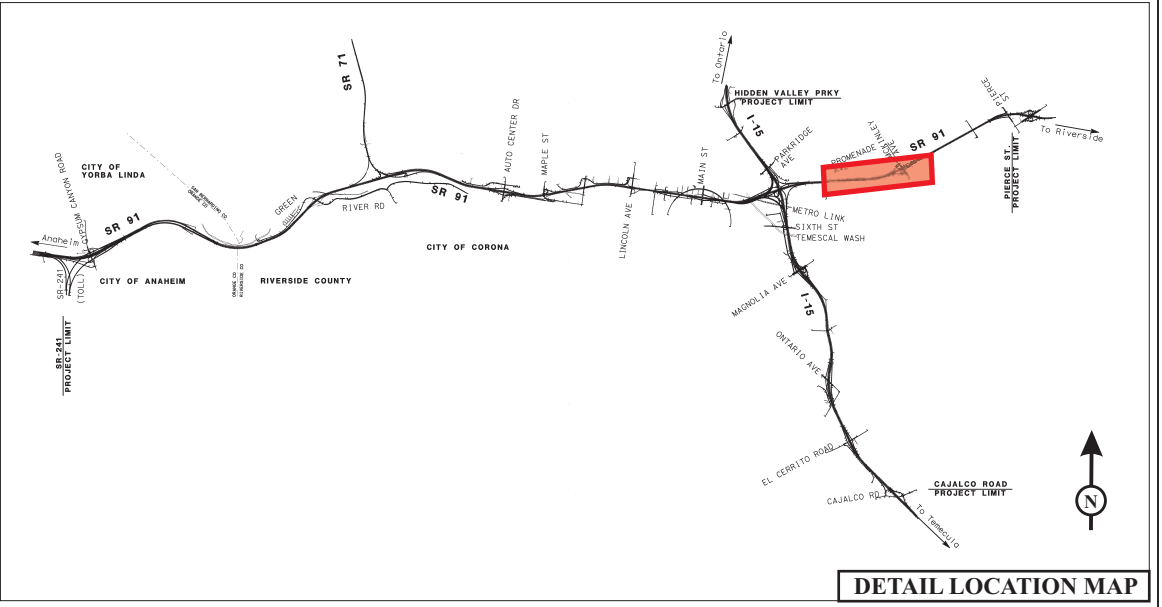


FIGURE 2-9

NO SCALE

LEGEND

- EXISTING HOV LANE
- GENERAL PURPOSE LANE
- AUXILIARY LANE
- RAMP/CONNECTOR IMPROVEMENTS

State Route 91 Corridor Improvement Project
Project Features at McKinley/Pierce Street
 12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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Permanent I-15 Improvements Under Alternative 1

Under Alternative 1, one median HOV lane would be constructed in each direction on I-15 from the new SR-91 direct connector north to Ontario Avenue. The existing K-rail would be replaced, and the full median would be paved to accommodate the new HOV lanes. Figure 2-3, provided earlier, shows a typical cross section on I-15 under Alternative 1.

Advance Signage Under Alternative 1

The purpose of advance signage is to inform drivers that they are approaching a new facility such as an HOV lane, tolled express lanes, or a construction zone. The advanced signage limits under Alternative 1 at the south end of I-15 within the project limits would be between El Cerrito Road and Cajalco Road.

Based on proposed Section 2E-52 in the proposed 2009 *Manual on Uniform Traffic Control Devices* (MUTCD) by the FHWA, signs must be located 1 mi in advance of any exit or entry point and preferably 2 mi in advance of those points, as conditions might dictate, such as along major expressways.

Project Costs

Alternative 1 will cost between approximately \$990 million and \$1 billion, depending on the design variation. The road, structure, right-of-way, and total costs for Alternative 1 for each design variation are provided in Table 2.15. Alternative 1 will be funded primarily from Measure A funds.

Table 2.15 Alternative 1 Summary of Costs

Alternative	Roadway	Structure	Right-of-Way	Total
1a	\$413,400,000	\$369,400,000	\$215,700,000	\$998,500,000
1b	\$412,800,000	\$367,800,000	\$209,700,000	\$990,300,000
1c	\$405,400,000	\$387,900,000	\$208,500,000	\$1,001,800,000
1d	\$404,800,000	\$386,400,000	\$202,400,000	\$993,600,000

Source: *Project Report* (September 2011).

2.3.3.2 Alternative 2: Add General-Purpose Lanes and Extend Tolled Express Lanes

Background on the Existing State Route 91 Tolled Express Lanes in Orange County

The existing SR-91 tolled express lanes in Orange County were implemented for congestion relief on SR-91 when no public funds were available to address the critical transportation problem in the SR-91 corridor. This concept was unique because the

private sector would take the risk and the State would receive congestion relief at no cost to the taxpayers.

The SR-91 toll facility project was authorized as tolled express lanes by the State of California legislature in 1989. Built for \$135 million, the tolled express lanes opened in 1995. The California Private Transportation Company (CPTC) was the original owner of the SR-91 tolled express lanes. An agreement between CPTC and the Department included a noncompete provision that created a 1.5 mi protection zone along each side of SR-91. This zone prohibited improvements along the corridor and created mobility problems as the region and corresponding transportation demands grew.

The passage of AB 1010 in 2002 permitted OCTA to purchase the Express Lane Franchise in Orange County from the CPTC in January 2003. AB 1010 also eliminated the noncompete provision of the franchise agreement, which allowed capacity improvements in this corridor to be planned, funded, and implemented. SB 1316 in 2008 allows the RCTC to toll express lanes on SR-91 under the OCTA franchise agreement.

On July 14, 2003, OCTA adopted a toll policy for the 91 Express Lanes based on the concept of congestion management pricing. The policy is designed to optimize 91 Express Lanes traffic flow at free-flow speeds. To accomplish this OCTA monitors hourly traffic volumes. Tolls are adjusted when traffic volumes consistently reach a trigger point where traffic flow can become unstable. These are known as “super peak” hours. Given the capacity constraints during these hours, pricing is used to manage demand. Once an hourly toll is adjusted, it is frozen for six months. Other (non-super peak) toll prices are adjusted annually by inflation. Toll prices currently range from \$1.35 in the non-peak hours to \$10.05 in the eastbound SR-91 “super peak” hour from 3:00 to 4:00 p.m. on Fridays.¹ The OCTA 91 Express Lanes toll policy² includes the following specific objectives:

- Provide a safe, reliable, predictable commute for 91 Express Lanes customers
- Optimize vehicle throughput at free flow speeds
- Pay debt service and maintain debt service coverage
- Increase average vehicle occupancy

¹ <http://www.91expresslanes.com/schedules.asp>.

² <http://www.91expresslanes.com/policies.asp>.

- Balance capacity and demand to serve customers who pay tolls as well as carpoolers with three or more persons who are offered discounted tolls
- Generate sufficient revenue to sustain the financial viability of the 91 Express Lanes
- Ensure all bond covenants are met
- Repay OCTA's internal borrowing and provide net revenues for SR-91 corridor improvements

On May 19, 2003, OCTA adopted the "Three Ride Free" policy. This innovative policy encourages carpooling by allowing a group of three or more commuters per vehicle to travel the 91 Express Lanes for free during most hours, except when traveling Eastbound, Monday through Friday between the hours of 4:00 p.m. and 6:00 p.m. At these times, carpools of three or more can still save money by earning a 50 percent discount on the posted toll.

The OCTA purchase of the 91 Express Lanes allowed revenues in excess of those needed for operations, maintenance, and debt payments to be used for improvements along the SR-91 corridor, including \$6.6 million in revenues contributed by OCTA for the SR-91 Eastbound Lane Addition Project. As noted in the 91 Express Lanes 2009 Annual Report, since OCTA took ownership of the 91 Express Lanes in 2003, they continue to be financially stable. Through the difficult economic conditions in fiscal year 2008–2009, OCTA maintained a stable financial situation for the toll facility. In fiscal year 2008–2009, as in every past year, the 91 Express Lanes continued to meet its financial obligations while providing its customers with travel time savings.

RCTC 91 Express Lanes Toll Policy

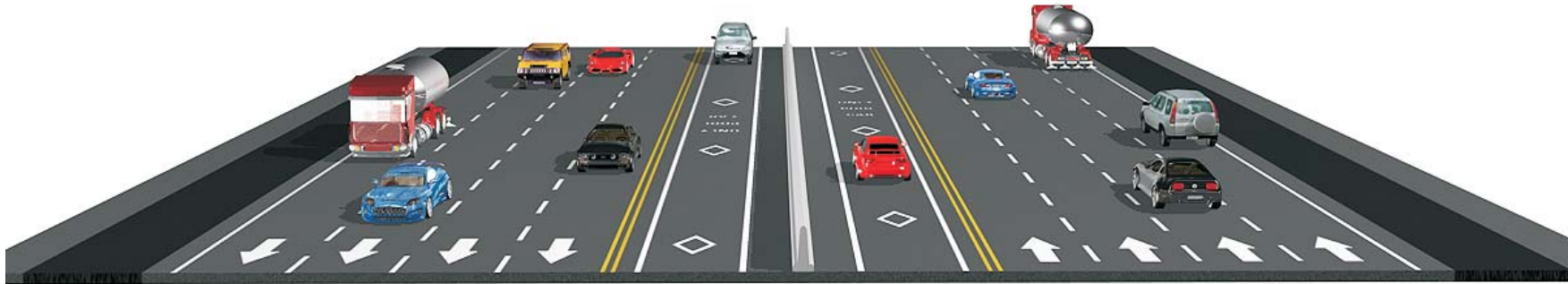
On June 7, 2012, the RCTC formally adopted the "RCTC 91 Express Lanes Toll Policy." The goals and specific policy statements listed above for the OCTA 91 Express Lanes toll policy were adopted by RCTC for the RCTC 91 Express Lanes. As stated in the RCTC staff report dated June 7, 2012, "OCTA and the Commission sharing the same toll policy goals supports coordinated regional operation of the lanes and a seamless customer experience." In addition to the posted tolls, the RCTC 91 Express Lane toll policy allows carpoolers with three or more persons (HOV3+), zero emission vehicles (ZEVs), motorcycles, disabled plates and disabled veterans to ride free during most hours. The exception is Monday through Friday 4:00 p.m. to 6:00 p.m. in the eastbound direction when they pay 50 percent of the posted toll.

Description of Alternative 2

Under Alternative 2, one GP lane would be constructed in each direction on SR-91 from the SR-91/SR-241 interchange in the City of Anaheim to Pierce Street in the City of Riverside. The existing tolled express lanes in Orange County would be extended east from the Orange/Riverside County line to I-15 in the City of Corona. The existing HOV lanes would be converted to tolled express lanes, and one additional tolled express lane would be added in each direction on SR-91 from the Orange/Riverside County Line to I-15, resulting in two tolled express lanes in each direction. Under Alternative 2, a single eastbound SR-91 tolled express lane would extend past I-15 to McKinley Street and convert to an HOV lane at Pierce Street. Westbound at Pierce Street, the existing HOV lane would be converted into a tolled express lane east of McKinley Street and join a second tolled express lane at the I-15 interchange. The new eastbound GP lane would join a newly constructed collector-distributor road providing access to the eastbound Pierce Street and Magnolia Avenue exit ramps. In the westbound direction, the existing HOV lane would be converted to a GP lane west of Pierce Street, and a new tolled express lane would be added in the median near McKinley Street, joining a second tolled express lane just west of I-15. Figure 2-10 shows a typical cross section on SR-91 under Alternative 2.

Under Alternative 2, a tolled express lane in each direction would be constructed on I-15. Single-lane tolled express lane direct connectors between I-15 and SR-91 would provide access from northbound I-15 to westbound SR-91 and from eastbound SR-91 to southbound I-15 extending as a single tolled express lane in each direction on I-15 to Cajalco Road. Additionally, single-lane tolled express lane direct connectors will be constructed from eastbound SR-91 to northbound I-15 and from southbound I-15 to westbound SR-91, extending as a single-lane tolled express lane in each direction north on I-15 to the Hidden Valley Parkway interchange. The direct connectors would allow express lane drivers to travel from the tolled express lanes on one corridor into the tolled express lanes on another corridor without having to transition through the GP lanes. Figure 2-11 shows a typical section on I-15 under Alternative 2.

The goal of tolled express lanes is to provide for long-lasting, reliable, free-flow travel for eligible users in an otherwise congested corridor. Tolled express lanes can be used by single- and multiple-occupancy vehicles for a fee, and users would be required to carry an active FasTrak transponder/account. The tolled express lanes would be available to HOVs with three or more people, motorcycles, zero-emission vehicles, and vehicles driven by handicapped persons with registered license plates, including disabled veterans, at either no toll or a reduced toll provided those vehicles



Existing Typical Cross Section



Proposed Typical Cross Section

LEGEND

- NEW GENERAL PURPOSE LANE
- CONVERTED TOLLED EXPRESS LANE
- NEW TOLLED EXPRESS LANE
- NEW AUXILIARY LANE

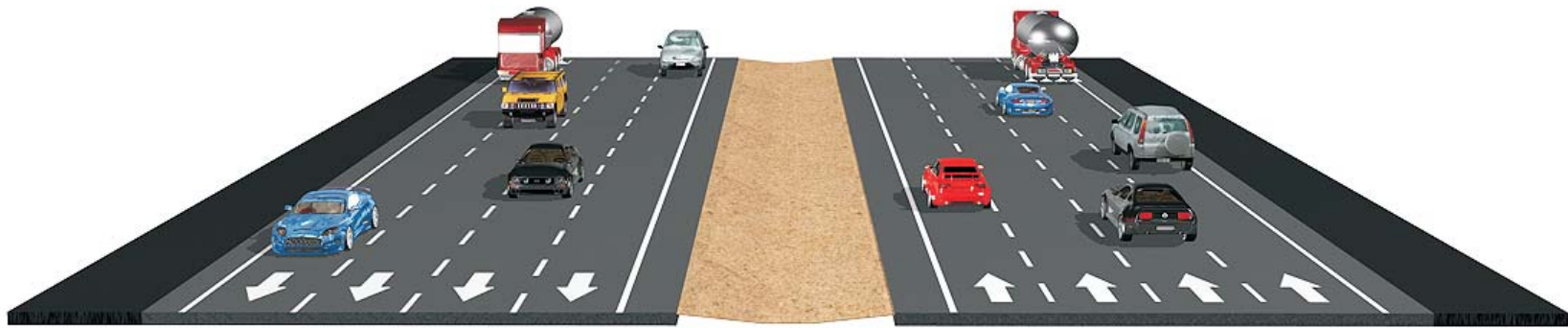
FIGURE 2-10

State Route 91 Corridor Improvement Project
 Typical Cross Section for Alternative 2 (LPA) on SR-91

12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.00/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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Existing Typical Cross Section



Typical Cross Section for the Project

LEGEND

NEW TOLLED EXPRESS LANE

FIGURE 2-11

State Route 91 Corridor Improvement Project
Typical Cross Section for Alternative 2 on I-15

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

NOT TO SCALE

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are equipped with active FasTrak toll transponders and accounts. As an example, the existing 91 Express Lanes in Orange County offer half-priced tolls to these vehicle classifications during certain peak hours with no toll during all other periods. In accordance with RCTC's adopted RCTC 91 Express Lane toll policy, existing and planned express bus services operating in the SR-91 corridor that provide connections between Orange and Riverside Counties will be able to use the tolled express lanes at either no toll or reduced tolls, depending on the day of the week. The advantage compared to two-or-more-person carpool lanes is the reliability of free-flow conditions and the ability to pass in a two-lane facility. Motorcycles, emergency, and other exempted vehicles meeting State requirements would be exempted from express lane tolls. Trucks, recreational, and other large vehicles as currently defined by the State with regards to HOV lanes would continue to be prohibited.

Alternative 2 is included as an alternative for the project because it would be funded in part by the Measure A sales tax revenue and by toll revenue bonds. The toll revenues generated under Alternative 2 would be used as the funding source for the construction and operation of the tolled express lanes under Alternative 2.

The following sections describe the project components and features of Alternative 2 in more detail. In addition, maps detailing the Alternative 2 project components and features are provided in Appendix L.

Permanent Improvements under Alternative 2

The mainline improvements to SR-91 for Alternative 2, including improvements to the interchanges, are generally similar to the improvements described earlier for Alternative 1. Refer to that earlier discussion and the figures provided in that section for the detailed description of those improvements.

In addition to the design variations at Auto Center Drive/Maple Street and Lincoln Avenue described earlier under Alternative 1 which would also apply to Alternative 2, Alternative 2 includes two design variations at Smith Avenue:

- **No Drop Ramp Design Variation:** Under this design variation, no additional access to the tolled express lanes would be provided on SR-91 between the Orange/Riverside County line and I-15.
- **Drop Ramp Design Variation:** Under this design variation, the existing Smith Avenue overcrossing would be reconstructed with drop ramps to provide an eastbound tolled express lane exit to Smith Avenue and a westbound entrance from Smith Avenue to the tolled express lanes.

The three design variations under Alternative 2 would result in eight combinations of design variations, as summarized in Table 2.16.

Table 2.16 Alternative 2 Design Variation Combinations

Alt.	Auto Center Drive/Maple Street Interchange	Smith Avenue	Lincoln Avenue Interchange
2a	Split Diamond design variation	No Drop Ramp design variation	Tight Diamond design variation
2b	Split Diamond design variation	No Drop Ramp design variation	Hook Ramp design variation
2c	Split Diamond design variation	Drop Ramp design variation	Tight Diamond design variation
2d	Split Diamond design variation	Drop Ramp design variation	Hook Ramp design variation
2e	Direct Connector design variation	No Drop Ramp design variation	Tight Diamond design variation
2f	Direct Connector design variation	No Drop Ramp design variation	Hook Ramp design variation
2g	Direct Connector design variation	Drop Ramp design variation	Tight Diamond design variation
2h	Direct Connector design variation	Drop Ramp design variation	Hook Ramp design variation

Source: *Project Report* (September 2011).

Alt. = Alternative

The primary difference in the improvements on SR-91 between Alternatives 1 and 2 is that Alternative 2 adds one 12 ft wide additional travel lane in each direction as part of the tolled express lanes. That additional lane would be accommodated in all the interchange improvements on SR-91 and their design variations as discussed earlier under Alternative 1.

The basic concept for the tolled express lanes under Alternative 2 is to provide an access point at the Orange/Riverside County line and then extend the two tolled express lanes in each direction to I-15. In addition, a Mid-City Access location would be constructed at Smith Avenue in the City of Corona. That access point would allow City of Corona residents to access the tolled express lanes, to and from the west, at a midpoint between access points to the east and west. The tolled express lanes would continue with one lane in each direction through the I-15 interchange on SR-91. As a result, a driver traveling east in the tolled express lanes would have three choices at the termination of the tolled express lanes: (1) continue on SR-91 in a single tolled express lane for approximately 1 mi through the interchange and then either enter an HOV lane or continue in the GP lanes; (2) travel south on I-15 to a single tolled express lane in the median, which would be converted to GP lanes approximately 4 mi south of that merge; or (3) travel north on I-15 to a single tolled express lane in the median, which would be converted to the GP lanes approximately 0.5 mi north of that merge. For westbound traffic on SR-91, entrances to the tolled express lanes would be provided in the median of SR-91 or from the northbound and southbound I-15 direct connectors. Access to the tolled express lanes would be provided at the Orange/

Riverside County line by way of a median auxiliary lane that extends from an egress lane to an ingress lane in each direction.

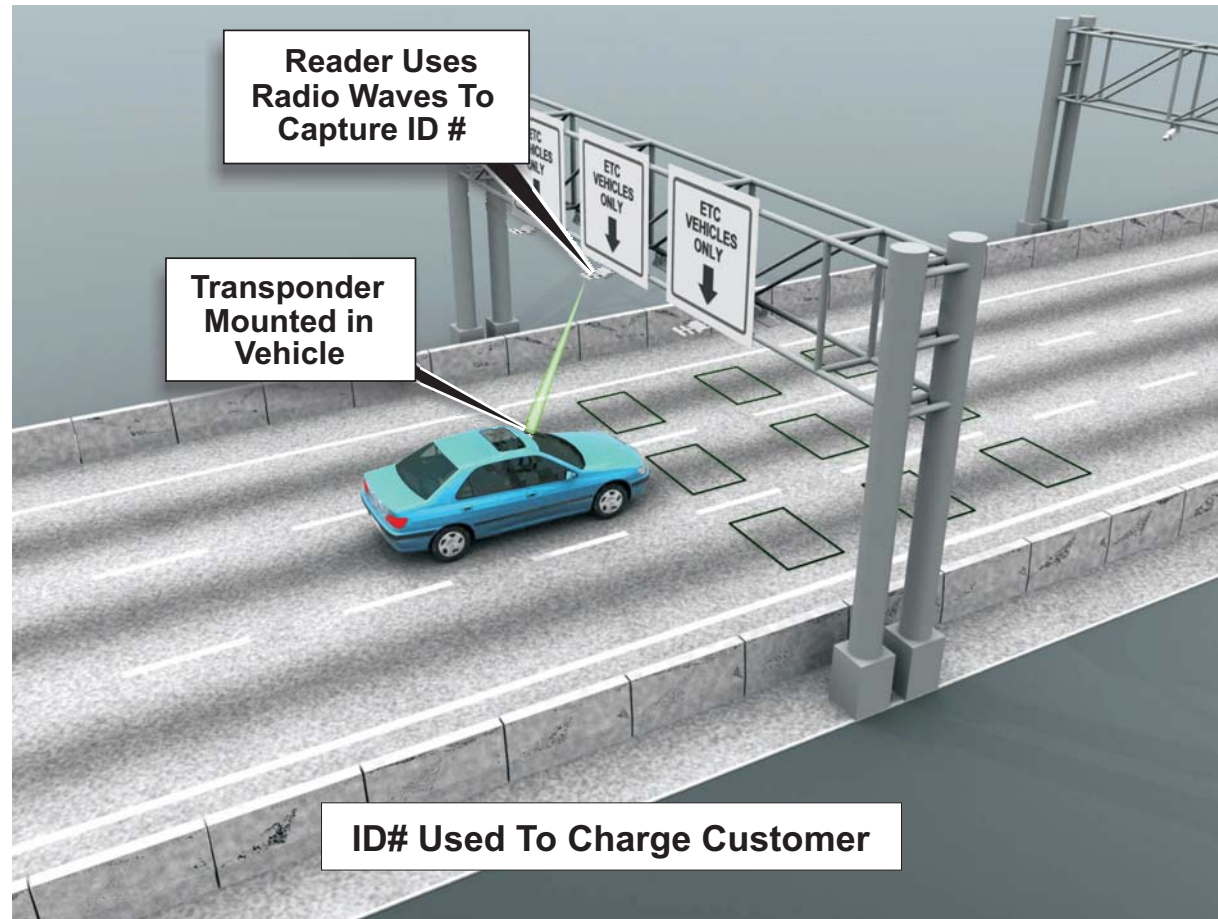
SR-91 Toll System Under Alternative 2

The tolled express lanes under Alternative 2 would be operated as an electronic toll collection (ETC) system. There would be no opportunity to pay tolls with cash on this facility. All tolled express lane users would be required to have an account with a tolling agency. The tolling agencies issue a California Standard (Title 21 compliant) transponder or toll tag to each customer. The transponders would be mounted on the windshields of the registered vehicles. It is anticipated that many Riverside County tolled express lane users would be existing account holders with the OCTA. The existing OCTA account holders, as well as other toll agency customers in California with transponders, would be able to use the extended tolled express lanes with their existing transponders with no further administrative action on their part. As shown on Figure 2-12, tolls would be collected electronically by equipment that would read the transponders at highway speeds. The transition from the OCTA tolled express lanes to the Riverside County tolled express lanes under Alternative 2 would be as seamless as possible for users.

In accordance with the RCTC 91 Express Lane toll policy adopted by RCTC on June 7, 2012, the operating rules, toll structure, and violation enforcement process for the Riverside County tolled express lanes would be the same as those that are currently in effect in Orange County. The toll rate will be set by time of day based on traffic demand observed over the previous 3-month period. This variable pricing approach adjusts toll rates based on the number of vehicles on the road to maintain free-flow conditions and maximize total throughput.

On the Orange County tolled express lanes, toll rates average \$2.93 per trip and currently vary from a minimum of \$1.35 to a maximum of \$10.05 for 1 hour during the Friday afternoon peak period. The toll rate on the SR-91 CIP tolled express lanes will be set by the time of day and day of week based on hourly traffic demand observed over the previous 3-month period. This is the method that gets the toll rates on the existing SR-91 tolled express lanes operated by OCTA. This method involves comparing actual traffic demand against a preset maximum threshold and adjusting the pricing accordingly, thereby maintaining reasonable travel times throughout the day on the tolled express lanes. The SR-91 CIP tolling system would have the ability to operate under dynamic pricing in the future where the actual travel time in the

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ETC: Electronic Toll Collection

FIGURE 2-12

State Route 91 Corridor Improvement Project
Toll Transponder Operation under Alternative 2

12-Ora-91-R14.43/R18.91
08-Riv-91-R0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

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SR-91 tolled express lanes or the travel time differential between the SR-91 GP lanes and the SR-91 tolled express lanes would be measured in real time between the entry and exit points. The price to travel in the tolled express lanes would be adjusted, usually in 15-minute intervals, as required to maintain traffic flow. The special vehicle classifications that are eligible would still receive reduced tolls.

Tolls would be collected along the route at specific points or toll debiting stations. These debiting stations would consist of an overhead antenna that reads the transponder, causing a charge to the customer's account in the amount of the toll applicable for the day of the week and time of day the trip is made. At this same point, a camera would record images of the license plate for violation enforcement purposes. Signs would advise motorists of the location of the upcoming tolled express lane entry; motorists would be forewarned that the facility they would be entering is a toll facility that would require a toll transponder. The amount of the current toll would also be displayed before the motorists enter the tolled express lane facility. A more detailed description of the tolling system can be found in the *Toll System Description Report* (July 2010).

The toll antenna and cameras at the debiting stations would be connected by a fiber optic cable backbone communications network to the existing SR-91 Toll Operations Center (TOC) and Customer Service Center (CSC). The TOC would serve as the 24/7 operating and maintenance information center for the tolled express lanes. The CSC would provide account services to the facility's customers and violation verification and processing. The CSC would be the central facility where customer accounts would be established and managed, toll transponders issued and tested, and violation processing would occur. The existing OCTA SR-91 TOC and CSC joint facility, as shown on Figure 2.13, would be used for the SR-91 CIP tolled express lanes under Alternative 2, and no new buildings would be required.

Advance Signage for Alternative 2

The purpose of advance signage is to inform drivers that they are approaching tolled express lanes, an HOV lane, or a construction zone. The advance signage limits on SR-91 under Alternative 2 would extend from Weir Canyon Road to SR-241 at the west end of the study area and from Tyler Street and Pierce Street at the east end of the study area. Advance signage limits at the south end of I-15 would be between Weirick Road and Cajalco Road. The advance signage limits at the north end of I-15 would be between Third Street and Hidden Valley Parkway in the City of Norco.

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FIGURE 2.13

State Route 91 Corridor Improvement Project
Existing SR-91 Express Lanes TOC and CSC
12-Ora-91-R14.43/R.18.19
08-Riv-91-R.0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

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Project Costs

Alternative 2 would cost between \$1.3 billion and \$1.4 billion, depending on the design variation. The roadway, structure, right-of-way, and total costs for Alternative 2 for each design variation are provided in Table 2.17.

Table 2.17 Alternative 2 Summary of Costs

Alternative	Roadway	Structure	Right-of-Way	Total
2a	\$557,800,000	\$541,600,000	\$253,200,000	\$1,352,600,000
2b	\$559,900,000	\$540,000,000	\$245,100,000	\$1,345,000,000
2c	\$567,600,000	\$569,200,000	\$272,600,000	\$1,409,400,000
2d	\$569,800,000	\$567,600,000	\$270,200,000	\$1,407,600,000
2e	\$555,300,000	\$561,100,000	\$238,300,000	\$1,354,700,000
2f	\$551,900,000	\$559,600,000	\$269,000,000	\$1,380,500,000
2g	\$567,200,000	\$588,800,000	\$270,200,000	\$1,426,200,000
2h	\$569,400,000	\$587,200,000	\$267,800,000	\$1,424,400,000

Source: Project Report (September 2011).

2.3.4 Phasing Plans for the Build Alternatives

2.3.4.1 Overview of the Phasing Plans

A phasing plan identifies project components that would be designed and implemented in phases as the entire project constructed is over time. For a transportation project such as the project, the phasing can be based on a number of factors (e.g., available funding, constructability, availability of right-of-way, traffic demand, and/or coordination with regional and local land use planning).

The phasing plans for the Build Alternatives were developed largely based on the funding anticipated to be available after completion of the environmental process and identification of the Preferred Alternative. The phasing plans were developed to provide for meaningful transportation improvements that would provide timely benefits to travelers on SR-91 and/or I-15.

2.3.4.2 Need for the Phasing Plans

The project is partially funded in the Measure A 10-Year Delivery Plan (RCTC 2009). Measure A is a one-half-cent sales tax in Riverside County that is dedicated to transportation improvements in the County. As described in the Measure A 10-Year Delivery Plan, Alternative 1 and the GP lanes in Alternative 2 are to be funded primarily with Measure A funds. The tolled express lanes in Alternative 2 are anticipated to be funded from bonds issued against future toll revenues generated from the SR-91 tolled express lanes. A summary of anticipated funding sources for the Initial Phases of Alternatives 1 and 2 is shown in Table 2.18.

Table 2.18 Anticipated Funding Sources

Potential Funding Source	Alternative 1	Alternative 2
RCTC Contribution (Measure A)	\$830,586,000	\$734,944,000
Federal TIFIA Loan	0	\$444,117,000
STIP Funds	\$2,000,000	\$2,000,000
Toll Revenue Bonds (CIBs/CABs)	0	\$163,768,000
Total	\$832,586,000	\$1,344,829,000

Source: Riverside County Transportation Commission (2011).

CABs = Capital Appreciation Bonds

CIBs = Current Interest Bonds

RCTC = Riverside County Transportation Commission

STIP = State Transportation Improvement Program

TIFIA = Transportation Infrastructure Finance and Innovation Act

As shown in Table 2.17, the Ultimate Project of the Preferred Alternative (Alternative 2f) is estimated to cost \$1.38 billion and is scheduled for completion by 2035. The Ultimate Project is expected to be funded through a combination of federal, state, and local (Measure A) funds.

With the downturn in the local, regional, and State economies, sales tax revenues have decreased substantially since 2007. As a result, forecast levels of available Measure A sales tax revenues are not currently projected to be generated at the rate originally estimated in the Measure A 10-Year Delivery Plan. To accommodate these reduced revenues, and to provide transportation improvements as early as possible on SR-91 and I-15, RCTC developed a phasing plan for the two Build Alternatives to maximize the use of available funds.

The need for a phasing plan for the two Build Alternatives is based on the following:

- The reduction in sales tax revenues during the recent economic downturn has reduced the amount of funding available for transportation projects such as the project. As a result, waiting until the time when funds for the entire project become available could result in substantial delays in the delivery of any improvements in the SR-91 and I-15 corridors and the benefits of those improvements to the traveling public.
- The RCTC desires to provide benefits to the traveling public on the project segments of SR-91 and I-15 as soon as possible. This would be accomplished by phasing the implementation of the improvements in Alternatives 1 and 2. This would provide benefits in phases as funding becomes available rather than delaying all benefits until the entire project can be funded and implemented in one phase.

2.3.4.3 Phasing Plan for Alternative 1

The following background assumptions were made regarding the phasing plan for Alternative 1:

- All the project components and features in Alternative 1 would be constructed no later than 2035.
- The project features and components implemented in each phase of Alternative 1 would provide independent utility and would have logical termini.
- The phasing plan would apply to Alternative 1 with any of the four design variations (a, b, c, d) possible under Alternative 1.

Implementation of Alternative 1 will be in two phases over a 20-year period beginning with an Initial Phase that would be completed by 2017 and culminating with completion of the Ultimate Project (second phase) by 2035. Improvements that would be provided in the Initial Phase and Ultimate Project under Alternative 1 are shown on Figures 2-14 and 2-15, respectively. The improvements that would be provided in the Initial Phase and the Ultimate Project are described in Tables 2.19 and 2.20, respectively.

The Initial Phase of Alternative 1 would include improvements on SR-91 from approximately Green River Road to the I-15 interchange (a distance of about 6 mi) and single-lane direct connectors to and from I-15 south, extending from SR-91 to the Ontario Avenue interchange (a distance of about 3 mi). The Initial Phase of Alternative 1 would generally implement shorter segments of the Alternative 1 improvements on SR-91 and I-15, with a construction duration estimated at 4 years.

The Ultimate Project under for Alternative 1 would be constructed as an independent construction contract and is estimated to have a construction duration of 1 to 2 years. As shown on Table 2.19, the Ultimate Project under Alternative 1 would include the improvements on SR-91 from SR-241 to Green River Road (one GP lane in each direction) and the improvements on SR-91 from I-15 to Pierce Street (one GP lane in each direction). In locations where the Initial Phase improvements overlap with the Ultimate Project, such as bridges or retaining walls, the Initial Phase would construct those elements in their ultimate locations, to the extent feasible. Minimal additional costs associated with phasing are anticipated as efforts would be made to minimize future rework and throw-away costs.

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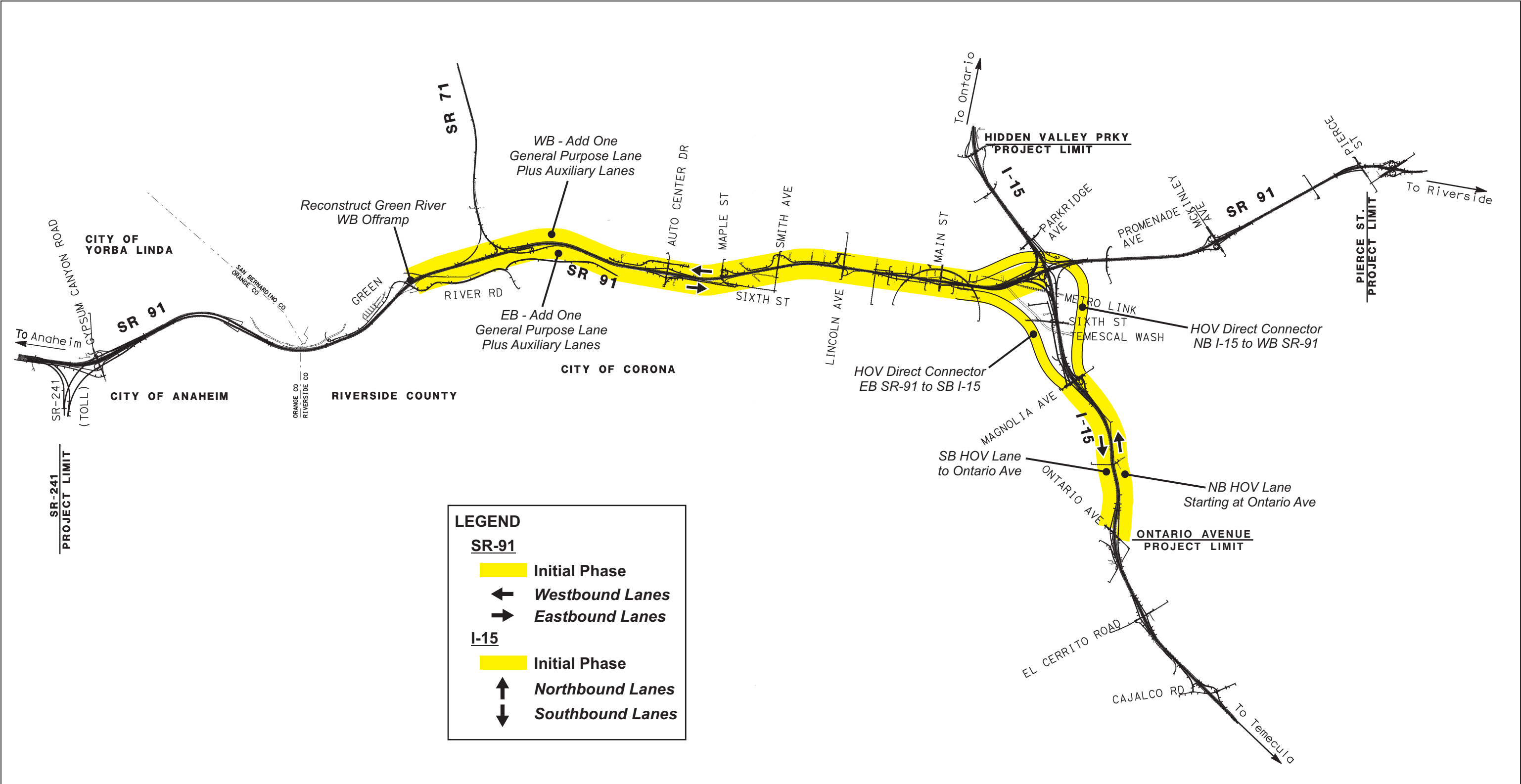


FIGURE 2-14

Note: Refer also to Appendix L, Project Features, which provides detailed preliminary design plans on an aerial photograph base for the two Build Alternatives and their design variations.



NOT TO SCALE

SR-91 Corridor Improvement Project
Initial Phase of Alternative 1
12-Ora-91-R14.43/R.18.19
08-Riv-91-R.0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

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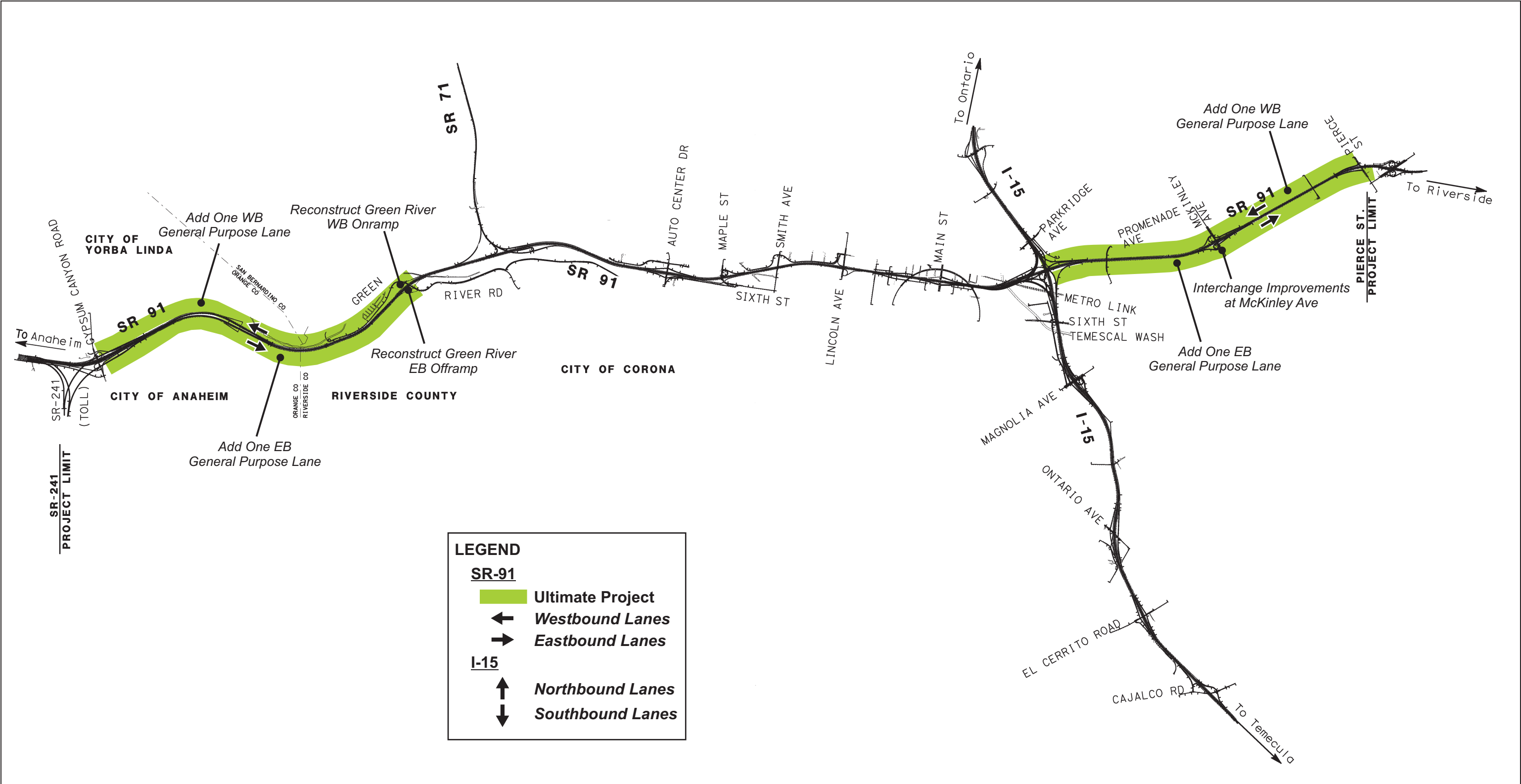


FIGURE 2-15



NOT TO SCALE

SR-91 Corridor Improvement Project
Alternative 1 Ultimate Project
12-Ora-91-R14.43/R.18.19
08-Riv-91-R.0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

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Table 2.19 Project Improvements in the Initial Phase under Alternative 1

State Route 91 – Initial Phase of Alternative 1	
Eastbound SR-91 (from west to east)	Westbound SR-91 (from east to west)
No work is proposed from SR-241 to Green River Road in the eastbound direction in the Initial Phase.	The westbound Green River Road off-ramp would be reconstructed to accommodate the Alternative 1 Ultimate Project. From Green River Road to the Orange/Riverside County line, Green River Road would be realigned to its location in the Alternative 1 Ultimate Project.
From the Green River Road eastbound on-ramp to the SR-71 east-north loop connector, an auxiliary lane would be added by restriping. An optional second lane would be added at the entrance to the loop connector.	From the SR-71 south-west connector to the Green River Road off-ramp, an auxiliary lane would be added.
From SR-71 to I-15, the existing HOV lane would remain, and a fifth general-purpose lane would be added with interchange improvements at Serfas Club Drive/Auto Center Drive, Maple Street, Lincoln Avenue, and Main Street.	From I-15 to SR-71 on SR-91, the existing HOV lane would remain, and a fifth general-purpose lane would be added with interchange improvements at Main Street, Lincoln Avenue, Maple Street, and Serfas Club Drive/Auto Center Drive.
The I-15 connectors would diverge from SR-91 and merge with the eastbound Main Street on-ramp within a collector-distributor road.	The I-15 connectors would merge with the westbound Main Street off-ramp within a collector-distributor road before merging with SR-91.
There would be no improvements from I-15 to Pierce Street on SR-91 in the Initial Phase.	There would be no improvements from Pierce Street to I-15 on SR-91 in the Initial Phase.
I-15 – Initial Phase of Alternative 1	
A single-lane direct HOV connector would be provided from eastbound SR-91 to southbound I-15 that would continue as a single-lane HOV lane in the median of I-15, terminating near the Ontario Avenue interchange.	
A single-lane HOV lane would be constructed in the median of I-15 that would begin near the Ontario Avenue interchange and would continue northbound as a single-lane direct HOV connector to westbound SR-91.	

Source: Project Report (September 2011).

HOV = high-occupancy vehicle

I-15 = Interstate 15

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

Table 2.20 Project Improvements in the Ultimate Project under Alternative 1

State Route 91 – Ultimate Project for Alternative 1	
Eastbound SR-91 (from west to east)	Westbound SR-91 (from east to west)
One general purpose lane would be provided between SR-241 and SR-71. Between SR-241 and Coal Canyon, widening on the eastbound SR-91 is proposed to accommodate the additional lane. Between Coal Canyon and Green River Road the centerline of SR-91 is proposed to be shifted northward, and widening of westbound SR-91 is proposed to accommodate the additional eastbound lane.	One general purpose lane would be provided between SR-71 and SR-241. Between Coal Canyon and SR-241, widening on the westbound SR-91 is proposed to accommodate the additional lane.
	Between Green River Road and Coal Canyon, widening of westbound SR-91 is proposed to accommodate the additional lane.
The Green River eastbound off and on ramps would be widened and realigned to accommodate the Alternative 1 Ultimate Project.	The Green River Road westbound on ramp would be widened and realigned to accommodate the Alternative 1 Ultimate Project.
Eastbound SR-91 (from west to east)	Westbound SR-91 (from east to west)
Between Green River Road and SR-71 restriping the eastbound SR-91 is proposed to accommodate the additional general purpose lane	Between the SR-71 south-west connector to Green River Road, the additional general purpose lane would be added by restriping. An auxiliary lane would also be added in advance of the Green River Road off-ramp by restriping.
From I-15 to Pierce Street a fourth general purpose lane would be added by widening the eastbound SR-91 between I-15 and Pierce Street off ramp.	From Pierce Street to I-15 a fourth general purpose lane would be added by widening the westbound SR-91 between Pierce St westbound on ramp and I-15.
The McKinley Street eastbound ramps would be modified to accommodate the widening of SR-91 and additional lanes would be added to the ramps to accommodate future traffic demand.	The McKinley Street westbound ramps would be modified to accommodate the widening of SR-91 and additional lanes would be added to the ramps to accommodate future traffic demand.
I-15 – Ultimate Project for Alternative 1	
There would be no Improvements along northbound I-15 in the Ultimate Project.	
There would be no Improvements along southbound I-15 in the Ultimate Project.	

Source: Project Report (September 2011).

HOV = high-occupancy vehicle

I-15 = Interstate 15

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

2.3.4.4 Phasing Plan for Alternative 2

Overview

The following background assumptions were made regarding the phasing plan for Alternative 2:

- All the project components and features in Alternative 2 would be constructed no later than 2035.
- The project features and components implemented in each phase of Alternative 2 would provide independent utility and would have logical termini.

Implementation of Alternative 2 will be in two phases, beginning with an Initial Phase that would be completed by 2017 and culminating with completion of the Ultimate Project (second phase) by 2035. The Initial Phase and Ultimate Project under Alternative 2 are shown on Figures 2-16 and 2-17, respectively. The improvements that would be provided in the Initial Phase and the Ultimate Project are described in Tables 2.21 and 2.22, respectively.

The following section describes the improvements in the Initial Phase of Alternative 2 in detail. The phasing plan for Alternative 2 would not change regardless of the design variation. However, the details that follow are for Alternative 2 with design variation f. As discussed later in Section 2.3.7.4, Alternative 2f has been identified as the Preferred Alternative for the SR-91 CIP. The detailed description provided below is provided only for the Initial Phase of Alternative 2f because this is the only phase currently programmed for construction funding in the 2011 FTIP (Amendment 24).

Initial Phase for Alternative 2

The Initial Phase of Alternative 2 is the minimum project that could provide early benefits to the traveling public with logical termini and independent utility. As shown on Figure 2-16, the Initial Phase of Alternative 2 includes improvements on SR-91 from approximately the Orange/Riverside County line (where the existing Express Lanes terminate) to the I-15 interchange (a distance of approximately 8 mi) and single-lane direct connectors to and from I-15 south, extending from SR-91 to the Ontario Avenue interchange (a distance of approximately 3 mi). The Initial Phase of Alternative 2 would generally implement shorter segments of Alternative 2.

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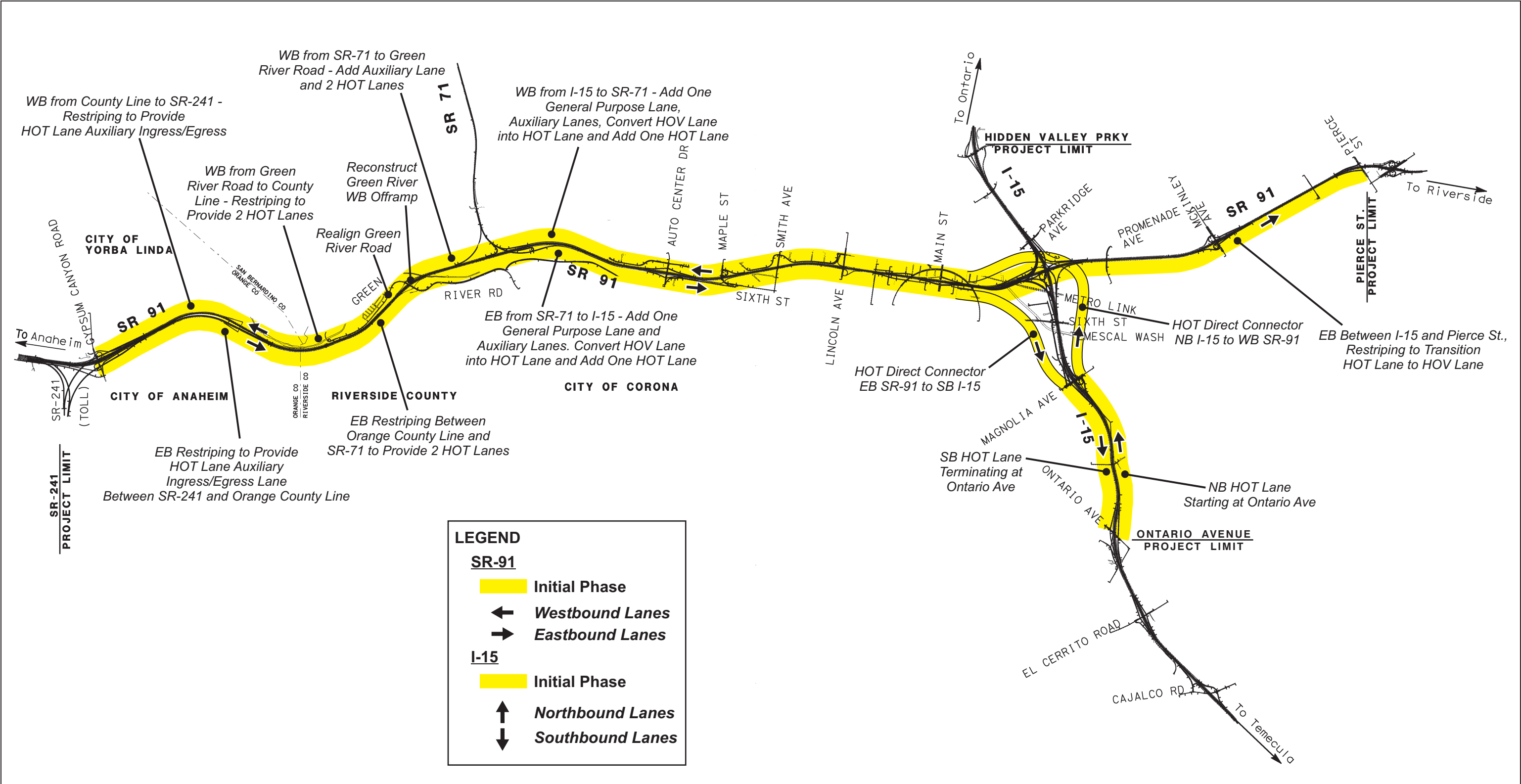


FIGURE 2-16

SR-91 Corridor Improvement Project

Initial Phase of Alternative 2

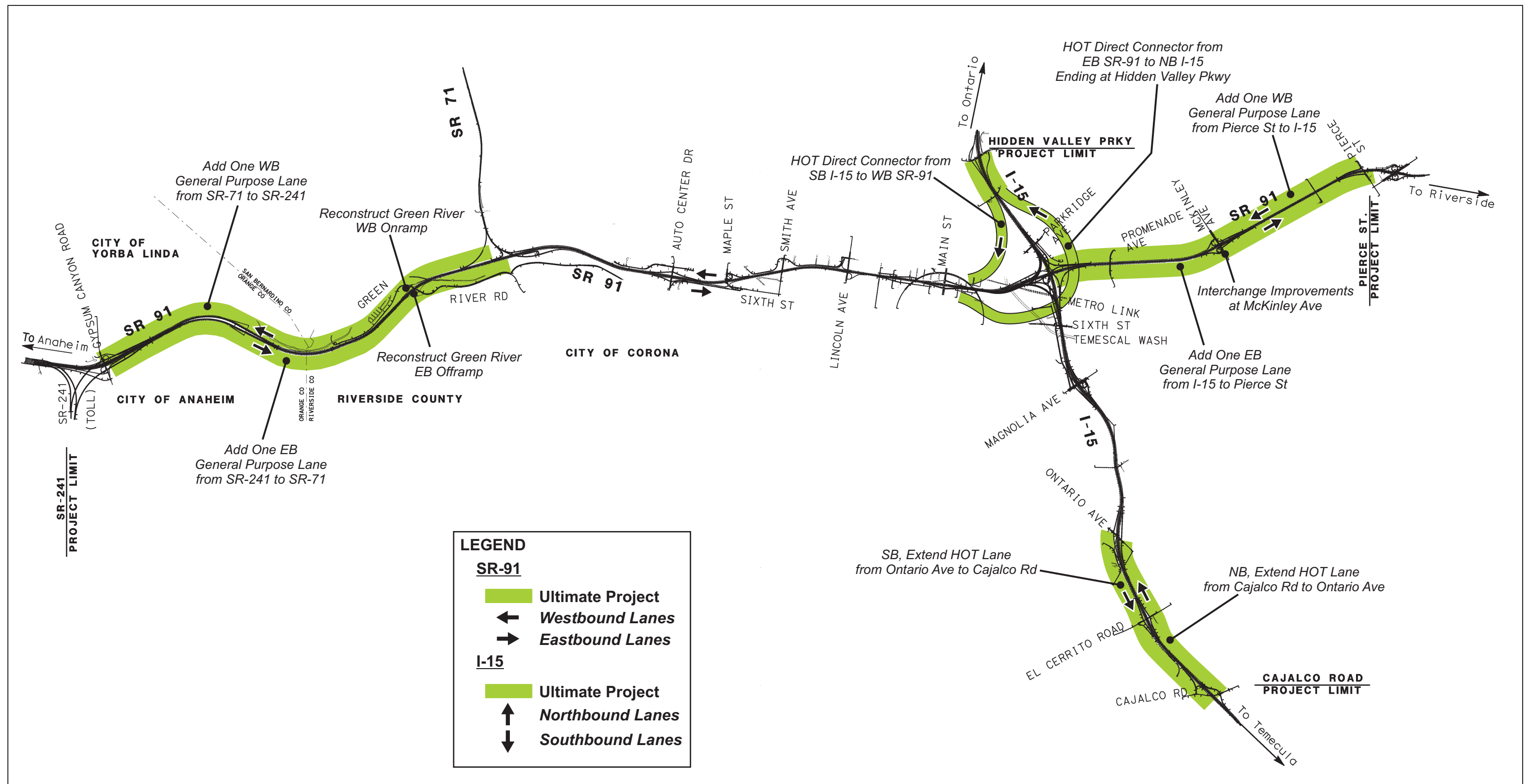
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08-Riv-91-R.0.00/R13.04

08-Riv-15-35.64/45.14

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Note: The Initial Phase only needs striping and does not require any road widening for the segments west of SR-71 on SR-91 eastbound, west of Green River Road on SR-91 westbound, and east of I-15 on SR-91 eastbound.

Refer also to Appendix L, Project Features, which provides detailed preliminary design plans on an aerial photograph base for the two Build Alternatives and their design variations.



NOT TO SCALE

FIGURE 2-17

SR-91 Corridor Improvement Project
Alternative 2 Ultimate Project

12-Ora-91-R14.43/R.18.19
08-Riv-91-R.0.00/R13.04
08-Riv-15-35.64/45.14
EA 0F540

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Table 2.21 Project Improvements in the Initial Phase under Alternative 2f

State Route 91 – Initial Phase of Alternative 2f	
Eastbound SR-91 (from west to east)	Westbound SR-91 (from east to west)
From SR-241 to Green River Road, an auxiliary lane would be provided between the egress (exit) and ingress (entrance) points for the tolled express lanes at the Orange/Riverside County line. This would be achieved by restriping the existing pavement.	The westbound Green River Road on-ramp would be reconstructed to accommodate the Alternative 2 Initial Phase.
	From Green River Road to the Orange/Riverside County line, Green River Road would be realigned to its location in the Alternative 2 Ultimate Project.
	The westbound Green River Road off-ramp would be reconstructed to accommodate the Alternative 2 Ultimate Project.
	From Green River Road to SR-241, an auxiliary lane would be provided between the egress (exit) and ingress (entrance) points for the tolled express lanes at the Orange/Riverside County line, which would be achieved by a combination of widening and restriping the existing pavement.
From the Orange/Riverside County line to SR-71, the two existing HOV lanes would be converted to two tolled express lanes.	From SR-71 to the Riverside/Orange County line, the existing HOV lane would be converted to a tolled express lane, and a second tolled express lane would be added.
From the Green River Road eastbound on-ramp to the SR-71 east-north loop connector, an auxiliary lane would be added by restriping. An optional second lane would be added at the entrance to the loop connector.	From the SR-71 south-west connector to the Green River Road off-ramp, an auxiliary lane would be added.
From SR-71 to I-15, the existing HOV lane would be converted to a tolled express lane, a second tolled express lane would be added, and a fifth general-purpose lane would be added with interchange improvements at Serfas Club Drive/Auto Center Drive, Maple Street, Lincoln Avenue, and Main Street.	From I-15 to SR-71 on SR-91, the existing HOV lane would be converted to a tolled express lane, a second tolled express lane would be added, and a fifth general-purpose lane would be added with interchange improvements at Main Street, Lincoln Avenue, Maple Street, and Serfas Club Drive/Auto Center Drive.
The I-15 connectors would diverge from SR-91 and merge with the eastbound Main Street on-ramp within a collector-distributor road.	The I-15 connectors would merge with the westbound Main Street off-ramp within a collector-distributor road before merging with SR-91.
From I-15 to Pierce Street on SR-91, a single tolled express lane would transition to a fourth general-purpose lane, and an HOV lane would be added by restriping the existing pavement.	There would be no improvements from Pierce Street to I-15 on SR-91.
I-15 – Initial Phase of Alternative 2f	
A single-lane tolled express lane connector would be provided from eastbound SR-91 to southbound I-15 that would continue as a single-lane tolled express lane in the median of I-15, terminating near the Ontario Avenue interchange.	
A single-lane tolled express lane would be constructed in the median of I-15 that would begin near the Ontario Avenue interchange and would continue northbound as a single-lane express lane connector to westbound SR-91.	

Source: Project Report (September 2011).

HOV = high-occupancy vehicle

I-15 = Interstate 15

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

Table 2.22 Project Improvements in the Ultimate Project under Alternative 2f

State Route 91 – Ultimate Project for Alternative 2f	
Eastbound SR-91 (from west to east)	Westbound SR-91 (from east to west)
A sixth general purpose lane would be provided between SR-241 and SR-71. Between SR-241 and Coal Canyon, widening on the eastbound SR-91 is proposed to accommodate the additional lane. Between Coal Canyon and Green River Road the centerline of SR-91 is proposed to be shifted northward, and widening of westbound SR-91 is proposed to accommodate the additional eastbound lane.	A sixth general purpose lane would be provided between SR-71 and SR-241. Between Coal Canyon and SR-241, widening on the westbound SR-91 is proposed to accommodate the additional lane.
	Between Green River Road and Coal Canyon, widening of westbound SR-91 is proposed to accommodate the additional lane.
The Green River Road eastbound off and on ramps would be widened and realigned to accommodate the Alternative 2 Ultimate Project.	The Green River Road westbound on ramp would be widened and realigned to accommodate the Alternative 2 Ultimate Project.
Between Green River Road and SR-71 restriping the eastbound SR-91 is proposed to accommodate the additional general purpose lane.	Between the SR-71 south-west connector to Green River Road, the additional general purpose lane would be added by restriping. An auxiliary lane would also be added in advance of the Green River Road off-ramp by restriping.
From I-15 to Pierce Street, a fourth general purpose lane would be added by widening the eastbound SR-91 between I-15 and Pierce Street off ramp. The eastbound tolled express lane would be extended from I-15 to McKinley Street interchange by restriping the inside general purpose lane.	From Pierce Street to I-15 a fourth general purpose lane would be added by widening the westbound SR-91 between Pierce St westbound on ramp and I-15. The westbound HOV lane would be converted to a tolled express lane within these limits.
The McKinley Street eastbound ramps would be modified to accommodate the widening of SR-91 and additional lanes would be added to the ramps.	The McKinley Street westbound ramps would be modified to accommodate the widening of SR-91 and additional lanes would be added to the ramps.
A new collector-distributor road would be constructed combining the Pierce Street and Magnolia Avenue eastbound off ramps into one exit point from SR-91 which is also the termination point of the fourth general purpose lane addition.	
I-15 – Ultimate Project for Alternative 2f	
A single-lane tolled express lane would be constructed in the median in both the northbound and southbound directions extending from Ontario Avenue interchange to Cajalco Road interchange.	
A single-lane tolled express lane connector would be provided from eastbound SR-91 to northbound I-15 that would extend in the median of I-15 to Hidden Valley Road interchange.	
A single-lane tolled express lane would be constructed in the median of I-15 that would begin at Hidden Valley Road interchange and would continue southbound as a single-lane express lane connector to westbound SR-91.	

Source: *Project Report* (September 2011).

HOV = high-occupancy vehicle

I-15 = Interstate 15

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

The project components on SR-91 and I-15 provided in the Initial Phase of Alternative 2 are described in detail in Table 2.21. Typical cross sections on SR-91 and I-15 for the Initial Phase of Alternative 2 are described in Table 2.22. Typical cross sections for the No Build Alternative and Alternative 2 are also described in Table 2.23 for comparison purposes.

Nonstandard Mandatory and Advisory Design Features

The categories of nonstandard mandatory and advisory design features in the Initial Phase of Alternative 2f are listed in Table 2.24.

Permanent Features

Bridges

The Initial Phase of Alternative 2f would require bridge work involving 24 structures as shown in Table 2.25. The bridge work would be a combination of modifications to existing structures, replacement of existing structures, and construction of new bridges. Some of the existing bridges that would be widened would also be seismically retrofitted.

Interchanges

The existing local road interchanges on SR-91 at Green River Road, Auto Center Drive, Maple Street, Lincoln Avenue, West Grand Boulevard, and Main Street would be modified to accommodate the mainline improvements on SR-91 under the Initial Phase of Alternative 2f. The existing system interchanges with SR-91 at SR-71 and I-15 would also be modified to accommodate the improvements on SR-91 under the Initial Phase of Alternative 2f.

Major Drainage and Culvert Facilities

Over 30 major cross-drainage structures and numerous inlets and contributory structures would be affected by the Initial Phase of Alternative 2f. The affected drainage/culvert structures and how they would be modified under the Initial Phase of Alternative 2f are summarized in Table 2.26.

Water Quality/Erosion Control

Erosion control would be required for the Initial Phase of Alternative 2f to assure storm water quality compliance and minimize long-term facility maintenance requirements. For slopes steeper than 4:1 (vertical to horizontal), an erosion control plan would be developed under the supervision of the Department District Landscape Architect that indicates how steeper slopes would be stabilized. For slopes steeper than 2:1, the erosion control plan would include a Geotechnical Report that addresses

Table 2.23 Typical Mainline Cross Sections for the Initial Phase of Alternative 2f

Freeway Segments	No Build Alternative	Initial Phase of Alternative 2f	Alternative 2f
Typical Cross Sections on SR-91			
SR-241 to the Orange/Riverside County line	• 2 tolled express lanes • 5 general-purpose lanes	• 2 tolled express lanes • 5 general-purpose lanes • 1 tolled express auxiliary lane	• 2 tolled express lanes • 6 general-purpose lanes • 1 tolled express auxiliary lane
Orange/Riverside County line to SR-71	• 2 HOV lanes • 5 general-purpose lanes	• 2 tolled express lanes • 5 general-purpose lanes • 1 tolled express auxiliary lane	• 2 tolled express lanes • 6 general-purpose lanes • 1 tolled express auxiliary lane
SR-71 to I-15	• 1 HOV lane • 4 general-purpose lanes	• 2 tolled express lanes • 5 general-purpose lanes • 1 auxiliary lane	• 2 tolled express lanes • 5 general-purpose lanes • 1 auxiliary lane
I-15 to Pierce Street	• 1 HOV lane • 3 general-purpose lanes	• 1 HOV lane • 3 general-purpose lanes	• 1 tolled express lane • 4 general-purpose lanes
Typical Cross Sections on I-15			
Cajalco Road to Ontario Avenue	• 3 general-purpose lanes	• 3 general-purpose lanes	• 1 tolled express lane • 3 general-purpose lanes
Ontario Avenue to SR-91	• 4 general-purpose lanes	• 1 tolled express lane • 4 general-purpose lanes	• 1 tolled express lane • 4 general-purpose lanes
SR-91 Interchange to Hidden Valley Parkway	• 4 general-purpose lanes	• 4 general-purpose lanes	• 1 tolled express lane • 4 general-purpose lanes

Source: *Project Report* (September 2011).

Note: **Bold** indicates a change in the cross section when compared to the cross sections in the column to the immediate left.

HOV = high-occupancy vehicle

I-15 = Interstate 15

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

Table 2.24 Nonstandard Mandatory and Advisory Design Features

Design Features		
• Clear Width to Bridge Rails • Compound/Reverse Curves • Corner Sight Distance • Decision Sight Distance • Design Speed Standards • Distance Between Successive On-Ramps • Diversion Angle • Grade of Local Road at Ramp Connection • Horizontal Clearance to Wall • Horizontal Curve Radius	• HOV Guidelines • HOV Preferred Lane (On-Ramp) • Interchange Spacing • Lane Drop • Mainline Reduction at Interchange • Median Width • Outer Separation • Ramp Gore Geometry • Shoulder Width • Side Slope	• Single Lane Branch Connectors • Single Lane Ramps • Standards for Curvature • Stopping Sight Distance • Superelevation Rate/Transition/Runoff • Traveled Way Width • Two Lane Exit Ramps • Vertical Curve Length

Source: *Project Report* (September 2011).**Table 2.25 Structures Work Under the Initial Phase of Alternative 2f**

PM	Bridge Name	Bridge No.	New	Replace	Widen	Retrofit
Riv-91- R0.07	County Line Creek	56-0366			X	
Riv-91-TBA	Green River WB Off-Ramp OH	TBA	X			
Riv-91-R1.14	West Prado OH	56-0634 L			X	
Riv-91-R2.08	Rte 91/71 Sep	56-0587			X	
Riv-91-R2.08	E91-N71 Conn Sep	56-0635			X	X
Riv-91-R2.84	Prado OH	56-0637 L/R			X	
Riv-91-R3.71	Serfas Club Drive UC	56-0368 L/R			X	X
Riv-91-TBA	Westbound Maple On-ramp	TBA	X ¹			
Riv-91-TBA	Eastbound Maple Off-ramp	TBA	X			
Riv-91-4.16	Maple Street OC	56-0344		X		
Riv-91-5.38	Lincoln Avenue OC	56-0362			X	
Riv-91-5.70	Buena Vista Avenue UC	56-0373 L/R			X	
Riv-91-5.99	West Grand Boulevard UC	56-0445 L/R			X	X
Riv-91-6.34	Main Street UC	56-0448 L/R		X		
Riv-91-TBA	Main Street EB On-Ramp BOH	TBA	X			
Riv-91-6.65	East Grand Boulevard UC	56-0364 L/R			X	X
Riv-91-TBA	EB On-ramp E Grand Blvd UC	TBA	X			
Riv-91-6.93	Temescal Wash BOH	56-0446 L/R			X	X
Riv-91-TBA	E91-N15/S15 Connector BOH	TBA	X			
Riv-91-TBA	N15/S15-W91 Connector BOH	TBA	X			
Riv-91-TBA	91-15 Express Viaduct	TBA	X			
Riv-91-TBA	S-W Express Viaduct	TBA	X			
Riv-15-38.69	Ontario Avenue UC	56-0498 L R			X	X
Riv-15-39.40	Old Temescal Rd UC	56-0644 L/R			X	X

Source: *Project Report* (2012).¹ Selected variations

BOH = bridge and overhead

Conn Sep = Connector Separation

EB = eastbound

L/R = left/right

OC = overcrossing

OH = overhead

Ora = Orange County

R = realigned

RCB = reinforced concrete box

Riv = Riverside County

SW = southwest

TBA = to be assigned

UC = undercrossing

WB = westbound

Table 2.26 Drainage Structures Work Under the Initial Phase of Alternative 2f

Post Mile	Initial Phase of Alternative 2f Drainage Structure Impacts		
	Existing Drainage Structure	Impact	Modification
SR-91 – Orange County			
R16.4	Trpl 12"x10' RCB	None	None
R16.61	60" RCP	None	None
R17.00	60" RCP	Extend Rt	2" Rt
R17.09	60" CMP	None	None
R17.38	5'x5' RCB	None	None
R17.43	5'x5' RCB	None	None
R17.70	3'x3' RCB	None	None
R17.94	Dbl 10'x8' RCB	None	None
R18.16	36" RCP	None	See Note 1
R18.25	36" RCP	Extend Rt	27' Rt
R18.37	36" RCP	None	See Note 1
R18.55	48" RCP	None	See Note 1
R18.66	48" RCP	None	See Note 1
R18.72	60" RCP	None	See Note 1
R18.82	30" RCP	None	See Note 1
R18.89	54" RCP	None	See Note 1
SR-91 – Riverside County			
R0.07	Tunnel	None	See Note 1
R0.12	54" RCP	None	See Note 1
R0.21	36" CMP	None	See Note 1
R0.35	12'x12' RCB	None	See Note 1
R0.47	36" CMP	Extend Rt	32' Rt
R0.59	36" CMP	Extend Rt	27' Rt
R0.78	36" CMP	Extend Rt	70' Rt
R0.91	24" CMP	Portion Abandon	Remove 13'
R1.13	24" CMP	Protect In Place	None
R1.22	54" CMP	Protect In Place	None
R1.38	72" CMP	Protect In Place	None
R1.52	72" CMP	Protect In Place	None
R1.73	12'x9' RCB	Protect In Place	None
R2.55	24" CMP	Protect In Place	None
R3.13	24" CMP	Extend Rt	33' Rt
R3.26	24" CMP	Protect In Place	None
R3.41	24" CMP	Protect In Place	None
R3.47	8'x8' RCB	Extend Rt	87' Rt
R3.98	42" RCP	Extend Rt & Lt	17' Rt & 100' Lt
4.24	42" RCP	Extend Rt	10' Rt
4.39	30" RCP	Extend Rt & Lt	49' Rt & 30' Lt
4.44	24" RCP	Extend Rt & Lt	38' Rt & 27' Lt
4.51	4'x3' RCB	Extend Rt	44' Rt
4.65	Dbl 4'x3' RCB	Extend Rt	39' Rt
4.71	24" RCP	Extend Rt & Lt	17' Rt & 21' Lt
4.74	24" RCP	Extend Rt & Lt	24' Rt & 8' Lt
4.91	24" RCP	Extend Rt	25' Rt
5.05	2-30" RCP	Extend Rt	36' Rt
5.20	24" RCP	Extend Rt & Lt	50' Rt & 50' Lt
5.39	30" RCP	Abandon Portion Rt	Abandon 150' Rt
5.43	12'x7.5' RCB	Extend Rt & Lt	110' Rt & 100' Lt
5.45	17'x14' RCB	Extend Lt	50' Lt
5.50	24" RCP	Extend Lt	20' Lt
5.58	24" RCP	Extend Rt & Lt	70' Rt & 60' Lt
5.71	54" RCP	Protect In Place	None
5.72	18" RCP	Extend Rt & Lt	78' Rt & 75' Lt
5.84	30" RCP	Abandon Portion Rt	60' New 30" RCP Rt
5.85	30" RCP	Abandon Portion Rt	55' New 30" RCP Rt
6.00	36" RCP	Protect In Place	None
6.02	18" RCP	Abandon Entire	Abandon 270'

Table 2.26 Drainage Structures Work Under the Initial Phase of Alternative 2f

Post Mile	Initial Phase of Alternative 2f Drainage Structure Impacts		
	Existing Drainage Structure	Impact	Modification
6.06	84" RCP	Protect In Place	None
6.08	36" RCP	Protect In Place	None
6.14	36" RCP	Extend Rt & Lt	5' Rt & 226' Lt
6.22	48" RCP	Extend Rt	30' Rt
6.29	48" RCP	Extend Rt	25' Rt
6.32	18" RCP	Extend Lt	50' New 24" RCP Lt
6.35	48" RCP	Protect In Place	None
6.37	48" RCP	Protect In Place	None
6.38	18" RCP	Extend Lt	90' Lt
6.43	48" RCP	Protect In Place	None
6.50	30" RCP	Extend Rt	125' Rt
6.58	48" RCP	Extend Rt & Lt	110' Rt & 190' Lt
6.63	30" RCP	Extend Rt	70' Rt
6.68	18" RCP	Protect In Place	None
6.82	18" RCP	Abandon Entire	Abandon 146'
6.92	18" RCP	Extend Lt	40' New 24" RCP Lt
7.29	24" RCP	None	None
7.33	18" RCP	None	None
7.38	24" RCP	None	None
7.49	24" RCP	None	None
7.56	18" RCP	None	None
7.78	18" CSP	None	None
7.88	54" RCP	None	None
8.26	8'x6' RCB	None	None
8.64	18" RCP	None	None
8.74	Dbl 8'x5' RCB	None	None
8.79	18" RCP	None	None
8.91	30" RCP	None	None
9.05	18" RCP	None	None
9.12	24" RCP	None	None
9.19	48" RCP	None	None
9.19	48" RCP	None	None
9.21	18" RCP	None	None
9.38	18" RCP	None	None
9.55	24" RCP	None	None
9.60	30" RCP	None	None
9.73	36" RCP	None	None
10.00	Trpl 5'x3' RCB	None	None
10.08	18" RCP	None	None
10.14	18" RCP	None	None
10.18	48" RCP	None	None
10.47	18" RCP	None	None
10.52	18" RCP	None	None
10.59	3-4'X2' RCB	None	None
10.70	3-12'X9' RCB	None	None
10.72	18" RCP	None	None
10.82	18" RCP	None	None
10.86	18" RCP	None	None
10.94	18" RCP	None	None

Source: *Project Report* (2012).

Note 1: These cross culverts are being extended as part of the SR-91 Eastbound Lane Addition Project on the south side of SR-91 and the United States Army Corps of Engineers' Santa Ana River Reach 9 Phase 2B Project on the north side of SR-91.

CMP = corrugated metal pipe

CSP = corrugated steel pipe

Dbl = double

Lt = left

N/A = not applicable

R = realigned

RCB = reinforced concrete box

RCP = reinforced concrete pipe

Rt = right

SR-91 = State Route 91

Trpl = triple

the stability of slopes steeper than 2:1 and would have concurrence by the Department District Maintenance Storm Water Coordinator. In addition, temporary BMPs would be implemented during construction of the Initial Phase of Alternative 2f.

Permanent BMPs for long-term operations of the Initial Phase of Alternative 2f would include biofiltration swales, infiltration basins, detention basins, and/or media filters (also referred to as Austin sand filters).

The increased impervious surface areas and disturbed soil areas under the Initial Phase of Alternative 2f are summarized by segment in Table 2.27.

Table 2.27 Storm Water Effect Areas for the Initial Phase of Alternative 2f

Project Segment	Initial Phase of Alternative 2f	
	New Impervious Surface Area (acres)	Disturbed Soil Area (acres)
1	40	173
2	41	122
3	19	26
Total	100	321

Source: Project Report (2012).

The quantities of feasible treatment BMPs estimated for the three project segments for the Initial Phase of Alternative 2f are listed in Table 2.28.

Table 2.28 Estimated Quantities of Treatment Best Management Practices for the Initial Phase of Alternative 2f

Project Segment	Initial Phase of Alternative 2f			
	Biofiltration Swales/Strips (Each)	Infiltration Devices (Each)	Detention Devices (Each)	Media Sand Filters (Each)
1	7	5	5	5
2	4	6	7	10
3	1	1	1	1
Total	12	12	13	16

Source: Project Report (2012).

The preliminary estimated total costs for storm water BMPs including temporary (construction site) and permanent (treatment) BMPs for the Initial Phase of Alternative 2f are listed in Table 2.29.

Table 2.29 Storm Water Best Management Practices Cost Estimates for the Initial Phase of Alternative 2f

Description	Cost
Design Pollution Prevention BMPs	\$447,011
Treatment BMPs	\$6,381,375
Construction Site BMPs	\$5,792,242
SWPPP	\$10,000
Total Estimated Storm Water BMP Cost	\$12,630,628

Source: Project Report (2012).

Prior to and during construction of the Initial Phase and Ultimate Project for Alternative 2f, the design/build contractor will be required to comply with the provisions of the following:

- NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002), and any subsequent permit, as they relate to the project construction activities.
- General Waste Discharge Requirements for Discharges to Surface Waters that Pose an Insignificant (De Minimus) Threat to Water Quality, Order No. R8-2009-0003, NPDES No. CAG998001, as they relate to discharge of non-storm-water dewatering wastes for the project.
- Procedures outlined in the Caltrans Storm Water Quality Handbooks, Project Planning and Design Guide (July 2010 or subsequent issuance) for implementing Design Pollution Prevention and Treatment BMPs for the project.
- NPDES Permit, Statewide Storm Water Permit, and Waste Discharge Requirements for the State of California, Department of Transportation (Order No. 99-06-DWQ, NPDES No. CAS000003)
- NPDES Permit and Waste Discharge Requirements for the Riverside County Flood Control and Water Conservation District, the County of Riverside, and the incorporated cities of Riverside County within the Santa Ana Region (Order No. R8-2010-0033, NPDES No. CAS618033); and for the County of Orange, Orange County Flood Control District and the incorporated cities of Orange County within the Santa Ana Region (Order No. R8-2009-0030), as applicable.

Retaining Walls

Several retaining walls are required to retain fill or cut slopes along the project segments of the Initial Phase of Alternative 2f. The approximate wall locations and average heights on SR-91 and I-15 for the Initial Phase of Alternative 2f are listed in Table 2.30.

Noise Barriers

There are existing noise barriers on the north side of the SR-91 mainline in the vicinity of the SR-91/SR-241/Gypsum Canyon Road interchange. Most of those walls would remain under the Initial Phase of Alternative 2f, but some of the existing barriers would be reconstructed. Preliminary locations for new or replacement noise barriers on SR-91 and I-15 under the Initial Phase of Alternative 2f are summarized in Table 2.31.

Utilities

There are several known utility facilities within the project limits. The following utility companies have facilities within the project limits on SR-91 that may be impacted by the Initial Phase of Alternative 2f:

- SCE
- SCG
- AT&T
- City of Corona water and sewer
- Comcast Cable
- Sprint
- Time Warner Cable
- Questar

Some existing utility facilities would only require encasement or protection in place during construction of the Initial Phase of Alternative 2f. However, the relocation of some existing utility facilities would be necessary to accommodate the construction of the Initial Phase of Alternative 2f. Appendix J, Utility Relocations, summarizes the anticipated utility relocations for the Initial Phase of Alternative 2f. Several of these utility facilities have been identified as “high/low risk” under the Department “Policy on High and Low Risk Underground Facilities Within Highway Rights of Way,” as defined in Chapter 13 of the Caltrans *Right-of-Way Manual*. All the utility relocation work needed to construct the improvements under the Initial Phase of Alternative 2f is considered to be part of the project. The utility conflicts for the Initial Phase of

Table 2.30 Alternative 2f Initial Phase Average Retaining Wall Heights

RW No.	Location	Type	Beg PM	End PM	Length (ft)	Height (ft)
Westbound SR-91						
21	Green River Road and Corps Embankment	1	0.50	0.52	100	4
23	Mainline & Green River on-ramp	MSE	0.50	0.88	2000	13
43	Green River on-ramp	1	0.88	0.90	100	3
43	Green River on-ramp	Tieback	0.90	0.94	200	8
61	Mainline & Green River off-ramp	1	1.24	1.90	3500	20
113	Mainline and 71 W-N Connector	Tieback	2.23	2.75	2750	10
141	Mainline	1	2.75	2.89	700	4
153	Mainline & Auto Center on-ramp	1	2.94	3.59	3432	7
TBA	Serfas Club Dr UC	Tieback	3.68	3.75	400	11
TBA	Maple St OC	Tieback	4.12	4.14	115	12.4
TBA	Smith Ave OC	Tieback	4.70	4.73	124	9.7
193	Auto Center off-ramp	1	3.74	4.29	2900	10
199	Maple off-ramp RT between Mainline	1	3.85	4.01	850	14
201	Maple off-ramp LT between Auto Center off-ramp	1	3.87	3.95	400	19
223	Maple off-ramp Mainline	1	4.19	4.80	3200	3
227	Mainline	1	4.796	5.364	3000	10
284	Lincoln Ave off and on Ramp	1	5.21	5.50	1515	14
287.2	Lincoln Ave off-ramp	1	5.402	5.686	1910	17
304	Mainline & Main St on-ramp	1	5.717	6.023	1616	23
325	Main St on-ramp	1	6.124	6.312	992	22
333	Mainline	1	6.264	6.339	398	19
338.2	Mainline	1	6.376	6.524	783	21
339	Main St off-ramp	1	6.386	6.587	1058	22
342	HOT Connectors	MSE	6.444	6.577	705	7
353	Mainline	1	6.660	6.899	1262	28
374	NB I-15 to WB SR-91 conn	1	7.051	7.163	591	8
384	SB I-15 to WB SR-91 conn	1	7.239	7.257	95	4
Southbound I-15						
2149	HOT Connectors	MSE	40.708	40.819	586	8
Eastbound SR-91						
110	Mainline	1	2.15	2.21	300	4
148	Mainline (goes past Riv1 line)	1	2.89	3.02	700	4
162	Mainline & Auto Ctr. off-ramp	1	3.17	3.70	2800	7
192	Autocenter on-ramp & Mainline	1	3.73	3.98	1300	6
198	Maple Off Ramp LT between Mainline	1	3.83	3.97	700	9
200	Maple Off Ramp RT between Auto Center on-ramp	1	3.83	3.97	700	6
TBA	Serfas Club Dr UC	Tieback	3.68	3.75	400	11
TBA	Maple St OC	Tieback	4.13	4.14	98	12.4
216	Maple Off Ramp at intersection	1	4.18	4.27	450	9
220	Mainline	1	4.26	4.34	438	7
228	Maple on-ramp & Mainline	1	4.29	4.80	2700	2
228	Mainline	1	4.796	4.834	200	5
278	Mainline/Lincoln Off-ramp	1	5.222	5.403	831	5
285	Mainline	Tieback	5.375	5.398	125	11
299	Lincoln on-ramp	1	5.625	5.717	488	13
303	Mainline	1	5.730	6.006	1459	22
321	Mainline & Main St off-ramp	1	6.053	6.292	1263	20
334.1	Mainline	1	6.284	6.347	332	13
334.2	Main St off-ramp	1	6.292	6.340	252	5
338.1	Mainline	1	6.376	6.548	907	15
342	HOT Connectors	MSE	6.444	6.577	705	7
343	Main St on-ramp & braid on-ramp	1	6.462	6.696	1234	16
351	Mainline	1	6.605	6.670	343	6
355	Mainline	1	6.694	6.718	127	6
356.1	SR-91 CD road to I-15	1	6.709	6.902	1023	20
356.2	Main St braid on-ramp	1	6.719	6.766	247	19

Table 2.30 Alternative 2f Initial Phase Average Retaining Wall Heights

RW No.	Location	Type	Beg PM	End PM	Length (ft)	Height (ft)
357	Mainline	1	6.737	6.785	254	6
361	Main St braid on-ramp	1	6.803	6.919	612	8
381	EB SR-91 to SB I-15 conn	1	7.197	7.277	425	6
383	Mainline	1	7.242	7.296	283	6
Northbound I-15						
2149	HOT Connectors	MSE	40.708	40.819	586	8

Source: Project Report (2012).

71 W-N = 71 West to North

CD = collector-distributor

Corps = United States Army Corps of Engineers

EB = eastbound

ft = foot/feet

HOT = high-occupancy toll

I-15 = Interstate 15

LT = Left Turn

MSE = Mechanically Stabilized Earth

NB = northbound

OC = Overcrossing

PM = Post Mile

RT = Right Turn

RW = Retaining Wall

SB = southbound

SR-91 = State Route 91

TBA = To Be Assigned

UC = Undercrossing

WB = westbound

Table 2.31 Initial Phase for Alternative 2f Recommended Noise Barrier Locations on SR-91 and I-15

Noise Barrier No.	Location – From	Location – To	Beg PM	End PM	Length (ft)	Height (ft)
Eastbound SR-91						
K-1	0.46 mi W Auto Ctr Dr	0.09 mi W Auto Ctr Dr	3.25	3.62	1925	14
M-2	0.01 mi E Auto Ctr Dr	0.02 mi W Maple St	3.72	4.14	2185	14
M-1	0.09 mi W Auto Ctr Dr	0.25 mi E Auto Ctr Dr	3.62	3.96	1835	14
O-1	0.31 mi E Maple St	0.02 mi W Smith Ave	3.95	4.71	1315	14
Westbound SR-91						
E-1	0.15 mi E Coal Cyn Rd	0.95 mi W Green River Rd	*18.42	0.00	4115	14
E-1	0.95 mi W Green River Rd	0.06 mi W Green River Rd	0.00	0.89	4250	14
Eastbound SR-91						
O-2	0.004 mi E Smith Ave	0.01 mi W Lincoln Ave	4.73	5.38	3400	14
Q-1	0.01 mi W Buena V. Ave	0.11 mi W Main St.	5.67	6.23	3190	14
W-1	0.05 mi E Main St.	0.01 mi E E. Grand Blvd	6.39	6.44	1855	12
Westbound SR-91						
P-1	0.15 mi E Lincoln Ave	0.08 mi W Main St.	5.53	6.28	3960	12
V-1	0.10 mi E Main St.	0.23 mi E Main St.	6.44	6.57	700	8
T-1	0.17 mi W Main St	0.15 mi E Main St	6.17	6.50	1675	10
D1-B	0.35 mi W Buchanan St	0.02 mi W Buchanan St	9.95	10.11	950	12
Southbound I-15						
K1-A	0.04 mi N Parkridge Ave	0.02 mi S Corona Ave	41.86	42.43	3000	14

Source: Project Report (2012).

* Post Mile entry is in Orange County, all others are Riverside County.

E = east

ft = feet

I-15 = Interstate 15

mi = mile/miles

N = north

PM = Post Mile

S = south

SR-91 = State Route 91

W = west

Alternative 2f are similar to the total required for both the Initial Phase and Ultimate Project Alternative 2f, but result in approximately \$5 million less in utility conflicts.

Refer to the following tables provided later in Section 3.5, Utilities/Emergency Services, which describe the effects of the Initial Phases and Ultimate Projects for Alternatives 1 and 2 on utilities in detail, including those utilities considered high risk:

- Table 3.5.4: Utility Relocations, Removals, and Protection In-place under Both Alternatives 1 and 2
- Table 3.5.5: Additional Utility Relocations Under Alternative 2

Landscaping and Irrigation Systems

The Department District 8 Landscape Architecture Branch developed the *215/91 Landscape Corridor Master Plan* (Master Plan; September 5, 2006) that includes the Riverside County segment of SR-91 within the project limits. That Master Plan provides guidance on plant material selection and hardscape elements that consider water use, ease and safety of maintenance, nonnative plant exclusion, corridor continuity, local cultural integration, and other context-sensitive factors.

Most of the existing highway planting and landscaping along SR-91 in the project limits would be removed under the Initial Phase of Alternative 2f. Replacement planting/landscaping and hardscape elements, consistent with the Master Plan, would be provided on SR-91 under the Initial Phase of Alternative 2f. The contract for planting/landscaping would be separate from the prime construction contract. Landscaping would commence before the end of construction of the Initial Phase and would be coordinated with the landscaping for the Ultimate Project.

The improvements on I-15 under the Initial Phase of Alternative 2f would be constructed in the median. There is currently no landscaping or irrigation in the existing median on I-15 within the project limits.

Ramp Metering

Ramp metering would be provided on all the local on-ramps on SR-91 in the project limits, if not present already. HOV bypass lanes would be constructed on ramps that are modified where feasible.

The connectors between SR-91 and I-15 (existing or new) would not be metered, with one exception. The new westbound collector-distributor road where I-15 traffic joins

SR-91 would be metered. The existing meter on the southbound SR-71 to eastbound SR-91 connector would be maintained. There would be no new metering for other connectors at the SR-71 and SR-91 interchange.

California Highway Patrol Enforcement Activities

CHP enforcement areas would be provided at new ramp meter installations and along the SR-91 mainline for the Initial Phase of Alternative 2f as shown in Table 2.32.

Table 2.32 California Highway Patrol Median Refuge Locations for the Initial Phase of Alternative 2f

Co-Rte-PM	SR-91 Eastbound	SR-91 Westbound	Existing or New
Ora-91-17.0	X	X	Existing
Ora-91-17.7	X		New
Ora-91-18.0		X	New
Riv-91-1.64		X	New
Riv-91-2.40		X	New
Riv-91-2.78	X		New
Riv-91-9.7	X	X	Remove

Source: *Project Report* (2012).

CHP = California Highway Patrol

CO = County

Ora = Orange County

PM = Post Mile

Riv = Riverside County

Rte = Route

SR-91 = State Route 91

X = CHP median refuge provided at this location

Non-Motorized and Pedestrian Features

Existing local road interchanges with SR-91 would be modified as a result of the Initial Phase of Alternative 2f. Construction of improvements at the local road connections would implement current ADA standards for curb ramp and sidewalks. These types of modifications are planned at the Auto Center Drive, Maple Street, Lincoln Avenue, and Main Street interchanges in the City of Corona.

The Initial Phase of Alternative 2f accommodates the existing Santa Ana River Trail/ Bike Lane and bicycle facilities on local streets. Bike lanes would be provided at Maple Street, Lincoln Avenue, and Main Street. The existing equestrian trails in Santa Ana Canyon would not be affected by the Initial Phase of Alternative 2f.

Permanent Right-of-Way Acquisition

The Initial Phase of Alternative 2 would require the permanent acquisition of additional right-of-way. Those acquisitions would include new right-of-way acquired in fee and permanent subsurface and aerial easements. The Initial Phase of

Alternative 2 would also require the temporary use of land during construction for TCEs. The extent of acquisition and TCEs varies for the Initial Phase of Alternative 2 among its design variations. The numbers of full and partial acquisitions for the Initial Phase of Alternative 2 are summarized by segment in Table 2.33.

Table 2.33 Right-of-Way Requirements for the Initial Phase of Alternative 2 – Segments 1, 2, and 3

Part of Freeway	Number of Partial Acquisitions	Number of Full Acquisitions
Segment 1¹		
Orange County	9	0
Riverside County – County Line	17	0
Auto Center Drive/Maple Street – Variation 1	55	26
Auto Center Drive/Maple Street – Variation 1 with Smith Avenue – Variation 2	73	29 ¹
Auto Center Drive/Maple Street – Variation 2	66	18
Auto Center Drive/Maple Street – Variation 2 with Smith Avenue – Variation 2	78 ¹	26
Total	104	29
Segment 2		
West – Variation 1	47	25
West – Variation 2	48	26 ¹
West – Variation 3	50	21
West – Variation 4	50 ¹	23
Interchange	45 ¹	39
Total	95	65
Segment 3		
South of SR-91	39	0
Total	39	0

Source: *Project Report* (September 2011).

¹ These totals represent the worst case (the greatest number of full and partial acquisitions) at the locations where there are design variations.

SR-91 = State Route 91

Temporary Project Features

Construction Staging

Construction staging would be required for all ramp reconstruction, freeway widening, and profile adjustments under the Initial Phase of Alternative 2f. The existing number of mainline through lanes would be maintained during construction by restriping the existing lanes and by shifting traffic within the corridor to maintain the existing capacity during construction. Complete closures of SR-91 and I-15 are not anticipated to be required during the construction of the Initial Phase of Alternative 2f.

A *Final Work Zone Mainline Analysis* (February 2010) for the SR-91 corridor was conducted to identify ways to minimize congestion along the corridor during the construction of the Initial Phase of Alternative 2f. That analysis was used to compare and select optimal construction staging strategies. The work zone analysis examined

ramp and connector closures in addition to two SR-91 mainline construction scenarios. With either mainline scenario, Stage 1 would construct outside improvements without impacting the mainline traffic lanes. Lane restrictions during Stage 2 would vary between the two scenarios evaluated.

The first mainline work zone scenario for SR-91 would consist of narrowing the existing mainline through lanes to 10.5 ft wide and maintaining a total of four GP lanes and one HOV lane in each direction. The second scenario would consist of converting the HOV lane to a GP lane and maintaining the three other GP lanes on weekends only. Both weekend and weekday peak periods were examined.

Congestion would occur with both scenarios, and neither scenario demonstrated a clear advantage from a traffic impact perspective. Under the second scenario, the tradeoffs involve avoidance of weekday impacts with greatly increased construction duration and costs. The first scenario is favored because it results in shorter construction duration with lower construction costs and earlier project completion.

Ramp and connector closures would also be required on SR-91 during the construction of the Initial Phase of Alternative 2. Preliminary recommendations for the duration of, and detours for, those ramp and connector closures on eastbound and westbound SR-91 are summarized in Table 2.34.

Construction Vehicle Access and Material Staging

Under the Initial Phase of Alternative 2f, construction vehicle access and staging of construction materials would occur within existing disturbed or developed areas inside the existing right-of-way or the additional right-of-way acquired for the Initial Phase. Vehicle access and materials staging during construction of walls outside of and immediately adjacent to the State right-of-way would occur in approved designated areas. All construction vehicle access, materials staging and storage, and other construction activities would occur within the defined disturbance limits for the Initial Phase of Alternative 2f.

The TCEs and permanent right-of-way limits for the Initial Phase of Alternative 2f and its design features, which include areas for construction vehicle access and material staging, are shown on the detailed figures provided in Appendix L, Project Features.

Table 2.34 Preliminary Proposed Ramp and Connector Closures along SR-91 for the Initial Phase of Alternative 2f

Interchange	Ramps (Off/On)	Closure ID	Time of Closure	Duration
SR-91 Eastbound				
SR-71 SB – SR-91 EB	On	X2	Weekends	2 weekends
Auto Center Drive	On	X3	Weekdays	6 months
Second Street/Grand Boulevard	Off	X4	Permanent	--
Main Street	On	X5	Weekdays & Weekends	12 months
SR-91 EB – I-15 NB	Off	X6	Weekends	2 weekends
SR-91 EB – I-15 SB	Off	X7	Weekends	2 weekends
SR-91 EB – SR-71 NB	Off	X12	Weekends	2 weekends
SR-91 Westbound				
SR-71 SB – SR-91 WB	On	Y3	Weekends	1 weekend
SR-91 WB – SR-71 NB	Off	Y4	Weekends	4 weekends
Auto Center Drive	Off	Y5	Weekdays & Weekends	6 months
Maple Street	Off	Y6	Weekdays & Weekends	2 months
Grand Boulevard	On	Y7	Permanent	--
Main Street	Off	Y8	Weekdays & Weekends	12 months
I-15 SB – SR-91 WB	On	Y9	Weekends	1 weekend

Source: *Final Ramp Closure Study* (February 2010).

EB = eastbound

I-15 = Interstate 15

ID = identification

NB = northbound

SB = southbound

SR-241 = State Route 241

SR-71 = State Route 71

SR-91 = State Route 91

WB = westbound

Transportation Management Plan During Construction

A Preliminary TMP (May 2010) was prepared to address transportation management during construction of the Initial Phase of Alternative 2f. Key elements in the TMP are:

- Public information/PAC
- Motorist information strategies
- Incident management
- Construction strategies
- Demand management
- Alternate route strategies
- Other strategies

Temporary Construction Easements

TCEs would be necessary under the Initial Phase of Alternative 2f for constructing walls along the State or other public rights-of-way, for extending major drainage facilities and culverts, utility relocation/modifications, and widening bridges. Land used as a TCE would be returned to its original or better condition prior to the return of that land to the original owners after the completion of the construction activities requiring that TCE. No permanent project features will be constructed within the boundaries of the TCEs.

Construction Lighting

The Initial Phase of Alternative 2f would require nighttime construction activities in some areas. If work is conducted at night, lighting would be directed away from land uses outside the freeway rights-of-way.

Project Costs

The Initial Phase of Alternative 2f would cost \$1.047 billion. The roadway, structure, right-of-way, and total costs for all of the design variations in the Initial Phase of Alternative 2 are provided in Table 2.35.

Table 2.35 Initial Phase of Alternative 2 Summary of Costs

Alternative	Roadway	Structure	Right-of-Way	Total
2a	\$372,800,000	\$419,100,000	\$227,600,000	\$1,019,500,000
2b	\$372,400,000	\$417,600,000	\$219,400,000	\$1,009,400,000
2c	\$386,400,000	\$447,400,000	\$247,000,000	\$1,080,800,000
2d	\$386,000,000	\$445,800,000	\$244,600,000	\$1,076,400,000
2e	\$371,100,000	\$439,300,000	\$212,700,000	\$1,023,100,000
2f	\$361,600,000	\$437,800,000	\$248,000,000	\$1,047,400,000
2g	\$384,400,000	\$467,000,000	\$244,500,000	\$1,095,900,000
2h	\$383,900,000	\$465,400,000	\$242,200,000	\$1,091,500,000

Source: Project Report (September 2011).

Ultimate Project for Alternative 2

The Ultimate Project under Alternative 2f would be constructed as an independent construction contract, with the Ultimate Project estimated to have a construction duration of 1 to 2 years. The Ultimate Project under Alternative 2f would include the improvements on SR-91 from SR-241 to SR-71, which would include the construction of one GP lane in each direction; the improvements on SR-91 from I-15 to Pierce Street, which would include one GP lane in each direction; the improvements on I-15 from Ontario Avenue to Cajalco Road, which would include extending the express lane access point to Cajalco Road; and improvements on I-15 between SR-91 and Hidden Valley Parkway, which would include direct connectors between SR-91 eastbound to I-15 northbound and I-15 southbound to SR-91 westbound. In locations where the Initial Phase improvements overlap with improvements in the Ultimate Project, such as bridges or retaining walls, the Initial Phase would construct those improvements in their ultimate locations, to the extent feasible. Minimal additional costs associated with phasing are anticipated as efforts would be made to minimize future rework and throw-away costs.

2.3.4.5 Design/Build Process

Alternatives 1 and 2 will be implemented in a best value design/build process. Under a typical traditional design-bid-construction process, a project is designed, construction contractors bid on that designed project, and the selected contractor constructs the designed project. This process requires separate contracts between the owner and the designer and then between the owner and the construction contractor. Under this approach, changes to the project design in response to changes in the field or opportunities to improve the design require a lengthy design review and approval process followed by work orders that define and approve the specific changes for implementation by the contractor. This results in a longer time period because the construction cannot begin until the design is fully completed and approved.

Under a best value design/build process, the owner contracts with a single entity (the design/build contractor) that would be responsible for designing and building the project. A primary advantage of this process is that design and construction activities can occur concurrently, which can substantially reduce the time between completion of the environmental process for a project and the beginning of operations for the first project improvements. In summary, the best value contract selection and procurement process generally provides for flexibility not offered by traditional competitive bidding. Design/build results in a single-source responsibility, decreases adversarial communications among the parties working on the project, results in faster project completion, provides greater ability to consider the past performance records of bidders, and typically reduces administrative costs. The primary benefit of a best value design-build process for the SR-91 CIP for the traveling public is that the best value contracting will result in the availability of the improvements to the public approximately 3 years sooner than under the traditional design-bid-construction process.

The design/build process includes several activities under the umbrella title “design/build:”

- **Final Design:** This includes all activities related to the final design of the project components and features, including: preparing the design; coordinating with parties such as utility providers regarding that design; incorporating the avoidance, minimization, and mitigation measures and other project conditions into the project specifications; conducting additional hazardous material testing; and preparing the detailed project specifications for the construction contractor.

- **Preconstruction:** This includes activities related to preparing for the project construction, including: property acquisition; development of traffic management plans, safety, and other required plans; hazardous materials and waste remediation; any required preconstruction geotechnical or other site surveys or reviews; and other activities that are initiated during and after final design when the design for specific project features and components become available.
- **Construction:** This includes all activities related to the construction of the project components and features based on the final design, including: setting up staging areas; materials/equipment deliveries; removal of waste materials; demolition; clearing; grading; excavation; pile driving construction of structures and the road surfaces; installation of BMPs, lighting, signing, and landscaping; and site cleanup.
- **Post-construction:** This includes activities conducted after construction of the project facilities is complete, including returning areas used as TCEs to their pre-project conditions, and installing and completing installation of all landscaping.

The project avoidance, minimization, and mitigation measures provided in Chapter 3, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and Mitigation Measures, and in Appendix E, Environmental Commitments Record, indicate whether the individual measures apply throughout the design/build process or for specific activities conducted as part of the design/build process.

2.3.5 Transportation Systems Management and Traffic Demand Management

The project does not include Transportation Systems Management (TSM), Traffic Demand Management (TDM), or multi-modal alternatives because the features of these measures (e.g., carpool, bus, and commuter rail) are provided by several local agencies, including RCTC and OCTA. However, TSM, TDM, and multi-modal components were considered, and elements of these measures are incorporated into the Build Alternatives as discussed below.

2.3.5.1 Transportation Systems Management

TSM consists of strategies to maximize the efficiency of the existing transportation facilities by providing options such as ridesharing, parking, and traffic signal optimization. TSM options to improve traffic flow typically increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Such strategies include replacing existing stop signs with traffic signals to improve existing peak-hour traffic flow and reduce queuing of vehicles. TSM also encourages public

and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system.

Although TSM measures would not solely satisfy the purpose and need of the project, TSM measures have been incorporated into the Build Alternatives as described under each of the Build Alternatives and summarized below:

- Ramp metering
- Auxiliary lanes
- Collector-distributor roads
- Frontage roads
- Turning lanes
- Traffic signal coordination
- Bicycle and pedestrian improvements

2.3.5.2 Traffic Demand Management

TDM focuses on regional strategies to reduce the number of vehicle trips and vehicle miles traveled, and to increase vehicle occupancy. TDM facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choices 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.

Alternative 1 would maintain the existing HOV lanes on SR-91 between the Orange/Riverside County line and Pierce Street. The continued operation of the HOV lanes under Alternative 1 would continue to act as an incentive for ridesharing which is a key TDM measure.

Alternative 2 would extend the existing tolled express lanes on SR-91 from the County line to I-15 in the City of Corona. Those tolled express lanes extension would operate with the same policy as the existing SR-91 tolled express lanes in Orange

County and provide a free or discounted rate to carpools with three or more occupants and buses. This ridesharing incentive is a TDM measure that would be implemented with Alternative 2, if selected, and is expected to further increase the occupancy rate on the SR-91 and reduce traffic demand.

2.3.5.3 Major Investment Study Build Alternatives

The *Riverside County-Orange County Major Investment Study Final Project Report: Locally Preferred Strategy Report* (OCTA, January 2006) considered a wide range of transportation options to address the need for improved mobility between Orange and Riverside Counties. Specifically, the MIS Policy Committee identified and approved four separate bands of broad east-west corridors between Riverside and Orange Counties as part of the LPS to address the demand for east-west travel between Riverside and Orange Counties. The SR-91 CIP is one of those bands of improvements (Corridor C). In addition to improvements to SR-91, three new corridors to meet the need for east-west travel between Riverside and Orange Counties were identified in the MIS as Corridors A, B, and D, which are described below. As noted in the MIS, Corridors A, B, and D would be needed in addition to the SR-91 CIP to address the forecasted demand for east-west travel between the two counties:

- **Corridor A:** Corridor A was defined as a corridor parallel to and north of SR-91 that would provide additional capacity in an elevated viaduct within the existing SR-91 corridor. Because Corridor A would have limited access/egress (i.e., at only I-15, SR-71, and SR-241), it would not address substantial amounts of the demand in this corridor. In addition, as noted above, the MIS identified the need for both the project and Corridor A, so Corridor A alone would not be consistent with the MIS and would not meet the defined purpose of the project.
- **Corridor B:** Corridor B was defined as a full-length tunnel or partial surface road/tunnel alignment from Cajalco Road at I-15 in Riverside County west across the Santa Ana Mountains to the SR-241/SR-133 interchange in central Orange County. Corridor B would be substantially south of the SR-91 corridor and, as noted in the MIS, is considered to be a needed improvement in addition to the project to address east-west demand. In addition, a corridor across the Santa Ana Mountains could traverse the Cleveland National Forest (CNF), the NNL land on the Irvine Ranch, and Limestone Canyon Regional Park, potentially resulting in substantial permanent and/or temporary use impacts of Section 4(f) properties. It might also impact Section 6(f) properties.

- **Corridor D:** Corridor D was defined as a corridor extending along existing SR-74 between Orange and Riverside Counties. Corridor D would be substantially south of the SR-91 corridor and, as noted in the MIS, is considered a needed improvement in addition to the project to address east-west demand. In addition, a corridor along SR-74 could traverse CNF and Ronald W. Caspers Wilderness Park, potentially resulting in permanent and/or temporary use impacts of Section 4(f) and Section 6(f) properties.

The MIS Build Alternatives listed above were eliminated from consideration for the SR-91 CIP because they would not meet most of the project objectives, and Corridors B, C and D could result in substantial use effects on Section 4(f) and Section 6(f) properties.

2.3.6 No Build Alternative

Several existing approved and in-process projects in the SR-91 and I-15 corridors are included in the background condition in the No Build Alternative and the Build Alternatives. Those projects, described later in Section 2.3.9, are:

- SR-91 Eastbound Lane Addition Project Between SR-241 and SR-71
- Santa Ana Mainstem Project – Santa Ana River Reach 9 Phases 2A and 2B
- Santa Ana River Interceptor Pipeline Reaches III and IV
- SR-71/SR-91 Interchange Improvement Project
- I-15 Corridor Improvement Project
- SR-241/SR-91 Direct Connectors

The background condition for the No Build and Build Alternatives does not include the Corridor A, B, and D improvements.

The No Build Alternative would generally maintain the current configurations of SR-91 and I-15 in the project study area, including the approved/planned projects described above. Under this alternative, there would be no additional GP lanes and no change in the existing configuration of tolled express or HOV lanes on SR-91. None of the improvements proposed in Build Alternatives 1 and 2 would be provided under the No Build Alternative. Although smaller localized projects could be considered, approved, and implemented on their own merits under the No Build Alternative, this alternative does not include any major corridor improvements on the project segments of SR-91 and I-15 beyond those described above as background improvements under the No Build and Build Alternatives.

The No Build Alternative is shown in detail on aerial photographs in Appendix L.

The No Build Alternative would not improve the vehicle, person, and goods movement travel times on SR-91 and I-15 and would not more effectively serve existing and future travel demand between and within Riverside and Orange Counties consistent with the RCTC Measure A 10-Year Delivery Plan. Under the No Build Alternative, no improvements would be provided on SR-91, I-15, and intersecting local roads to more effectively serve existing and forecast intraregional travel demand and reduce diversion of regional traffic from the freeways into the surrounding communities. As a result, the No Build Alternative would not benefit travelers in these corridors and would not contribute to improved air quality in the long term.

The SR-91 Implementation Plan would not be implemented under the No 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 Alternatives.

2.3.7 Comparison of the No Build and Build Alternatives

Table 2.36 provides a comparison of the key features and potential environmental effects of the No Build Alternative and Alternatives 1 and 2.

2.3.7.1 Identification of the Preferred Alternative

This section discusses the process to identify a Preferred Alternative for the SR-91 CIP. As documented in this section, the identification of a Preferred Alternative was the result of an ongoing, interdisciplinary process that was carried out by the PDT to identify the purpose and need for the project, develop the range of alternatives, evaluate the alternatives, and present the results of the alternatives' evaluation to the public in the Draft EIR/EIS, which was circulated for public review in May 2011. As described later in this section, the PDT identified Alternative 2f as the Preferred Alternative on September 20, 2011.

Table 2.36 Comparison of the Alternatives

Project Feature or Environmental Effect	No Build Alternative	Alternative 1	Alternative 2
Project Features¹			
Structures (new, replace, widen, retrofit)	None	Up to 27	Up to 34
Drainage Structures (modified)	None	52	57
Water Quality and Erosion Control BMPs	None	18 biofiltration swales/strips 13 infiltration devices 16 detention devices 16 Austin sand filters	25 biofiltration swales/strips 19 infiltration devices 22 detention devices 22 Austin sand filters
Costs for BMPs	None	Temporary: \$4,390,000 Permanent: \$5,775,000	Temporary: \$5,716,000 Permanent: \$10,148,250
CHP Enforcement Areas	3 existing westbound SR-91 3 existing eastbound SR-91	3 existing westbound plus 1 new westbound 3 existing eastbound plus 1 new eastbound	2 existing westbound plus 2 new westbound 2 existing eastbound plus 2 new eastbound
Total Project Costs (right-of-way, design, road and structures construction)	None	\$990 million to \$1.0 billion, depending on the design variation.	\$1,345 to \$1,426 billion, depending on the design variation.
HOV/Tolled Express Lanes	Existing tolled express lanes in Orange County to the Orange/Riverside County line. Existing HOV lanes on SR-91 from the Orange/Riverside County line to Pierce Street	Existing tolled express lanes in Orange County to the Orange/Riverside County line. Existing HOV lanes on SR-91 from the Orange/Riverside County line to Pierce Street. New HOV lane on northbound I-15 from Ontario Avenue to a direct connector to westbound SR-91 at the I-15/SR-91 interchange New HOV lane on southbound I-15 from a direct connector from eastbound SR-91 at the I-15/SR-91 interchange to Ontario Avenue	Extension of existing tolled express lanes to the SR-91/I-15 interchange Conversion of the existing HOV lanes to tolled express lanes from the Orange/Riverside County line to Pierce Street. One additional tolled express lane in each direction on SR-91 to I-15. New tolled express lane on I-15 from Cajalco Road to direct connectors from northbound I-15 to westbound SR-91 and from eastbound SR-91 to southbound I-15 New tolled express lanes on I-15 from Hidden Valley Parkway to direct connectors from southbound I-15 to westbound SR-91 and from eastbound SR-91 to northbound I-15.

Table 2.36 Comparison of the Alternatives

Project Feature or Environmental Effect	No Build Alternative	Alternative 1	Alternative 2
Acquisition and Removal of Homes	No impact	Purchase and removal of 93 to 117 homes, depending on the design variation.	Purchase and removal of 114 to 161 homes, depending on the design variation.
Number of Residents Displaced	No impact	252 to 410 residents displaced, depending on the design variation.	399 to 564 residents displaced, depending on the design variation.
Acquisition and Removal of Businesses	No impact	Purchase and removal of 110 to 189 businesses, depending on the design variation.	Purchase and removal of 88 to 275 businesses, depending on the design variations.
Number of Employees Displaced	No impacts	A range of between 114 to 527 employees, depending on the design variation and the employee displacement factors.	A range of between 133 and 576 employees, depending on the design variation and the employee displacement factors.
Environmental Effects¹			
Farmlands	No impact	Conversion of 1.8 ac of Farmland of Local Importance and 15.2 ac of Grazing Land to non-agricultural uses	Conversion of 4.1 ac of Farmland of Local Importance and 16.6 ac of Grazing Land to non-agricultural uses
Utilities: Relocation of the SCE Substation	No relocation required.	No relocation required	Relocation required
Biology: Natural Communities	No impact	Permanent impacts to: 27.24 ac of coastal sage scrub 0.48 ac of riparian/riverine habitat 0.01 ac oak woodland Temporary impacts to: 7.59 ac of coastal sage scrub 1.60 ac of riparian/riverine habitat 0.51 ac of oak woodland habitat Wildlife corridors during construction	Permanent impacts to: 35.45 ac of coastal sage scrub 0.47 ac of riparian/riverine habitat 0.02 ac oak woodland Temporary impacts to: 8.04 ac of coastal sage scrub 1.29 ac of riparian/riverine habitat 0.50 ac of oak woodland habitat Wildlife corridors during construction
Biological Resources: Wetlands and Other Waters of the U.S.	No impact	Depending on the design variation, permanent impacts as follows: - Corps jurisdictional waters: 1.80 to 2.31 ac - CDFG jurisdictional areas: 2.84 to 3.54 ac - RWQCB jurisdictional areas: 1.80 to 2.31 ac	Depending on the design variation, permanent impacts as follows: - Corps jurisdictional waters: 0.42 to 2.49 ac - CDFG jurisdictional areas: 1.31 to 4.41 ac - RWQCB jurisdictional areas: 0.42 to 2.49 ac Alternative 2f permanent impacts: - Corps jurisdictional waters: 0.42 ac - CDFG jurisdictional areas: 1.31 ac - RWQCB jurisdictional areas: 0.42 ac

Table 2.36 Comparison of the Alternatives

Project Feature or Environmental Effect	No Build Alternative	Alternative 1	Alternative 2
		Depending on the design variation, temporary impacts as follows: • Corps jurisdictional waters: 1.66 ac • CDFG jurisdictional areas: 2.43 to 2.45 ac • RWQCB jurisdictional areas: 1.66 ac	Depending on the design variation, temporary impacts as follows: • Corps jurisdictional waters: 1.72 to 1.98 ac • CDFG jurisdictional areas: 2.01 to 3.85 ac • RWQCB jurisdictional areas: 1.72 to 1.98 ac Alternative 2f temporary impacts: • Corps jurisdictional waters: 1.98 ac • CDFG jurisdictional areas: 2.01 ac • RWQCB jurisdictional areas: 1.98 ac

Source: Riverside County Transportation Commission (2011).

¹ The project features and environmental parameters and impacts listed in this table focus on those features and impacts which differ between Alternatives 1 and 2.

ac = acre, acres

BMPs = best management practices

CDFG = California Department of Fish and Game

CHP = California Highway Patrol

Corps = United States Army Corps of Engineers

HOV = high occupancy vehicle

I-15 = Interstate 15

RWQCB = Regional Water Quality Control Board

SCE = Southern California Edison

SR-91 = State Route 91

2.3.7.2 Identification of the Locally Preferred Alternative

RCTC identified Alternative 2 as the LPA on July 14, 2010. A project sponsor such as the RCTC may choose to designate an LPA if it decides that one of the project alternatives best satisfies the stated purpose and need for that project. Based on the studies conducted to date for the project, RCTC identified Alternative 2 as the LPA.

Compared to Alternative 1, Alternative 2 provides improved travel times and speeds and better reduces congestion. Refer to Section 3.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities, for a detailed discussion of the traffic benefits of Alternative 2.

By designating Alternative 2 as an LPA, prior to the circulation of the Draft EIR/EIS for public review, RCTC provided disclosure of its preference among the alternatives to the general public as well as to other agencies that may have an interest in the project. RCTC's basis for identifying Alternative 2 as the LPA was that, in addition to improving travel times and reducing congestion more than Alternative 1, Alternative 2 also provides increased flexibility in project funding which, if the project is ultimately approved, would enable project benefits to be realized sooner than would be possible under Alternative 1. Funding for Alternative 1 is envisioned to be primarily from Measure A and augmented by federal, State, and local fund sources that can be applied to the project. Alternative 2 adds toll revenue bonds and the use of a federal TIFIA loan as potential major additional funding sources. While Alternative 2 has a higher construction cost than Alternative 1, financial modeling demonstrates that the additional costs can be more than offset by the projected toll revenues.

2.3.7.3 Development of the PDT Recommendation

On September 20, 2011, the PDT evaluated the two Build Alternatives and the No Build Alternative to develop a recommendation to the Department and RCTC for the Preferred Alternative. The approach of the PDT for developing that recommendation was conducted in two steps:

- **Step 1:** This first step considered the ability of the two Build Alternatives and the No Build Alternative to meet five specific criteria that had been established for evaluating the alternatives and identifying the Preferred Alternative. If the result of this step was the identification of a Build Alternative as the Preferred Alternative, then Step 2 would be conducted. The five specific criteria were:

1. Best meets the project purpose
 2. Provides the best travel time savings
 3. Considers substantially differentiating environmental impacts
 4. Public comments/preferences
 5. Consistent with system planning
- **Step 2:** This step considered the design variations for the selected Build Alternative and evaluated them on four criteria to determine which of the design variations should be included in the Preferred Alternative. These four criteria were:
 1. Minimizes community/right-of-way impacts
 2. Provides for best traffic operations
 3. Considers substantially differentiating environmental impacts
 4. Considers public and agency comments

The PDT's use of this process to develop its recommendation for the Preferred Alternative is described in the following sections.

Step 1: Identify an Alternative from the No Build Alternative, Alternative 1, and Alternative 2

The PDT evaluated the ability of the No Build Alternative and the two Build Alternatives to meet the following criteria:

- **Best Meets the Project Purpose:** Table 2.37 lists the defined purpose for the SR-91 CIP and describes the ability of the alternatives to satisfy this criterion. As shown, the No Build Alternative does not meet the defined project purpose while Alternatives 1 and 2 do meet the defined project purpose.
- **Provides the Best Travel Time Savings:** Table 1.10, provided earlier in Chapter 1, Project, summarizes the travel times that would occur under the No Build and Build Alternatives in 2015 and 2035. As shown in that table, travel times under the No Build Alternative would increase substantially by 2015 and by 2035. Under Alternative 1, travel times would increase at much lower rates than under the No Build Alternative, but at higher rates than under Alternative 2, when comparing the HOV lanes to the tolled express lanes. As a result, Alternative 2 best meets this criterion, Alternative 1 partially meets this criterion, and the No Build Alternative does not meet this criterion.
- **Considers Substantially Differentiating Environmental Impacts:** Table 2.38 summarizes the impacts of the No Build Alternative and the Build Alternatives for those environmental topics where there is a difference in impacts among the

Table 2.37 Ability of the Alternatives to Meet the Project Purpose

Defined Project Purpose	Does the Alternative Meet this Purpose?		
	No Build Alternative	Alternative 1	Alternative 2
Improve the vehicle, person, and goods movement within the SR-91 corridor to more effectively serve existing and future travel demand between and within Riverside and Orange Counties.	No. The No Build Alternative does not satisfy this criterion because it does not improve traffic operations in the SR-91 Corridor. Refer to Table 1.10, which indicates that travel times will increase and travel speeds will decrease under the No Build Alternative compared to both existing conditions and with-project conditions.	Yes. Alternative 1 satisfies this criterion because it improves traffic operations in the SR-91 Corridor. Refer to Table 1.10, which indicates that travel times will increase much less than and travel speeds will decrease less than under the No Build Alternative.	Yes. Alternative 2 satisfies this criterion because it improves traffic operations in the SR-91 Corridor. Refer to Table 1.10, which indicates that travel times will increase much less than and travel speeds will decrease less than under the No Build Alternative.
Provide improvements along the SR-91 and I-15 transportation corridors as well as to related local roads, and to reduce diversion of regional traffic from the freeways into the surrounding communities.	No. The No Build Alternative does not satisfy this criterion because it does not provide any improvements on SR-91 or local roads that would reduce diversion of regional traffic off the freeways.	Yes. The added capacity and improved operations provided in Alternative 1 are expected to reduce diversion of regional traffic from the freeways into the surrounding communities.	Yes. The added capacity and improved operations provided in Alternative 2 are expected to reduce diversion of regional traffic from the freeways into the surrounding communities.

Sources: Riverside County Transportation Commission (2011).

I-15 = Interstate 15

SR-91 = State Route 91

Table 2.38 Summary of Impacts by SR-91 CIP Build Alternative and Design Variation

Potential Impact	No Build Alternative	Alternative 1 (with design variations a, b, c, d)	Alternative 2 (with design variations a, b, c, d)	Alternative 2 (with design variations e, f, g, h)
Total Costs (Final Design, Right-of-Way, and Construction)	No costs	1a: \$ 998,500,000 1b: \$ 990,300,000 1c: \$ 1,001,800,000 1d: \$ 993,600,000	2a: \$ 1,352,600,000 2b: \$ 1,345,000,000 2c: \$ 1,409,400,000 2d: \$ 1,407,600,000	2e: \$ 1,354,700,000 2f: \$ 1,380,500,000 2g: \$ 1,426,200,000 2h: \$ 1,424,400,000
Number of Single Family Homes Purchased and Removed	None	1a: 21 1b: 21 1c: 21 1d: 21	2a: 23 2b: 24 2c: 23 2d: 24	2e: 23 2f: 18 2g: 23 2h: 24
Number of Multiple Family Homes Purchased and Removed	None	1a: 96 1b: 72 1c: 96 1d: 72	2a: 114 2b: 90 2c: 138 2d: 127	2e: 114 2f: 127 2g: 138 2h: 127
Total Number of Homes Purchased and Removed	None	1a: 117 1b: 93 1c: 117 1d: 93	2a: 137 2b: 114 2c: 161 2d: 151	2e: 137 2f: 145 2g: 161 2h: 151
Total Number of Residents Displaced	None	1a: 410 1b: 326 1c: 336 1d: 252	2a: 480 2b: 399 2c: 564 2d: 529	2e: 480 2f: 507 2g: 564 2h: 529
Number of Businesses Purchased and Removed	None	1a: 188 1b: 189 1c: 110 1d: 111	2a: 270 2b: 271 2c: 274 2d: 275	2e: 221 2f: 88 2g: 271 2h: 272
Number of Employees Displaced (range depending on the employee displacement factors)	None	1a: 133-438 1b: 114-527 1c: 133-410 1d: 114-500	2a: 133-464 2b: 133-554 2c: 133-404 2d: 133-553	2e: 133-450 2f: 169-576 2g: 133-400 2h: 133-548
Number of Storage Units Removed	None	1a: 122 1b: 122 1c: 50 1d: 50	2a: 199 2b: 199 2c: 199 2d: 199	2e: 157 2f: 154 2g: 199 2h: 199
Permanent Use of Land Designated in General Plans for Uses Other than Transportation (in acres)	None	1a: 56.8 1b: 65.7 1c: 61.7 1d: 64.9	2a: 80.7 2b: 80.7 2c: 94.6 2d: 94.5	2e: 78.0 2f: 118.2 2g: 92.7 2h: 92.7

Table 2.38 Summary of Impacts by SR-91 CIP Build Alternative and Design Variation

Potential Impact	No Build Alternative	Alternative 1 (with design variations a, b, c, d)	Alternative 2 (with design variations a, b, c, d)	Alternative 2 (with design variations e, f, g, h)
Permanent Subsurface Easements at Parks (in acres)	None	CHSP: 1.65 New OC Park (NNL): 0.4 Total: 1.69	CHSP: 1.88 New OC Park (NNL): 2.2 Total: 4.08	
Permanent Conversion of Farmland to Nonagricultural Uses (in acres)	None	Farmland of Local Importance: 1.8 Grazing Land: 15.2 Total: 17.0	Farmland of Local Importance: 4.1 Grazing Land: 16.6 Total: 20.7	
Temporary Use of Farmland for TCEs (in acres)	None	Grazing Land: 3.4	Farmland of Local Importance: 0.1 Grazing Land: 3.5 Total: 3.6	
Estimated Property Tax Revenue Losses (City of Corona)	None	1a: \$279,889 1b: \$221,893 1c: \$246,687 1d: \$188,691	2a: \$359,713 2b: \$335,415 2c: \$399,372 2d: \$375,074	2e: \$298,514 2f: \$298,825 2g: \$303,595 2h: \$352,740
Estimated Sales Tax Revenues Losses as a Result of Business Displacements (City of Corona)	None	1a: \$487,327 1b: \$494,825 1c: \$442,343 1d: \$449,840	2a: \$569,798 2b: \$577,295 2c: \$599,787 2d: \$607,285	2e: \$517,317 2f: \$659,766 2g: \$577,295 2h: \$584,793
Estimated Total Direct and Indirect Temporary/Construction Jobs	None	1a: 21,762 1b: 22,736 1c: 22,053 1d: 21,995	2a: 30,563 2b: 30,577 2c: 31,603 2d: 31,619	2e: 31,036 2f: 31,053 2g: 32,137 2h: 32,154
Relocation of the SCE Substation	None	Would not require relocation	2a: would not require relocation 2b: would not require relocation 2c: would require relocation 2d: would require relocation	2e: would not require relocation 2f: would not require relocation 2g: would require relocation 2h: would require relocation
Increase in Impervious Surface Areas (in acres)	None	117	173 Alternative 2f = 173	
Total Soil Area Disturbed During Construction (in acres)	None	351	503 Alternative 2f = 503	
Total Amount of Excavated (Cut) Material (in cubic yards)	None	1a: 748,038 1b: 761,723 1c: 708,420 1d: 722,105	2a: 744,256 2b: 758,325 2c: 779,038 2d: 793,107	2e: 725,719 2f: 739,788 2g: 756,497 2h: 770,566

Table 2.38 Summary of Impacts by SR-91 CIP Build Alternative and Design Variation

Potential Impact	No Build Alternative	Alternative 1 (with design variations a, b, c, d)	Alternative 2 (with design variations a, b, c, d)	Alternative 2 (with design variations e, f, g, h)
Total Additional Imported Material (in cubic yards)	None	1a: 307,534 1b: 275,467 1c: 343,004 1d: 310,937	2a: 699,151 2b: 657,122 2c: 699,335 2d: 666,306	2e: 677,139 2f: 644,110 2g: 738,946 2h: 705,917
Total Amount of Embankment (fill) Material (in cubic yards)	None	1a: 1,055,572 1b: 1,037,190 1c: 1,051,424 1d: 1,033,042	2a: 1,434,407 2b: 1,415,447 2c: 1,478,373 2d: 1,459,413	2e: 1,402,858 2f: 1,383,898 2g: 1,495,443 2h: 1,476,483
Permanent Impacts to Coastal Sage Scrub (in acres)	None	27.24	35.45	
Permanent Impacts to Riparian/Riverine Habitat (in acres)	None	0.48	0.47	
Permanent Impacts to Oak Woodland Habitat (in acres)	None	0.01	0.02	
Temporary Impacts to Coastal Sage Scrub (in acres)	None	7.59	8.04	
Temporary Impacts to Riparian/Riverine Habitat (in acres)	None	1.60	9.29	
Temporary Impacts to Oak Woodland Habitat (in acres)	None	0.51	0.50	
Permanent Impacts to Corps Jurisdictional Waters (in acres)	None	1a: 2.31 1b: 2.30 1c: 2.31 1d: 1.80	2a: 2.44 2b: 2.43 2c: 2.49 2d: 2.49	2e: 2.44 2f: 0.42 2g: 2.49 2h: 2.49
Permanent Impacts to CDFG Jurisdictional Areas (in acres)	None	1a: 3.44 1b: 3.54 1c: 3.44 1d: 2.84	2a: 4.01 2b: 4.12 2c: 4.31 2d: 4.41	2e: 4.07 2f: 1.31 2g: 4.31 2h: 4.41
Permanent Impacts to RWQCB Jurisdictional Areas (in acres)	None	1a: 2.31 1b: 2.30 1c: 2.31 1d: 1.80	2a: 2.44 2b: 2.43 2c: 2.49 2d: 2.49	2e: 2.44 2f: 0.42 2g: 2.49 2h: 2.49
Temporary Impacts to Corps Jurisdictional Waters (in acres)	None	1a: 1.66 1b: 1.66 1c: 1.66 1d: 1.65	2a: 1.72 2b: 1.74 2c: 1.76 2d: 1.78	2e: 1.79 2f: 1.98 2g: 1.83 2h: 1.85

Table 2.38 Summary of Impacts by SR-91 CIP Build Alternative and Design Variation

Potential Impact	No Build Alternative	Alternative 1 (with design variations a, b, c, d)	Alternative 2 (with design variations a, b, c, d)	Alternative 2 (with design variations e, f, g, h)
Temporary Impacts to CDFG Jurisdictional Areas (in acres)	None	1a: 2.44 1b: 2.43 1c: 2.45 1d: 2.43	2a: 2.92 2b: 3.05 2c: 3.19 2d: 3.32	2e: 3.45 2f: 2.01 2g: 3.72 2h: 3.85
Temporary Impacts to RWQCB Jurisdictional Areas (in acres)	None	1.66	2a: 1.72 2b: 1.74 2c: 1.76 2d: 1.78	2e: 1.79 2f: 1.98 2g: 1.83 2h: 1.85
Permanent Direct Impacts to CAGN Habitat (in acres)	None	6.56	6.32	
Temporary Direct Impacts to CAGN Habitat (in acres)	None	1.08	2.09	
Permanent Indirect Impacts to LBV Habitat (in acres)	None	0.94	0.94	
Temporary Indirect Impacts to LBV Habitat (in acres)	None	0.0	0.0	

Source: Modified from the SR-91 CIP *Draft EIR/EIS* (May 2011).

CAGN = California gnatcatcher

CDFG = California Department of Fish and Game

CHSP = Chino Hills State Park

Corps = United States Army Corps of Engineers

LBV = least Bell's vireo

New OC Park (NNL) = New Orange County Park (National Natural Landmark)

RWQCB = Regional Water Quality Control Board

SCE = Southern California Edison

TCEs = temporary construction easements

alternatives. As shown, the No Build Alternative does not result in impacts for all the parameters shown. The Build Alternatives both result in effects in each category, but there is generally not a substantial difference between the Build Alternatives in the impacts in most of those categories although Alternative 2 does have a greater footprint and disturbed area.

- **Considers Public and Agency Comments:** For the agencies and members of the general public who provided an opinion or preference regarding the SR-91 Build Alternatives or other alternatives during the public review period for the Draft EIR/EIS, there was no strong preference for or against a specific alternative. The numbers of commenters and the alternatives they supported or opposed based on all the comments from the agencies and the public (including comment cards received at the public hearing) and the transcripts from the public hearing were:
 - Opposes Alternative 1: 1 commenter
 - Opposes Alternatives 1b, 1d: 2 commenters
 - Supports Alternative 1: 1 commenter
 - Supports Alternatives 2a, 2c, 2e, 2g: 2 commenters
 - Opposes Alternatives 2b, 2d, 2f, 2h: 4 commenters
 - Opposes Alternative 2g: 1 commenter
 - Supports Alternative 2: 2 commenters
 - Opposes Alternative 2: 1 commenter
 - Supports the Project: 2 commenters
 - Opposes Tolls and Toll Lanes: 10 commenters
 - Opposes Increased Tolls: 1 commenter
 - Wants Reduced Tolls: 1 commenter
 - Wants Alternatives on SR-91 and Elsewhere: 17 commenters
- **Consistent with System Planning:** As described earlier in Chapter 1, the MIS proposed improvements in the SR-91 corridor within a maximum feasible cross section. In general, the cross section in Alternative 2 is wider than in Alternative 1 and, as a result, meets this criterion better than Alternative 1.

In summary, although the No Build Alternative does not result in the environmental impacts of Alternatives 1 and 2 and it was identified as a preference in a few public comments on the Draft EIR/EIS, it does not meet the project purpose, provide travel time savings, nor provide consistency with system planning. Alternatives 1 and 2 are considered equivalent under the above criteria for meeting project purpose, and public comment. Alternative 1 is superior to Alternative 2 for the environmental impacts criteria; however, Alternative 2 is superior to Alternative 1 in providing better travel

time savings and better consistency with system planning. Therefore, Alternative 2 meets the above criteria better than either Alternative 1 or the No Build Alternative.

2.3.7.4 PDT Recommendation for SR-91 CIP Alternative

Based on the evaluation of the No Build and Build Alternatives against the criteria described above, the PDT recommended Alternative 2 as the Preferred Alternative for the SR-91 CIP. RCTC, the Department, the City of Corona, OCTA, and the TCA (all members of the PDT), concurred with this recommendation. As a result, Alternative 2 is the Preferred Alternative for the SR-91 CIP.

Step 2: Identify Design Variations at Three Interchanges

The PDT next considered the identification of the design variations at three interchanges to include in Alternative 2, the Preferred Alternative, based on four criteria:

- Minimizes community/right-of-way impacts
- Provides for best traffic operations
- Considers substantially differentiating environmental impacts
- Considers public and agency comments

As discussed earlier, the Build Alternatives and their design variations result in effects in all the impact categories listed in Table 2.38 although there is generally not a substantial difference between the Build Alternatives and their design variations in the impacts in most of those categories. Alternative 2 with its design variations does have a larger footprint and disturbs a larger area so its impacts related to the footprint and disturbed area would be greater than under Alternative 1 with its design variations. As a result, Alternative 1 with its design variations is superior to Alternative 2 with its design variations for the environmental impact criteria for the design variations at the three interchanges described below.

The evaluation of the design variations considered for inclusion in the Preferred Alternative, based on community/right-of-way impacts, traffic operations, and public and agency comments, is described in the following sections:

- **Auto Center Drive/Maple Street (Design Variations f and b):** The two design variations at this location were compared. That comparison indicated design variation f (direct connectors to each interchange) costs \$2.2 million more than design variation b (split diamond ramps/collector road), would result in 7 fewer full parcel acquisitions, 12 more partial parcel acquisitions, \$17 million less in

right-of-way costs, and would result in slight differences in traffic volumes (some increases and some decreases) at the intersections within this interchange complex when compared to design variation b.

Based on these factors, the City of Corona indicated a strong preference for design variation f at this interchange. The PDT, including the Department, RCTC, City of Corona, OCTA and TCA, concurred with the identification of design variation f for inclusion in the Preferred Alternative, Alternative 2.

- **Smith Avenue/Mid-City Access (Design Variations f and h):** The two design variations at this location were compared. That comparison indicated design variation f (No Smith Avenue access) costs \$77 million less than design variation h (Smith Avenue access), would result in 10 fewer full parcel acquisitions, 10 fewer partial parcel acquisitions, and reduced right-of-way costs. There is no appreciable difference in overall traffic operations of SR-91 for these two design variations. However, design variation h would provide additional direct local access to the tolled express lanes not provided in design variation f. Design variation h would have the potential to deteriorate operating conditions in the tolled express lanes.

The PDT, including the Department, RCTC, City of Corona, OCTA, and TCA, concurred with the identification of design variation f for inclusion in the Preferred Alternative, Alternative 2.

- **Lincoln Avenue Interchange (Design Variation f and e):** The two design variations at this location were compared. That comparison indicated design variation f (Lincoln Avenue hook ramps) costs \$7.5 million less than design variation e (tight diamond), would result in 4 fewer full parcel acquisitions, 3 more partial parcel acquisitions, reduced right-of-way costs, and would result in better traffic operations when compared to design variation e because it provides greater intersection spacing.

The PDT, including the Department, RCTC, City of Corona, OCTA, and TCA, concurred with the identification of design variation f for inclusion in the Preferred Alternative, Alternative 2.

2.3.7.5 Preferred Alternative

The PDT unanimously agreed with the recommendation of the identification of Alternative 2f as the Preferred Alternative for the SR-91 CIP. The Initial Phase of

Alternative 2f is the only phase of the SR-91 CIP that is programmed for construction funding in the 2011 FTIP (Amendment 24). A detailed description of the Initial Phase of Alternative 2f was provided earlier in Section 2.3.4.4.

2.3.7.6 Actions Under CEQA and NEPA

As noted above, after the public circulation period for the Draft EIR/EIS, all comments were considered and the Department identified Alternative 2f as the Preferred Alternative. The Department will make its final determination of the project's effect on the environment. In accordance with CEQA, the Department will certify that the project complies with CEQA, will prepare findings for all significant adverse impacts identified, will prepare a Statement of Overriding Considerations (SOC) for impacts that would not be mitigated below a level of significance, and will certify that the findings and SOC were considered prior to project approval. The Department will file an NOD with the SCH that indicates the project would have significant impacts, mitigation measures were included as conditions of project approval, findings were made, and an SOC was adopted.

With respect to NEPA, the Department, as assigned by FHWA, will document and explain its decision regarding the selected alternative, project impacts, and mitigation measures in a ROD in accordance with NEPA. At this time, a ROD would be approved only for the Initial Phase of Alternative 2f because that is the phase programmed in the 2011 FTIP (Amendment 24). A separate ROD will be prepared for the Ultimate Project in the future once the Ultimate Project is programmed in a future FTIP. At the time the Ultimate Project is programmed, the Department will assess whether the project scope has changed, existing conditions in the study area have changed, and/or there is potential for substantial new adverse impacts not evaluated in the original Final EIR/EIS. That assessment may result in a determination that additional environmental documentation (such as an Environmental Reevaluation under NEPA and an Addendum to the Final EIR under CEQA if there are no substantial changes in the project scope, the existing environment and the project impacts) and/or updated technical studies are needed prior to implementation of the Ultimate Project.

2.3.7.7 Refinements to the Preferred Alternative *Green River Parking Lot*

Construction of the Corps' Santa Ana River Reach 9 Phase 2B project started December 2009. The Corps revised the scope of the project during construction specifically to extend the embankment 800 ft east of its existing limits. The SR-91

CIP includes an approximately 30-space parking lot at this location at the end of the proposed Green River Road re-alignment and cul-de-sac, as shown on Sheet 10 in Appendix L. That parking area is intended to be used by bicyclists and other users of the Santa Ana River Trail/Bike Lane. An entrance to the Santa Ana River Trail/Bike Lane from the parking lot would enter from the south side of the parking lot onto the maintenance access road on top of the embankment. Based on the modification to the embankment, the Corps' Santa Ana River Reach 9 Phase 2B project was in conflict with the proposed parking lot configuration in this area. The embankment modification would not affect the design of the Green River Road realignment, the Green River Golf Club access road, or the Star Ranch access road. As a result of coordination with the Corps, the parking lot was reconfigured to avoid conflict with the extension of the embankment. The entrance to the Santa Ana River Trail/Bike Lane from the parking lot will now enter from the north side onto the extended maintenance access road as modified by the Corps as part of the Santa Ana River Reach 9 Phase 2B project. Retaining walls will be constructed to retain the parking lot to avoid encroaching into the maintenance access road.

High-Occupancy Vehicle Identification Express Lane Refinements

The SR-91 CIP assumed technology would be available by 2017 to identify HOVs traveling in the tolled express lanes. However, it was determined that the needed technology would not be available by 2017 and that a dedicated HOV lane would be required to identify HOVs before they enter the tolled express lanes. The HOV lane would be in the vicinity of the SR-91/SR-71 interchange. An additional lane would be constructed adjacent to the tolled express lanes both westbound and eastbound for a distance of approximately 2,000 ft. The HOV lanes would each require gantries with vehicle detection systems to identify the HOV and transmit that information to the toll operations center. Additional widening will be required along SR-91, and realignment of the proposed connector ramps along with an increase in retaining wall heights will be required. All the improvements associated with these HOV lanes will be entirely within existing State freeway right-of-way. CHP enforcement areas will be provided in the median in each direction after the toll gantry to enforce violations. This refinement would not result in any changes to the environmental impact analyses or the avoidance, minimization, and mitigation measures discussed in this EIR/EIS.

Cul-de-Sac Modifications

West Second Street will be eliminated from South Victoria Avenue to East Grand Avenue as a result of the SR-91 widening and configuration of the eastbound collector-distributor road. South Victoria Avenue, South Howard Avenue, and South

Joy Street would terminate at cul-de-sacs outside the State freeway right-of-way based on the removal of West Second Street. The existing Main Street ramps will be realigned to the north as part of the SR-91 widening and configuration of the westbound collector-distributor road. The North Victoria Avenue and North Belle Avenue cul-de-sacs will be relocated to the State freeway right-of-way based on the realignment of the Main Street ramps. These cul-de-sac configurations were refined to accommodate a fire truck vehicle per City of Corona standards.

Westbound Green River Road On-Ramp Enforcement Area

A CHP enforcement area is proposed per Department standards at the westbound Green River Road on-ramp. The original CHP enforcement area would be located at the limit line of the ramp meter on the north side of the ramp. That proposed CHP enforcement area would have impacted an existing drive-thru at the Carl's Junior restaurant, which would need to be relocated. The CHP enforcement area will be shifted to avoid the relocation of the Carl's Junior drive-thru area.

Westbound Green River Road Off-Ramp Enforcement Area

The design of the westbound off-ramp to Green River Road was refined to further reduce the direct impacts of the SR-91 CIP on CHSP. This design modification reduced the direct impacts to CHSP from 0.89 ac to 0.48 ac. No other impacts or changes resulted from this design refinement.

**2.3.8 Alternatives Considered but Eliminated from Further Discussion
Prior to the Draft Environmental Document**

2.3.8.1 HOV/Tolled Express Lanes in Parallel Alternative

Implementation of both HOV and tolled express lanes, in parallel, was considered under two cross-section configurations. The first would construct one HOV lane and one tolled express lane in each direction. A single tolled express lane and HOV lane would not provide passing opportunities. This would reduce the operational efficiency of both lanes and make both facilities less attractive. Without passing opportunities, free flow of the tolled express lane could not be assured. Free flow is considered critical to maintaining the time-saving incentive for users paying the express lane toll.

The other configuration would provide one HOV lane and two tolled express lanes in each direction. This option would maintain the HOV lane and provide for passing opportunities within the tolled express lanes. However, the third additional lane would result in a total cross-section exceeding that which is considered the maximum

feasible, based on costs and impacts to businesses and residences within the City of Corona.

Because of the loss of efficiency with separate HOV and tolled express lanes and because comparable functionality can be achieved through the tolled express lane pricing structure in Alternative 2, HOV/Tolled Express Lanes in Parallel Alternative was not carried forward for detailed evaluation in this EIR/EIS.

2.3.8.2 Additional HOV Lanes Alternative

Consideration was given to implementing two HOV lanes in each direction rather than two tolled express lanes. This option could be constructed within the maximum feasible cross section, but the cost would exceed the cost of Alternative 1 and would approach the cost of Alternative 2. Because the known available funding for the project is not sufficient to cover the additional cost that would be incurred for an additional HOV lanes alternative, this alternative is at a severe fiscal disadvantage compared to a tolled express lanes alternative. In addition, the tolled express lanes alternative can provide functionality comparable to multiple HOV lanes but with a change in vehicle occupancy requirements from two or more to three or more persons. Finally, the availability of tolls to assist in financing the tolled express lanes alternative is a major advantage for funding the improvements in that alternative, which does not occur with a multiple HOV lanes alternative.

Because of higher costs and less available funding, and because comparable functionality can be achieved through the tolled express lanes in Alternative 2, the Additional HOV Lanes Alternative was not carried forward for detailed evaluation in this EIR/EIS.

2.3.8.3 Alternatives Considered in the Value Analysis Study

Other alternatives were considered for the project during several planning studies, including the *Project Study Report* and the MIS. In addition, in compliance with federal requirements for projects costing more than \$25 million, a Value Analysis (VA) Study was conducted from June 16 to June 27, 2008 (*Value Analysis Study Report*, October 2008). Twenty-three alternatives investigated in the VA Study were rejected for a variety of reasons. Descriptions of those alternatives and the reasons they were not carried forward for detailed evaluation in this EIR/EIS are summarized in Table 2.39.

2.3.8.4 Mid-City At-Grade Access to Tolled Express Lanes

An alternative to provide at-grade Mid-City Access for westbound ingress and eastbound egress accessible from the Lincoln Avenue ramps was considered. Based on the traffic analyses, the weaving movements associated with this alternative would introduce additional friction through an added access point to the tolled express lane that would negatively impact traffic operations in the general purpose lanes and the tolled express lanes. That negative impact to traffic operations conflicts with the fundamental objective of the project to increase capacity and throughput on SR-91 within the project limits. Therefore, this Alternative was eliminated from further consideration in the EIR/EIS.

2.3.8.5 Multi-Modal Components

The existing public transit services between Riverside and Orange Counties are bus and commuter rail. MetroLink commuter rail services between Riverside and Orange Counties operate on railroad tracks owned by the BNSF Railroad. MetroLink commuter rail service in the SR-91 MIS corridor is nearing capacity on existing equipment, and the corridor lacks sufficient express bus service. MetroLink currently operates 16 trips daily on the IEOC Line between downtown Riverside, Laguna Niguel/Mission Viejo, and Oceanside. It operates nine trips daily on the 91-Line between Riverside and Los Angeles via Corona, Fullerton, and Norwalk. Depending on demand, in 2011, the RCTC plans to increase commuter rail services to Riverside County by two additional trips on the IEOC Line and three additional trips on the 91-Line. With this enhanced service, there will be at least one train every 30 minutes in the peak direction (westbound during the a.m. peak hour and eastbound during the p.m. peak hour). Further service improvements to MetroLink are envisioned in the SCRRRA *Strategic Assessment* (MetroLink, January 19, 2007). It is anticipated there will be at least 40 daily trips each on the IEOC Line and 91-Line by 2030.

Alternative 2 would extend the existing tolled express lanes from the County line to I-15 in the City of Corona. The tolled express lanes would be available to buses and HOVs with three or more persons at either no toll charge or a reduced charge.¹

¹ RCTC's toll pricing policy for the SR-91 CIP will be the same as the OCTA SR-91 Express Lanes. The toll pricing policy for the SR-91 CIP was adopted by the RCTC Board at its June 7, 2012 meeting where the public was provided an opportunity for comment.

Table 2.39 Summary of Rejected Value Analysis Study Alternatives

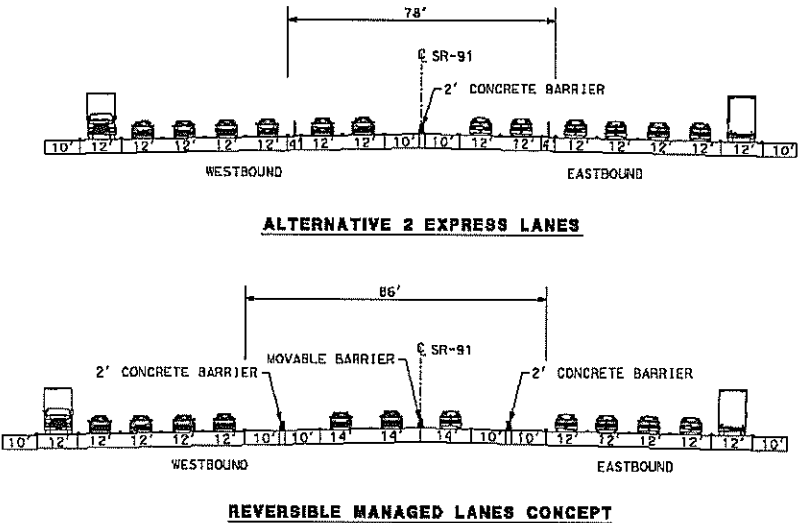
Value Analysis Study Alternative and Description	Reasons Alternatives Were Not Carried Forward for Detailed Evaluation in the EIR/EIS
1.1 and 1.2: Reversible Managed Lanes – The VA Study proposed consideration of a reversible managed lane facility using a movable barrier to adjust the number of lanes in each direction to add more capacity for the peak directional flow. Cross-sections for the Alternative 2 Express Lanes and Reversible Managed Lanes Concept are shown below.  The diagrams show two cross-sections of a highway. The top diagram, labeled 'ALTERNATIVE 2 EXPRESS LANES', shows a 78-foot wide section with a centerline labeled 'C SR-91' and two 2-foot concrete barriers on either side. The bottom diagram, labeled 'REVERSIBLE MANAGED LANES CONCEPT', shows an 86-foot wide section with a centerline labeled 'C SR-91', two 2-foot concrete barriers, and a movable barrier in the center. Both diagrams show lane widths and vehicle icons for westbound and eastbound traffic.	Reversible lanes can be an effective means of achieving high lane utilization if there is a major temporal division in the prevailing traffic pattern, such as a high a.m. in-bound peak hour and a high out-bound p.m. peak hour. Such a solution has been in place in San Diego County along the I-15 corridor for several years. SR-91 has historically exhibited operating characteristics similar to the I-15 corridor in that SR-91 has historically exhibited high westbound traffic volumes in the a.m. peak hour and high eastbound volumes in the p.m. peak hour. Although a directional split is forecast on SR-91 through 2035, the forecasted demand for the tolled express lanes in the off-peak direction exceeds the capacity for a single lane, which indicates the need for two full-time tolled express lanes in each direction. Other implications associated with reversible lanes include the need for additional concrete barriers on either side of the facility, necessitating additional shoulder width and widening. Assessment of a standard 2:1 reversible facility revealed that it required an 86 ft wide cross-section, which would exceed the 78 ft required for two full-time reversible lanes in each direction. Additional long-term operational costs and complications related to using a moveable barrier for a reversible facility also make this approach undesirable on SR-91. The long term operational costs include the continuous costs of moving 15 miles of barrier twice daily, 7 days a week. The additional costs for maintaining and operating a movable barrier system are prohibitively expensive. The <i>Value Analysis Study</i> (October 2008) estimated this alternative would add over \$200 million to the project. As a result, an alternative with this ongoing daily operations cost was not recommended in the <i>Value Analysis Study</i>. As a result, reversible lanes were not carried forward for detailed evaluation in this EIR/EIS.
1.3: Construct Measure A HOV Widening with Corridor A – The VA Study proposed constructing the SR-91 CIP in conjunction with the Corridor A alignment proposed in the Riverside County/Orange County MIS.	Although this option affords some economy of scale and provides overall cost savings, funding is currently only available for the SR-91 CIP and not the Corridor A alignment. This alternative cannot be implemented without incurring major delay in implementation of the SR-91 CIP. If this alternative is pursued, it would result in several years delay in implementing the MIS LPS including the SR-91 CIP. This alternative is not consistent with the MIS or the MIS LPS. The LPS identified the SR-91 CIP project as the maximum and feasible widening to SR-91. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
1.4: Additional Tolled Express Lanes – The VA Study proposed providing three tolled express lanes in each direction on SR-91 instead of the two lanes proposed in the SR-91 CIP.	The alternative was not carried forward because it was not consistent with the recommendations of the Riverside County/Orange County MIS. Based on the MIS (2006) approved by OCTA and RCTC, the strategic alternatives to be advanced included maximum widening of the SR-91 includes adding one or two lanes in each direction. This alternative would also be constrained by the locations of the Santa Ana River to the north and substantial topograph and the Mindemum Landslide to the south. This alternative did not meet that strategy. No source was identified for the

Table 2.39 Summary of Rejected Value Analysis Study Alternatives

Value Analysis Study Alternative and Description	Reasons Alternatives Were Not Carried Forward for Detailed Evaluation in the EIR/EIS
	additional funding this alternative would require and it would have created adverse effects, especially in the City of Corona, beyond those associated with the maximum feasible cross section as identified in the Riverside County/Orange County MIS. Therefore, this alternative was not carried forward for detailed analysis in this EIR/EIS.
2.0: Southbound SR-71 to Westbound SR-91 Connector – Both Build Alternatives propose to improve the existing southbound SR-71 to westbound SR-91 connector to achieve a 25 mph design speed. The VA Study proposed a major realignment of the connector to achieve a 40 to 50 mph design speed.	The analysis determined that the higher speed connection would have substantial adverse environmental, budget, and schedule impacts. This alignment would reduce available merging and weaving distances so that access to westbound lanes could not be provided at the Orange County line. Also, the higher design speed of the upgrade would not be realizable during peak hours due to mainline congestion on westbound SR-91. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
3.1: Reverse Wishbone Structure at SR-241 – The VA Study proposed a reverse wishbone structure to provide improved access to the tolled express lanes in the vicinity of the SR-241 interchange.	The OCTA is pursuing a separate project to construct direct connectors between the tolled express lanes and the SR-241 toll road. With that project proceeding, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
3.2: SR-241 to SR-91 Direct Connector – The OCTA is collaborating with the TCA to propose a direct connector between SR-241 and the SR-91 tolled express lanes.	Because current scheduling calls for this project to be completed after the SR-91 CIP, the VA Study proposed incorporation of the components for the SR-91 CIP. The effort is not in the scope of work for the SR-91 CIP, and expansion of the scope to include this work would delay the SR-91 CIP by at least 6 months. Any cost savings that could be realized by combining the projects would be negated by increases in construction costs and user delay costs occasioned by that delay. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
4.0: Provide Standard Lane Drop for Westbound SR-91 West of SR-241 – The proposed lane drop does not meet Department standards and would require approval of a design exception.	The proposal for a standard lane drop would require a design exception, and the added cost would reduce the overall project value. The estimated additional cost of this alternative is \$11.7 million per the VA Study (October 2008). For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
5.1: Reconfigure Auto Center Drive Interchange – The VA Study proposed reconfiguring the Auto Center Drive interchange and extension of Sixth Street, which currently transitions into Maple Street, west to Auto Center Drive as a south frontage road.	This enhancement would eliminate SR-91 access at Maple Street, require replacement of the Maple Street overcrossing, and substantially increase right-of-way acquisition south of SR-91. While it could afford some improvement in local circulation, the operational improvement on mainline SR-91 would be minimal. It was concluded that the additional cost of this option would not be commensurate with the project's need and purpose, and elimination of Maple Street access would not be acceptable. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
8.0: Detention Basin at Northbound SR-71 Loop – This VA Study alternative would convey storm water from the narrowest pinch point of SR-91 east to a detention basin in the loop of the eastbound SR-91 to northbound SR-71 connector.	The Project Development Team concluded that while this proposal represents one means of dealing with storm water at the western end of the project, more cost effective means are available. A comprehensive SWDR is in preparation for the PA&ED phase, and a more detailed report will be prepared during PS&E. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.

Table 2.39 Summary of Rejected Value Analysis Study Alternatives

Value Analysis Study Alternative and Description	Reasons Alternatives Were Not Carried Forward for Detailed Evaluation in the EIR/EIS
9.0: Star Ranch Access Road – Star Ranch is a property south of SR-91 between the Orange County line and Green River Road. Access to that property is currently provided via a vehicular undercrossing just east of the County line, which provides a connection to Green River Road on the north side of SR-91. This alternative proposes an access on a new alignment, entirely south of SR-91, beginning at Green River Road.	Further analysis determined that the alternative access would not be less costly than modification of the existing road, and it would create problems in providing proper access control at the Green River Road interchange. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
10.0: Construct Park-and-Ride at Green River Road – This alternative proposed construction of a park-and-ride facility at the Green River Road interchange.	Park-and-ride facilities are not within the project scope, although the subject is considered in depth in the VA Study. The need for additional park-and-ride facilities within the project study limits was identified as part of the MIS LPS and is being considered as a separate project along with several other projects that were identified in the MIS LPS. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
13.1 and 13.2: Construct Westbound Hook Ramps at Lincoln Avenue Interchange – Existing westbound hook ramps connect to Pomona Drive west of Lincoln Avenue. The alternative would move those hook ramps to east of Lincoln Avenue.	The alternative would displace an auto dealership or large parts of a mobile home park. Either right-of-way impact is disproportionate to any economy or improvement that is afforded by this modification. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
14.1: Reconfigure Main Street Eastbound Ramp Braid – The alternative proposed a revised configuration for braided ramps providing access from Main Street to eastbound SR-91 and to I-15.	It was determined that initial cost savings attributed to the alternative would be negated by the cost of additional widening required on Main Street. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
15.1: Below-Grade Ramp Braid for Westbound SR-91 Off-Ramp to Main Street – The alternative would construct a braided ramp to allow westbound SR-91 traffic to exit at Main Street without merging through entering I-15 traffic.	No tunnel alignment could be found that would provide adequate sight distance through the multiple location constraints. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
15.3: Construct Westbound SR-91 to Main Street Off-Ramp via Connection to I-15 Connector – This alternative would allow westbound SR-91 traffic to exit at Main Street without merging through I-15 traffic. Instead, traffic would enter the connector toward northbound or southbound I-15 but exit to Main Street.	The alternative would not meet driver expectations. Drivers do not anticipate using a freeway-to-freeway connector to access a local roadway. FHWA does not allow access points along an Interstate connector. A preferred solution will be pursued by Alternative 15.2. The <i>Value Analysis Study</i> estimated this alternative would add \$36 million to the project. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
16.0: Widen South I-15 Direct Connectors to Two Lanes – Single-lane connectors are proposed.	The additional cost of the connector widening is prohibitive, and no benefit would accrue from it. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
17.0: Construct SR-91/I-15 Direct Connectors from Steel – Structures are proposed as prestressed, precast or cast-in-place concrete.	Increased maintenance costs for steel structures would result in higher life-cycle costs compared to concrete as proposed. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
18.0: Construct Park-and-Ride Facility at Main Street Interchange – This alternative proposes construction of a park-and-ride facility in the southeast quadrant of the Main Street interchange.	Park-and-ride facilities are not within the project scope, although the subject is considered in the VA Study. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.

Table 2.39 Summary of Rejected Value Analysis Study Alternatives

Value Analysis Study Alternative and Description	Reasons Alternatives Were Not Carried Forward for Detailed Evaluation in the EIR/EIS
20.2: Construct Standard Lane Drop East of Magnolia Avenue	The alternative does not provide a substantial freeway operational benefit to warrant the extension of the project limits east of Pierce Street. This alternative was considered in the previous planning phase of the project and was rejected by the Department. For this reason, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
20.3: Construct Eastbound Hook Off-Ramp at Magnolia Avenue	This alternative would eliminate the eastbound exit at Pierce Street and provide the exit ramp at Magnolia Avenue for access to Pierce Street. This alternative does not meet driver expectations of exiting at one location to provide access to a different location, and a preferable solution is afforded by Alternative 20.1. This alternative results in a minimal savings of \$1 million. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.
20.5: Construct Single-Lane Exit at Pierce Street and Magnolia Avenue and Hook Ramp to Westbound Magnolia Avenue	This alternative would provide an exit at Pierce Street for southbound Pierce Street traffic and an exit at Magnolia Avenue for Pierce Street northbound traffic. This alternative does not meet driver expectations of exiting at one location for access to an arterial street, and a preferable solution is afforded by Alternative 20.1. For these reasons, this alternative was not carried forward for detailed evaluation in this EIR/EIS.

Source: *Value Analysis Study Report* (October 2008).

CIP = Corridor Improvement Project

Department = California Department of Transportation

EIR/EIS = Environmental Impact Report/Environmental Impact Statement

ft = foot/feet

HOV = high-occupancy vehicle

I-15 = Interstate 15

MIS = Major Investment Study

mph = miles per hour

OCTA = Orange County Transportation Authority

PA&ED = Project Approval and Environmental Document

PS&E = Plans, Specifications and Estimates

SR-241 = State Route 241

SR-71 = State Route 71

SR-91 = State Route 91

SWDR = Storm Water Data Report

TCA = Transportation Corridor Agencies

VA = Value Analysis

As a result, extension of the tolled express lanes would reduce the travel time for the existing Express Bus service using those lanes between the two counties and facilitate the planned expansion of the existing Express Bus service in this corridor. In addition to the project, four separate transit projects are either planned or under study along the SR-91 corridor, as shown in Table 2.40.

A multi-modal improvement to construct reversible managed lanes on SR-91 was considered during the value analysis study for the project. It was considered to provide lower performance and greater cost when compared to the Alternative 2 tolled express lanes. Further reasons for rejecting this concept are provided in Table 2.39 and Section 2.3.8.3, Alternatives Considered in the Value Analysis Study.

The Build Alternatives are compatible with multi-modal projects that will be implemented as funding becomes available and/or project planning efforts conclude to allow the multi-modal projects to be implemented. These multi-modal projects are separate and independent projects from the Build Alternatives. They are compatible with and are not precluded by the Build Alternatives.

Table 2.40 Transit Projects

Plans and/or Projects	Project Descriptions, Proposed Improvements, and Anticipated Completion Dates
MetroLink Short-term Expansion Plan	- Increases the number of daily trains from 23 to 31 along the IEOC and 91 lines. - This project is anticipated to be completed by 2016.
Express Bus Improvements – Orange County to Riverside County	- The Riverside County to Hutton Centre/South Coast Metro route began service in fall 2006. - Four additional routes are planned for implementation by FY 2015/2016. - This project will contribute to congestion relief on SR-91.
MetroLink Service and Station Improvements	- This long-term expansion plan will build on MetroLink's Short-term Expansion Plan (which will be implemented by 2016) by increasing the number of daily trains from 31 to 42 along the IEOC and 91 lines. - Capital improvements necessary for this expansion include a third track, parking improvements and new crossovers at critical locations, new storage tracks in San Bernardino, and the purchase of new engines and coaches. - This project is anticipated to be completed by 2020. - This project will contribute to congestion relief on SR-91.
Anaheim to Ontario International Airport High-Speed Rail	- Conceptual engineering studies are currently in preparation. Potential alignments are being considered along SR-91 within Santa Ana Canyon and on SR-57. - The project completion date and estimated cost of the project will be determined as the environmental phase progresses. - This project will contribute to congestion relief on SR-91 by providing additional capacity throughout the corridor.

Source: *Project Report* (September 2011).

FY = Fiscal Year

IEOC = Inland Empire-Orange County

SR-57 = State Route 57

SR-91 = State Route 91

2.3.9 Related Projects and Other Projects in the Vicinity of the SR-91 CIP

2.3.9.1 Approved or In-Process Projects

Several projects that have been approved or are in process could affect the design of the Build Alternatives. Those projects and how they relate to the project are described in this section. The general locations and extents of the projects are shown on Figure 2-18 and in more detail on the No Build Alternative figures in Appendix L. Extensive coordination regarding design issues associated with these projects and the project has been, and continues to be, conducted by RCTC, the Department, and the project consultants. These projects are described briefly in the following sections.

SR-91 Eastbound Lane Addition Project Between SR-241 and SR-71

Department Districts 8 and 12, in conjunction with OCTA and RCTC, recently completed construction of an additional GP lane and widened all lanes and shoulders to standard widths on eastbound SR-91 between SR-241 in eastern Orange County and SR-71 in western Riverside County. This project provides relief at the SR-91/SR-241 interchange chokepoint where an existing GP lane ended, facilitates the movement of traffic to the SR-71/SR-91 interchange, and enhances safety. The project was approved on December 28, 2007. Construction began in fall 2009 and was completed in early 2011. The conceptual designs for the Build Alternatives accommodate the Eastbound Lane Addition Project improvements.

Santa Ana River Mainstem Project – Santa Ana River Reach 9 Phases 2A and 2B

The Reach 9 Phase 2A project in the Lower Santa Ana River just below the Prado Dam is planned to begin construction in late 2011. The Reach 9 Phase 2B project in the Lower Santa Ana River located adjacent to the Green River Road Golf Course began construction in December 2009 and is anticipated to be completed by summer 2012. The features of these projects include grouted stone bank protection and sheet pile designed to protect SR-91 from damage that would be caused by a full release of stored water from Prado Dam. The project was originally analyzed in the *Prado Basin and Vicinity, Including Reach 9 and Stabilization of the Bluff Toe at Norco Bluffs Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR)* (Corps, November 2001).



LEGEND

- SR-91 Between SR-55 and SR-241
- I-15 Corridor Improvement Project
- SR-91 Eastbound Lane Addition Project Between SR-241 and SR-71
- Santa Ana River Interceptor Pipeline Reaches 3 and 4

- Santa Ana River Reach 9 Phase 2B
- ✱ Santa Ana River Reach 9 Phase 2A
- ✱ SR-241/SR-91 Direct Connectors
- ✱ SR-91/SR-71 Interchange Improvement Project

- County Boundary
- City Boundary
- Parks



SOURCE: Bing (2008); Thomas Bros. (2008); PB (2009)
 I:\PAZ\0701\GIS\Basemap\ProjectsNearby.mxd (1/16/2012)

FIGURE 2-18

SR-91 Corridor Improvement Project
 Approved and In-Process Projects
 in the SR-91 CIP Area

12-Ora-91-R14.43/R18.91
 08-Riv-91-R0.90/R13.04
 08-Riv-15-35.64/45.14
 EA 0F540

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The project design consists of the stabilization of the channel through the bank protection discussed above and, in the case of Phase 2B, the realignment of the Santa Ana River north of its existing alignment to limit erosion and scour potential. Phase 2B was environmentally approved in September 2009. Phase 2A was environmentally approved in 2011, with construction beginning in early 2012 and completion in late 2014.

The design of this project will accommodate right-of-way for the Build Alternatives as well as several other projects including the Santa Ana River Interceptor (SARI) pipeline (discussed in detail below), and the relocation of part of the existing Santa Ana River Trail/Bike Lane.

Santa Ana River Interceptor Pipeline Reaches III and IV

The Santa Ana Watershed Project Authority (SAWPA) was formed in 1972 to plan and construct the SARI pipeline network with the goal of protecting and improving groundwater and surface water quality of the Santa Ana River Watershed. The SAWPA is a joint powers agency with five member agencies: Eastern Municipal Water District, Western Municipal Water District, Inland Empire Utilities Agency, Orange County Water District, and San Bernardino Valley Municipal Water District. The SARI pipeline conveys primarily highly saline, nondomestic wastewater from industrial dischargers and municipal desalter facilities in Riverside and San Bernardino Counties to the Orange County Sanitation District's wastewater treatment plant. The soil cover over a segment of the SARI pipeline downstream of Prado Dam, which was once buried at a depth of approximately 20 ft, has been eroding, and the pipeline has recently been completely exposed in several locations. These exposures were caused by flows less than 10,000 cubic feet per second (cfs). Costly emergency actions have been conducted to protect the line.

Current releases and additional impact from future increased releases are anticipated to further expose and damage the SARI, resulting in system failure, risks to public health, and costly clean-up and repair. The Corps Prado Basin SEIS/EIR identified that the scour effect resulting from increased releases from the raised spillway elevation of Prado Dam would ultimately expose and undermine the existing SARI.

As shown on Figure 2-18, the SARI project begins immediately downstream of Prado Dam and extends further downstream to Weir Canyon Road. The project parallels an approximately 7 mi long segment of the Santa Ana River (calculated in river miles). The SARI pipeline project (Reaches III and IV in particular) is within Reach 9 of the

Santa Ana River in the project study area. This section of the SARI pipeline will be relocated at the same time the Corps realigns the Santa Ana River Channel (Reach 9 Phase 2B) through this section. Like the Corps' Santa Ana River Realignment Project, the SARI pipeline project has been planned to accommodate the design of the Build Alternatives.

The project was approved in late 2009. Construction began in late 2009 with the realigned SARI pipeline anticipated to be operational by mid-2013.

2.3.9.2 Future Projects

SR-71/SR-91 Interchange Improvement Project

RCTC completed the Project Approval and Environmental Document (PA&ED) process to improve the connection between SR-91 and SR-71 in and near the City of Corona in June 2011. The SR-71/SR-91 interchange is a substantial source of traffic congestion in the area. This project proposes to reduce congestion, enhance safety for motorists, support the movement of goods, and improve mobility and connections between the two freeways and among Riverside, Orange, and San Bernardino Counties.

This project proposes replacing the existing single-lane connection between eastbound SR-91 and northbound SR-71 with a new two-lane, direct flyover ramp, and building a new separate eastbound road just south of and parallel to SR-91 to provide improved access between the Green River Road interchange and the SR-71/SR-91 interchange. The project limits on SR-71 begin at the SR-71/SR-91 interchange and end approximately 1.5 mi north of SR-91. This project would be implemented after the Initial Phase of the SR-91 CIP and is anticipated to be completed in 2018.

I-15 Corridor Improvement Project

As part of other congestion relief projects in Riverside County, RCTC is planning improvements to I-15 northward from just north of the I-15/I-215 separation in the City of Murrieta to the San Bernardino County line. The I-15 Corridor Improvement Project extends approximately 44 mi along I-15. Two build alternatives are under consideration: an HOV lane and a mixed-flow lane alternative, and a tolled express lane and mixed-flow lane alternative. This project would be implemented after the Initial Phase of the SR-91 CIP and is anticipated to be completed in 2019.

SR-241/SR-91 Direct Connectors

To maximize the efficiency of transitions between SR-241 and the existing SR-91 tolled express lanes in Orange County, direct connectors are conceptually planned at this interchange, as shown on Figure 2-16. These improvements would be implemented by the TCA and OCTA. This would allow SR-241 toll road users to transition directly onto the SR-91 tolled express lanes and vice versa. Construction of this project is anticipated to be completed after the completion of the Initial Phase of the SR-91 CIP.

Future SR-91 Implementation Plan Improvements

As discussed in Chapter 1, Project, improvements are planned for SR-91 in the short term (including the recently completed SR-91 Eastbound Lane Addition project described above), medium term (by 2015), and into the future (by 2022). These improvements include a number of smaller projects and two large projects. The large projects, which were considered in the MIS, are: Corridor A (a parallel facility to the SR-91) and Corridor B (Post 2030, another separate intercounty transportation facility). Corridors A and B are projects requiring major financial commitments and, while they are included in the time frame for the 30-year horizon, they may or may not occur within that horizon depending on the ability to fund them. Table 3.25.1 in Section 3.25, Cumulative Impacts, provides descriptions of these future SR-91 projects.

2.3.10 Permits and Approvals Needed

Table 2.41 identifies the permits and/or approvals that are or may be required prior to or during construction and/or operation of Alternatives 1 and 2.

Table 2.41 Permits and Approvals Needed

Agency	Permit/Approval	Status/When Required
Federal Agencies		
FHWA	Approval for Modified Access Report to the Interstate System	A "Letter of Acceptability" approving the modified access was received from FHWA in a letter to the Department dated May 11, 2011. Final approval will occur in August 2012 after approval of the ROD.
	Section 6005 of SAFETEA-LU for satisfying Air Quality Conformity Requirements	Approval was received from FHWA on June 6, 2012.
	Major Project Operational Independence and Non-Concurrent Construction Determination	Concept request was submitted January 20, 2012, and final approval is expected by June 2012.
	Cost Estimate Review	Approval was received on March 23, 2012.
	Draft Project Management Plan	Submitted on May 16, 2012.
	Plan of Finance (in lieu of Initial Financial Plan)	Submittal is expected by July 2012.
	Final Project Management Plan	Approval is expected by October 2012.
	Close of Finance/Financial Plan Annual Update	The first annual update would be submitted in May 2013.
USFWS	Section 7 Consultation for Threatened and Endangered Species	The BO was approved on November 30, 2011, by USFWS (refer to Appendix N).
	Review and Comment on 404 Permit	
Corps	Section 404 Individual Permit for filling or dredging waters of the United States.	The application for this permit was submitted in July 2011.
	Section 408 Permit for modifications to Corps' facilities in three locations and a modified easement at a fourth location.	An initial application for this permit was submitted in December 2011.
National Park Service	Approval of the use of land from CHSP if that land is protected under Section 6(f).	Because the 0.48 ac of land in CHSP that will be used by the project is not currently protected by Section 6(f), no NPS approval is required at this time. If that land becomes protected under Section 6(f) prior to the use of 0.48 ac in CHSP for the SR-91 CIP, the requirements for protection under Section 6(f) will be analyzed and addressed with State Parks and the California Department of Parks and Recreation, Office of Grants and Local Services.

Table 2.41 Permits and Approvals Needed

Agency	Permit/Approval	Status/When Required
State Agencies		
CDFG	1602 Agreement for Streambed Alteration	The application for this agreement was submitted in February 2011.
California State Parks	Concurrence regarding the determination of the project effects on CHSP.	State Parks provided written concurrence with the de minimis determination for project effects on CHSP in a letter dated March 26, 2012; a copy of that letter is provided in Appendix B.
	Right-of-Entry/Encroachment Permit	An approved Right-of-Entry/Encroachment Permit will be required prior to any construction encroaching into land within the boundary of CHSP.
	Approval of a permanent aerial easement in CHSP	Prior to construction of the Green River Road westbound off-ramp.
California Transportation Commission (CTC)	Approval of STIP funding	After the Department approves the Final EIR and files the Notice of Determination.
SWRCB	Section 402 NPDES (Construction Activity)	The notification for coverage under Order No. 2009-0009-DWQ, NPDES No. CAS000002 will be submitted prior to construction.
	Section 402 NPDES Permit (Department NPDES Permit)	Coverage under Order No. 99-06-DWQ, NPDES No. CAS000003 will be addressed with submittal of the NOI under NPDES No. CAS000002, which will be submitted prior to construction.
Santa Ana RWQCB	Section 402 NPDES (Groundwater Dewatering)	The notification for coverage under Order No. R8-2009-0003, NPDES No. CAG998001, will be submitted prior to construction.
	Section 401 Water Quality Certification	The application for this agreement was submitted in February 2011.
Regional and Local Agencies		
Western Riverside County RCA and the RCTC	JPARP	A Preliminary Determination of Biologically Equivalent or Superior Preservation is provided in Appendix O of the <i>Natural Environment Study (2010)</i>
Cities of Anaheim, Corona, Riverside, and Norco, and Counties of Riverside and Orange	Freeway Agreements	Freeway agreements reflecting the project will be finalized after completion of the Final EIR/EIS.
Cities of Anaheim, Corona, and Riverside, and Counties of Orange and Riverside	Encroachment permits for any encroachments into public right-of-way owned by these jurisdictions.	Prior to any encroachment
Cities of Anaheim, Corona, and Riverside, and Counties of Orange and Riverside	Approval of the TMP and any detour plans using local streets	Prior to construction
Orange County Flood Control District and Riverside County Flood Control District	Coordination for, and approval of, any project-related changes to the existing flood control facilities	During final design

Table 2.41 Permits and Approvals Needed

Agency	Permit/Approval	Status/When Required
County of Orange	Approval of a permanent subsurface easement in the New OC Park (NNL)	Prior to construction of the Ultimate Project
Railroads		
BNSF Railroad Company	Memorandum of Understanding and a Construction and Maintenance Agreement with the railroad	Prior to any construction within or above railroad right-of-way
California Public Utilities Commission	Approval of the project, based on review of the Construction and Maintenance Agreement	Prior to any construction within or above railroad right-of-way
Utilities		
SCG SCE City of Corona AT&T/Pacific Bell Comcast Cable Sprint Time Warner Cable Questar/Four Corner Pipeline Company Level 3 Communications Temescal Valley Regional Interceptor City of Riverside Santa Ana Watershed Project Authority Western Riverside Regional Wastewater	Approvals to relocate, protect in place, or remove utility facilities	Prior to any construction activities that would affect utility facilities

BNSF = Burlington Northern Santa Fe
 BO = Biological Opinion
 CDFG = California Department of Fish and Game
 CHSP = Chino Hills State Park
 Corps = United States Army Corps of Engineers
 Department = California Department of Transportation
 EIR = Environmental Impact Report
 EIS = Environmental Impact Statement

FHWA = Federal Highway Administration
 JPARP = Joint Project Acquisition/Review Process
 NOD = Notice of Determination
 NOI = Notice of Intent
 NPDES = National Pollutant Discharge Elimination System
 RCA = Regional Conservation Authority
 RCTC = Riverside County Transportation Commission

ROD = Record of Decision
 RWQCB = Regional Water Quality Control Board
 SCE = Southern California Edison
 SCG = Southern California Gas Company
 SWRCB = State Water Resources Control Board
 TMP = Transportation Management Plan
 USFWS = United States Fish and Wildlife Service