



# 2015 State Route 91 Implementation Plan

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Prepared for:



In Association with:



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## SECTION 1: \_\_\_\_\_ 2015 STATUS REPORT AND UPDATE

### INTRODUCTION

Previous law authorized the California Department of Transportation (Caltrans) to enter into franchise agreements with private companies to construct and operate four demonstration toll road projects in California. This resulted in the development of the 91 Express Lanes facility in Orange County. The four-lane, 10-mile toll road runs along the median of State Route 91 (SR-91) in northeast Orange County between the Orange/Riverside County line and State Route 55 (SR-55). Since the 91 Express Lanes carried its first vehicle on December 27, 1995, the facility has saved users tens of millions of hours of commuting time (over 50 million hours since 2003).

While the 91 Express Lanes facility has improved travel time along the SR-91 corridor, provisions in the franchise agreement between Caltrans and the private franchisee, the California Private Transportation Company (CPTC), prohibited Caltrans and county transportation agencies from adding transportation capacity or operational improvements to the SR-91 corridor through the year 2030 from Interstate 15 (I-15) in Riverside County to the Orange/Los Angeles Counties border. Consequently, the public agencies were barred from adding new lanes, improving interchanges, and adding other improvements to decrease congestion on the SR-91 freeway.

Recognizing the need to eliminate the non-compete provision of the franchise agreement, Governor Gray Davis signed Assembly Bill 1010 (Lou Correa) (AB 1010) into law in September 2002, paving the way for much-needed congestion relief for thousands of drivers who use SR-91 to travel between Riverside and Orange Counties each day. The bill allowed the Orange County Transportation Authority (OCTA) to purchase the 91 Express Lanes franchise and eliminate the existing clause that prohibited any capacity-enhancing improvements from being made to SR-91 until the year 2030. The purchase agreement for the 91 Express Lanes was completed on January 3, 2003, placing the road in public hands at a cost of \$207.5 million. With the elimination of the non-compete provision through AB 1010 and the subsequent 91 Express Lanes purchase by OCTA,

Orange County and Riverside County public officials and Caltrans Districts 8 and 12 have been coordinating improvement plans for SR-91.

Senate Bill 1316 (Lou Correa) (SB 1316) was signed into law in September 2008 as an update to the provisions of AB 1010. SB 1316 authorizes OCTA to transfer its rights and interests in the Riverside County portion of SR-91 toll lanes by assigning them to the Riverside County Transportation Commission (RCTC), and authorizes RCTC to impose tolls for 50 years. SB 1316 also requires OCTA, in consultation with Caltrans and RCTC, to issue an annual SR-91 Implementation Plan (Plan) and a proposed completion schedule for SR-91 improvements from State Route 57 (SR-57) to I-15. The Plans prior to adoption of SB 1316 included a westerly project limit of SR-55. The Plan establishes a program of projects eligible for funding by the use of potential excess toll revenue and other funds.

This 2015 Plan is the result of the requirement to provide the State Legislature with an annual Implementation Plan for SR-91 improvements and builds on the 2014 report, which was a major update of the previous annual Implementation Plans. This year's update includes projects that were identified in the 2006 Riverside County – Orange County Major Investment Study (MIS) as well as other project development efforts and funding programs such as the RCTC 10-Year Western County Highway Delivery Plan that outlines a number of projects such as the extension of High Occupancy Toll (HOT) Lanes from the Orange/Riverside County line to I-15, the California Transportation Commission (CTC) Corridor Mobility Improvement Account (CMIA) that provides a funding source for transportation projects, the extension of the Measure A program that provides funding for transportation projects in Riverside County, and the Renewed Measure M program that provides funding for transportation projects in Orange County. The 2015 Plan includes an overview, identification of issues and needs, time frames for project packages to improve mobility on SR-91, and are listed based on a logical sequence for implementation. Project descriptions include conceptual

lane diagrams (as appropriate), cost estimates (in 2015 dollars, or as noted), and discussion of key considerations that need to be addressed in the planning and development of each project. This Plan will provide OCTA, RCTC, and Caltrans with a framework to implement SR-91 and other related improvements. Future annual Plan updates will continue to refine the scope, cost, and schedule of each project included in this version of the Plan.

## PROJECT ACCOMPLISHMENTS

Much progress has been made since the initial 2003 SR-91 Implementation Plan was approved. The 2015 Plan includes select completed project exhibits as a historical reference, see Section 4 Appendix B.

### Completed Construction/Improvement Projects

As of June 2015, the following physical improvements have been constructed/implemented:

- ❖ Repave and seal pavement surfaces, restripe, and replace raised channelizers on the 91 Express Lanes.
- ❖ EB SR-91 restripe and median barrier reconstruction project that removed the CHP enforcement area and extended the EB auxiliary lane from SR-71 to the Serfas Club Drive off-ramp.
- ❖ WB auxiliary lane extension between the County line and SR-241. This project eliminated the lane drop at the 91 Express Lanes and extended the existing auxiliary lane from the County line to SR-241 in the westbound direction. This improvement minimized the traffic delays at the lane drop area, resulting in improved vehicle progression.
- ❖ WB restripe project extended the auxiliary lane between SR-71 and the County line resulting in a new continuous auxiliary lane between SR-71 & SR-241.
- ❖ Express Bus improvements are implemented for the Galleria at Tyler to South Coast Metro route and Village at Orange to Riverside/Corona.
- ❖ Safety Improvements at the Truck Scales. Existing shoulders were improved, lanes were re-stripped, illumination improved, and signage was modified into and out of the EB facilities.
- ❖ Green River Road overcrossing replacement (See Section 4).

- ❖ Metrolink parking structure at the North Main Street Corona Metrolink Station (See Section 4).
- ❖ EB SR-91 lane addition from SR-241 to SR-71 (See Section 4).
- ❖ New SR-91 WB/EB travel lanes between SR-55 and SR-241 (See Section 4).

These projects provide enhanced freeway capacity and improved mobility for one of the most congested segments of SR-91.

The completed EB SR-91 lane addition project from SR-241 to SR-71 (See Section 4) has greatly enhanced highway operations. This accounts for some of the improvement in existing EB p.m. peak hour travel time from approximately 70+ minutes in 2010 to approximately 50 minutes in 2014 (for the baseline travel time).

In addition, there are two projects that have a direct impact upon SR-91 widening projects. The first is the \$2 billion U.S. Army Corps of Engineers (Corps) Santa Ana River Mainstem (SARM) improvement project that provides flood protection from the recently improved Prado Dam (near SR-71) to the Pacific Ocean. As part of the Corps' project, existing riverbanks have been improved due to the increased capacity of the Prado Dam outlet works, which can now release up to 30,000 cubic feet per second (cfs) compared to the previous facility capacity of 10,000 cfs. The only remaining segments of the Santa Ana River to be improved are Reach 9 Phase 2A, which includes areas along SR-91 from just east of the Coal Canyon Wildlife Corridor Crossing to SR-71, and segments along Weir Canyon Road near Savi Ranch. SR-91 project design teams have coordinated with the Corps, Caltrans, and other federal, regional, and local agencies in order to accommodate future SR-91 improvements by the Corps bank protection project within Reach 9 Phase 2B by relocating the Santa Ana River. This has greatly enhanced the ability of Caltrans and other regional transportation agencies to implement many of the SR-91 improvement projects listed herein. The Corps SARM Reach 9 Phase 2B improvements were under construction as of September 2009 with American Recovery and Reinvestment Act (ARRA) "stimulus" funding and construction was finalized in April 2015. Environmental mitigation within the Santa Ana River perennial stream habitat restoration area will continue for another seven years of the nine year mitigation program.

The other project with a direct impact to SR-91 is the \$120 million Santa Ana Regional Interceptor (SARI) sewer trunk line relocation. The existing SARI line is within the Santa Ana River floodplain and was in jeopardy of failure due to

scour from the potential increased flood releases by the aforementioned Corps project. In order to relocate the proposed 48-inch diameter SARI line outside of the floodplain, which is immediately adjacent to SR-91, Caltrans highway R/W was relinquished to the Orange County Flood Control District (OCFCD) for location of the SARI line. SR-91 project teams have coordinated with the OCFCD, Caltrans, and other federal, regional, and local agencies in order to accommodate planned SR-91 improvements within the remaining State R/W subsequent to relinquishment. This project completed the construction phase in mid-2014.

### Completed Designs and other Reports

In addition to the physical improvements in the corridor, there are various project development phase documents (Feasibility Reports, Studies, PSR, PA/ED, or PS&E) that are completed, or are in draft form and anticipated to be approved that identify improvements that will provide improved mobility. These documents include (also see Section 5):

- ❖ MIS – Final Project Report: Locally Preferred Strategy Report (January 2006).
- ❖ Project Study Report “On Route 91 from State Route 241 in Orange County to Pierce Street in the City of Riverside in Riverside County” (October 2006).
- ❖ Renewed Measure M Transportation Investment Plan (November 2006).
- ❖ Project Study Report for SR-71/SR-91 Interchange (December 2006).
- ❖ RCTC 10-Year Western County Highway Delivery Plan (December 2006).
- ❖ SR-91 Feasibility Study from SR-57 to SR-55 (June 2009).
- ❖ SR-91/Fairmont Boulevard Feasibility Study (December 2009).
- ❖ Corridor System Management Plan (CSMP) Orange County SR-91 Corridor Final Report (August 2010).
- ❖ Renewed Measure M Early Action Plan, approved August 2007 and subsequently renamed as the Capital Action Plan (April 2011).
- ❖ PSR-PDS for SR-241/SR-91 Connector (January 2012).
- ❖ PS&E for Initial SR-91 CIP Project (2014).
- ❖ PSR-PDS on SR-91 between SR-57 and SR-55 (October 2014).

### Updates from the 2014 SR-91 Implementation Plan

In addition to the improvements and progress noted above, the following items that were included in the 2014 SR-91 Implementation Plan have been modified for the 2015 Plan update:

- ❖ Project schedules have been revised within the horizon year timelines. The 2016 horizon year is updated to 2019.
- ❖ Various project descriptions, costs, and schedules have been updated from the 2014 Plan based on continued project development.
- ❖ Projects that were identified for implementation by Post-2035 are now defined as Concepts by Post-2035 and are located in Appendix A.
- ❖ The WB SR-91 to SB SR-55 flyover reconstruction (Option 1 in the PSR) is included in Project #8.

### SR-91 CORRIDOR CONDITIONS

#### Project Limits

The project study limits encompass the segment of SR-91 from west of the junction of SR-57 and SR-91 in the City of Anaheim in Orange County, to east of the junction of SR-91 and I-15 in the City of Corona in Riverside County. The freeway segment is approximately 20.3 miles long, and includes approximately 12.7 miles within Orange County and approximately 7.6 miles within Riverside County.

#### Traffic Conditions Summary

A review of traffic conditions in the Corridor indicates that the existing carrying capacity of the facility is inadequate to accommodate current and future peak demand volumes, and that Level of Service (LOS) F prevails in the peak direction during the entire peak period, where LOS F is defined as the worst freeway operating condition and is defined as a density of more than 45 passenger cars/lane/mile. The results also indicate that there are several physical constraints that generate unacceptable traffic queues. The following list summarizes the deficiencies identified along the SR-91 Corridor:

- ❖ Heavy traffic volumes from I-15 (North and South) converge with SR-91. The weaving and merging condition is complicated by the close proximity of the Westbound (WB) Main Street off-ramp.

- ❖ High demand from several on-ramps within the eastern segment exacerbates traffic conditions during peak hours.
- ❖ High traffic volumes from Gypsum Canyon Road and Santa Ana Canyon Road contribute to congestion on the mainline.
- ❖ One of the two EB lanes from The Eastern Transportation Corridor (State Route 241) is dropped at the merge to State Route 91 (SR-91), causing additional congestion in the EB direction.
- ❖ Heavy traffic reentering the freeway merges at slow speeds from existing WB and EB truck scales, impacting the general-purpose lanes.
- ❖ SR-55 merges with SR-91. An EB lane on SR-91 is dropped (as a dedicated exit) at Lakeview Avenue and a second EB lane is dropped (as a dedicated exit) at Imperial Highway creating a weave condition.
- ❖ WB SR-91 drops a GP lane and a 91 Express Lane to SB SR-55, which contributes to mainline congestion. This drop also occurs on the left-hand side of SR-91 as opposed to the typical right-hand connector exit.
- ❖ High demand from Weir Canyon Road, Imperial Highway and Lakeview Avenue increases delay during the peak hours.
- ❖ WB traffic entering SR-91 at Lakeview Avenue to southbound (SB) SR-55 contributes to mainline congestion by weaving through three lanes on WB SR-91.

## PROJECT SUMMARY

Many of the highway projects and concepts identified in this 2015 Plan are based on the MIS that was completed in January 2006. The projects and concepts are presented based on potential implementation schedules and priorities established in the MIS as well as through subsequent project development. Table 1 summarizes the various pending, potential concepts, and completed projects in the 2015 Plan, and they are outlined below by implementation/construction schedule (see Section 2 for detailed pending projects, Section 3 Appendix A for concept project summaries, and Section 4 Appendix B for completed project summaries):

- ❖ The first set of projects is anticipated to be completed by 2019 and includes five improvements at a total

cost of approximately \$1.9 billion. The projects include a new SR-91 WB auxiliary lane at Tustin Avenue; Metrolink service improvements; the Initial SR-91 Corridor Improvement Project (CIP) that will widen SR-91 by one GP lane in each direction east of Green River Rd, add collector-distributor (CD) roads and direct south connectors at I-15/SR-91, extend the 91 Express Lanes to I-15, and provide system/local interchange improvements; Express Bus service improvements; and a State Route 241 (SR-241)/ 91 Express Lanes connector. These projects are in the process of final design, construction, or procurement and implementation, as noted in the project summaries.

- ❖ Three projects for implementation by 2025 include the interchange improvements at SR-71/SR-91, Metrolink station improvements, and SR-91 widening improvements between SR-57 and SR-55. OCTA, RCTC, and Caltrans have initiated preliminary planning activities for these projects to ensure readiness when local, state, or federal funding becomes available. Some of the 2025 projects are funded and underway in various stages of project development. Projects for implementation by 2025 would cost approximately \$388 million to \$885 million.
- ❖ Projects for implementation by 2035 focus on longer-lead time projects and include a potential new interchange or overcrossing at Fairmont Boulevard and the Ultimate SR-91 CIP that includes widening SR-91 by one GP lane in each direction from SR-241 to Green River Road, I-15/SR-91 Direct North Connector, and SR-91 improvements east of I-15.
- ❖ Long-range concepts for potential implementation by Post-2035 in Appendix A include an elevated 4-lane facility (MIS Corridor A) from SR-241 to I-15, the Anaheim to Ontario International Airport Maglev High Speed Rail, and the Irvine-Corona Expressway (ICE) 4-lane facility from SR-241/ SR-133 to I-15/Cajalco Road (formerly known as MIS Corridor B). These three multi-billion dollar potential concepts require a significant amount of planning, design, and future policy and public input. In some cases, these concepts

may include previous projects as components, such that all concepts within this summary may not be implemented.

### Traffic Analysis

For the 2015 Plan, the traffic analysis for major SR-91 capacity projects has been updated from the 2014 Plan. This analysis used the latest freeway operations software model available from UC Berkeley and traffic data calibrated to reflect new traffic patterns since the 2014 Plan. This freeway operations model provides a better depiction of actual travel delays experienced by motorists compared to traditional travel demand models. The model can be used to analyze freeway bottlenecks sometimes neglected in traditional travel demand models. This approach is especially important given high SR-91 traffic volumes and the potential for relatively few vehicles to significantly slow down traffic. For example, a minor freeway merging area can cause many vehicles to slow, cascading delay through the traffic stream, and suddenly both speed and volume rapidly decrease for major segments of the freeway.

The operations analysis quantified travel time savings for WB morning and EB afternoon conditions for the following major capacity enhancing projects:

- ❖ New SR-91 WB/EB lanes from SR-71 to I-15 by 2017 (Initial CIP, Project 3).
- ❖ SR-241/91 Express Lanes connector with lanes to Coal Canyon on SR-91 by 2019 (Project 5).
- ❖ SR-91 EB lane between SR-57 and SR-55 by 2025 (Project 8).
- ❖ New SR-91 WB/EB lanes, various segments, from SR-241 to I-15 by 2035 (Ultimate CIP, Project 10).

The WB morning (a.m.) traffic analysis results indicate that for the year 2019 forecasts, travel times in Riverside and Orange Counties are anticipated to improve significantly (by about 24 minutes) due to the inclusion of the Initial Phase of the CIP (Project #3), though bottlenecks are anticipated at the Orange-Riverside County line and at the SR-55 interchange. A minor bottleneck is shown at the SR-241 interchange. The main bottlenecks in Riverside County have decreased because of the completion of proposed

Table 1 – SR-91 Implementation Plan Projects

Project No.	Project Summary (Implementation Year)	Cost (\$M)
<b>Projects By Year 2019</b>		
1	SR-91 WB Lane at Tustin Avenue (2016)	45.2
2	Metrolink Short-Term Expansion Plan (2016)	249.2
3	Initial Phase CIP: Widen SR-91 by One GP Lane in Each Direction East of Green River Rd, CD Roads and I-15/SR-91 Direct South Connector, Extension of Express Lanes to I-15 and System/Local Interchange Improvements (2017)	1,407
4	Express Bus Service Improvements Between Orange County and Riverside County (2017)	6
5	SR-241/91 Express Lanes Connector (2019)	180
<b>SUBTOTAL</b>		<b>1,887</b>
<b>Projects By Year 2025</b>		
6	SR-71/SR-91 Interchange Improvements (2020)	123.4
7	Metrolink Stations	43.4
8	SR-91 between SR-57 and SR-55 (2025)	221-718
<b>SUBTOTAL</b>		<b>388 – 885</b>
<b>Projects By Year 2035</b>		
9	Fairmont Boulevard Improvements (Post-2025)	76.8
10	Ultimate CIP: Widen SR-91 by One GP Lane in Each Direction from SR-241 to SR-71, I-15/SR-91 Direct North Connector, and SR-91 Improvements East of I-15 (2035)	TBD
<b>SUBTOTAL</b>		<b>77+</b>
Appx. A	Concept Summary (Implementation Year)	Cost (\$M)
<b>Concepts By Post-2035</b>		
A-1	Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15 (Post-2035)	2,720
A-2	Anaheim to Ontario International Airport Maglev High Speed Rail (Post-2035)	2,770 – 3,200
A-3	Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road ( Post-2035)	8,855
<b>SUBTOTAL</b>		<b>14,350 – 14,780</b>
Appx. B	Completed Project Summary Since 2006 (Constructed Year)	Cost (\$M)
B-1	Green River Road Overcrossing Replacement (March 2009)	24.3
B-2	North Main Street Corona Metrolink Station Parking Structure (June 2009)	25
B-3	Eastbound Lane Addition from SR-241 to SR-71 (September 2010)	51.2
B-4	Widen SR-91 between SR-55 and SR-241 by Adding a 5 <sup>th</sup> GP Lane in Each Direction (January 2013)	85.2

projects (including the Initial Phase of the CIP), though some congestion is still forecasted. In the year 2025

forecast, WB bottlenecks occur at Main Street, the Orange-Riverside County line, at the SR-241 interchange, and at the SR-55 interchange. This results in an increase in travel time, mostly within Riverside County from about 16 minutes in 2019 to over 40 minutes in 2025. Assuming Corridor A and the ICE are not constructed by 2035, bottlenecks appear at Main Street, just east of the SR-71 interchange, at the Orange-Riverside County line, at the SR-241 interchange, and at the SR-55 interchange. With completion of the ultimate CIP project, Riverside County travel times improve dramatically with reduction to near 2019 levels (about 16 minutes). For all forecast horizon years, travel times in Orange County remain relatively unchanged between Existing (2014) and 2035 with the exception that there is about a 20 minute travel time savings with implementation of projects in 2019. OCTA has initiated a study to address the operational aspects at the WB SR-91 to SB SR-55 movement as well as explore multi-modal opportunities on, or adjacent to, the SR-91 corridor that would relieve congestion.

The EB evening (p.m.) traffic analysis indicates that for the year 2019 forecasts, bottlenecks are shown just before the SR-55 interchange and at the Orange-Riverside County line. Implementation of Project #3, the Initial Phase of the CIP, results in decreased Riverside County corridor travel times from approximately 21 minutes to under 10 minutes. In the year 2025 forecast, EB bottlenecks are still shown west of the SR-55 interchange and at the Orange-Riverside County line. The queuing in Riverside County has largely decreased because of the completion of proposed projects, and corridor travel times are forecast to be less than existing conditions through 2035. For the 2035 horizon year, bottlenecks appear at SR-55, at the SR-241 interchange, and at Lincoln Avenue. The 2035 travel times remain consistently low for EB SR-91 in Riverside County. Figures 1-1 and 1-2 below show the travel times by horizon year.

Figure 1-1 – Mainline Westbound SR-91 from I-15 to SR-57 A.M. Peak Hour Average Travel Time

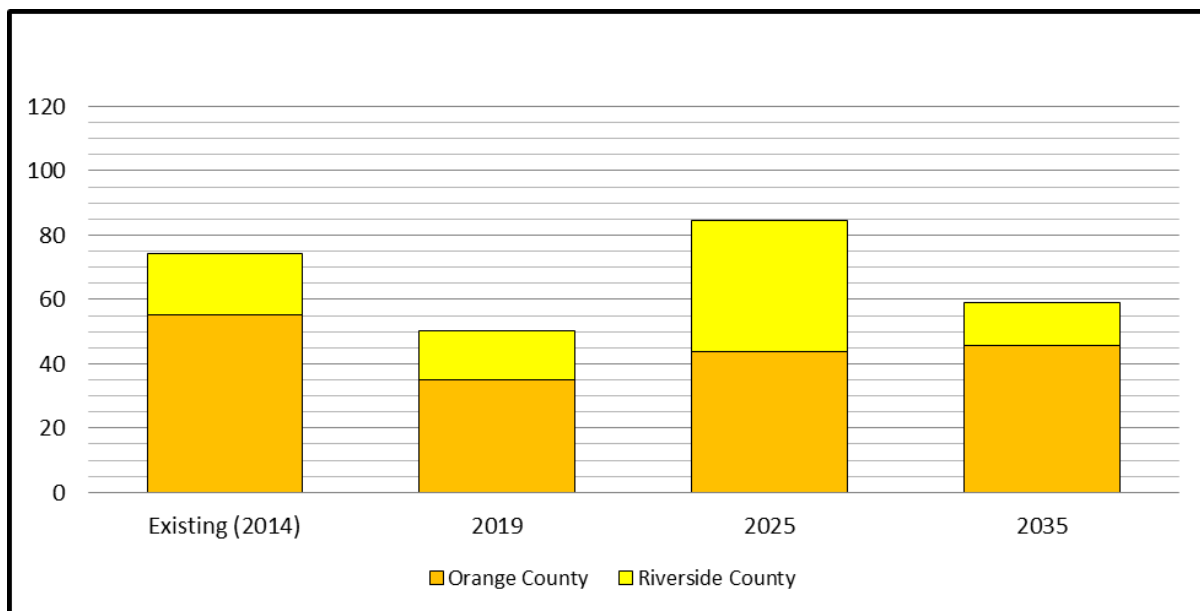
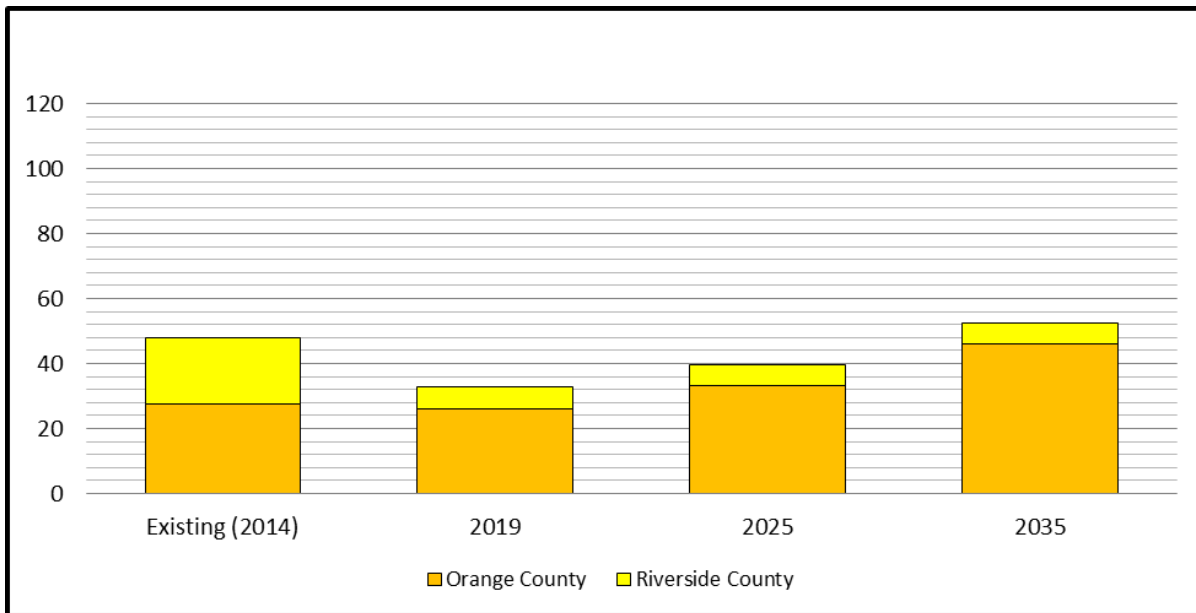




Figure 1-2 – Mainline Eastbound SR-91 from SR-57 to I-15 P.M. Peak Hour Average Travel Time



**ICE STATUS SUMMARY**

The ICE concept (see Concept #A-3) was conceived as part of the MIS and was established as part of a suite of projects to support future peak demand volumes between Riverside and Orange Counties. The ICE was further evaluated in 2009 for financial and geotechnical feasibility. Seven (7) primary feasibility issues were considered:

- ❖ Geologic, hydrogeologic/hydrologic, and geotechnical conditions
- ❖ Corridor concepts (full tunnel and partial tunnel/partial surface road)
- ❖ Tunnel configuration
- ❖ Tunnel excavation and support methods
- ❖ Tunnel systems (e.g. ventilation, emergency fire system, operation building, toll system, etc.)
- ❖ Construction considerations
- ❖ Construction, Operation & Maintenance (O&M) costs

At the conclusion of the financial and geotechnical feasibility study in 2010, the Riverside-Orange Corridor Authority Board (ROCA) directed staff to shelve the project due to its high construction cost and the difficult economic climate, and to reevaluate the concept on an annual basis during the preparation of the SR-91 Implementation Plan.

The National Forest Service has continued monitoring of the ground water level along the preliminary alignment of the tunnel and has not found any significant changes since 2010. The technological ability to construct the large-diameter tunnels is currently available; however, the cost of tunnel boring machines (TBM) required to construct this project has not been reduced significantly. In general, no significant changes to the seven feasibility issues considered for the ICE concept have occurred over the last five years.

**Conclusion**

An assessment of current economic conditions, lack of state and federal transportation funding; and the high construction cost is hampering the ability of OCTA and RCTC to implement this concept. Until considerable advancements are made in regards to efficient and affordable tunneling technology, and more state and federal funding are made available, the concept will remain a challenge to implement.

**OVERVIEW**

The 2015 Plan describes projects, implementation schedules, key consideration, benefits, and costs (in 2015 dollars, or as noted) for major projects and concepts through Post-2035. Most of the projects and concepts identified in this Implementation Plan are based on the MIS that was completed in January 2006. The projects and concepts are presented based on potential implementation schedules and priorities established in the MIS and subsequent updates. The schedules for implementation of the packages of projects include 2019, 2025, and 2035. The 2019 projects are capable of being implemented through the project development process with minimal to moderate environmental constraints. Some of the longer-range projects for 2025 and 2035 require more significant planning and environmental assessment prior to design.

Each of the project or concept improvements includes an estimate of project schedules. It is important to note that implementing various time saving measures, such as design-build or contractor incentives for early completion, may potentially reduce project schedules. The implementation phases are defined as follows:

- ❖ **Conceptual Engineering = Pre-Project Study Report (Pre-PSR)** – Conceptual planning and engineering for project scoping and feasibility prior to initiating the PSR phase.
- ❖ **Preliminary Engineering = Project Study Report (PSR)** – Conceptual planning and engineering phase that allows for programming of funds.
- ❖ **Environmental = Project Approval/Environmental Document (PA/ED)** – The detailed concept design that provides environmental clearance for the project and programs for final design and right of way acquisition. The duration for this phase is typically 2-3 years.
- ❖ **Design = Plans, Specifications and Estimates (PS&E)** – Provide detailed design to contractors for construction bidding and implementation.
- ❖ **Construction** = The project has completed construction and will provide congestion relief to motorists.

The intent of these Implementation Plan project packages is to provide an action list for OCTA, RCTC and Caltrans to pursue in the project development process or for initiating further studies.

Figure 2-1 – SR-91 Project Study Area from SR-57 to I-15

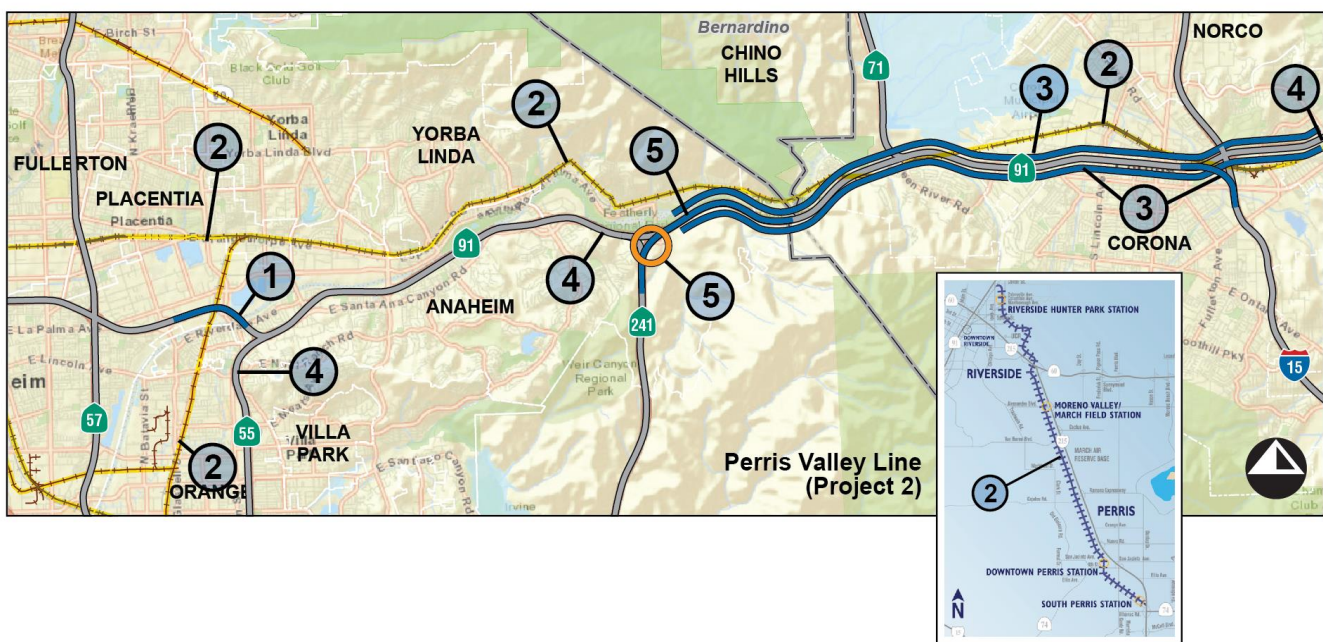


## PROJECTS BY YEAR 2019

The first set of projects will be completed by 2019 and includes five (5) improvements at a total cost of approximately \$1.9 billion (in 2015 dollars, or as noted). The five projects include a new SR-91 WB auxiliary lane at Tustin Avenue; Metrolink service improvements; the Initial SR-91 Corridor Improvement Project (CIP) that will widen SR-91 by one GP lane in each direction east of Green River Rd, add collector-distributor (CD) roads and direct south connectors at I-15/SR-91, extend the 91 Express Lanes to I-15, and provide system/local interchange improvements; Express Bus service improvements; and a SR-241/ 91 Express Lanes connector . Further details for each of the projects are included following the summary below.

Project No.	Project Summary (Implementation Year)	Cost (\$M)
1	SR-91 WB Lane at Tustin Avenue (2016)	45.2
2	Metrolink Service Improvements (2016)	249.2
3	Initial Phase CIP: Widen SR-91 by One GP Lane in Each Direction East of Green River Rd, CD Roads and I-15/SR-91 Direct South Connector, Extension of Express Lanes to I-15 and System/Local Interchange Improvements (2017)	1,407
4	Express Bus Service Improvements (2017)	6
5	SR-241/91 Express Lanes Connector (2019)	180
<b>SUBTOTAL</b>		<b>1,887</b>

Figure 2-2 – Summary of Projects for Implementation By 2019



# SR-91 WB Lane at Tustin Avenue

## Project No: 1

Anticipated Completion: 2016

### Project Cost Estimate\*

Capital Cost	\$ 23,100,000
Support Cost	\$ 15,419,000
R/W Cost	\$ 6,717,000
Total Project Cost	\$ 45,236,000

### Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	2014-2016

\* Schedule is derived from April 2012 OCTA Capital Action plan. Costs are from 2012 Caltrans Estimate at Completion.

## Project Description

The project will add a westbound (WB) auxiliary lane on SR-91 beginning at the northbound (NB) SR-55 to WB SR-91 connector through the Tustin Avenue interchange.

## Key Considerations

Build Alternative 3 was selected from the Project Study Report (PSR), *On Westbound (WB) SR-91 Auxiliary Lane from the Northbound (NB) SR-55/WB SR-91 Connector to the Tustin Avenue Interchange*, and requires additional right-of-way. City of Anaheim utilities are within close proximity of the proposed widening section. Widening of the Santa Ana River bridge is required. Coordination with the City of Anaheim occurred for widening of Tustin Avenue and the WB SR-91 Off-Ramp that was completed in early 2011.

## Benefits

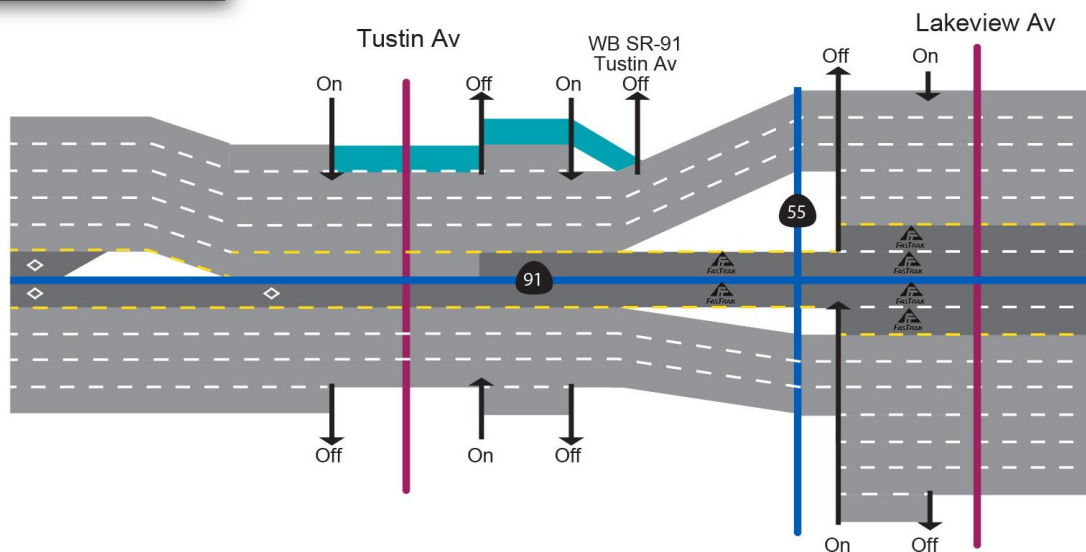
The project would reduce or eliminate operational problems and deficiencies on this section of WB SR-91 including weaving and merging maneuvers. This project would also address choke-point conditions, which are caused primarily by extensive weaving between the NB SR-55 to WB SR-91 connector and the WB SR-91 off-ramp to Tustin Avenue.

## Current Status

Preliminary engineering was completed and approved by Caltrans. The environmental phase was completed in November 2010, and design was completed in mid-2013. Construction was initiated in February 2014. The project received \$14M from the Proposition 1B State-Local Partnership Program (SLPP), \$14M from Measure M, with the balance from Regional Improvement Program (RIP) funds.

### LEGEND

-  Existing Highway
-  Interchange/Ramp
-  County Line
-  HOV Lane
-  Tolled Express Lane
-  Existing Lane
-  Proposed Improvement Lane



## Project No: 2

Anticipated Completion: 2016

### Project Cost Estimate\*

IEOC Service Cost	\$ 1,160,000
Perris Valley Line Cost	\$ 248,000,000
Total Metrolink Costs	\$ 249,160,000

### Project Schedule

To be completed by 2016

\* Costs from OCTA and RCTC  
(in 2015 dollars)

## Project Description

Orange County Transportation Authority (OCTA) and the Riverside County Transportation Commission (RCTC) are coordinating on the implementation of additional commuter rail service on the Inland Empire – Orange County (IEOC) Line, which operates between Oceanside and San Bernardino. The ongoing success of the IEOC Line service and significant freeway construction on parallel corridors would bolster potential growth on Metrolink. Currently, there are sixteen (16) daily trains that run on the IEOC Line and nine (9) trains running on the 91 Line for a total of 25 daily trains. There will be an additional two IEOC roundtrips by late 2015. The long-term service improvements will include 24 IEOC trains by 2030.

Construction began in October 2013 on the \$248,000,000 Perris Valley Line (PVL), which will expand Metrolink commuter rail service on the 91 Line (Riverside to Los Angeles, via Fullerton). The new service will extend 24 miles from downtown Riverside to south Perris

and will add four new stations along the route. The PVL is expected to open to riders by December 2015. The project is located within the right of way of the existing San Jacinto Branch Line through Riverside, Moreno Valley and Perris. The PVL is the first extension of Metrolink service since the Antelope Valley Line was built in 1994. The initial schedule (December 2015) has nine trains through to Los Angeles and 12 between Perris and Riverside.

## Key Considerations

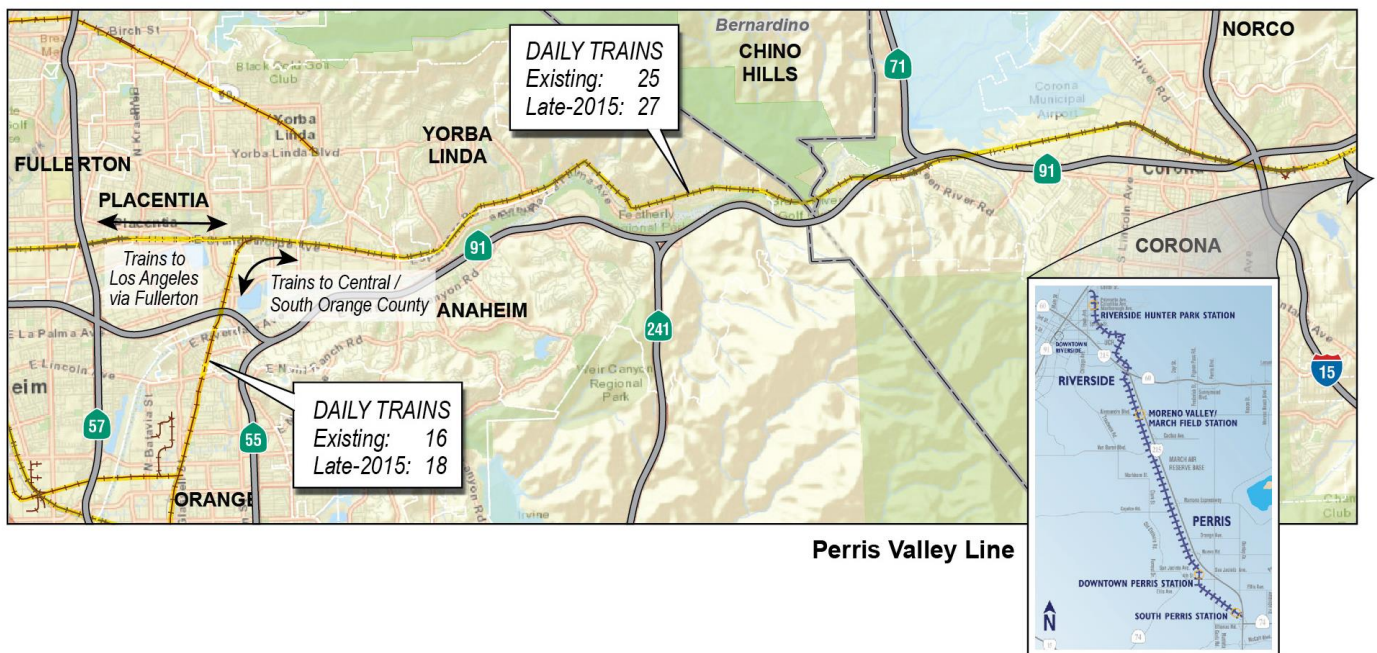
The long-term plan (by 2020) adds more service by constructing additional stations. The City of Anaheim is also proposing Anaheim Canyon Station improvements for a second track and platform to be implemented as part of the long-term plan. The City of Placentia is currently in the environmental phase for a new Metrolink commuter rail passenger station and parking lot to be constructed as part of the long-term plan.

## Benefits

Enables development of expanded Metrolink service and improves efficiency, which will contribute to congestion relief on SR-91.

## Current Status

Two additional IEOC Line roundtrips will be added by late 2015 and nine trains from the expanded PVL by December 2015.



# Initial Phase CIP: Widen SR-91 by One GP lane In Each Direction East of Green River Road, CD Roads and I-15/SR-91 Direct South Connector, Extension of Express Lanes to I-15 and System / Local Interchange Improvements

**Project No: 3**  
**Anticipated Completion: 2017**

**Project Cost Estimate\***

Total Capital Cost	\$ 1,161,000,000
Support Cost	\$ 246,000,000
<b>Total Project Cost</b>	<b>\$ 1,407,000,000</b>

**Project Schedule\*\***

Preliminary Engineering	Completed
Environmental	Completed
Design/Construction	2013-2017

\* Cost obtained for Initial Phase is from RCTC and is 2014 dollars

\*\* Schedule for Initial Phase; subsequent phase for Ultimate Project anticipated in 2035 (see Project #10)

**Project Description**

The approved Project Study Report (PSR) for the SR-91 Corridor Improvement Project (CIP), from SR-241 to Pierce Street, includes the addition of a 5th general purpose lane in each direction, the addition of auxiliary lanes at various locations, additional lanes at the SR-71/SR-91 interchange (Project #6), and collector-distributor (CD) lanes at the I-15/SR-91 interchange. Subsequently, the Riverside County Transportation Commission's (RCTC) 10-Year Delivery Plan recommended the following in addition to the PSR recommended improvements: the extension of the 91 Express Lanes from the Orange County line to I-15, the construction of SR-91 (EB/WB)/I-15 (SB/NB) Express Lanes median direct connectors, and the construction of one Express Lane in each direction from the I-15/SR-91 interchange southerly to I-15/Cajalco Road, and northerly to I-15/Hidden Valley Parkway. An Express Lanes ingress/egress lane is also planned near the County Line. Due to economic conditions, a Project Phasing Plan was developed to allow an Initial Phase with reduced improvements to move forward as scheduled, with the remaining ultimate improvements to be completed later. The following is a summary of the deferred ultimate improvements (Project #10): SR-91/I-15 median North Direct Connector and I-15 Express Lanes North to Hidden Valley Parkway; general purpose lanes and Express Lanes from I-15 to Pierce Street; and general purpose lanes from SR-241 to SR-71. The I-15 Express Lanes to be extended from Ontario Avenue to Cajalco Road are included in RCTC's I-15 Express Lane Project with an anticipated completion in 2020.

**Key Considerations**

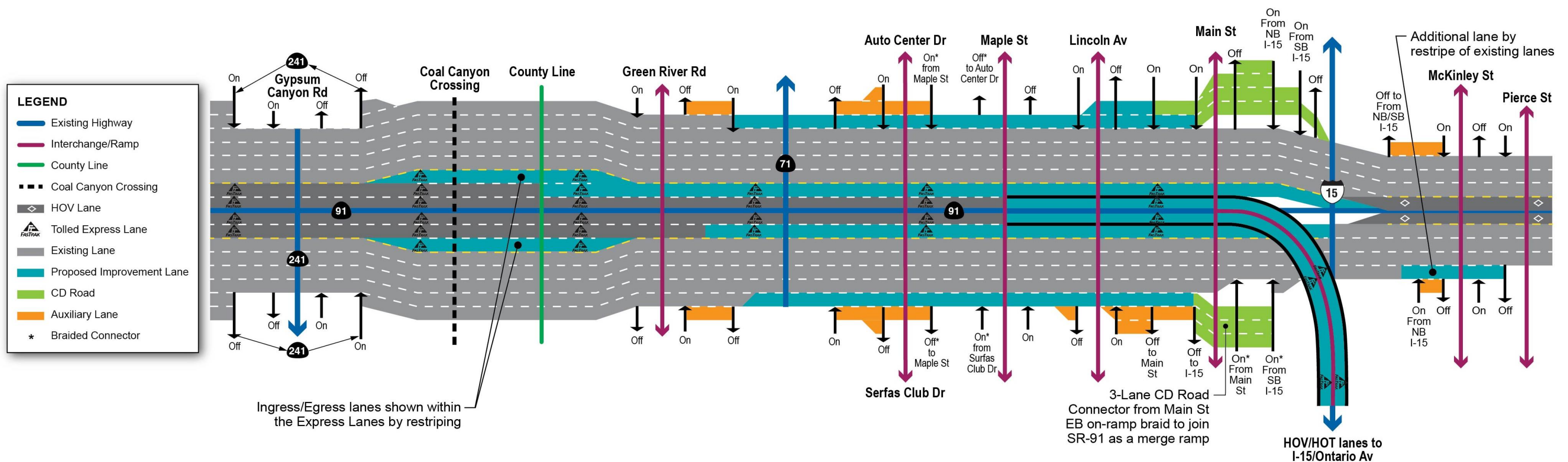
Coordination among many of the SR-91 freeway projects that overlap the project limits is critical to successfully delivering these projects on schedule and within budget. Designing to accommodate future projects is a recurring theme for each of these projects. Minimizing conflicts in scope between projects requires direct coordination between each project team. Additionally, future projects frequently have multiple alternatives under study, each with differing scope and construction footprints. Specifically, the project improvements need to continue to be coordinated with the SR-71/SR-91 interchange (Project #6), the SR-241/91 Express Lanes Connector (Project #5), and RCTC's I-15 Express Lane Project.

**Benefits**

The Initial Phase and Ultimate CIP projects will reduce congestion and delays by providing additional SR-91 capacity from SR-241 to Pierce Street, along I-15 from SR-91 to Cajalco Road to the south, and to Hidden Valley Parkway to the north. Traffic operation will improve by eliminating or reducing weaving conflicts along SR-91 and I-15 by the use of CD roads and auxiliary lanes. The project will provide motorists a choice to use Express Lanes for a fee in exchange for time savings.

**Current Status**

The environmental phase was completed in Fall 2012. A Design-Build contractor was selected in May 2013 and construction activities began in early 2014 for the Initial Phase.



# Express Bus Service Improvements

## Project No: 4

Anticipated Completion: 2017

### Project Cost Estimate\*

Total Annual Capital Cost	\$ 1,000,000**
Total Annual Operating Cost	\$ 5,000,000**

### Project Schedule

Riverside/Corona	FY 2017
Anaheim Resort (Planned RTA Route 200)	
Temecula to	FY 2017
Village at Orange (Planned RTA Route 205)	
Village at Orange to	Existing
Riverside/Corona (RTA Route 216)	
Riverside/Corona to	Existing
South Coast Metro (OCTA Route 794)	

\* Capital and Operating costs from OCTA and RCTC (2015 dollars)

\*\*20-year average

### Project Description

Orange County Transportation Authority (OCTA), working with the Riverside County Transportation Commission (RCTC), and the Riverside Transit Agency (RTA), plans an expansion of Express Bus service between Riverside and Orange counties. Commuters lack direct transit connections to some Orange County employment centers, and new Express Bus service can provide this connection.

### Existing Service

OCTA has operated Route 794 since 2006 from Riverside County to Hutton Centre and South Coast Metro (shown in orange below). RTA has operated Route 216 since 2010 between the Village at Orange and Downtown Riverside (shown in red below).

### New Service

Two new Express Bus routes are planned for implementation by Fiscal Year 2017 between Riverside County and Orange County including RTA route 200 (shown in blue below) from Riverside County to Corona and to the Anaheim Resort. The route would include three AM and three PM roundtrips by three buses. RTA route 205 (shown in green below) from Temecula to the Village at Orange is proposed to include two AM and two PM roundtrips by 2 buses. Existing RTA route 216 (shown in red below) from the Riverside Downtown Terminal to the Village at Orange is planned for expansion of service from the current two buses to five buses by Fiscal Year 2023.

Upon completion of the proposed 91 Express Lanes, RCTC expects to nearly double Express Bus service on SR-91. Currently, Riverside Transit Agency (RTA) and OCTA operate 21 bus trips per day on SR-91 and RCTC envisions adding 20 additional trips, bringing the total to 41 daily trips. Service duration for this expansion will increase by 11,500 hours per year and will be served by five new transit coaches to be procured specifically for this service.

### Key Considerations

Operating costs will average \$5,000,000 each year and capital costs will average \$1,000,000 per year. The cost sharing will be negotiated between Orange and Riverside counties. RCTC is committing \$5,000,000 for Express Bus purchases once the Riverside County portion of the 91 Express Lanes open.

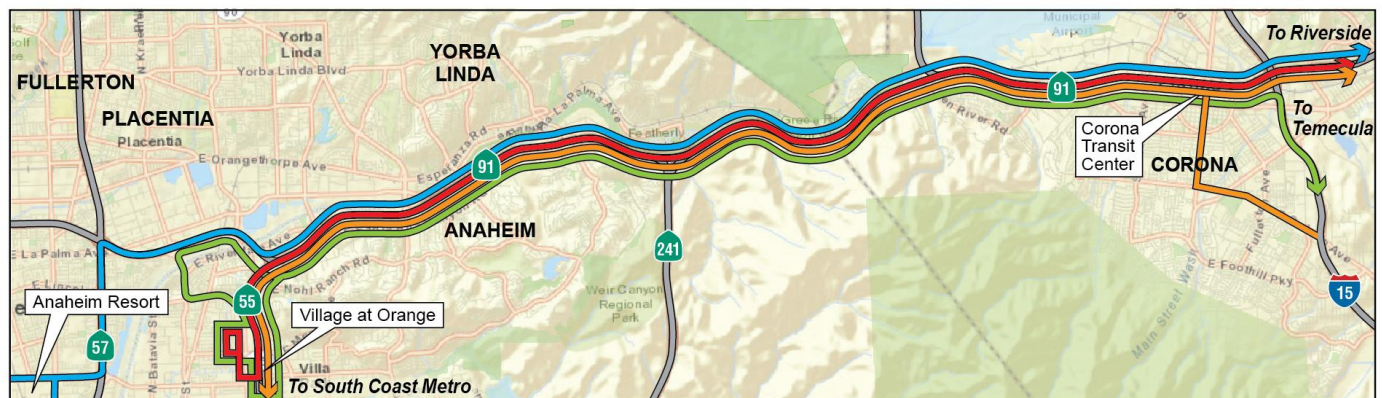
Intercounty Express Bus service is effective between locations where transit travel times by Express Bus would be more competitive than Metrolink and connecting rail feeder buses. There is some duplication of service between the existing Express Bus routes and Metrolink service. One reason customers are attracted to Express Bus service over Metrolink is that the cost is approximately 33% lower. There may be some merit to subsidizing Metrolink fares for price-sensitive transit riders in this corridor instead of keeping competitive bus service.

### Benefits

Development of Express Bus services will contribute to congestion relief on SR-91.

### Current Status

A cooperative agreement covering the Riverside/Corona to South Coast Metro service with Riverside County has been developed. The Riverside County to South Coast Metro Express Bus route is currently operating. Expansion of the program is dependent upon available operating funds and future financial commitments with Riverside County. The implementation dates may change based on funding availability.



# SR-241/91 Express Lanes Connector

## Project No: 5

Anticipated Completion: 2019

### Project Cost Estimate\*

Total Project Cost \$ 180,000,000

### Project Schedule

Preliminary Engineering	Completed
Environmental	2012-2017
Design/Construction	2017-2019

\* Assumes a 2-lane connector, extending as far as Coal Canyon. Costs from State Route 241 / 91 Connector Fact Sheet (10/28/2013).

## Project Description

The SR-241/91 Express Lanes connector will carry northbound (NB) SR-241 traffic to eastbound (EB) 91 Express Lanes and carry westbound (WB) 91 Express Lanes traffic to southbound (SB) SR-241. Outside widening would be required mainly on the south side of SR-91 for realignment of EB lanes up to the Coal Canyon Crossing.

## Key Considerations

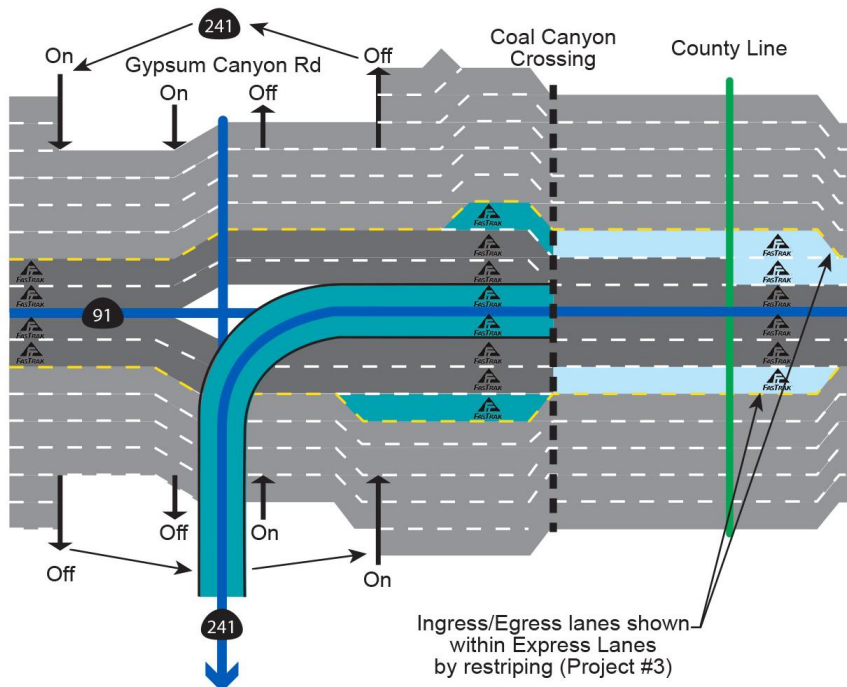
This project was originally permitted as a High Occupancy Vehicle (HOV) connector into the SR-91 HOV lane. With the implementation of the 91 Express Lanes, the project will need to carefully coordinate the traffic operations and tolling policies that will result with the convergence of the SR-241 toll road, the existing OCTA 91 Express Lanes, and the proposed extension of the 91 Express Lanes by RCTC. The project will follow the SR-91 CIP (Project #3) in its implementation and will need to be designed accordingly. Continuous operations of the 91 Express Lanes will be a key consideration for this project. The preliminary analysis calls for the SR-91 center median to be widened to the south to make room for a two lane (one in each direction) direct connector and associated Express Auxilliary Lanes in each direction. The project would tie into the SR-91 CIP improvements at Coal Canyon.

## Benefits

The project will provide connectivity from the 91 Express Lanes and the SR-241 Eastern Transportation Corridor System. The project improves access to SR-241 and South County for traffic that does not currently utilize the 91 Express Lanes, which also improves WB SR-91 by eliminating the need for HOV and Express Lane users to weave across four general purpose lanes to use the existing SB SR-241 connector. It will help alleviate congestion on NB SR-241 and EB SR-91 by allowing SR-241 users to bypass the existing EB SR-91 general purpose connector. The project will also provide a benefit to the Central County MIS area.

## Current Status

Preliminary engineering concepts for a SR-241/91 Express Lanes direct connector have been developed by The Foothill/Eastern Transportation Corridor Agencies (TCA) and Caltrans. The 91 Express Lanes Extension and SR-241 Connector Feasibility Study was completed in March 2009 and was initiated to evaluate the various alternatives. An expanded alternative would connect to SR-71 or extend the ingress/egress further east. A Project Study Report was initiated in January 2011 and was completed by January 2012. The Project Report and Environmental Document is anticipated to be completed by early 2017.



### LEGEND

- Existing Highway
- Interchange/Ramp
- County Line
- - - Coal Canyon Crossing
- Tolled Express Lane
- Existing Lane
- Proposed Improvement Lane
- Project #3 Improvements





## PROJECTS BY YEAR 2025

Projects for implementation by 2025 include the interchange improvements at SR-71/SR-91, Metrolink station improvements, and SR-91 widening improvements between SR-57 and SR-55. Some of the 2025 projects are funded and underway in various stages of project development. OCTA, RCTC, and Caltrans have initiated preliminary planning activities for these projects to ensure readiness when local, state, or federal funding becomes available. Consequently, there may be opportunities to advance these projects if additional funding is made available. Projects for implementation by 2025 are expected to cost approximately \$388 million to \$885 million (in 2015 dollars, or as noted).

Project No.	Project Summary (Implementation Year)	Cost (\$M)
6	SR-71/SR-91 Interchange Improvements (2020)	123.4
7	Metrolink Station Improvements (2020)	43.4
8	SR-91 between SR-57 and SR-55 (2025)	221-718
<b>SUBTOTAL</b>		<b>388 – 885</b>

Figure 2-3 – Summary of Projects for Implementation By 2025



**Project No: 6**

**Anticipated Completion: 2020**

**Project Cost Estimate\***

Total Project Cost \$ 123,397,000

**Project Schedule**

Preliminary Engineering	Completed
Environmental	Completed
Design/Construction	2013-2020

\* Cost obtained from preliminary engineer's cost estimate (2011 dollars)

**Project Description**

The current project includes a new two-lane direct connector flyover from eastbound (EB) SR-91 to northbound (NB) SR-71 and modifications to the existing Green River Road EB SR-91 on-ramp.

**Key Considerations**

Project improvements must be coordinated with the following projects: the SR-91 Corridor Improvement Project (CIP) (Project #3 and #10) and the SR-241/91 Express Lanes Connector (Project #5). The Green River Road Overcrossing Replacement was completed in March 2009 (see Appendix B Project No. B-1) and consisted of replacing the previously existing Green River Road Overcrossing with a new six-lane wide, 4-span overcrossing to accommodate widening of SR-91 by Projects #3, #5, and #10. The SR-91 CIP (Project #3 and #10) project design-build team began construction activities in early 2014. The Project Report and Environmental Document for the SR-241/91 Express Lanes Connector (Project #5) is anticipated to be completed by early 2017.

Close coordination with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Wildlife will also be required as the connector crosses the Santa Ana River below the Prado Dam. In addition, implementation of Major Investment Study (MIS) Corridor A (Concept #A-1) within the median of SR-91 will require the need for a three-level crossing of SR-91 and the proposed SR-71 direct flyover connector. Coordination will be required with an at-grade or grade-separated managed lane ingress/egress facility that may be located near the county boundary as part of the SR-91 CIP (Project #3 and #10).

**Benefits**

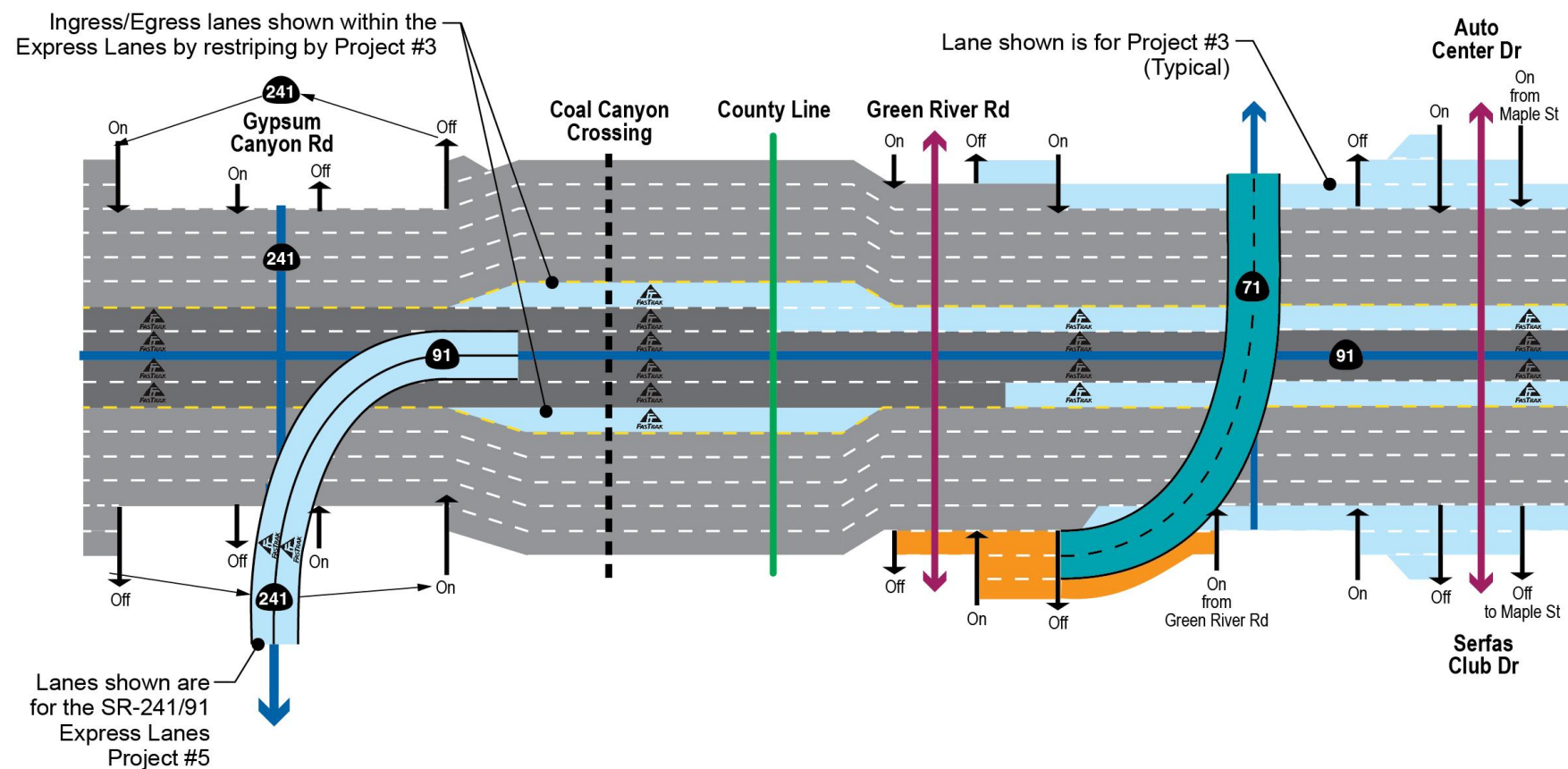
The project will provide a new direct connector improvement from EB SR-91 to NB SR-71, replacing the geometric choke point created by the existing connector. The project will also improve traffic operations and operational efficiency by eliminating or minimizing weaving conflicts through the use of auxiliary lanes.

**Current Status**

The environmental phase was completed in June 2011. Final design is underway and is anticipated to be complete in mid-2015.

**LEGEND**

- Existing Highway
- Interchange/Ramp
- County Line
- Coal Canyon Crossing
- Tolled Express Lane
- Existing Lane
- Proposed Improvement Lane
- CD Road
- Auxiliary Lane
- Project #3 and #5 Improvements



## Project No: 7

Anticipated Completion: 2020

### Project Cost Estimate\*

Anaheim Canyon Station Cost	\$ 20,005,000
Placentia Station Cost	\$ 23,420,000
Total Metrolink Costs	\$ 43,425,000

### Project Schedule

To be completed by 2020

\* Costs from OCTA and RCTC  
(in 2015 dollars)

## Project Description

This long-term plan (by 2020) adds more Metrolink service by constructing additional stations. The Anaheim Canyon Station improvement project includes the addition of a second station track, platform, extensions of the existing platform, and associated passenger amenities, including ticket vending machines, benches, canopies, and signage. The project is anticipated to move forward with OCTA as the lead agency on all phases of project development, including environmental.

The proposed Placentia Metrolink Station improvements include platforms and parking that will be located on BNSF Railway and City of Placentia right of way. OCTA is the lead for design and construction of the project.

## Key Considerations

Coordination has been ongoing with the Metrolink extension studies for the Anaheim Canyon and Placentia Station improvements.

## Benefits

Enables development of expanded Metrolink service and improves efficiency, which will contribute to congestion relief on SR-91.

## Current Status

OCTA staff continues to work with the City to define the Anaheim Canyon Station project in a project definition report (PDR). A final version of the PDR was sent to the City on December 22, 2014, for signature. OCTA anticipates releasing a request for proposals for a consultant to perform the environmental and preliminary design, once the City approves and signs the PDR. A cooperative agreement with the City is in place for the project defining roles and responsibilities.

Plans for the Placentia Station platforms, station amenities, and parking are 95 percent complete. However, finalization of the design is on hold pending the outcome of the City of Placentia's negotiations with private developers for a possible transit-oriented development on city-owned property where a surface parking lot was planned to be constructed. A new cooperative agreement with the City for construction of the station will need to be presented to the Board for approval once the City has signed an agreement with the developer. The City of Placentia is 90 percent complete with demolishing a packing house on the site for construction of the southern station platform.

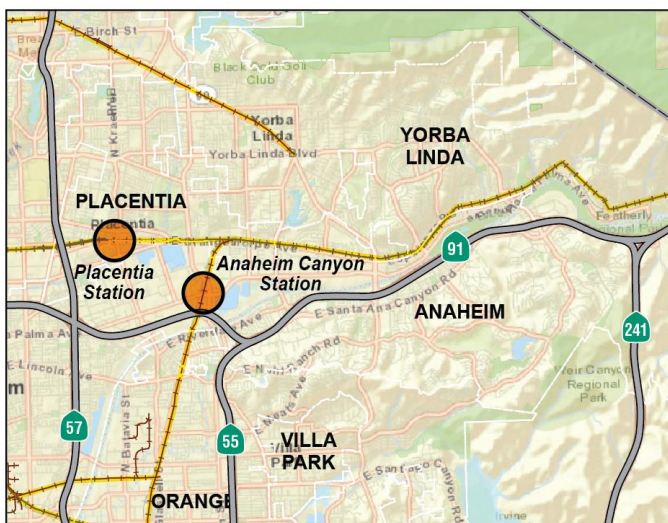


Image source: Perris Valley Line, a project of Riverside County Transportation Commission (RCTC)

# SR-91 Improvements between SR-57 and SR-55

## Project No: 8

Anticipated Completion: 2025

### Project Cost Estimate\*

Capital Cost	TBD
R/W Cost	TBD
Support Cost	TBD
Management & Contingency	TBD
Total Project Cost, Low*	\$ 221,000,000
Total Project Cost, High*	\$ 718,000,000

### Project Schedule

Conceptual Engineering	Completed
Preliminary Engineering	Completed
Environmental	2015-2017
Design	2018-2021
Construction	2021-2025

\* Project Costs from SR-91 PSR/PDS (2014 dollars). Cost Range is for reduced shoulder Alternative 2A (low) and full standard Alternative 2B with Option 1 (high) (excludes support costs).

## Project Description

Improve the SR-57/SR-91 interchange complex, including nearby local interchanges, as well as adding freeway capacity between SR-55 and SR-57. Some improvements to NB SR-57 may be considered and will be further analyzed during the Environmental phase.

Specific improvements will be subject to approved plans developed in cooperation with local jurisdictions and affected communities. The improvements shown are from the concepts developed by the SR-91 Project Study Report - Project Development Support from SR-57 to SR-55. The improvements for Alternative 2A include one EB GP lane from east of SR-57 to west of the SR-55 connector. One WB GP lane is added from west of the Kraemer Blvd/Glassell St interchange to State College Blvd. Also, NB SR-57 from Lincoln Av to Orangethorpe Av is realigned. Alternative 2B is the same as Alternative 2A with the exception of a proposed standard left shoulder width of 10 feet in both directions. Option 1 could be applied to either Alternative and includes reconfiguring the WB SR-91 to SB SR-55 connector as a standard right diverge.

## Key Considerations

The proposed project improvements on WB and eastbound (EB) SR-91 between SR-57 and SR-55 may require right-of-way acquisition.

Coordination with the SR-91 WB Lane at Tustin Avenue improvements (Project #1) will be required.








## Benefits

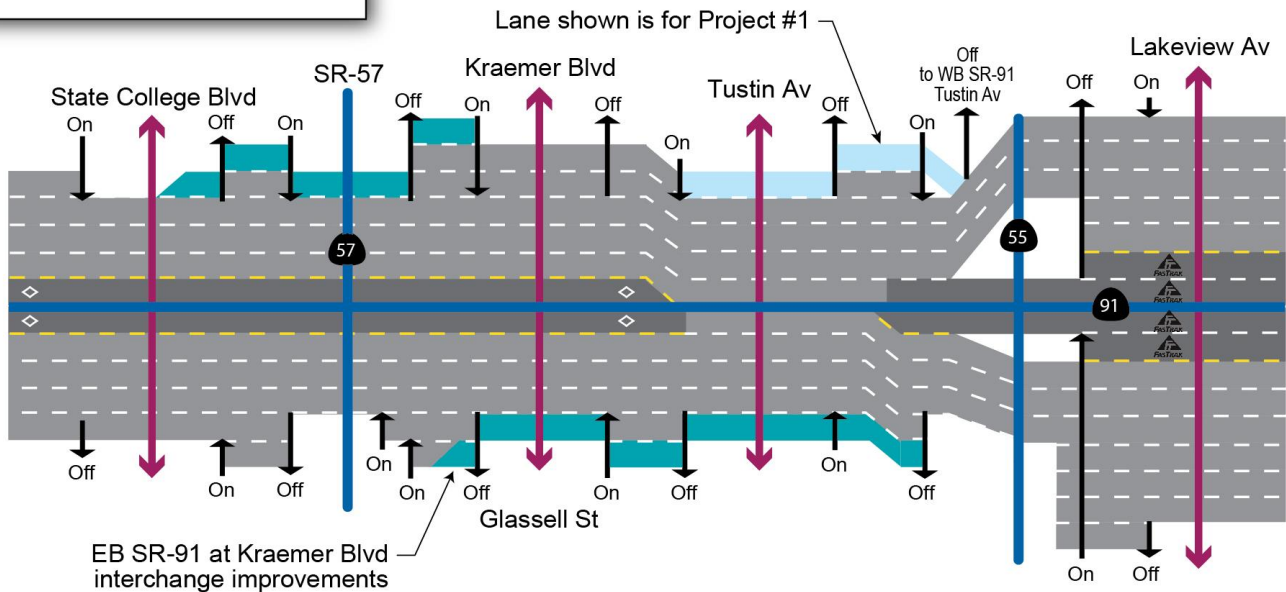
The proposed project improvements on WB and EB SR-91 between SR-57 and SR-55 include, among other features, adding one EB general purpose lane to achieve lane balancing. The project improvement will alleviate congestion and reduce delay.

## Current Status

The project improvement for EB SR-91 widening and for improvements to SR-57/SR-91 and SR-55/SR-91 were studied by the SR-91 Feasibility Study, which was completed in June 2009. Preliminary engineering was completed in 2014 and the Environmental phase began in early 2015. The proposed improvements are included in the Measure M2 program through the Environmental phase.

### LEGEND

-  Existing Highway
-  Interchange/Ramp
-  HOV Lane
-  Tolled Express Lane
-  Existing Lane
-  Proposed Improvement Lane
-  Project #1 Improvements



## PROJECTS BY YEAR 2035

Projects for implementation by 2035 focus on longer-lead time projects and include a potential new interchange or overcrossing at Fairmont Boulevard and the Ultimate SR-91 CIP that includes widening SR-91 by one GP lane in each direction from SR-241 to Green River Road, I-15/SR-91 direct north connector, and SR-91 improvements east of I-15.

Project No.	Project Summary (Implementation Year)	Cost (\$M)
<b>9</b>	Fairmont Boulevard Improvements (Post-2025)	76.8
<b>10</b>	Ultimate CIP: Widen SR-91 by One GP Lane in Each Direction from SR-241 to SR-71, I-15/SR-91 Direct North Connector, and SR-91 Improvements East of I-15 (2035)	TBD
<b>SUBTOTAL</b>		<b>77+</b>

Figure 2-4 – Summary of Projects for Implementation by 2035



## Project No: 9

Anticipated Completion: Post-2025

### Project Cost Estimate\*

Capital Cost	\$ 67,800,000
Support Cost	\$ 9,000,000
Total Project Cost	\$ 76,800,000

### Project Schedule

Conceptual Engineering	Completed
Preliminary Engineering	TBD
Environmental	TBD
Design	TBD
Construction	TBD

\* Costs from Feasibility Study (2009 dollars). R/W cost is undetermined at this time. Cost does not include potential impact to Santa Ana River.

## Project Description

The project would provide a new interchange with SR-91 at Fairmont Boulevard. On- and off-ramps will connect Fairmont Boulevard to eastbound (EB) and westbound (WB) SR-91. The proposed interchange does not include a Fairmont Boulevard connection to Santa Ana Canyon Road to the south.

## Key Considerations

Interchange spacing and weaving issues (to SR-55) need to be evaluated. Widening of SR-91 may be needed to accommodate interchange ramps. Proximity of the Santa Ana River may require that the WB ramp junction be located north of the river. New connection requirements and interchange spacing needs to be considered.

## Benefits

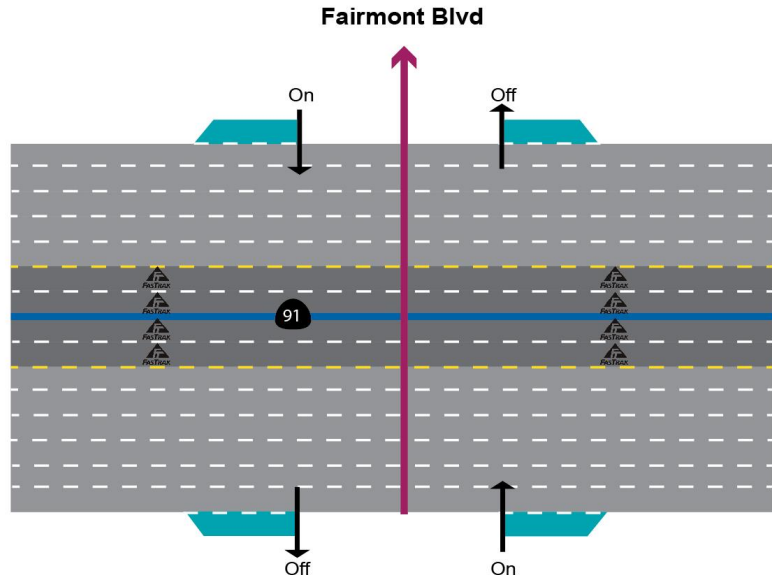
The interchange is expected to relieve congestion at Imperial Highway (SR-90), Lakeview Avenue, and Weir Canyon Road Interchanges. Preliminary traffic modeling shows a 10-15% decrease in volumes at Weir Canyon and SR-90 interchanges with the interchange alternative.

## Current Status

The City of Anaheim completed a conceptual engineering study in December 2009. Multiple alternatives have been developed as part of the conceptual engineering study. Project development is pending funding identification.

### LEGEND

-  Existing Highway
-  Interchange/Ramp
-  County Line
-  Tolled Express Lane
-  Existing Lane
-  Proposed Improvement Lane



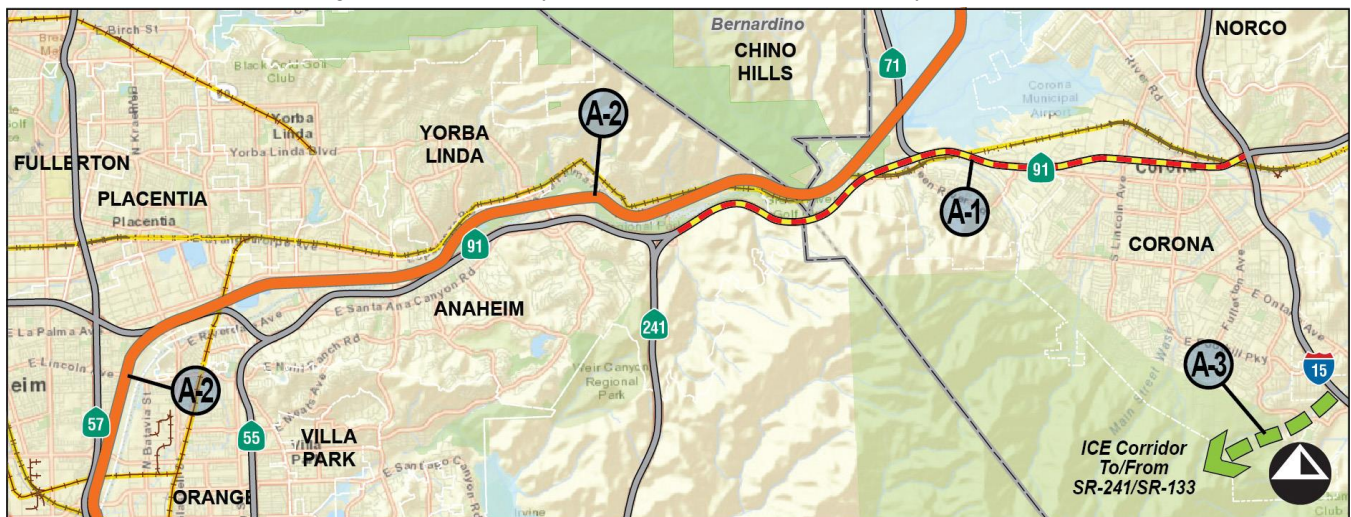


**SECTION 3: APPENDIX A - CONCEPTS BY Post-2035**

Concepts for potential implementation by Post-2035 focus on longer-lead time projects. This multi-billion dollar program may include: an elevated 4-lane facility (MIS Corridor A) from SR-241 to I-15; the Anaheim to Ontario International Airport Maglev High Speed Rail; and the Irvine-Corona Expressway (ICE) 4-lane facility from SR-241/SR-133 to I-15/Cajalco Road (formerly known as MIS Corridor B). The multi-billion dollar potential concepts include significant environmental constraints and right of way requirements in addition to requiring a significant amount of planning, design, and future policy and public input. The Corridor A Concept may incorporate projects being developed in the earlier programs as concept components.

Appendix Concept No.	Concept Summary (Implementation Year)	Cost (\$M)
A-1	Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15 (Post-2035)	2,720
A-2	Anaheim to Ontario International Airport Maglev High Speed Rail (Post-2035)	2,770-3,200
A-3	Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road (Post-2035)	8,855
<b>SUBTOTAL</b>		<b>14,350-14,780</b>

Figure 3-1 – Summary of Concepts for Implementation by Post-2035





# Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15

## Concept No: A-1

Anticipated Completion: Post-2035

### Concept Cost Estimate\*\*

Capital Cost*	\$1,488,000,000
Support Cost (25%)	\$372,000,000
R/W Cost	\$860,000,000
Total Project Cost	\$2,720,000,000

### Concept Schedule

Conceptual Engineering	TBD
Preliminary Engineering	TBD
Environmental	TBD
Design	TBD
Construction	TBD

\* Capital costs include \$160M for environmental mitigation excluding corresponding support cost, which is included in support cost estimate

\*\* Costs derived from Riverside County - Orange County MIS, January 2006 (2005 dollars)

## Concept Description

The improvements primarily consist of constructing a new 4-lane elevated expressway near or within the Santa Ana Canyon with freeway-to-freeway connectors at SR-241 and I-15. The facility may include managed lanes and potential reversible operations.

## Key Considerations

Choice of alignment will be key to determining net capacity increase. Extensive right-of-way (R/W) will be required to implement the improvements if the alignment is not on the SR-91 corridor. If Project #3 or #10 is constructed and a 4-lane elevated facility is proposed within the median of SR-91 through Corona, then extensive managed lane closures would be required during construction (thus temporarily reducing SR-91 capacity during construction).

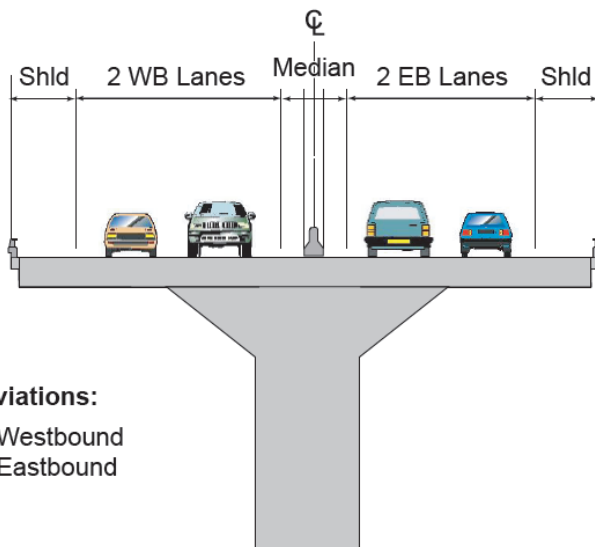
An alternative could be studied for the median Corridor A viaduct along with reduced SR-91 geometric standards to minimize R/W impacts. Also, direct connectors (such as for High Occupancy Vehicle (HOV) / High Occupancy Toll (HOT) at I-15/SR-91) to/from the median could be precluded by Maglev columns located within the same median area. Caltrans and Maglev highway R/W, maintenance, safety, and operations considerations would need to be analyzed if shared use with a Maglev facility were pursued. Additional mitigation costs may be required for improvements to SR-241 and SR-133 as a result of additional Corridor traffic volumes. Corridor A as managed lanes, with potential extension of 91 Express Lanes to I-15 (Project #3 and #10), may affect traffic distribution due to "parallel" tolled facilities.

## Benefits

The concept would provide significant congestion relief by allowing vehicles to bypass the at-grade freeway lanes and local arterial interchanges between SR-241 and I-15. Connections are proposed directly between SR-91, SR-241, and I-15.

## Current Status

This concept is identified in the Riverside County - Orange County Major Investment Study (MIS) as part of the Locally Preferred Strategy to improve mobility between Riverside County and Orange County. No project development work is planned at this time



### Abbreviations:

WB = Westbound  
EB = Eastbound

Elevated 4-Lane Facility (MIS Corridor A) Cross-Section

# Anaheim to Ontario International Airport Maglev High Speed Rail

## Concept No: A-2

Anticipated Completion: 2035

### Concept Cost Estimate\*

Total Capital Cost, Low \$ 2,770,000,000

Total Capital Cost, High \$ 3,200,000,000

### Concept Schedule

To be determined

\* Concept costs from American Magline Group (2012 dollars)

## Concept Description

Proposals for a new super-speed train corridor from Anaheim to Ontario are included in this concept. This concept includes an alternative that would use SR-91 right-of-way, or would be aligned adjacent to SR-91 right-of-way, or could potentially be co-located with the Major Investment Study (MIS) Corridor A (Concept #A-1) alignment. Another alignment opportunity is being investigated along SR-57.

## Key Considerations

Alternative alignment impacts to SR-91 right-of-way envelope and/or Santa Ana River are undetermined. The choice of alignment will potentially impact MIS Corridor A (Concept #A-1). Right-of-way (R/W) will be required to implement the improvements. Potential considerations for co-locating the Magnetic Levitation (maglev) train adjacent to Corridor A (and also SR-91) include providing a two-column structure with a barrier between the trains and vehicles. Caltrans and maglev highway

R/W, maintenance, safety, and operations considerations would need to be analyzed if shared use with a maglev facility were pursued. See the MIS Corridor A (Project #11) for additional considerations. Coordination with Metrolink improvements (Project #9) will be required.

## Benefits

The concept would provide congestion relief by providing a direct high-speed/high-capacity connection with Ontario International Airport for Orange County air passengers and business next-day deliveries. Maglev will make the trip in just 14.5 minutes. Relieves congestion on SR-91 by providing additional capacity in the corridor.

## Current Status

Preliminary design, engineering and Phases 1 and 2 of a Preliminary Environmental Impact Statement/Environmental Impact Statement (PEIS/EIS) are completed. Congress has approved \$45M in SAFETEA-LU for the environmental phase of the project. The Anaheim to Ontario segment is included in the "Constrained" Plan of the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) passed in April 2012. Construction funding of up to \$7 billion has been identified through a loan commitment from the China Export-Import Bank.

## LEGEND

- Existing Highway
- High Speed Rail Representative Alignment



REPRESENTATIVE ALIGNMENT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY

# Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road

## Concept No: A-3

Anticipated Completion: Post-2035

### Concept Cost Estimate\*

Capital Cost	\$ 7,675,000,000
Support Cost	\$ 880,000,000
R/W Cost	\$ 300,000,000
Total Project Cost	\$ 8,855,000,000

### Concept Schedule

Geotechnical Feasibility	Completed
Preliminary Engineering	TBD
Environmental	TBD
Design	TBD
Construction	TBD

\* Costs derived from the Feasibility Evaluation Report (2009 dollars)

## Concept Description

The improvements primarily consist of constructing a highway and rail facility through the Cleveland National Forest with freeway-to-freeway connectors at SR-241/SR-133 and I-15/Cajalco Road. The facility would essentially be a continuation of SR-133 on the west end of the corridor, to I-15 on the east end.

## Key Considerations

The tunnel concept is technically feasible based on the geotechnical investigation completed in December 2009. The initial project phase would be the construction of one 2-lane highway tunnel and one rail tunnel. The second project phase would include construction of a second 2-lane highway tunnel. Additional technical studies and geotechnical borings would be needed to refine the tunnel alignments and grades. Costs associated with the Irvine-Corona Expressway (ICE) tunnels are based on the Feasibility Evaluation Report completed in December 2009. A financial analysis will be needed for the construction, operations and toll requirements of the ICE tunnels.



## Benefits

The concept would provide significant congestion relief by providing an alternative route between Orange and Riverside counties and would allow vehicles to bypass SR-91 between SR-241 and I-15. The concept would not disrupt SR-91 traffic during construction and would allow for additional route selection for incident management, emergency evacuation, and for continuity of the highway network by linking SR-133 to I-15.

## Current Status

On August 27, 2010 the Riverside Orange Corridor Authority Board took action to defer additional study of the ICE concept until such time as financial considerations improve and/or technological advancements warrant reexamination. Review of the concept shall be done annually through the SR-91 Implementation Plan update to determine if any of the major assumptions with regard to financial considerations, private sector interest, or technological advancements have changed to make the tunnel financially viable. (See "ICE status summary" for further discussion).

## LEGEND

	Existing Highway
	ICE (Corridor B) Representative Alignment

**NOTE:** REPRESENTATIVE ALIGNMENT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY



## SECTION 4:      APPENDIX B - COMPLETED PROJECT EXHIBITS

The following exhibits represent completed projects from previous Plans since 2006, and are intended to be used as a reference to illustrate the progress made since the inception of the Plan. Note: some projects listed in the Plan as completed (see Section 1, Project Accomplishments) are not included herein since there was no exhibit created or necessary for use with prior Plans (such as for restriping projects, various safety enhancements, minor operational improvements, etc.).

Appendix Project No.	Project Improvements	Constructed
B-1	Green River Road Overcrossing Replacement	March 2009
B-2	North Main Street Corona Metrolink Station Parking Structure	June 2009
B-3	Eastbound Lane Addition from SR-241 to SR-71	September 2010
B-4	Widen SR-91 between SR-55 and SR-241 by Adding a 5 <sup>th</sup> GP Lane in Each Direction	December 2012



# Green River Road Overcrossing Replacement

## Appendix Project No: B-1

Actual Completion: March 2009

### Project Costs

Capital Cost	\$ 21,000,000
Support Cost	\$ 3,000,000
R/W Cost	\$301,000
<b>Total Project Cost</b>	<b>\$ 24,301,000</b>

### Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	Completed

### Project Description

Improvements primarily consist of replacing the existing Green River Road overcrossing with a new six-lane wide, 4-span overcrossing to accommodate future widening of SR-91. The interior spans will accommodate up to eight mainline lanes in each direction including two HOV lanes. The exterior spans can accommodate two lanes, either for auxiliary lanes or collector distributor roads. Entrance and exit ramps will be realigned and widened to accommodate the new bridge, yet the interchange will retain its current configuration. New signals will be installed at the ramp intersections. Ramp and bridge improvements will be constructed within existing right of way.

### Key Considerations

Design interface is required with the Eastbound Lane Addition from SR-241 to SR-71, SR-71/SR-91 Interchange Improvements, SR-91 Corridor Improvement Project, and SR-241/SR-91 HOV/HOT Connector.

### Benefits

The project will improve the level of service at ramp and local street intersections at the interchange. Improvements will reduce ramp queues that extend into the freeway's general purpose lanes, thus contributing to congestion relief on SR-91.

### Current Status

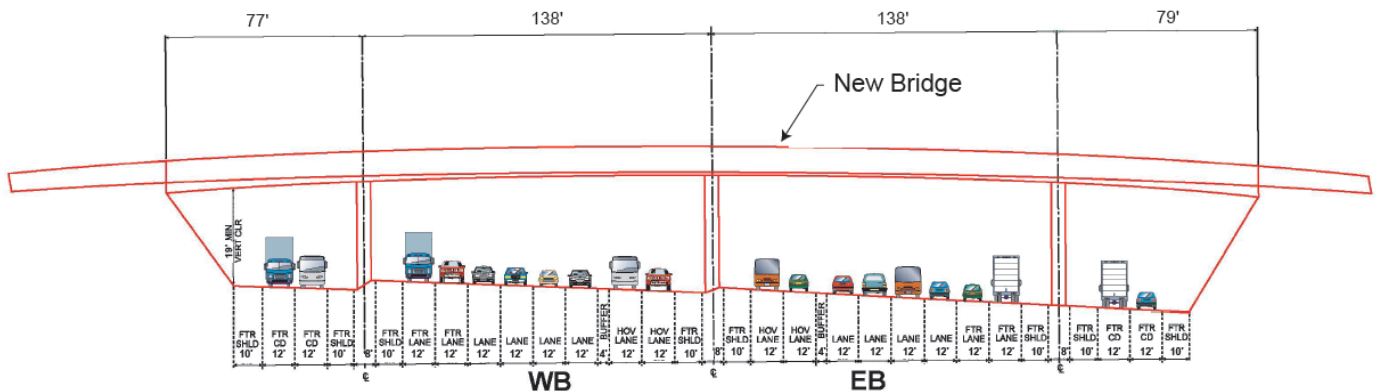
The project began construction in March 2007 and was completed in March 2009.

### Project Schedule Caltrans Equivalents:

Preliminary Engineering = PID  
 Environmental = PA/ED  
 Design = PS&E

### Abbreviations:

CD = Collector Distributor Lane  
 FTR = Future  
 HOV = High Occupancy Vehicle  
 SHLD = Shoulder



GREEN RIVER BRIDGE CROSS-SECTION

NOTE: All dimensions are approximate



# North Main Street Corona Metrolink Station Parking Structure

## Appendix Project No: B-2

Actual Completion: June 2009

### Project Costs

Capital Cost	\$ 20,000,000
Support Cost	\$ 5,000,000
R/W Cost	\$0
Total Project Cost	\$ 25,000,000

### Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	Completed

### Project Description

The project provides a six level parking structure with 1,065 parking stalls. The construction is within the existing North Main Street Metrolink station property in Corona.

### Key Considerations

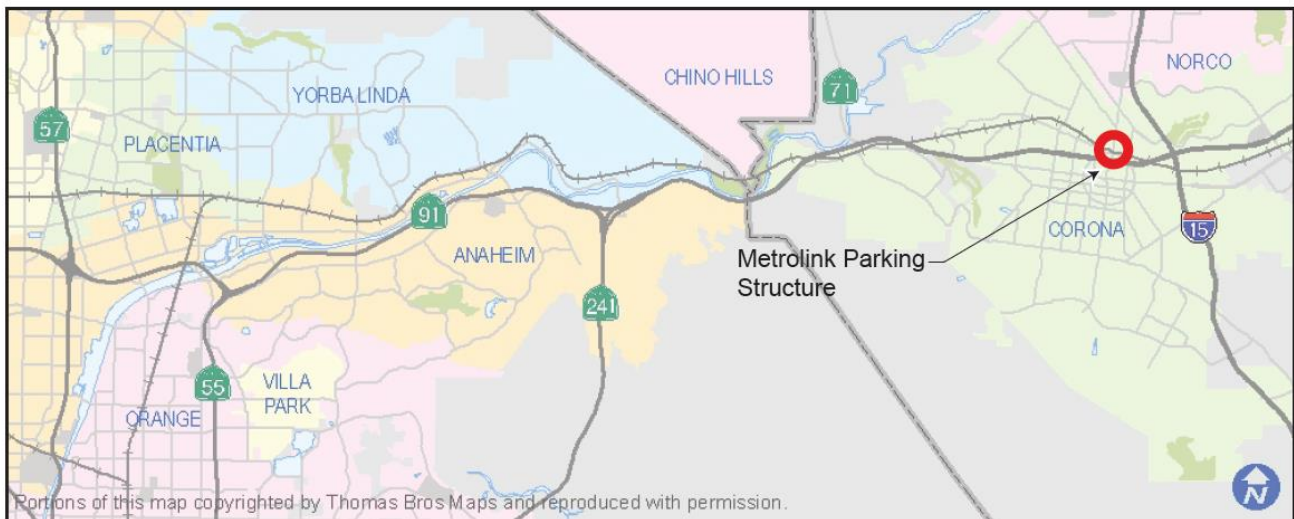
Proposed improvements were constructed within existing right of way. Currently there are 700 users of the facility, 200 more that were previously able to accommodate. Additionally RCTC has opened up the lot to park and ride carpools and vanpools and has issued over 120 permits for carpoolers to use the expanded station. This shows an added benefit of supporting carpooling as well as transit to offset congestion on SR-91.

### Benefits

Demand for parking currently exceeds the capacity at the North Main Street Corona station. New parking capacity will allow Metrolink ridership to increase thereby diverting vehicle trips from SR-91.

### Current Status

Construction was initiated in January 2008 and was completed in June 2009. The project was funded with Federal Congestion Management and Air Quality (CMAQ) funds.



# Eastbound Lane Addition from SR-241 to SR-71

## Appendix Project No: B-3

Actual Completion: September 2010

### Project Cost Estimate

Capital Cost	\$ 41,000,000
Support Cost	\$ 8,000,000
R/W Cost	\$ 2,200,000
<b>Total Project Cost</b>	<b>\$ 51,200,000</b>

### Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	Completed

### Project Description

The project will provide an additional eastbound (EB) lane from the SR-91/SR-241 interchange to the SR-71/SR-91 interchange and will widen all EB lanes and shoulders to standard widths.

### Key Considerations

Coordination with the SR-91 Corridor Improvement Projects (Project #3 and #11) will be required. Staged construction would be required for all ramp reconstruction and freeway widening. Freeway operations would most likely be affected by this project, however, freeway lane closures are not anticipated. An EB concrete shoulder will be constructed with a 12 foot width to provide for future widening as contemplated by Project #3 and #11.

### Benefits

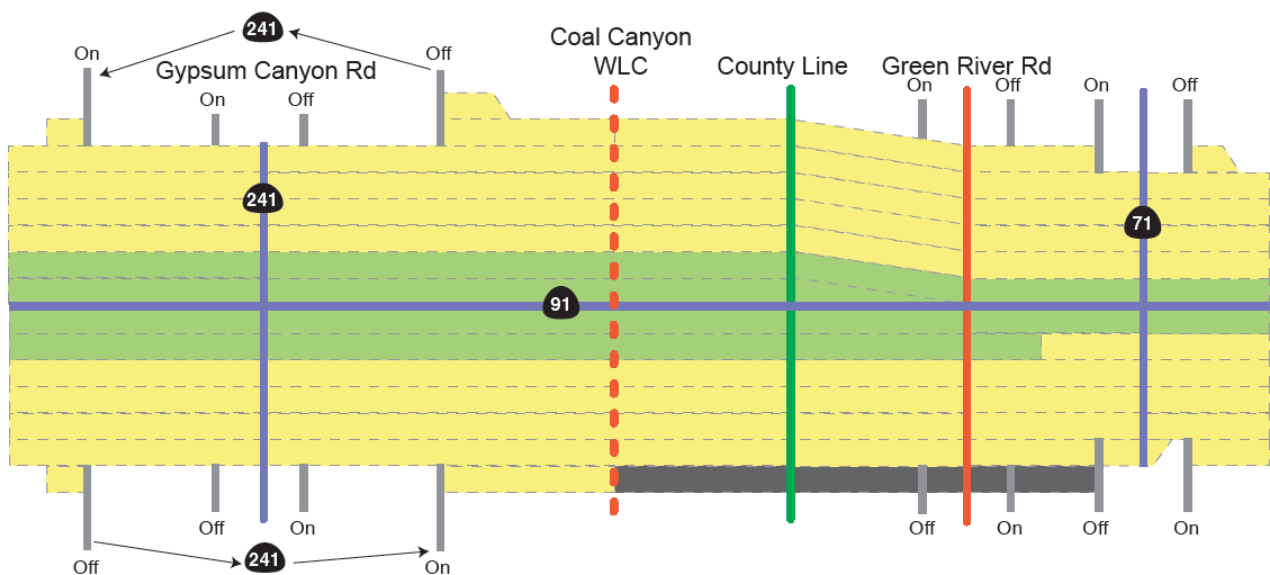
The lane addition would help to alleviate the weaving condition between SR-241 and SR-71, as well as remove vehicles from the SR-91 mainline that would be exiting at Green River Road and SR-71.

### Current Status

Funding is from the American Recovery and Reinvestment Act (ARRA) with \$71.44M approved, and the balance of project costs are from other sources. Construction began in late 2009 and was completed in September 2010.

**LEGEND**

- Existing Highway
- Interchange/Ramp
- County Line
- HOV or HOT Lane
- Existing Lane
- Project Improvement Lane
- Existing Interchange



# Widen SR-91 between SR-55 and SR-241 by Adding a 5th GP Lane in Each Direction

## Appendix Project No: B-4 Actual Completion: January 2013

### Project Costs

Capital Cost	\$ 65,005,000
Support Cost	\$ 19,639,000
R/W Cost	\$ 573,000
<b>Total Project Cost</b>	<b>\$ 85,217,000</b>

### Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	Completed

### Project Description

This project proposes capacity and operational improvements by adding one general purpose (GP) lane on eastbound (EB) SR-91 from the SR-55/SR-91 connector to east of the Weir Canyon Road interchange and on westbound (WB) SR-91 from just east of Weir Canyon Road interchange to the Imperial Highway (SR-90) interchange. Additionally, this project would facilitate truck traffic approaching the truck scales in both directions.

### Key Considerations

Caltrans is not considering relocation of the truck scales at this time.

### Benefits

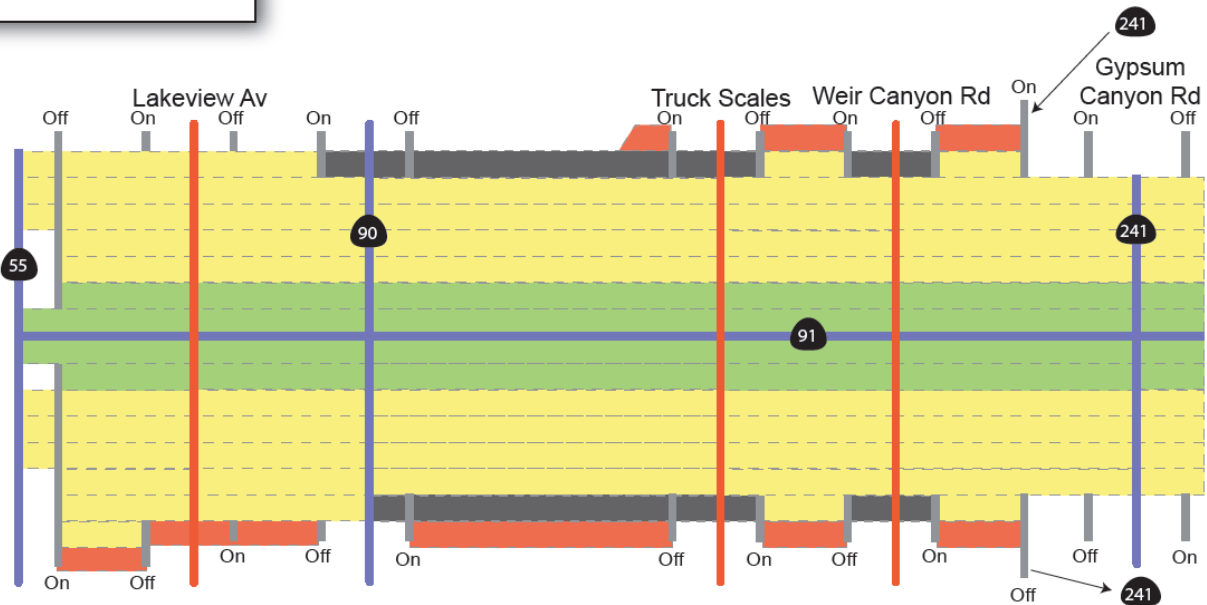
Alleviates congestion on WB SR-91 by eliminating the lane drop at the truck scales and providing a continuous GP lane to SR-90. Alleviates congestion on EB SR-91 by eliminating the lane drop for northbound (NB) SR-55 at SR-91 by providing an auxiliary lane to Lakeview Avenue, and at SR-90 by providing a continuous GP lane through Weir Canyon Road.

### Current Status

Construction was completed in January 2013. The project received \$22M of Corridor Mobility Improvement Account (CMIA) funding and \$74M of State Transportation Improvement Program (STIP) Augmentation funds.

### LEGEND

- Existing Highway
- Interchange/Ramp
- Existing Interchange
- HOV or HOT Lane
- Existing Lane
- Project Improvement Lane
- Auxiliary Lane



**NOTE: FAIRMONT BLVD IS CONTINGENT UPON IMPLEMENTATION OF THE PROJECT**





The following documents and resources were used in the development of the 2015 Plan. Data was provided by OCTA, RCTC, Caltrans Districts 8 and 12, Transportation Corridor Agencies (TCA), and other agencies.

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PSR-PDS for SR-241/SR-91 Connector, January 2012

Project Report and Environmental Document (EIR/EIS) for SR-91 CIP from SR-241 to Pierce Street Project, October 2012

Draft PSR-PDS “On SR-91 Between SR-57 and SR-55”

PS&E “On State Route 91 Between the SR-91/SR-55 Interchange and the SR-91/SR-241 Interchange in Orange County” (April 2011)

Corridor System Management Plan (CSMP) Orange County SR-91 Corridor Final Report, August 2010

Project Study Report/Project Report “Right of Way Relinquishment on Westbound State Route 91 Between Weir Canyon Road and Coal Canyon”, May 2010

SR-91/Fairmont Boulevard Feasibility Study, December 2009

SR-91 Feasibility Study from SR-57 to SR-55, December 2009

Feasibility Evaluation Report for Irvine-Corona Expressway Tunnels, December 2009

Renewed Measure M Strategic Plan, June 2009

Plans, Specifications and Estimates (PS&E) for Eastbound SR-91 lane addition from SR-241 to SR-71, May 2009

PSR “On State Route 91 Between the SR-91/SR-55 Interchange and the SR-91/SR-241 Interchange in Orange County”, April 2009

91 Express Lanes Extension and State Route 241 Connector Feasibility Study, March 2009

PSR/PR “On Gypsum Canyon Road Between the Gypsum Canyon Road/SR-91 Westbound Off-Ramp (PM 16.4) and the Gypsum Canyon Road/SR-91 Eastbound Direct On-Ramp (PM 16.4)”, June 2008

California Transportation Commission, Corridor Mobility Improvement Account (CMIA), February 2007

PSR “On Route 91 from Green River Road to Serfas Club Drive in the City of Corona in Riverside County”, December 2006

Orange County Transportation Authority Renewed Measure M Transportation Investment Plan, November 2006

PSR “On Route 91 from State Route 241 in Orange County to Pierce Street in the City of Riverside in Riverside County”, October 2006

Riverside County-Orange County Major Investment Study (MIS) – Final Project Report: Locally Preferred Strategy Report, January 2006

Preliminary design plans for Eastbound Lane Addition from SR-241 to SR-71, 2006

Project Study Report “Westbound State Route 91 Auxiliary Lane from the NB SR-55/WB SR-91 Connector to the Tustin Avenue Interchange”, July 2004

California – Nevada Interstate Maglev Project Report, Anaheim-Ontario Segment; California-Nevada Super Speed Train Commission, American Magline Group, August 2003

PSR-PDS on SR-91 between SR-57 and SR-55, October 2014

Riverside Transit Agency, Ten-Year Transit Network Plan, January 22, 2015

Route Concept Reports for SR-91, Caltrans Districts 8 and 12

Various Preliminary Drawings and Cross Sections, Caltrans Districts 8 and 12

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