

STATE ROUTE 91

IMPLEMENTATION PLAN 2018



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INTERNATIONAL



STATE ROUTE 91 (SR-91) IMPLEMENTATION PLAN KEEPING MOTORISTS MOVING ON THE SR-91 CORRIDOR

Every year since 2002, OCTA, RCTC, and stakeholders have worked collaboratively to review a program of projects along the SR-91 corridor.

BENEFITS		<ul style="list-style-type: none"> • Provides seamless connectivity between Orange and Riverside Counties • Increases travel options • Optimizes vehicle throughput • Reinvests net revenues on the SR-91 corridor to improve regional mobility • Investments to date: \$1.9 billion 		
COMPLETED EFFORTS	PROJECT		COST (MILLIONS)	COMPLETION
	Orange County	Eastbound Lane Addition (SR-241 to SR-71)	\$51.2	2010
		Fifth Lane Addition (SR-55 to SR-241)	\$85.2	2013
		Westbound Lane at Tustin Avenue	\$43.3	2016
	Riverside County	Green River Road Overcrossing	\$24.3	2009
		North Main Street Corona Metrolink Parking Structure	\$25	2009
		91 Corridor Improvement Project (Initial Phase)	\$1,407	2017
Bi-County	Metrolink Service Improvements	\$249	2016	
ANTICIPATED PROJECTS	PROJECT		COST (MILLIONS)	CURRENT PHASE
	Orange County	SR-91 Improvements (SR-57 to SR-55)	\$250 to \$350	Environmental
		Fairmont Improvements	\$76.8	Preliminary Engineering
	Riverside County	15/91 Express Lanes Connector	\$180	Preliminary Engineering
		SR-71/SR-91 Interchange	\$123.4	Final Design
		Improvements East of I-15	TBD	Environmental
	Bi-County	Express Bus Service	\$5.8	Underway
		Metrolink Stations and Service	\$55.8	Final Design
		6th General Purpose Lane Addition (SR-241 to SR-71)	TBD	Environmental
		RCTC Operational Improvements	TBD	Conceptual Engineering
SR-91/SR-241 Connector	\$181	Environmental		
CONCEPTS	LOCATION		COST (MILLIONS)	
	Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15 (Post-2035)		\$2,720	
	Anaheim to Ontario International Airport Maglev High Speed Rail (Post-2035)		\$2,770 - \$3,200	
	Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road (Post-2035)		\$8,855	
	WB SR-91 to SB SR-55 Connector Improvements (Post-2035)		\$75 - \$150	
EB SR-91 Fifth Lane Addition at SR-241		\$31		

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SECTION 1: _____ 2018 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.

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. In 2017, RCTC opened to traffic the extension of the 91 Express Lanes into Riverside County with completion of the SR-91 Corridor Improvement Project (see Section 4 - Appendix B). SB 1316 also requires OCTA and RCTC, in consultation with Caltrans, 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 potential improvements to relieve congestion and improve operations in the SR-91 corridor .

This 2018 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 2017 report. 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, including 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 projects included in the 2018 Plan have been infused with various sources of local, state, and federal funding. The 2018 Plan includes an overview, identification of issues and needs, and anticipated completion dates for project packages to improve mobility on SR-91. Project descriptions include conceptual lane diagrams (as appropriate), cost estimates (in 2018 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.

91 EXPRESS LANES TOLL POLICY GOALS

With the completion of the State Route 91 Corridor Improvement Project's initial phase in spring 2017, there is now approximately 18 miles of Express Lanes between Orange and Riverside counties. OCTA and RCTC have adopted goals for the 91 Express Lanes to continue to maintain a safe, reliable, and predictable travel time for express lane users traversing seamlessly between the two counties. The goals below take into consideration the 91 Express Lanes as well as the SR-91 corridor at large. These guiding principles include:

- optimizing vehicle throughput at free flow speeds; increasing average vehicle occupancy;
- balancing capacity and demand to serve customers who pay tolls as well as carpoolers (3+) who are offered discounted tolls;
- paying debt service and maintaining debt service coverage;
- generating sufficient revenue to sustain the financial viability of the 91 Express Lanes; and
- when appropriate, reinvesting net revenues on the SR-91 corridor to improve regional mobility.

The Riverside County portion of the 91 Express Lanes began operation in March 2017. Throughout the first year of operation, RCTC made minor operational improvements to improve the SR-91 corridor travel between State Route 241 (SR-241) and McKinley Street. RCTC is now considering additional improvements that may be needed to further enhance efficiency on the SR-91 corridor between SR-241 and McKinley Street. These improvements are anticipated to enhance operations for general purpose lanes, express lanes, and local arterials. RCTC is in the process of implementing operational improvements on the SR-91 corridor in Riverside County. It is also important to note that going forward, other improvements along the SR-91 corridor should be phased in such a way that will adhere to the previously mentioned guiding principles and minimize traffic impacts to the 91 Express Lanes and the corridor at large.

Therefore, as information for projects in this Plan is updated annually, it is important to ensure each project is sequenced in such a way that it provides maximum benefits to the SR-91 corridor. This can be achieved by implementing the projects at the time which optimizes the operations of the corridor and 91 Express Lanes. Detailed operational analysis will need to be conducted separately at the project level prior to implementation.

PROJECT ACCOMPLISHMENTS

Much progress has been made since the initial 2003 SR-91 Implementation Plan was approved. The 2018 Plan includes select completed project exhibits as a historical reference, see Section 4 - Appendix B.

Completed Construction/Improvement Projects

As of June 2018, the following improvements have been constructed or 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).
- ❖ Additional SR-91 WB and EB travel lane between SR-55 and SR-241 (See Section 4).
- ❖ SR-91 WB bypass lane to Tustin Avenue at SR-55 (See Section 4).
- ❖ Metrolink Service Improvements (See Section 4).
- ❖ Initial SR-91 CIP widened SR-91 by one GP lane in each direction east of Green River Rd, added collector-distributor (CD) roads and direct south connectors at I-15/SR-91, extended the 91 Express Lanes to I-15, and provided system/local interchange improvements. This project allows RCTC to operate toll lanes on SR-91 within Riverside County (See Section 4).

These projects provide enhanced freeway capacity and/or 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 improved 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 six 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.

The WB SR-91 Widening Project completed construction in 2016 from State College Blvd to Interstate 5 (I-5). This project added one WB general purpose lane and removed the dedicated exit lane to State College Blvd from the SB SR-57 to WB SR-91 Connector that was causing operational issues due to the short weaving distance. While this project falls just to the west of the limits for the Plan study area, it will have an influence on operations within the Plan area.

The most recently completed project has provided significant benefits to drivers on SR-91, the Initial CIP. This \$1.4 billion investment project included widening SR-91 by one GP lane in each direction east of Green River Road, adding collector-distributor (CD) roads and direct south connectors at I-15/SR-91, extending the 91 Express Lanes to I-15, and providing system/local interchange improvements. The new lanes and other improvements are expected to save time, offer choice and reliability, boost safety, enhance access and job creation, promote ridesharing, reduce pollution and aid the movement of goods along the region's roadways.

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).
- ❖ 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/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 Corridor Improvement Project (CIP) Project (2014).
- ❖ PSR-PDS on SR-91 between SR-57 and SR-55 (October 2014).
- ❖ Measure M Next 10 Delivery Plan (Next 10 Plan), (November 2016).
- ❖ Project Report & Environmental Document for SR-241/91 Express Connector (anticipated approval late 2018).

Updates from the 2017 SR-91 Implementation Plan

In addition to the improvements and progress noted above, the following items that were included in the 2017 SR-91 Implementation Plan have been modified for the 2018 Plan update:

- ❖ Projects are grouped based on County jurisdiction.
- ❖ The Ultimate SR-91 CIP project has been split into two separate projects for 2018, including the 6th General Purpose Lane Addition from SR-241 to SR-71, and improvements east of I-15.
- ❖ A new set of improvements has been added for 2018 for RCTC Operational Improvements within the SR-91 corridor to enhance the recently completed SR-91 CIP project.
- ❖ Various project descriptions, costs, and schedules have been updated from the 2017 Plan based on continued project development.

- ❖ Travel time analysis now includes existing year and 2035 horizon year.

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 conditions that contribute to unacceptable traffic queues. The following list summarizes the deficiencies identified along the SR-91 corridor:

- ❖ Heavy traffic volumes from I-15 converge with the SR-91 and increase delay during the peak hours.
- ❖ SR-71 traffic demand and trumpet interchange geometry (Type L-12) for the EB SR-91 to NB SR-71 connector contribute to mainline delays.
- ❖ High traffic volumes from Gypsum Canyon Road, Santa Ana Canyon Road, and Green River Road contribute to congestion on the mainline.
- ❖ One of the two lanes from The Eastern Transportation Corridor (State Route 241) connector is dropped at the merge to EB SR-91, causing additional congestion.
- ❖ Heavy traffic reentering the freeway merges at slow speeds from existing WB and EB truck scales, impacting the general-purpose lanes. EB truck traffic must make two lane changes to stay on EB SR-91.
- ❖ 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 standard 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 SB SR-55 contributes to mainline congestion by weaving through three lanes on WB SR-91.
- ❖ The existing two-lane connector from WB SR-91 to SB SR-55 is over capacity.
- ❖ There is a lane drop on EB SR-91 at SB SR-241 which creates a chokepoint in the area.

PROJECT SUMMARY

Many of the highway projects and concepts identified in this 2018 Plan are based on the MIS that was completed in January 2006. The projects and concepts are presented in the following groups: Orange County Projects, Riverside County Projects and Bi-County Projects. The projects are in various stages of development such as planning, final design, construction, or procurement and implementation, as noted in the project summaries. Table 1 summarizes the various

planned projects, concept projects, and completed projects in the 2018 Plan. Project groupings are described below (see Section 2 for detailed planned projects, Section 3 Appendix A for concept project summaries, and Section 4 Appendix B for completed project summaries):

- ❖ The Orange County set of projects include two improvements at a total cost from approximately \$327 to \$427 million. The projects include the; SR-91 widening improvements between SR-57 and SR-55 and a potential new interchange or overcrossing at Fairmont Boulevard.
- ❖ The Riverside County set of projects include three improvements at a total cost of more than \$300 million. The improvements include a 15/91 Express Lanes Connector, the SR-71/SR-91 interchange, and the improvements east of I-15.
- ❖ Bi-County projects which benefit both Orange and Riverside Counties include, Express Bus service improvements; Metrolink service and station improvements; a 6th General Purpose Lane Addition (SR-241 to SR-71); RCTC Operational Improvements; and a SR-241/91 Express Connector.

Traffic Analysis

For the 2018 Plan, the traffic analysis for major SR-91 capacity projects has been updated from the 2017 Plan. This analysis used the latest freeway operations software model available from UC Berkeley (FREQ) and traffic data calibrated to reflect new traffic patterns since the 2017 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 rapidly decreasing both speed and volume 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:

- ❖ SR-91 Improvements between SR-57 and SR-55.
- ❖ 15/91 Express Lanes Connector.
- ❖ SR-71/SR-91 Interchange Improvements.
- ❖ SR-91 Improvements East of I-15.
- ❖ Widen SR-91 by One GP Lane from SR-241 to SR-71.
- ❖ SR-241/91 Express Connector.

The WB morning (a.m.) traffic analysis results indicate that for the year 2035 forecasts, travel times in Riverside County are anticipated to improve (by about 10 minutes), but increase slightly (by about 5 minutes) in Orange County. Bottlenecks are anticipated at the Orange-Riverside County line and at the SR-241 interchange/Gypsum Canyon interchange area. A bottleneck occurs at the SR-55 interchange area. The main bottlenecks in Riverside County will decrease because of the completion of proposed

Table 1 – SR-91 Implementation Plan Projects

Project Summary		Cost (\$M)
Orange County Projects		
SR-91 Improvements between SR-57 and SR-55		250-350
Fairmont Boulevard Improvements		76.8
SUBTOTAL		327-427
Riverside County Projects		
15/91 Express Lanes Connector		180
SR-71/SR-91 Interchange Improvements		123.4
SR-91 Improvements East of I-15		TBD
SUBTOTAL		303+
Bi-County Projects		
Express Bus Service Improvements Between Orange County and Riverside County		5.825
Metrolink Service and Station Improvements		55.8
6th General Purpose Lane Addition (SR-241 to SR-71)		TBD
RCTC Operational Improvements		TBD
SR-241/91 Express Connector		181
SUBTOTAL		243+
Appx. A	Concept Projects Summary	Cost (\$M)
Conceptual Projects		
Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15		2,720
Anaheim to Ontario International Airport Maglev High Speed Rail		2,770 – 3,200
Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road		8,855
WB SR-91 to SB SR-55 Improvements		75 – 150
EB SR-91 Fifth Lane Addition at SR-241		31
SUBTOTAL		14,451 – 14,956
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 th GP Lane in Each Direction (January 2013)	85.2
B-5	SR-91 WB Lane at Tustin Avenue (April 2016)	45.2
B-6	Metrolink Service Improvements (June 2016)	249
B-7	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

projects, though some congestion is still forecasted. Travel time in Orange County shows an increase in 2035 due to the growth in traffic and alleviation of bottlenecks upstream. A project to address the operational aspects for the WB SR-91 to SB SR-55 movement is included (see Concept A-4) in addition to exploring multi-modal opportunities by OCTA on, or adjacent to, the SR-91 corridor that could provide additional congestion relief.

The EB evening (p.m.) peak hour traffic analysis indicates that for the year 2035 forecasts, travel times in Riverside County are anticipated to increase slightly (by about 3 minutes), and gradually increase (by about 12 minutes) in Orange County. Bottlenecks appear at SR-55, at SR-241, and just before the Main Street interchange. Travel time in Orange County shows a gradual increase in 2035 due to the growth in traffic and no additional capacity enhancing projects in the areas of the bottlenecks.

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) and the associated tunneling process 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 eight (8) 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 regard 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 2018 Plan describes projects, current statuses, key consideration, benefits, and costs (in 2018 dollars, or as noted) for major projects and concepts through Post-2035. Some of the projects and concepts identified in this Implementation Plan are based on the MIS that was completed in January 2006. The projects are grouped as follows: Orange County Projects, Riverside County Projects and Bi-County Projects.

As the Plan is updated on an annual basis, project sequencing can be achieved in such a way that provides maximum benefits to the SR-91 corridor. Separately, and as part of the project development process, detailed operational analysis will need to be conducted to evaluate operational issues associated with each project. The project development phases are discussed in the status updates and 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



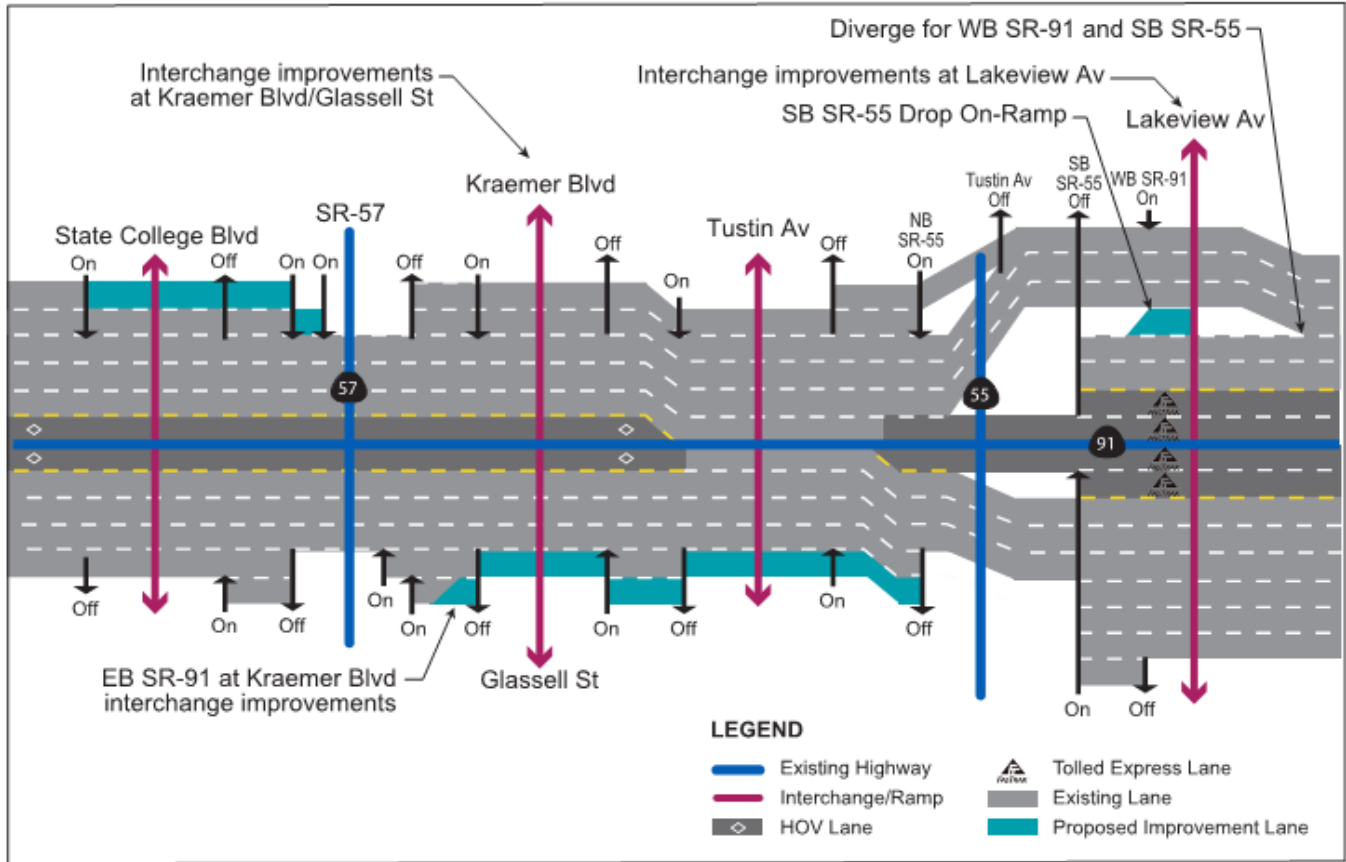
ORANGE COUNTY PROJECTS

The Orange County set of projects include two improvements at a total cost ranging from approximately \$327 to \$427 million. The projects include: SR-91 widening improvements between SR-57 and SR-55, and a potential new interchange or overcrossing at Fairmont Boulevard. Further details for each of the projects are included following the summary below.

Orange County Project Summary	Cost (\$M)
SR-91 between SR-57 and SR-55	250-350
Fairmont Boulevard Improvements	76.8
SUBTOTAL	327-427



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



Project Description

Improve the SR-57/SR-91 interchange complex, including local interchanges, and adding capacity between SR-55 and SR-57. An improvement to NB SR-57 for an Orangethorpe Av Bypass was analyzed, but does not provide congestion relief to SR-91; therefore, the concept was dropped from consideration. In addition, a drop on-ramp from Lakeview Av would be located between realigned WB SR-91 lanes for direct access to SB SR-55.

Specific improvements will be subject to approved plans developed in cooperation with local jurisdictions and affected communities. Improvements also include splitting the WB SR-91 Connector to SR-57 into separate exits and extending WB SR-91 lane additions through State College Blvd to connect with the auxiliary lane to Raymond Av-East St. The improvements for the Build Alternative include one EB GP lane from east of SR-57 to the SR-55 connector. One WB GP lane is added from NB SR-57 Connector through the State College Blvd interchange. An additional option was considered for WB SR-91 that included SR-57 connector metering instead of the lane additions from the SR-57 connectors; however, it did not relieve traffic congestion and was not considered further.

Key Considerations

The proposed project improvements on WB and EB SR-91 may require right-of-way acquisition. A non-standard geometric cross-section will reduce the right-of-way impacts to partial acquisitions only.

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 and interchange improvements. Project improvements will reduce congestion and delay, and reduce weaving.

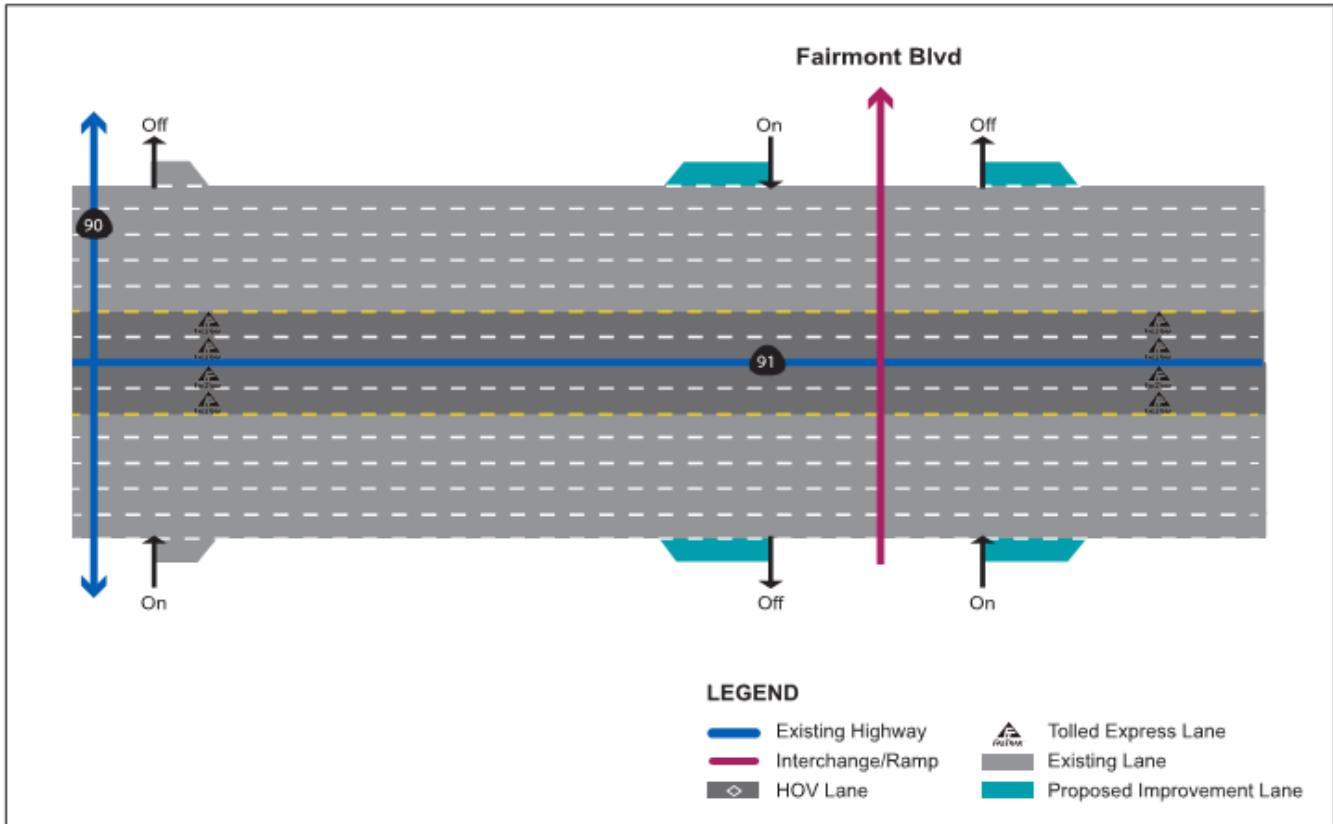
Current Status

The project improvement for EB SR-91 widening and for improvements to SR-57/SR-91, Lakeview 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 M program through the Environmental phase.

Schedule and Cost

Anticipated project construction to be completed in 2025 and cost is estimated to be from \$250,000,000 to \$350,000,000.

Fairmont Boulevard Improvements



Project Description

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

A pedestrian/bicycle connection is also proposed between La Palma Avenue and Santa Ana Canyon Road. This bridge and pathway will allow for direct Santa Ana River Trail access from both Anaheim south of SR-91 and from Yorba Linda.

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. Ramp and bridge placement needs to take pedestrian/bicycle bridge into account, or incorporate the pedestrian/bike path into the design beyond the vehicular access limits of the project.

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 for the interchange. Multiple alternatives have been developed as part of the conceptual engineering study. Bicycle/pedestrian bridge is currently in initial planning stages. Project development is pending funding identification.

On July 24, 2017, OCTA staff along with a senior staff member of WSP presented the findings of a 91 Express Lanes intermediate access study. The study provided various alternatives, traffic modeling, and financial impacts of the additional access. At the conclusion of the discussion, the OCTA Board of Directors did not authorize additional analysis for the intermediate access.

Schedule and Cost

Anticipated project completion is 2035 and construction cost is estimated to be \$76,800,000. Costs from Feasibility Study (2009 dollars). R/W cost is undetermined at this time. Cost excludes any potential impact to Santa Ana River.

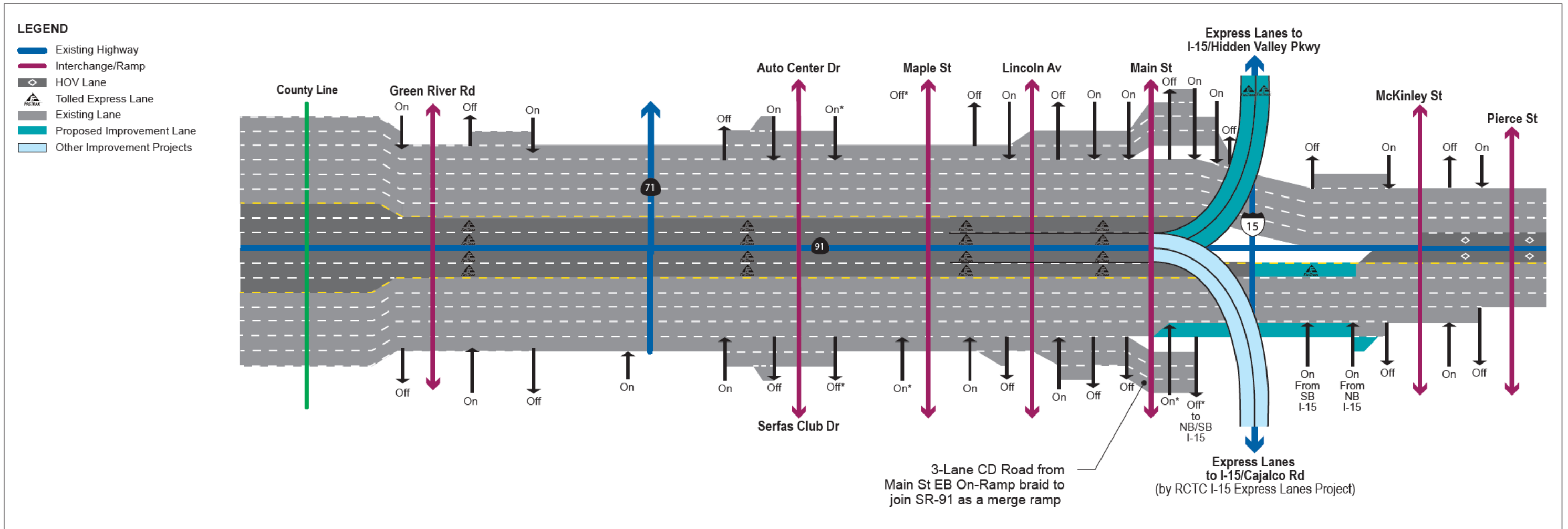
RIVERSIDE COUNTY PROJECTS

The Riverside County set of projects include three improvements: a 15/91 Express Lanes Connector, the SR-71/SR-91 interchange, and Improvements east of I-15. Projects for implementation in Riverside County are expected to cost in excess of \$300 million (in 2018 dollars, or as noted).

Riverside County Project Summary		Cost (\$M)
15/91 Express Lanes Connector		180
SR-71/SR-91 Interchange Improvements		123.4
SR-91 Improvements East of I-15		TBD
SUBTOTAL		303+



15/91 Express Lanes Connector



The Project Approval and Environmental Document (PA/ED) for the SR-91 Corridor Improvement Project (CIP), from SR-241 to Pierce Street, included the addition of a 5th lane in each direction, the addition of auxiliary lanes at various locations, the addition of collector-distributor (CD) lanes at the I-15/SR-91 interchange, the extension of the 91 Express Lanes from the Orange County line to I-15, the construction of a SR-91 Express Lanes median direct connector to and from I-15 South, a SR-91 Express Lanes median direct connector to and from I-15 North (15/91 Express Lanes Connector, the subject project), and the construction of one Express Lane in each direction from the I-15/SR-91 interchange southerly to I-15/Cajalco Road (now part of RCTC I-15 Express Lanes Project [ELP]), and easterly to east of McKinley Street. 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. Subsequently, the proposed 15/91 Express Lanes Connector improvements have been pulled out from the CIP as a standalone project. 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 date 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, the SR-241/91 Express Connector, and RCTC's I-15 Express Lanes Project.

Benefits

The 15/91 Express Lanes Connector project will reduce congestion and operational delays by providing direct median-to-median access between the SR-91 Express Lanes and I-15 Express Lanes. Traffic operations will improve by eliminating weaving conflicts and out-of-direction travel along SR-91 and I-15 by the use of the direct connectors. The project will provide motorists a choice to use the 15/91 Express Lanes Connector for a fee in exchange for timesavings.

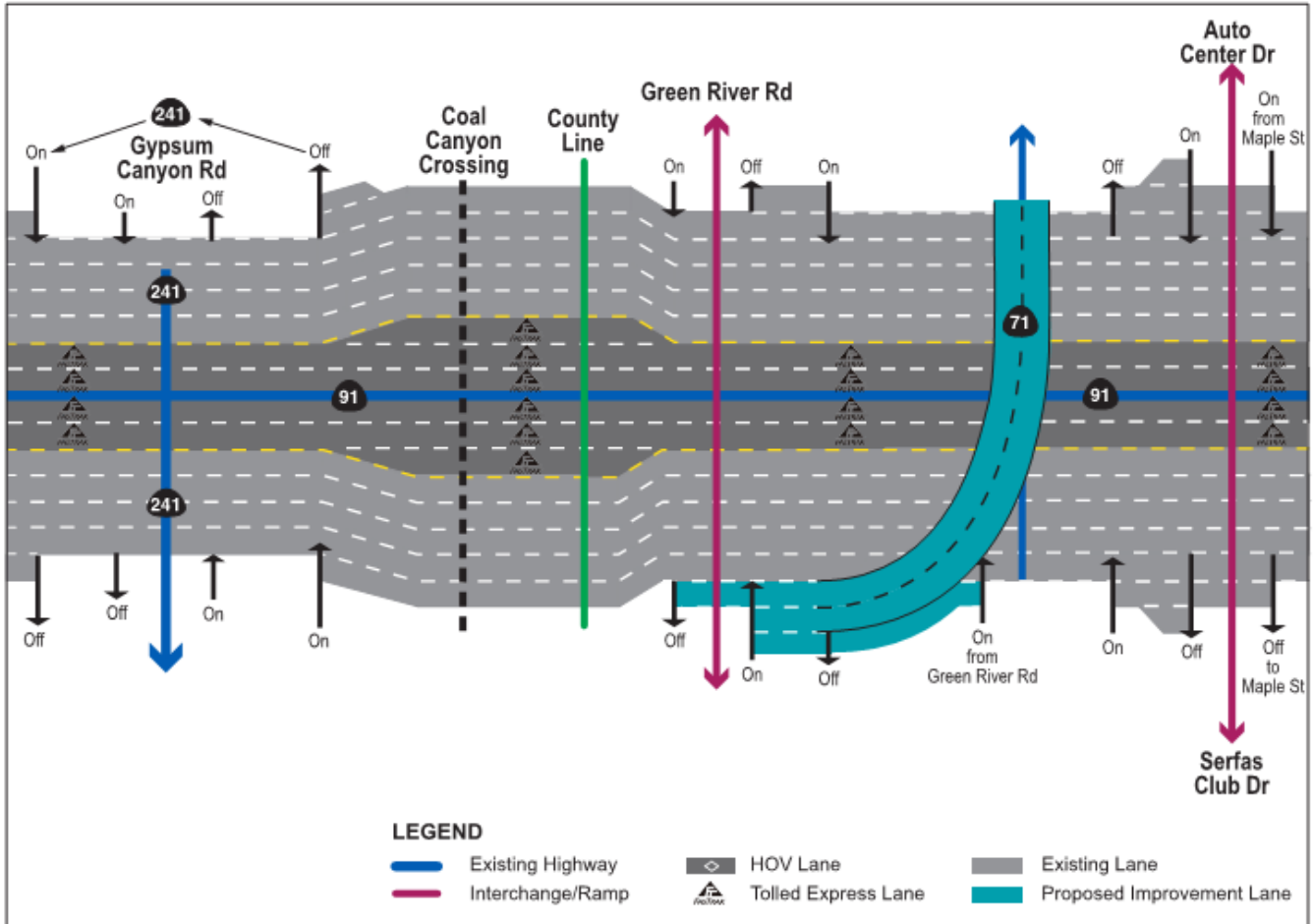
Current Status

Preliminary engineering is currently under development and scheduled to be completed in 2018. The 15/91 Express Lanes Connector is currently discussed in the environmental document for the SR-91 CIP that was completed in 2012. However, an environmental revalidation is currently underway and scheduled to be completed in 2019.

Schedule and Cost

Anticipated project completion is 2022 and total cost is estimated to be \$180,000,000.

SR-71/SR-91 Interchange Improvements



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 Sixth General Purpose and the SR-241/91 Express Connector.

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 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.

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.

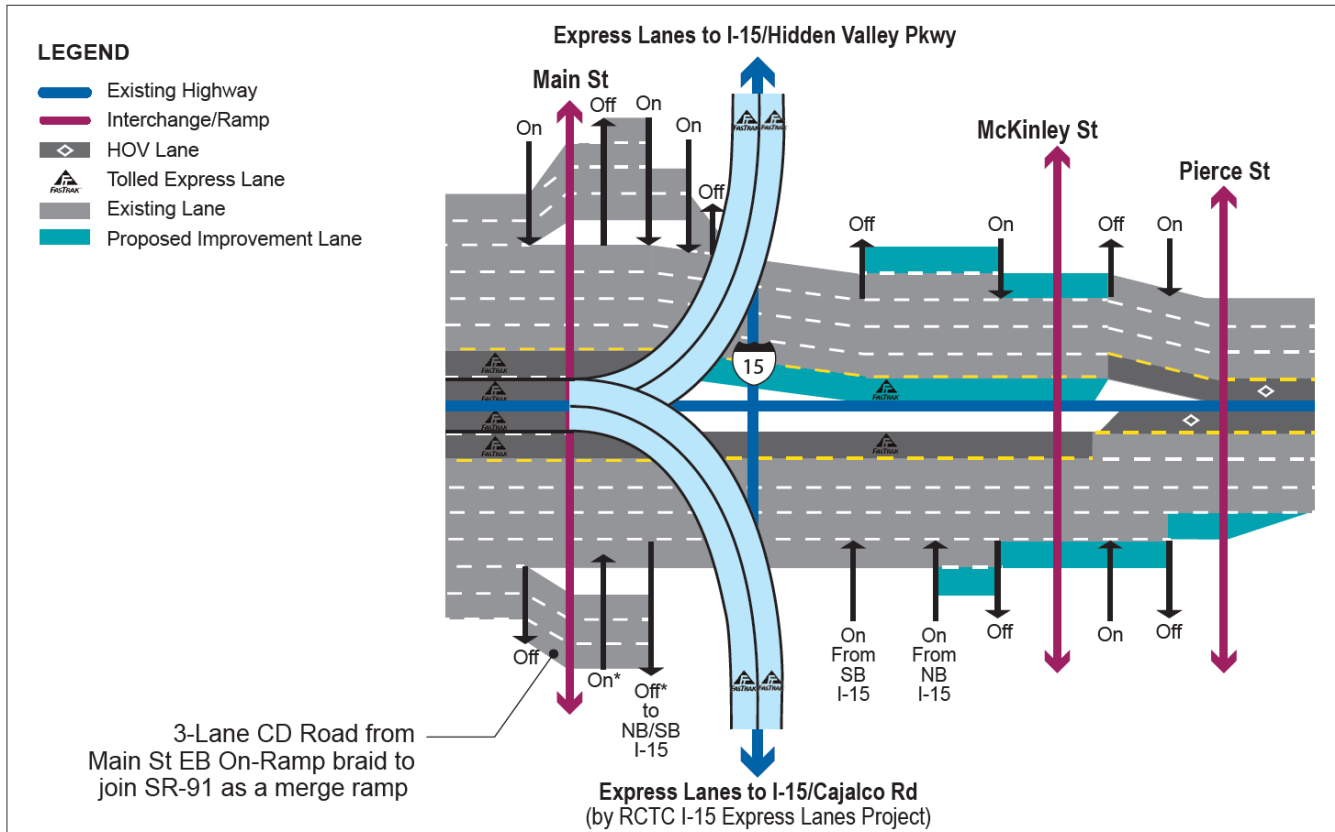
Current Status

The environmental phase was completed in June 2011. Final design is underway.

Schedule and Cost

Construction is deferred to 2021-2023 pending funding availability. Cost is estimated to be \$123,400,000.

SR-91 Improvements East of I-15



Project Description

The Project Approval and Environmental Document (PA/ED) for the SR-91 Corridor Improvement Project (CIP), from SR-241 to Pierce Street, included the addition of a 5th lane in each direction, the addition of auxiliary lanes at various locations, the addition of collector-distributor (CD) lanes at the I-15/SR-91 interchange, the extension of the 91 Express Lanes from the Orange County line to I-15, the construction of a SR-91 Express Lanes median direct connector to and from I-15 South, a SR-91 Express Lanes median direct connector to and from I-15 North, and the construction of one Express Lane in each direction from the I-15/SR-91 interchange southerly to I-15/Cajalco Road (now part of RCTC I-15 Express Lanes Project [ELP]), and easterly to east of McKinley Street. 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 SR-91 improvements east of I-15, which includes extending an Express Lane east of McKinley Street and adding a general purpose lane to Pierce Street in each direction (the subject project), is a component of the SR-91 CIP that was not constructed with the Initial Phase. The I-15 Express Lanes to be extended from Ontario Avenue to Cajalco Road are included in RCTC's I-15 Express Lanes Project with an anticipated completion date in 2020. The SR-91 Express Lanes median direct connector to and from I-15 North is also a separate project.

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, the SR-241/91 Express Connector, 15/91 Express Lanes Connector, and RCTC's I-15 Express Lanes Project.

Benefits

The SR-91 Improvements east of I-15 will reduce congestion and delays by providing additional SR-91 capacity from I-15 to Pierce Street.

Current Status

Preliminary engineering is complete but may need to be revisited at a future date. The SR-91 Improvements east of I-15 is currently discussed in the SR-91 CIP environmental document for the SR-91 that was completed in 2012.

Schedule and Cost

Anticipated project completion and cost are to be determined.

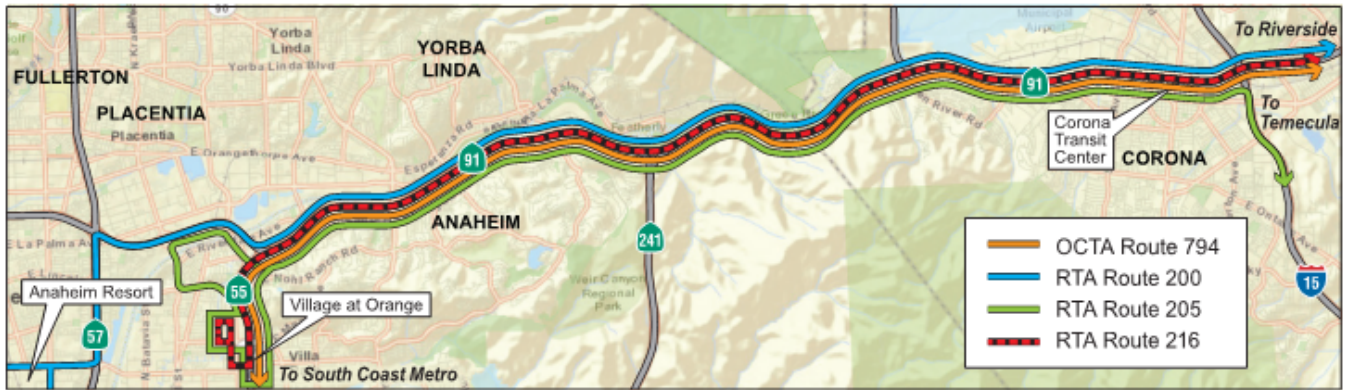
BI-COUNTY PROJECTS

Projects that benefit both Orange and Riverside Counties include: Express Bus service improvements; Metrolink Service and Station Improvements; a 6th General Purpose Lane Addition (SR-241 to SR-71); RCTC Operational Improvements; and a SR-241/ 91 Express Connector. These five (5) projects for implementation across the Orange-Riverside County Boundary are expected to cost in excess of \$243 million (in 2018 dollars, or as noted).

Bi-County Project Summary		Cost (\$M)
Express Bus Service Improvements		5.825
Metrolink Service and Station Improvements		55.8
Sixth GP Lane Addition (SR-241 to SR-71)		TBD
RCTC Operational Improvements		TBD
SR-241/91 Express Connector		181
SUBTOTAL		243+



Express Bus Service Improvements



Project Description

Orange County Transportation Authority (OCTA), working with the Riverside County Transportation Commission (RCTC), and the Riverside Transit Agency (RTA), operate Express Bus service between Riverside and Orange counties. Commuters lack direct transit connections to some Orange County employment centers not served by Metrolink and these Express Bus service 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 above), RTA operated Route 216 since 2010 until January 2018 between the Village at Orange and Downtown Riverside.

New Service

Two new Express Bus routes were implemented by RTA in January 2018 between Riverside County and Orange County including RTA Route 200 (shown in blue above) from San Bernardino/Riverside to the Anaheim Resort. The route provides hourly service on weekdays and 90-120 minute service weekends with a fleet of five buses. RTA Route 205 (shown in green above) from Temecula/Corona to the Village at Orange includes three AM and three PM roundtrips by 3 buses. Existing RTA Route 216 (shown in dashed red above) from the Riverside Downtown Terminal to the Village at Orange was replaced by the new Routes 200 and 205.

Since completion of the 91 Express Lanes, RTA more than doubled its Express Bus service on SR-91. Currently, OCTA operates 11 bus trips per day on SR-91. RTA now operates 46 trips weekdays (up from 18 that Route 216 provided weekdays) and 18 trips weekends (up from 8 provided by Route 216) on SR-91 Express Lanes. Service hours for this expansion is an extra 21,445 hours per year and is being served by five new RTA coaches added to the RTA fleet.

Key Considerations

Operating costs average \$4,825,000 each year and capital costs average \$825,000 per year. 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.

Benefits

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

Current Status

The Express Bus Routes have been fully implemented as of FY18. Changes to routes may be made in the future based on available funding and ridership demand.

Schedule and Cost

The Express Bus Routes have been fully implemented as of FY18, with future potential route changes. Operating costs average \$4,825,000 each year and capital costs average \$825,000 per year.

Metrolink Service and Station Improvements

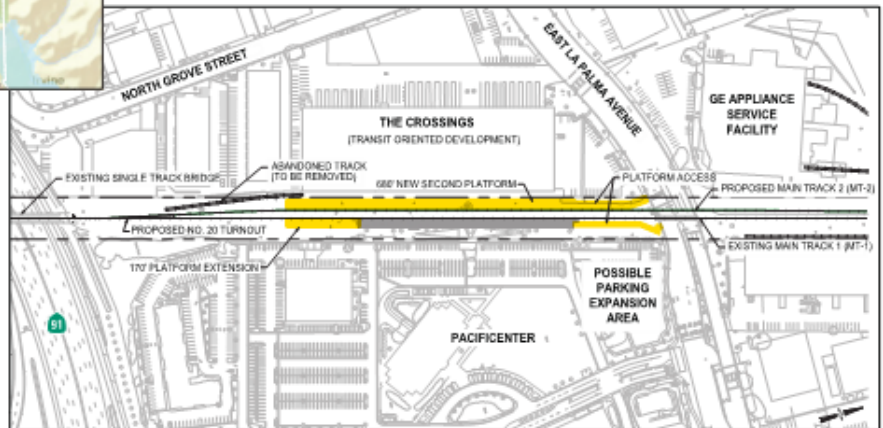
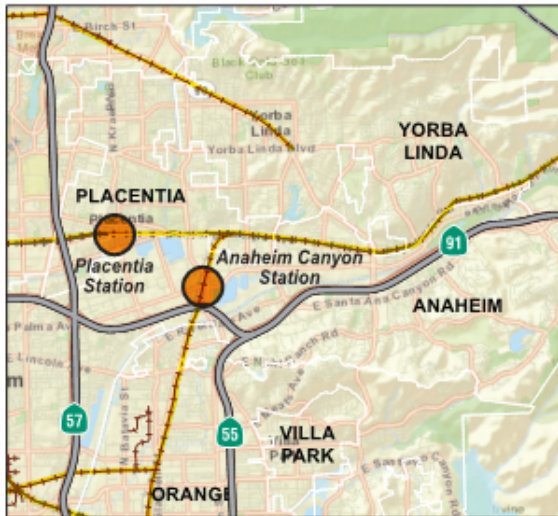


Image source: Anaheim Canyon Station Project Definition Report, February 23, 2015

Project Description

The Anaheim Canyon Station improvement project includes the addition of a second track, platform, extensions of the existing platform, and associated passenger amenities, including ticket vending machines, benches, canopies and signage. This project will improve the safety and on-time performance of Metrolink service, as well as improved pedestrian circulation within the station. OCTA is the lead on all phases of project development, including environmental.

The proposed Placentia Metrolink Station will be a new station on the 91/Perris Valley line. OCTA is the lead for design and construction of the projects.

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, improved efficiency, and fosters train ridership growth in the region which will contribute to congestion relief on SR-91.

Current Status

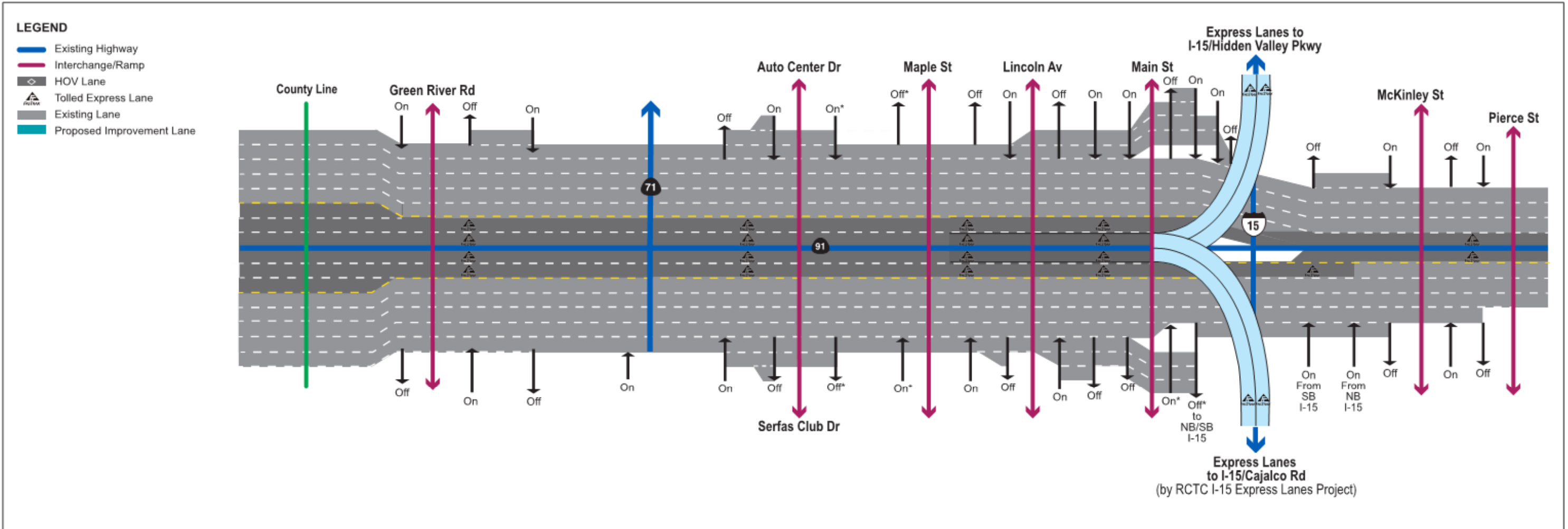
Preliminary plans for the Anaheim Canyon Station project were completed in early 2017. Environmental clearance was completed in June 2017. Final plans, specifications and estimates are expected to be completed in May 2019. Construction for the Anaheim Canyon Station improvements should begin late 2019.

Plans for the new Placentia Station platforms, station amenities, and parking structure are complete. Construction will begin pending negotiations with BNSF Railway.

Schedule and Cost

Construction is anticipated to begin in late 2019 for the Anaheim Canyon Station improvements. Construction for the Placentia Station will begin pending negotiations with BNSF Railway. The project cost is estimated to be \$55,800,000.

RCTC Operational Improvements



Project Description

A range of corridor improvements are being developed to potentially improve traffic operations for the general purpose lanes. The location of these additional operational improvements include: a) SR-91 westbound at the County Line, and b) I-15 northbound at the RCTC 91 Express Lanes entrance. The nature of these operational improvements range from re-striping express lane ingress/egress areas to the construction of an additional auxiliary lane between interchanges.

Key Considerations

Factors considered to advance corridor improvements include expected improvement to general purpose lane congestion, impact to the express lane operations, impact to toll revenue, consistency with 91 Express Lanes toll policy, project implementation cost and schedule, environmental approvals, available funding, necessary approvals by other agencies, and other factors.

Benefits

Potential benefits may include travel time savings and reduced traffic queues for general purpose lane users. Potential benefits may also include congestion reduction and improved mobility for the overall corridor when accounting for both general purpose lane and express lane users. These potential improvements may benefit certain traffic movements, localized corridor areas, and/or the entire corridor.

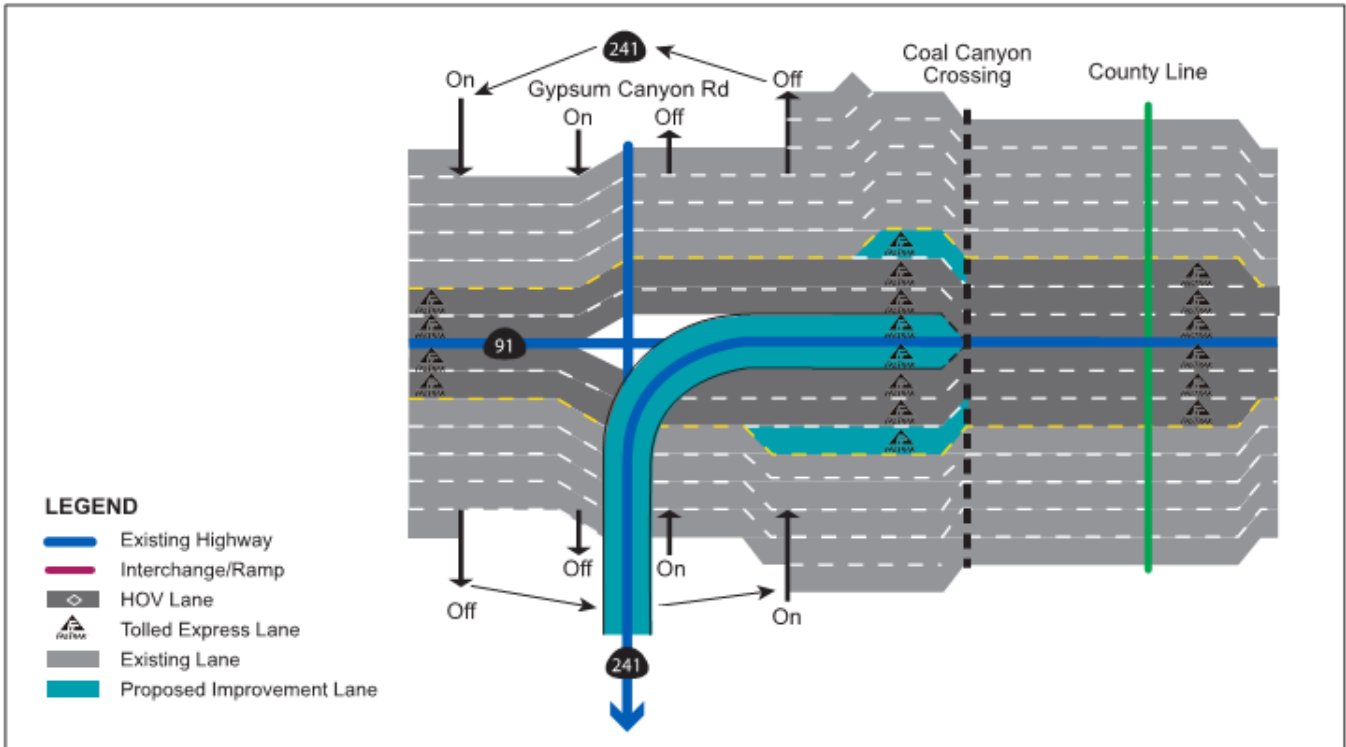
Current Status

Conceptual improvement options have been created and are now being developed. Ongoing analysis and work continues in the following areas: traffic operations, toll revenue impacts, cost estimating, project scheduling, and overall project implementation.

Schedule and Cost

Anticipated full project completion and costs are to be determined.

SR-241/91 Express Connector



Project Description

The SR-241/91 Express 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 on the south side of SR-91 for realignment of EB lanes up to the Coal Canyon Crossing.

Key Considerations

This project was originally planned 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 OCTA 91 Express Lanes, and the RCTC 91 Express Lanes. The project will follow the SR-91 CIP 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 Auxiliary Lanes in each direction. The project would tie into the SR-91 CIP improvements at Coal Canyon. Coordination will be conducted with local agencies to ensure the project avoids impacts to planned bicycle and trail connections on Gypsum Canyon Road per City of Anaheim General Plan and OCTA Commuter Bikeways Strategic Plan.

Benefits

The project will provide connectivity from the 91 Express Lanes and the SR-241 Toll Road. The project improves access to SR-241 and South County for traffic that does not currently utilize the 91 Express Lanes.

Current Status

Preliminary engineering concepts for a SR-241/91 Express Lanes direct connector have been developed by The Foothill/Eastern Transportation Corridor Agency (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. A Project Study Report was initiated in January 2011 and was completed by January 2012. The Draft Project Report and Draft Environmental Document were completed in late-2016, and the Final Project Report and Environmental Document is anticipated to be completed in 2018. Final Engineering has been deferred until the Environmental Document is certified and is anticipated to be completed in 2019.

TCA will continue to work with all affected agencies involved to find a solution that results in the completion of this project and minimizes the impacts to traffic flows.

Schedule and Cost

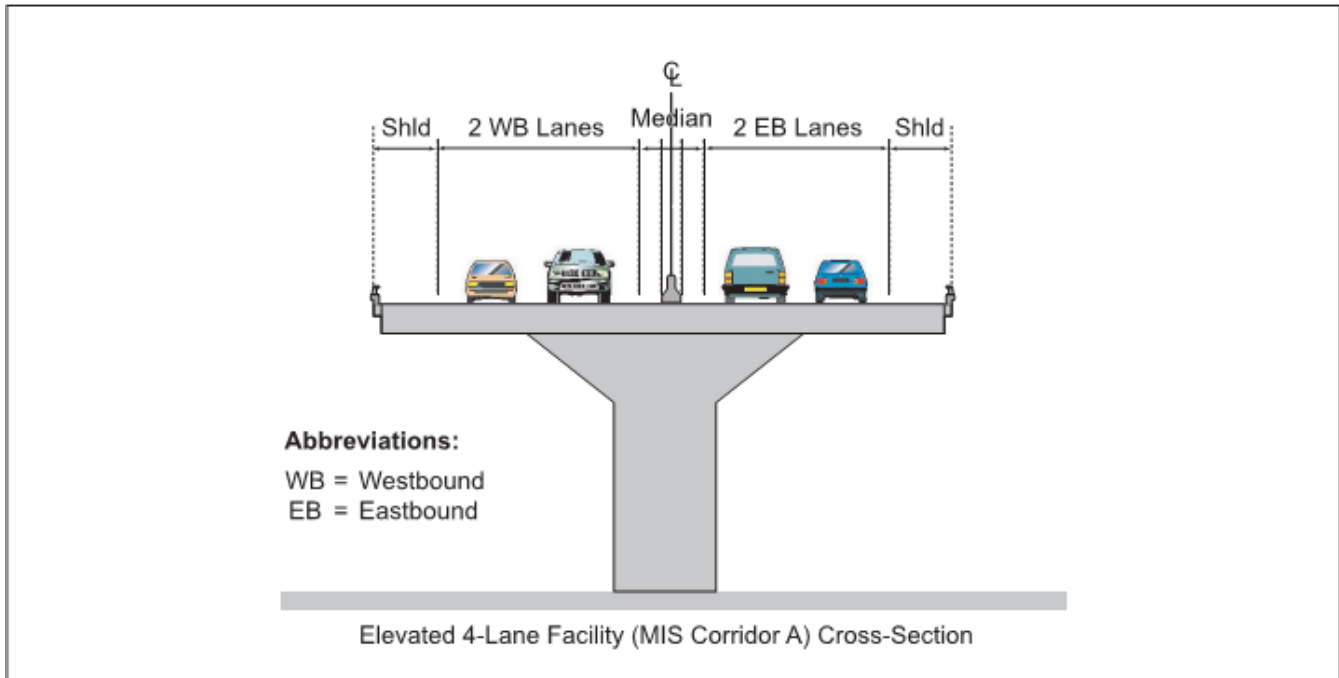
The project could be completed in 2023 pending OCTA and RCTC approval. Cost is estimated to be \$181,000,000.

SECTION 3: APPENDIX A - POST-2035 AND CONCEPTUAL PROJECTS

Concepts for potential Post-2035 implementation (potentially earlier if funding becomes available) 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; the Irvine-Corona Expressway (ICE) 4-lane facility from SR-241/SR-133 to I-15/Cajalco Road (formerly known as MIS Corridor B), WB SR-91 to SB SR-55 Connector Improvements, and EB SR-91 Fifth Lane Addition at SR-241. These 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 MIS Corridor A concept may incorporate projects being developed in the earlier programs as concept components.

Concept Summary	Cost (\$M)
Elevated 4-Lane Facility (MIS Corridor A) from SR-241 to I-15	2,720
Anaheim to Ontario International Airport Maglev High Speed Rail	2,770-3,200
Irvine-Corona Expressway (ICE) 4-Lane Facility from SR-241/SR-133 to I-15/Cajalco Road	8,855
WB SR-91 to SB SR-55 Connector Improvements	75-150
EB SR-91 Fifth Lane Addition at SR-241	31
SUBTOTAL	14,451-14,956

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



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 in the SR-91 corridor. When median connector projects or HOV/HOT projects are constructed and this 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 the extension of 91 Express Lanes to I-15, this project concept 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.

Schedule and Cost

Anticipated project completion is post-2035 and construction cost is estimated to be \$2,720,000,000 (2005 dollars).

Anaheim to Ontario International Airport Maglev High Speed Rail



LEGEND

- Existing Highway
- High Speed Rail Representative Alignment

REPRESENTATIVE ALIGNMENT SHOWN FOR ILLUSTRATIVE PURPOSES ONLY

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 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. 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 for additional considerations. Coordination with Metrolink improvements 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.

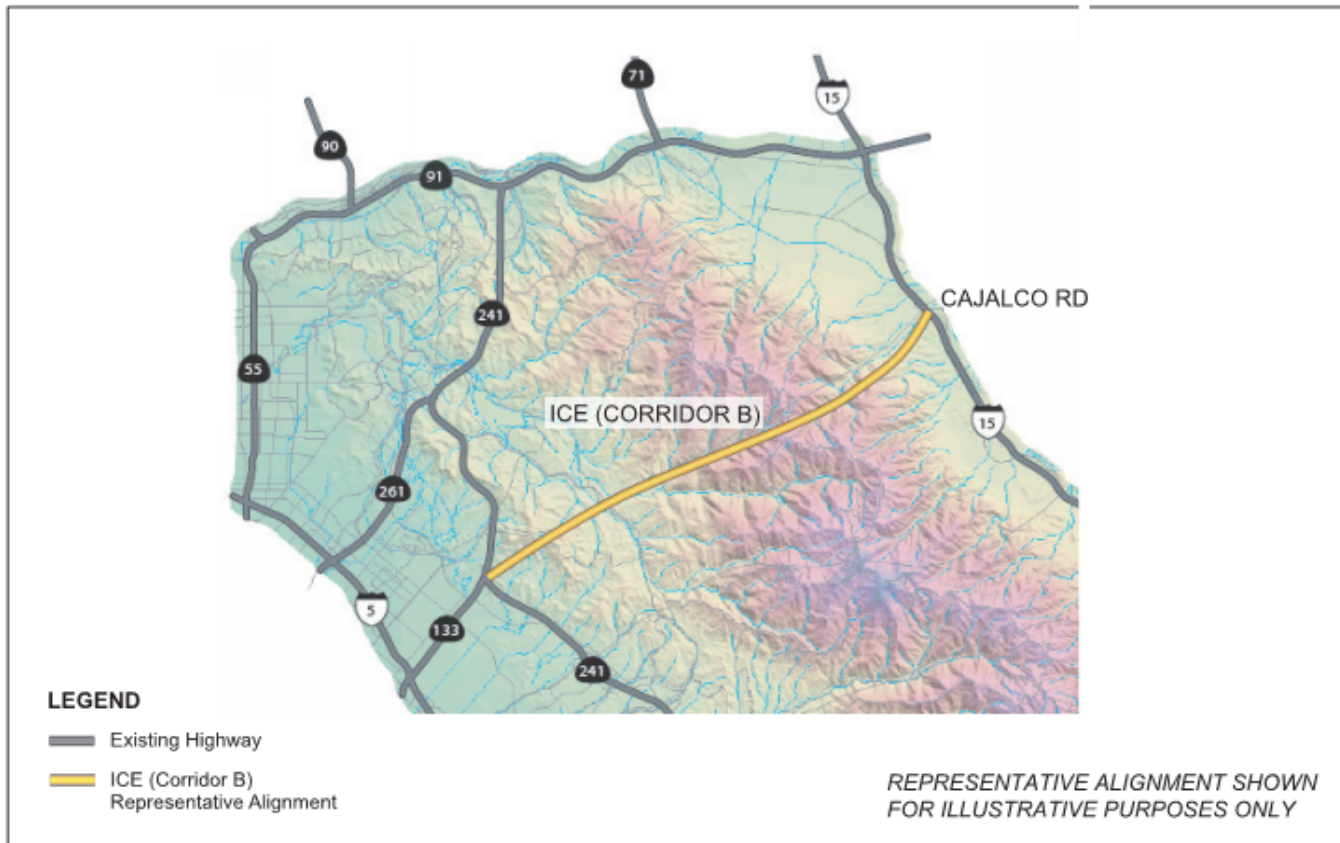
Current Status

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.

Schedule and Cost

Anticipated project completion is 2035 and construction cost is estimated to be from \$2,770,000,000 to \$3,200,000,000 (2012 dollars).

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



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.

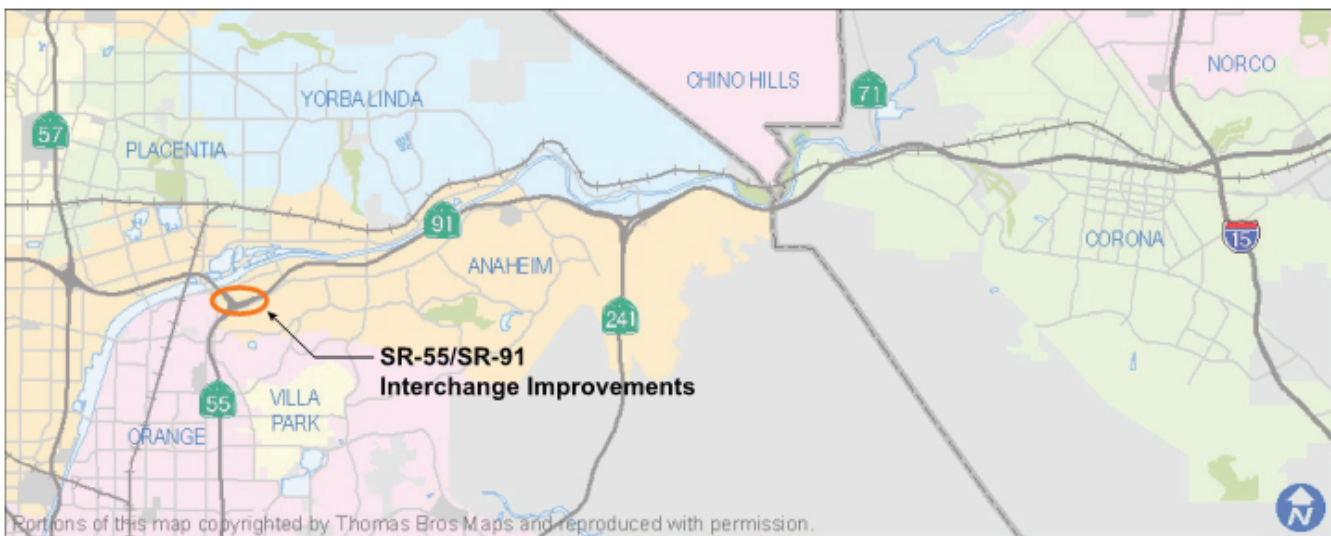
Current Status

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).

Schedule and Cost

Anticipated project completion is post-2035 and construction cost is estimated to be \$8,855,000,000 (2009 dollars).

WB SR-91 to SB SR-55 Connector Improvements



Concept Description

The project consists of operational improvements by modifying the connector to SB SR-55 from WB SR-91. The improvements would extend to Lakeview Avenue to the east and would include a new connector from WB SR-91 to SB SR-55 as a potential right-hand exit.

Key Considerations

Right-of-way impacts, detailed SR-55/SR-91 interchange improvements, and downstream impacts to SR-55 require further evaluation in a subsequent phase of project development. Conceptual design of SR-55/SR-91 would be coordinated with completed improvements at SR-91 and Tustin Avenue, and with the SR-91 Environmental Study Improvements from SR-57 to SR-55.

The study for Project #6 is currently being conducted which includes the SR-55/SR-91 interchange area, however, that project's objective is to primarily improve operations of the SR-91 between SR-55 and SR-57.

Operational enhancements between SR-55 and Lakeview Avenue may provide some benefit for SR-55/SR-91 by addressing WB SR-91 weaving issues.

Benefits

Interchange improvements are anticipated to provide congestion relief for WB SR-91 traffic and potentially improve the connection from WB SR-91 to SB SR-55.

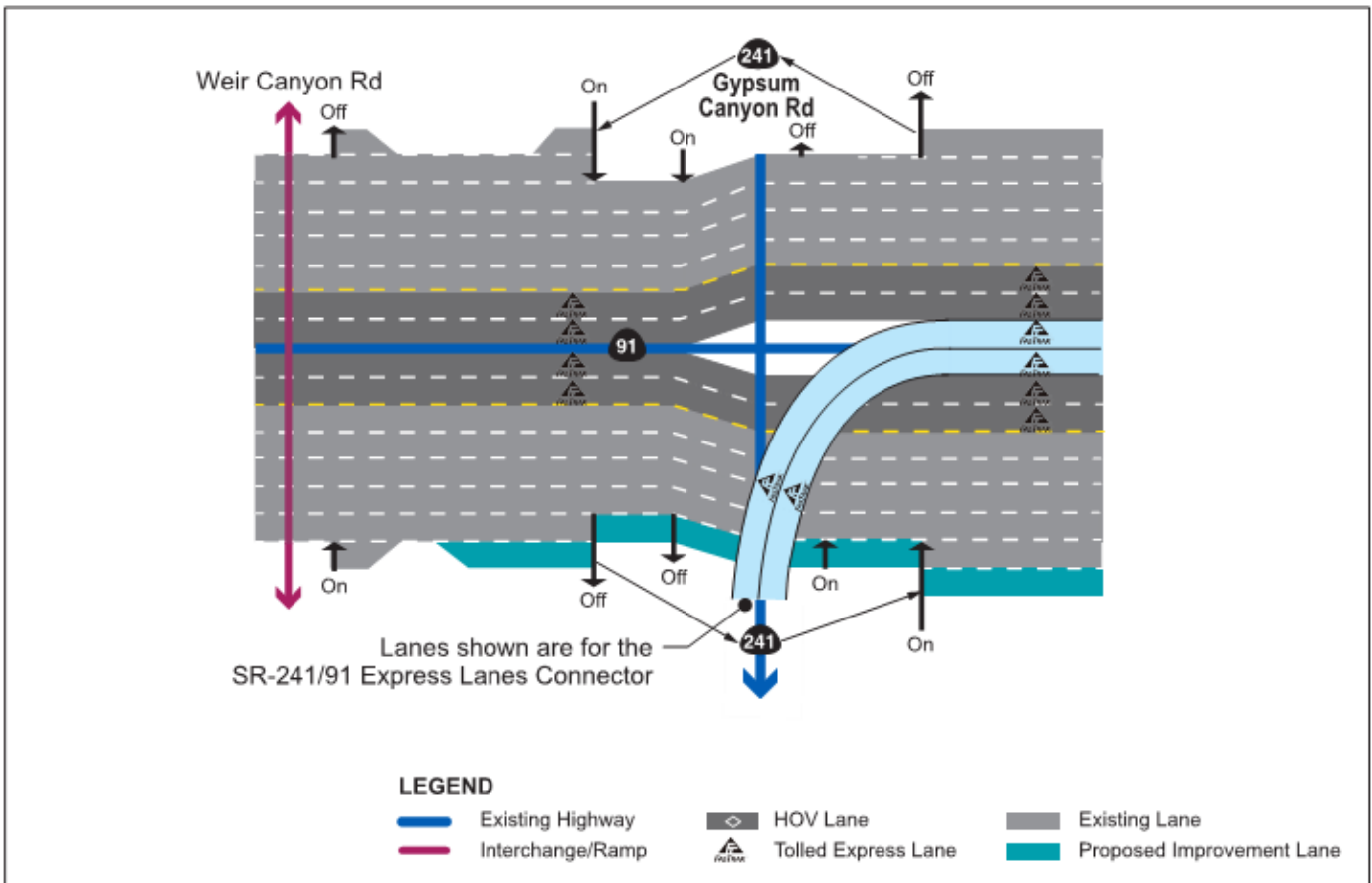
Current Status

SR-55/SR-91 project information was derived from the Final Alternatives Evaluation and Refinement Report, December 2005, by the Riverside County - Orange County Major Investment Study (MIS). Focused SR-91/SR-55 conceptual engineering needs to be scheduled. However, initial conceptual engineering was also studied as part of the SR-91 Feasibility Study Between State Route 57 and State Route 55 Interchange Areas in June 2009.

Schedule and Cost

Anticipated project completion is post-2035 and construction cost is estimated to be from \$75,000,000 to \$150,000,000.

EB SR-91 Fifth Lane Addition at SR-241



Concept Description

The location of the proposed EB SR-91 fifth general purpose (GP) lane addition (The Segment) is on EB SR-91 from Weir Canyon Road to the NB SR-241 Connector. The Segment consists of 4 (four) GP lanes and 2 (two) managed lanes (91 Express Lanes).

Upstream (westerly) from The Segment the EB SR-91 has 5 GP lanes and the 5th lane drops to the SB SR-241 Connector as some traffic volume exits to the SB SR-241. Downstream from The Segment the EB SR-91 gains the 5th lane back as the NB SR-241 Connector merges with SR-91 in a dedicated lane addition. This 5th lane continues beyond the Riverside County line providing enhanced mobility.

Key Considerations

This segment with 4 GP lanes might be creating a traffic choke point due to the decrease of capacity, potentially contributing to significant traffic delays passing through this segment along with other traffic issues such as queue jumping, weaving, merging and operational speed differential. However, additional traffic from NB SR-241 to EB SR-91 and Gypsum Canyon Rd on-ramp suggest balancing the number of lanes should be carefully examined. As such, additional capacity will enhance EB freeway operations along this Segment.

Benefits

1. Extends the existing 5th EB GP lane easterly and ties it to the existing 5th lane downstream. This could provide capacity enhancement and may result in removing an existing choke point. Significant delay savings is anticipated.
2. Potentially eliminate queue jumping in this area from EB SR-91 as well as Weir Canyon Rd.
3. Potentially reduce speed differential between through lanes, thus creating a more balanced flow.
4. Potentially provide balanced lane utilization at high traffic demand area.

Current Status

Additional traffic analysis and study is required to confirm the benefits to EB SR-91 by the proposed improvements. This location was identified by Caltrans as a high congestion location in the County. The concept is intended to improve the choke point that exists due to the presence of a 4 lane segment between 5 lane freeway segments. The project cost is proposed to be funded by SB-1 Program with a target RTL of 2025.

Schedule and Cost

The project cost is proposed to be funded by SB-1 Program funds with an anticipated Ready to List (RTL) date of 2025 and construction estimated as 2027. The total project cost is estimated to be \$31,250,000.

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 th GP Lane in Each Direction	December 2012
B-5	SR-91 WB Lane at Tustin Avenue	April 2016
B-6	Metrolink Service Improvements	June 2016
B-7	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	July 2017

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
Total Project Cost	\$ 24,301,000

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.

Project Schedule Caltrans Equivalents:

Preliminary Engineering = PID

Environmental = PA/ED

Design = PS&E

Current Status

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

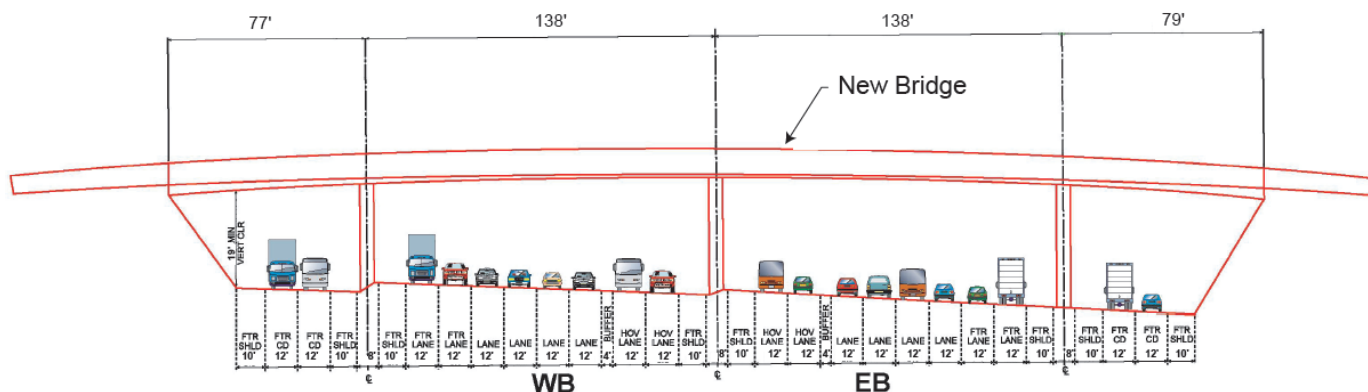
Abbreviations:

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

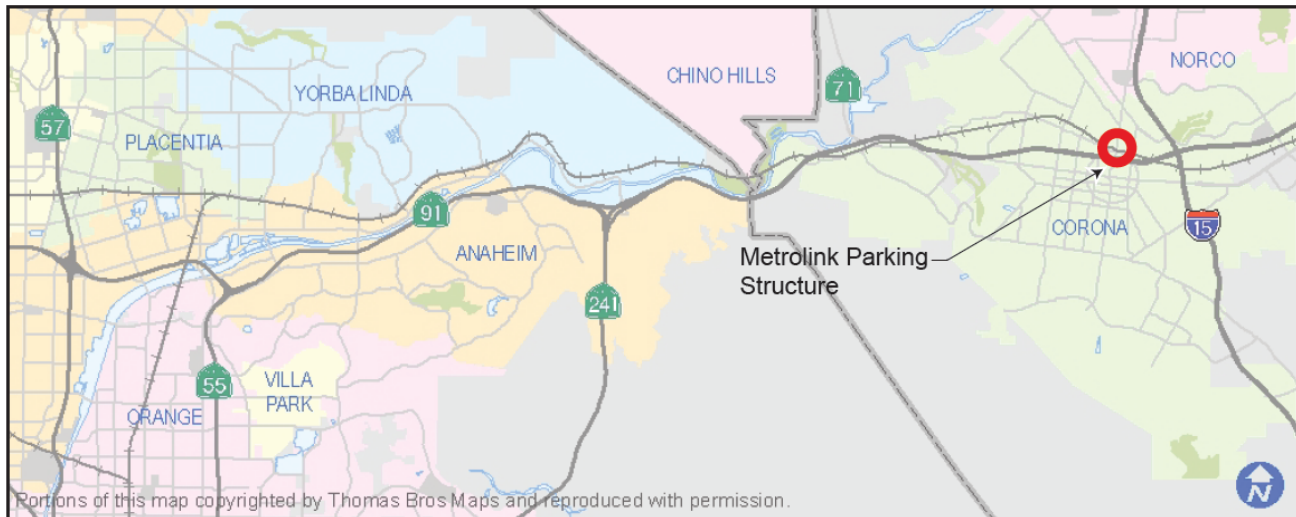
Proposed improvements were constructed within existing right of way. Currently there are 700 users of the facility, 200 more that were previously able to accommodate. Additionally RCTC has opened up the lot to park and ride carpools and vanpools and has issued over 120 permits for carpoolers to use the 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
Total Project Cost	\$ 51,200,000

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

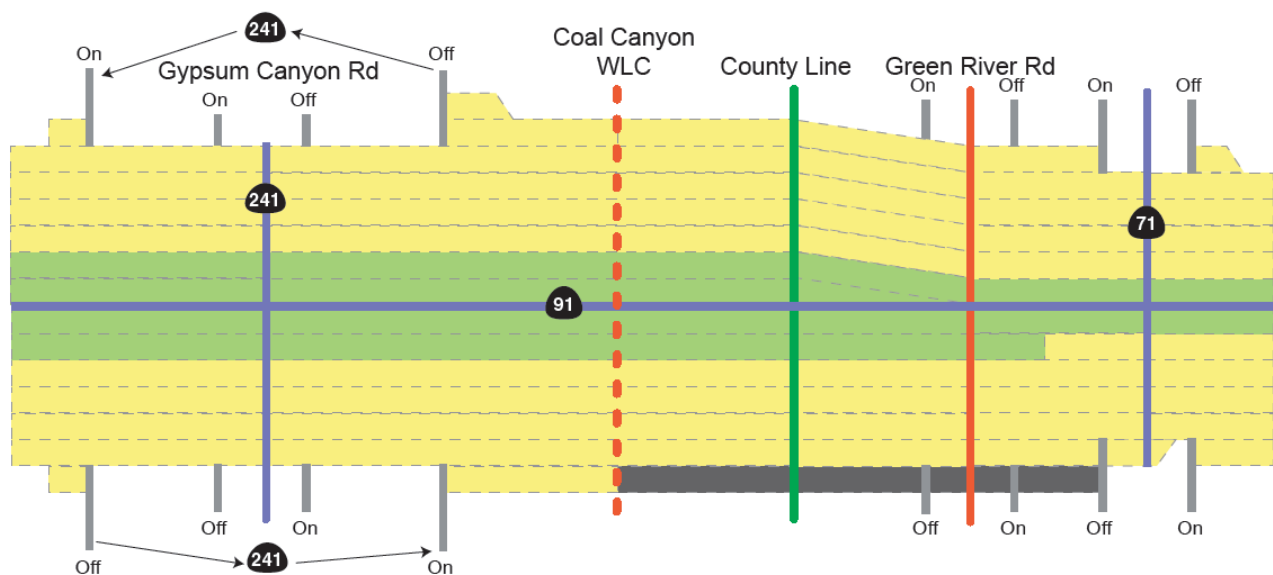
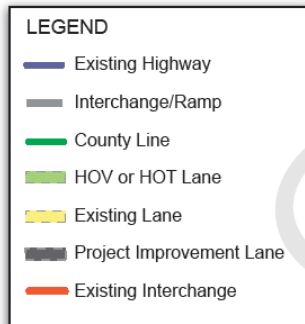
Coordination with the SR-91 Corridor Improvement Projects (Project #3 and #11) will be required. Staged construction would be required for all ramp reconstruction and freeway widening. Freeway operations would most likely be affected by this project, however, freeway lane closures are not anticipated. 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.



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
Total Project Cost	\$ 85,217,000

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.

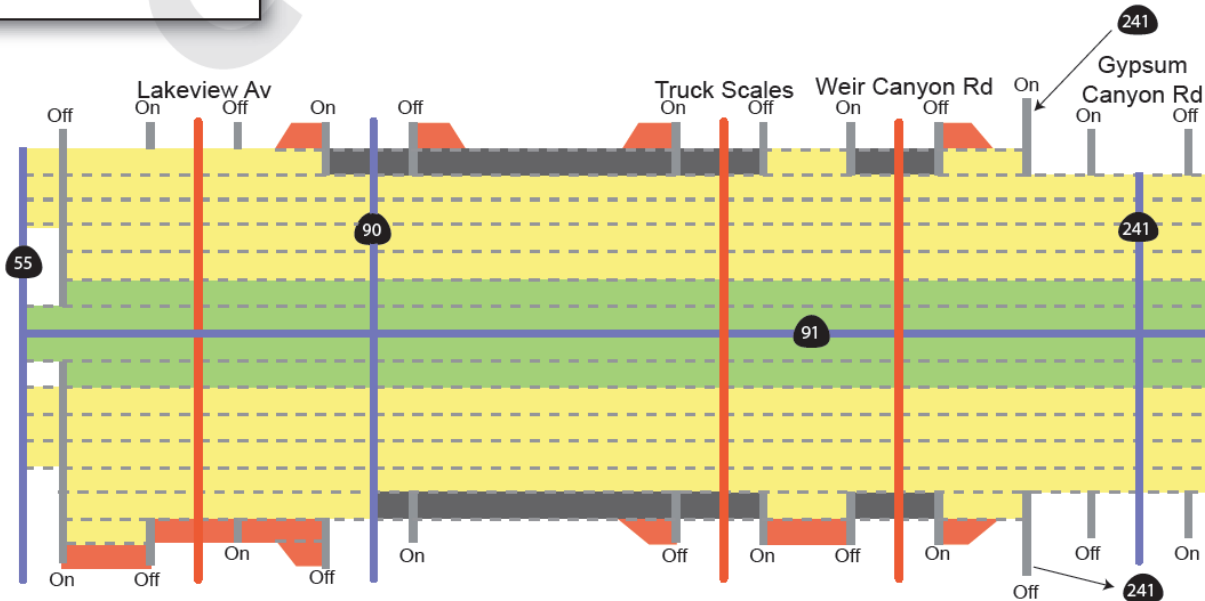
Benefits

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

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



SR-91 WB Lane at Tustin Avenue

Appendix Project No: B-5 Actual Completion: April 2016

Project Cost Estimate*

Capital Cost	\$ 22,218,000
Support Cost	\$ 16,382,000
R/W Cost	\$ 4,682,000
Total Project Cost	\$ 43,282,000

Project Schedule

Preliminary Engineering	Completed
Environmental	Completed
Design	Completed
Construction	Completed

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. This project includes approximately 1.1 lane miles.

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

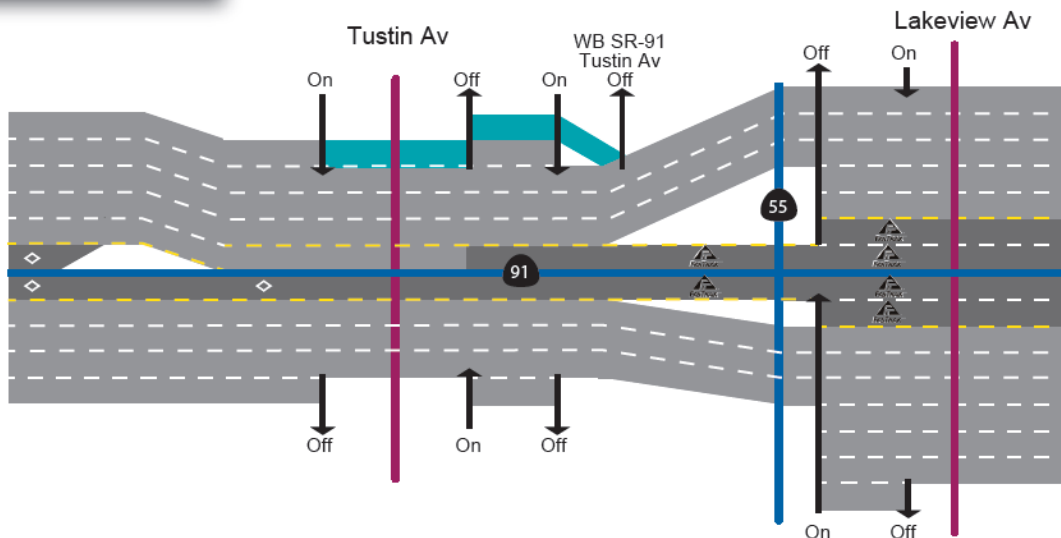
The project would reduce or eliminate operational problems and deficiencies on this section of WB SR-91 including weaving and merging maneuvers. This project would also address choke-point conditions, which are caused primarily by extensive weaving between the NB SR-55 to WB SR-91 connector and the WB 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. Contract acceptance and open to traffic in May 2016.

LEGEND

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



Metrolink Service Improvements

Appendix Project No: B-6	
Actual 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	
Complete 2016	
* Costs from OCTA and RCTC (in 2015 dollars)	

Project Description

There are sixteen daily trains that run on the IEOC Line and nine trains running on the Los Angeles to Riverside portion of 91/Perris Valley (91/PV) Line for a total of 25 daily trains. The long-term service improvements will include 24 IEOC trains by 2030.

The Perris Valley portion of the 91 Line extends Metrolink service southeast by 25 miles, from Riverside to Perris. The project is located within the right of way of the existing San Jacinto Branch Line through Riverside, Moreno Valley and Perris. Construction began in October 2013, cost approximately \$248 million, and the extension opened to the public in June 2016. The inaugural schedule (December 2015) includes nine trains through to Los Angeles and 12 between Perris and Riverside.

Key Considerations

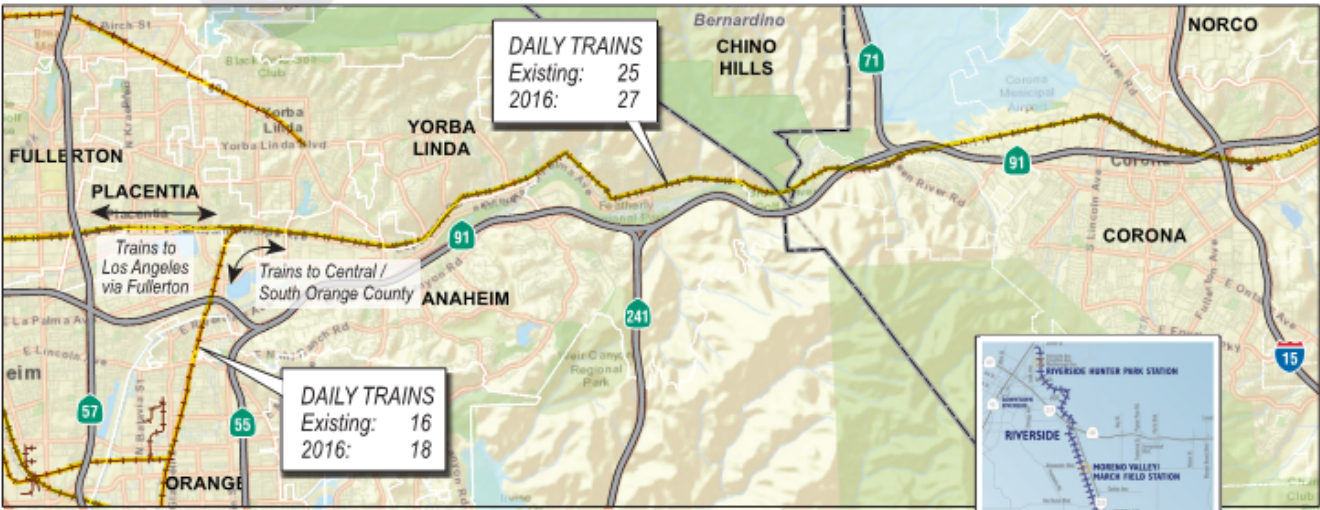
Construction of the new Placentia Metrolink station will improve passenger access to the 91/PV Line, by creating a station between Fullerton and Corona. Improvements at the Anaheim Canyon station are designed to account for future expansion of the IEOC rail service.

Benefits

Enables development of expanded Metrolink service, improved efficiency, and fosters train ridership growth in the region, which will contribute to congestion relief on SR-91.

Current Status

Two additional IEOC Line roundtrips were added in late 2015, and in mid-2016, nine trains began service on the Perris Valley extension to the 91/PV Line.



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: B-7

Actual Completion: 2017

Project Cost Estimate*

Total Capital Cost	\$ 1,161,000,000
Support Cost	\$ 246,000,000
Total Project Cost	\$ 1,407,000,000

Project Schedule**

Preliminary Engineering	Completed
Environmental	Completed
Design/Construction	2013-2017

* Cost obtained for Initial Phase is from RCTC (2014 dollars)

** Schedule for Initial Phase; subsequent phase for Ultimate Project anticipated in 2035

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 #5), 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: I-15/SR-91 median North Direct Connector, and I-15 Express Lanes North to Hidden Valley Parkway (Project #9); 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

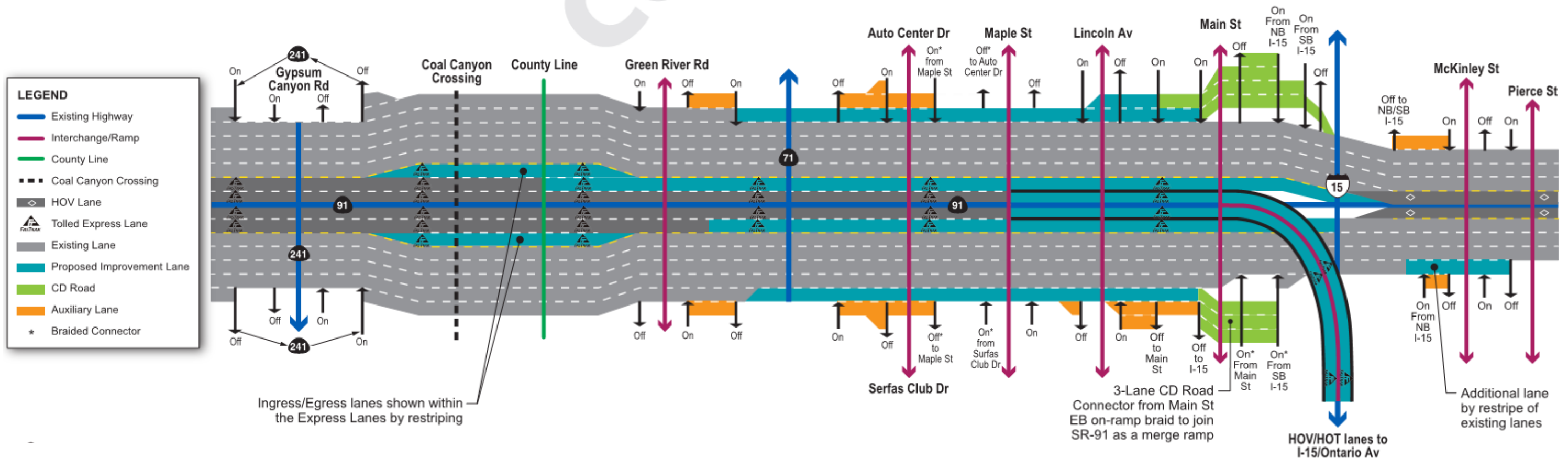
Coordination among many of the SR-91 freeway projects that overlap the project limits is critical to successfully delivering these projects on schedule and within budget. Designing to accommodate future projects is a recurring theme for each of these projects. Minimizing conflicts in scope between projects 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, the SR-241/91 Express Connector, 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 operations 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. The project is anticipated to open to traffic in Spring 2017 with final project acceptance anticipated at the end of 2017.



The following documents and resources were used in the development of the 2018 Plan. Data was provided by OCTA, RCTC, Caltrans Districts 8 and 12, Transportation Corridor Agencies (TCA), other agencies and online resources.

-
- Measure M Next 10 Delivery Plan (Next 10 Plan), November 14, 2016
- Riverside Transit Agency, Ten-Year Transit Network Plan, January 22, 2015
- PSR-PDS on Route 91 Between SR-57 and SR-55, October 2014
- PS&E for “Westbound State Route 91 Auxiliary Lane from the NB SR-55/WB SR-91 Connector to the Tustin Avenue Interchange”, 2014
- PS&E for Initial SR-91 CIP Project, 2014
- California Transportation Commission, Corridor Mobility Improvement Account (CMIA), Amended December 2012
- M2020 Plan (Measure M), September 2012
- 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
- 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
- Feasibility Evaluation Report for Irvine-Corona Expressway Tunnels, December 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
- Orange County Transportation Authority Renewed Measure M Transportation Investment Plan, November 2006
- Riverside County-Orange County Major Investment Study (MIS) – Final Project Report: Locally Preferred Strategy Report, January 2006
- California – Nevada Interstate Maglev Project Report, Anaheim-Ontario Segment; California-Nevada Super Speed Train Commission, American Magline Group, August 2003
- Route Concept Reports for SR-91, Caltrans Districts 8 and 12
- Various Preliminary Drawings and Cross Sections, Caltrans Districts 8 and 12