ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017
PROJECT BASELINE AGREEMENT

State Route 91 Operational and Multimodal Improvements

Resolution TCEP-P-2324-02B
(to be completed by CTC)

1. FUNDING PROGRAM

- ☐ Active Transportation Program
- ☐ Local Partnership Program (Competitive)
- ☐ Solutions for Congested Corridors Program
- ☐ State Highway Operation and Protection Program
- ☑ Trade Corridor Enhancement Program

2. PARTIES AND DATE

2.1 This Project Baseline Agreement (Agreement) effective on 12/7/2023 (will be completed by CTC), is made by and between the California Transportation Commission (Commission), the California Department of Transportation (Caltrans), the Project Applicant, Orange County Transportation Authority (OCTA), and the Implementing Agency, OCTA and Caltrans, sometimes collectively referred to as the "Parties".

3. RECITAL

3.1 Whereas at its 6/28/2023 meeting the Commission approved the Trade Corridor Enhancement Program and included in this program of projects the State Route 91 Operational and Multimodal Improvements, the parties are entering into this Project Baseline Agreement to document the project cost, schedule, scope and benefits, as detailed on the Project Programming Request Form attached hereto as ***Exhibit A***, the Project Report attached hereto as ***Exhibit B***, the Performance Metrics Form, if applicable, attached hereto as ***Exhibit C***, as the baseline for project monitoring by the Commission.

3.2 The undersigned Project Applicant certifies that the funding sources cited are committed and expected to be available; the estimated costs represent full project funding; and the scope and description of benefits is the best estimate possible.

4. GENERAL PROVISIONS

The Project Applicant, Implementing Agency, and Caltrans agree to abide by the following provisions:

4.1 To meet the requirements of the Road Repair and Accountability Act of 2017 (Senate Bill [SB] 1, Chapter 5, Statutes of 2017) which provides the first significant, stable, and on-going increase in state transportation funding in more than two decades.

4.2 To adhere, as applicable, to the provisions of the Commission:

- ☐ Resolution _____, "Adoption of Program of Projects for the Active Transportation Program", dated _____
- ☐ Resolution _____, "Adoption of Program of Projects for the Local Partnership Program", dated _____
- ☐ Resolution _____, "Adoption of Program of Projects for the Solutions for Congested Corridors Program", dated _____
- ☐ Resolution _____, "Adoption of Program of Projects for the State Highway Operation and Protection Program", dated _____
- ■ Resolution G-23-46, "Adoption of Program of Projects for the Trade Corridor Enhancement Program", dated 6/28/2023

4.3 All signatories agree to adhere to the Commission's Guidelines. Any conflict between the programs will be resolved at the discretion of the Commission.

4.4 All signatories agree to adhere to the Commission's SB 1 Accountability and Transparency Guidelines and policies, and program and project amendment processes.

4.5 OCTA (non-SHOPP) and Caltrans (SHOPP) agrees to secure funds for any additional costs of the project.

4.6 Caltrans District 12 agrees to report to Caltrans on a quarterly basis; on the progress made toward the implementation of the project, including scope, cost, schedule, and anticipated benefits/performance metric outcomes.

4.7 Caltrans agrees to prepare program progress reports on a on a semi-annual basis and include information appropriate to assess the current state of the overall program and the current status of each project identified in the program report.

4.8 Caltrans District 12 agrees to submit a timely Completion Report and Final Delivery Report as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.9 OCTA and Caltrans District 12 agrees to submit a timely Project Performance Analysis as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.10 All signatories agree to maintain and make available to the Commission and/or its designated representative, all work related documents, including without limitation engineering, financial and other data, and methodologies and assumptions used in the determination of project benefits and performance metric outcomes during the course of the project, and retain those records for six years from the date of the final closeout of the project. Financial records will be maintained in accordance with Generally Accepted Accounting Principles.

4.11 The Inspector General of the Independent Office of Audits and Investigations has the right to audit the project records, including technical and financial data, of the Department of Transportation, the Project Applicant, the Implementing Agency, and any consultant or sub-consultants at any time during the course of the project and for six years from the date of the final closeout of the project, therefore all project records shall be maintained and made available at the time of request. Audits will be conducted in accordance with Generally Accepted Government Auditing Standards.

5. SPECIFIC PROVISIONS AND CONDITIONS

5.1 Project Schedule and Cost
See Project Programming Request Form, attached as Exhibit A.

5.2 Project Scope
See Project Report or equivalent, attached as Exhibit B. At a minimum, the attachment shall include the cover page, evidence of approval, executive summary, and a link to or electronic copy of the full document.

5.3 Performance Metrics
See Performance Metrics Form, if applicable, attached as Exhibit C.

5.4 Additional Provisions and Conditions *(Please attach an additional page if additional space is needed.)*

Caltrans is delivering a multi-asset project under the same construction contract using SHOPP funds. SHOPP funds will be tracked and expended separately from the TCEP funds.

Attachments:

Exhibit A: Project Programming Request Form
Exhibit B: Project Report
Exhibit C: Performance Metrics Form *(if applicable)*

SIGNATURE PAGE
TO
PROJECT BASELINE AGREEMENT

Project Name: State Route 91 Operational and Multimodal Improvements

Resolution: TCEP-P-2324-02B

(to be completed by CTC)

Darrell Johnson — Digitally signed by Darrell Johnson DN: OU=OCTA, O=Orange County Transportation Authority, CN=Darrell Johnson, E=djohnson@octa.net Reason: I am the author of this document Location: Date: 2023.10.27 09:23:49-07'00' Foxit PDF Editor Version: 12.1.3

10/27/2023
Date

Darrell E. Johnson

Chief Executive Officer

Project Applicant

Chris Flynn — Digitally signed by Chris Flynn Date: 2023.10.27 16:14:45 -07'00'

10/27/2023
Date

Mario Orso (Acting D12 District Director) Chris Flynn signing for Mario Orso

Caltrans District 12

Implementing Agency

Chris Flynn — Digitally signed by Chris Flynn Date: 2023.10.27 16:15:17 -07'00'

10/27/2023
Date

Mario Orso (Acting D12 District Director) Chris Flynn signing for Mario Orso

District Director
California Department of Transportation

11/27/2023
Date

Tony Tavares
Director
California Department of Transportation

03/19/2024
Date

Tanisha Taylor

Executive Director
California Transportation Commission

Exhibit B:

1. PPNO 4600A SR 91 Operational and Multimodal Improvements
    a. Link to Full Project Report: https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:e4917215-cb77-45cc-acbb-4df567c9eafc
    b. Additional link for Project Report: https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:04414a88-2caa-4cb4-a5ef-b14713aba568
    c. Signed Environmental Document
    d. Updated Cost Estimate
    e. Email from CTC Hannah Walter with confirmation for ePPR changes

State Route 91 Improvement Project between State Route 57 and State Route 55

ORANGE COUNTY, CALIFORNIA
DISTRICT 12 – ORA – 91 (PM 4.7/R10.8)
DISTRICT 12 – ORA – 57 (PM 15.5/16.2)
DISTRICT 12 – ORA – 55 (PM 17.4/R17.9)
EA 0K9800/12-0002-0098

Initial Study with Mitigated Negative Declaration/ Environmental Assessment with Finding of No Significant Impact

Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans.

June 2020

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General Information about This Document

The California Department of Transportation (Caltrans) District 12, as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study with Mitigated Negative Declaration/Environmental Assessment, which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Orange County, California. Caltrans is the lead agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

The Initial Study/Environmental Assessment was circulated to the public for 30 days between November 21, 2018 and December 21, 2018. Comments received during this period are included in Appendix I. Elsewhere throughout this document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated. A copy of the document is available for review at Caltrans District 12, 1750 E. 4th Street, Suite 100, Santa Ana, CA 92705.

If you have questions or would like a copy of the document, please email: Kathleen.Dove@dot.ca.gov

Alternative Formats:

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please contact Andy Perez at District 12's Public Information Office by phone at (657) 328-6256 (Voice), or use California Relay Service 1 (800) 735-2929 (TTY to Voice), 1 (800) 735-2922 (Voice to TTY), 1 (800) 855-3000 (Spanish TTY to Voice and Voice to TTY), 1-800-854-7784 (Spanish and English Speech-to-Speech) or 711.

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SCH# 2018111042
12-ORA-91 PM 4.7/R10.8
12-ORA-57 PM 15.5/16.2
12-ORA-55 PM 17.4/R17.9
0K9800
1200020098

Improve traffic conditions with widening of freeway mainline, primarily in the eastbound direction, and modification to various interchanges, connectors, ramps, and intersections.
State Route 91 from Post Mile (PM) 4.7 to R10.8, State Route 57 (SR-57) from PM 15.5 to PM 16.2, and State Route (SR-55) from PM 17.4 to PM R17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California.

INITIAL STUDY with MITIGATED NEGATIVE DECLARATION/ ENVIRONMENTAL ASSESSMENT with FINDING OF NO SIGNIFICANT IMPACT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C), 49 USC 303, and/or 23 USC 138

THE STATE OF CALIFORNIA
Department of Transportation

RESPONSIBLE AGENCY:
California Transportation Commission
and
Orange County Transportation Authority

Christopher Flynn

6/22/20

Chris Flynn
Deputy District Director
Department of Transportation District 12
1750 E. 4th Street, Suite 100
Santa Ana, CA 92705
NEPA and CEQA Lead Agency

Date of Approval

The following persons may be contacted for additional information concerning this document:

Kathleen Dove, Generalist Branch
Caltrans District 12 – Division of Environmental Analysis
1750 E. 4th Street, Suite 100
Santa Ana, CA 92705
(657) 328-6000

100% COST ESTIMATE (M2 FUNDING)

11/3/2023
EA 12-0K981
PM R 9.2 / R11.4

PROJECT DESCRIPTION

SR-91 SEGMENT 1 (COMBINED MAP/M2) IMPROVEMENT IN ORANGE COUNTY CITY OF ANAHEIM FROM 0.7 MILE WEST TO 1.3 MILE EAST OF LAKEVIEW AVENUE OVERCROSSING

	Cost in 2023 $
	M2 FUNDING
ROADWAY ITEMS	**$45,491,367**
STRUCTURE ITEMS	**$21,310,000**
SUBTOTAL CONSTRUCTION	**$ 66,801,367**
SUPPLEMENTAL ITEMS	**$ 1,341,690**
STATE FURNISHED ITEMS	**$ 2,471,201**
RIGHT OF WAY AND UTILITIES	**$ 1,715,445**
TOTAL PROJECT COST	**$ 72,329,703**

	Cost in 2025 $
3.5% ESCALATED COST (2.0 yrs)	***$ 77,481,386***

SR-91 - Lakeview IC Improvements
100% Project Cost Estimate (M2 FUNDING)

Item No	Final Pay Item (F)	Item Description	Unit Pay	Est. Quantity	Unit Price	Amount
010636		CONCRETE BARRIER (TYPE 60MG MODIFIED)	LF	590	$ 216.00	$ 127,440
013754		ALTERNATIVE CRASH CUSHION TL-2	EA	2	$ 30,000.00	$ 60,000
015019		ALTERNATIVE CRASH CUSHION TL-3	EA	4	$ 50,000.00	$ 200,000
015063	F	CONCRETE BARRIER (TYPE 836S)	LF	430	$ 200.00	$ 86,000
015064	F	CONCRETE BARRIER (TYPE 836SV)	LF	478	$ 200.00	$ 95,600
015299		ALTERNATIVE IN-LINE TERMINAL TL-3	EA	4	$ 3,950.00	$ 15,800
015469		TEMPORARY FIBER OPTIC CABLE SYSTEMS	LS	1	$ 501,000.00	$ 501,000
037068	F	STRUCTURAL CONCRETE (JUNCTION STRUCTURE)	CY	38	$ 2,800.00	$ 106,400
038223		CONCRETE BARRIER (TYPE 60MD MODIFIED)	LF	200	$ 107.00	$ 21,400
046940		CONCRETE BARRIER (TYPE 60MC MODIFIED)	LF	8	$ 270.00	$ 2,160
070030		LEAD COMPLIANCE PLAN	LS	1	$ 12,700.00	$ 12,700
080060		LEVEL 2 CRITICAL PATH METHOD SCHEDULE	LS	1	$ 50,000.00	$ 50,000
090100		TIME-RELATED OVERHEAD (WDAY)	WDAY	575	$ 3,500.00	$ 2,012,500
090205		DISPUTE RESOLUTION BOARD ON-SITE MEETING	EA	10	$ 6,000.00	$ 60,000
090210		HOURLY OFF-SITE DISPUTE RESOLUTION BOARD RELATED TASK	HR	40	$ 200.00	$ 8,000
090214		SAFETY QUALITY CONTROL MANAGER (LS)	LS	1	$ 552,000.00	$ 552,000
120090		CONSTRUCTION AREA SIGNS	LS	1	$ 100,000.00	$ 100,000
120100		TRAFFIC CONTROL SYSTEM	LS	1	$ 395,000.00	$ 395,000
120103		STATIONARY IMPACT ATTENUATOR VEHICLE	DAY	39	$ 750.00	$ 29,250
120120		TYPE III BARRICADE	EA	46	$ 105.00	$ 4,830
120149		TEMPORARY PAVEMENT MARKING (PAINT)	SQFT	2910	$ 2.89	$ 8,410
120159		TEMPORARY TRAFFIC STRIPE (PAINT)	LF	214,400	$ 0.20	$ 42,880
120165		CHANNELIZER (SURFACE MOUNTED)	EA	55	$ 46.00	$ 2,530
120204		PORTABLE RADAR SPEED FEEDBACK SIGN SYSTEM DAY	EA	1150	$ 48.50	$ 55,775
120300		TEMPORARY PAVEMENT MARKER	EA	5405	$ 2.10	$ 11,351
120320		TEMPORARY BARRIER SYSTEM	LF	24,960	$ 20.00	$ 499,200
128651		PORTABLE CHANGEABLE MESSAGE SIGN (EA)	EA	23	$ 3,750.00	$ 86,250
129100		TEMPORARY CRASH CUSHION MODULE	EA	190	$ 202.00	$ 38,380
129110		TEMPORARY CRASH CUSHION	EA	11	$ 6,000.00	$ 66,000
129150		TEMPORARY TRAFFIC SCREEN	LF	25,000	$ 4.00	$ 100,000
129152		TEMPORARY RADAR SPEED FEEDBACK SIGN SYSTEM	EA	2	$ 30,000.00	$ 60,000
130100		JOB SITE MANAGEMENT	LS	1	$ 500,000.00	$ 500,000
130300		PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	$ 10,000.00	$ 10,000
130320		STORM WATER SAMPLING AND ANALYSIS DAY	EA	18	$ 1,200.00	$ 21,600
130330		STORM WATER ANNUAL REPORT	EA	3	$ 2,000.00	$ 6,000
130500		TEMPORARY EROSION CONTROL BLANKET	SQYD	1000	$ 15.00	$ 15,000
130505		MOVE-IN/MOVE-OUT (TEMPORARY EROSION CONTROL)	EA	12	$ 650.00	$ 7,800
130520		TEMPORARY HYDRAULIC MULCH	SQYD	2000	$ 5.00	$ 10,000
130610		TEMPORARY CHECK DAM	LF	530	$ 11.00	$ 5,830
130620		TEMPORARY DRAINAGE INLET PROTECTION	EA	96	$ 219.00	$ 21,024
130640		TEMPORARY FIBER ROLL	LF	5470	$ 3.85	$ 21,060
130680		TEMPORARY SILT FENCE	LF	1680	$ 5.00	$ 8,400
130710		TEMPORARY CONSTRUCTION ENTRANCE	LS	1	$ 12,000.00	$ 12,000
130730		STREET SWEEPING	LS	1	$ 30,000.00	$ 30,000
130900		TEMPORARY CONCRETE WASHOUT	LS	1	$ 8,000.00	$ 8,000
140003		ASBESTOS COMPLIANCE PLAN	LS	1	$ 10,000.00	$ 10,000
141001		HEALTH AND SAFETY PLAN	LS	1	$ 5,000.00	$ 5,000
141120		TREATED WOOD WASTE	LB	52,400	$ 0.50	$ 26,200
148005		NOISE MONITORING	LS	1	$ 5,000.00	$ 5,000
153248		REMOVE CONCRETE (MISCELLANEOUS)	SQFT	6530	$ 4.50	$ 29,385
170103		CLEARING AND GRUBBING (LS)	LS	1	$ 13,000.00	$ 13,000
190101		ROADWAY EXCAVATION	CY	49,490	$ 33.00	$ 1,633,170
192001	F	STRUCTURE EXCAVATION	CY	160	$ 240.00	$ 38,400
192048	F	STRUCTURE EXCAVATION, RETAINING WALL (SOUND WALL)	CY	4978	$ 94.00	$ 467,932
193001	F	STRUCTURE BACKFILL	CY	52	$ 350.00	$ 18,200
193020	F	STRUCTURE BACKFILL, RETAINING WALL (SOUND WALL)	CY	6180	$ 128.00	$ 791,040
193031	F	PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	483	$ 100.00	$ 48,300
194001		DITCH EXCAVATION	CY	790	$ 120.00	$ 94,800
200114		ROCK BLANKET	SQFT	45,950	$ 9.60	$ 441,120
200122		WEED GERMINATION	SQYD	248,000	$ 0.80	$ 198,400
200123		CULTIVATION	SQYD	248,000	$ 0.80	$ 198,400

SR-91 - Lakeview IC Improvements
100% Project Cost Estimate (M2 FUNDING)

Item No	Final Pay Item (F)	Item Description	Unit Pay	Est. Quantity	Unit Price	Amount
202004		IRON SULFATE (LB)	LB	5380	$ 3.00	$ 16,140
202006		SOIL AMENDMENT	CY	2460	$ 75.00	$ 184,500
202038		PACKET FERTILIZER	EA	5770	$ 0.80	$ 4,616
204006		PLANT (GROUP F)	EA	94,000	$ 2.50	$ 235,000
204011		PLANT (GROUP K)	EA	34	$ 568.00	$ 19,312
204035		PLANT (GROUP A)	EA	5400	$ 19.50	$ 105,300
204036		PLANT (GROUP B)	EA	35	$ 46.00	$ 1,610
204038		PLANT (GROUP U)	EA	56	$ 210.00	$ 11,760
204054		NATIVE SEEDING (TYPE 1)	ACRE	.2	$ 4,100.00	$ 820
204097		PLANT ESTABLISHMENT WORK (MINIMUM BID)	LS	1	$ 120,000.00	$ 120,000
205035		WOOD MULCH	CY	2590	$ 130.00	$ 336,700
205035		FINISHING ROADWAY	LS	1	$ 50,000.00	$ 50,000
206400		CHECK AND TEST EXISTING IRRIGATION FACILITIES	LS	1	$ 10,000.00	$ 10,000
206562		1" REMOTE CONTROL VALVE	EA	6	$ 479.00	$ 2,874
206564		1 1/2" REMOTE CONTROL VALVE	EA	10	$ 579.00	$ 5,790
206565		2" REMOTE CONTROL VALVE	EA	10	$ 573.00	$ 5,730
207055		2" COPPER PIPE (SUPPLY LINE)	LF	30	$ 200.00	$ 6,000
208426		2" BACKFLOW PREVENTER ASSEMBLY	EA	1	$ 4,580.00	$ 4,580.00
208442		FLOW SENSOR	EA	1	$ 2,574.00	$ 2,574
208445		TREE WELL SPRINKLER ASSEMBLY	EA	210	$ 61.00	$ 12,810
208588		3" GATE VALVE	EA	13	$ 1,000.00	$ 13,000
208595	F	1" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	11,250	$ 5.75	$ 64,688
208596	F	1 1/4" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	4130	$ 9.00	$ 37,170
208597	F	1 1/2" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	4510	$ 6.50	$ 29,315
208598	F	2" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	2110	$ 10.00	$ 21,100
208599	F	2 1/2" PLASTIC PIPE (SCHEDULE 40) (SUPPLY LINE)	LF	300	$ 10.00	$ 3,000
208607	F	3" PLASTIC PIPE (CLASS 315) (SUPPLY LINE)	LF	2861	$ 16.75	$ 47,922
208683		BALL VALVE	EA	10	$ 490.00	$ 4,900
208688		PVC PIPE CONDUIT	LF	1030	$ 60.00	$ 61,800
208762		12" CORRUGATED STEEL PIPE CONDUIT (.064" THICK)	LF	250	$ 100.00	$ 25,000
210110		IMPORTED TOPSOIL (CY)	CY	120	$ 280.00	$ 33,600
210300		HYDROMULCH	SQFT	20,000	$ 0.35	$ 7,000
210430		HYDROSEED	SQFT	20,000	$ 0.65	$ 13,000
210610		COMPOST (CY)	CY	180	$ 79.00	$ 14,220
210630		INCORPORATE MATERIALS	SQFT	20,000	$ 0.25	$ 5,000
220101		FINISHING ROADWAY	LS	1	$ 75,000.00	$ 75,000
250201		CLASS 2 AGGREGATE SUBBASE	CY	7770	$ 56.00	$ 435,120
260203		CLASS 2 AGGREGATE BASE (CY)	CY	4480	$ 50.00	$ 224,000
280000		LEAN CONCRETE BASE	CY	3690	$ 225.00	$ 830,250
360200		BASE BOND BREAKER	SQYD	31,600	$ 3.15	$ 99,540
390132		HOT MIX ASPHALT (TYPE A)	TON	14,600	$ 130.00	$ 1,898,000
390137		RUBBERIZED HOT MIX ASPHALT (GAP GRADED)	TON	1470	$ 165.00	$ 242,550
394074		PLACE HOT MIX ASPHALT DIKE (TYPE C)	LF	110	$ 6.90	$ 759
394077		PLACE HOT MIX ASPHALT DIKE (TYPE F)	LF	1480	$ 3.60	$ 5,328
397005		TACK COAT	TON	8	$ 1,900.00	$ 15,200
398000		REMOVE ASPHALT CONCRETE PAVEMENT (CY)	CY	16,850	$ 30.00	$ 505,500
398100		REMOVE ASPHALT CONCRETE DIKE	LF	260	$ 10.00	$ 2,600
401050		JOINTED PLAIN CONCRETE PAVEMENT	CY	11,200	$ 325.00	$ 3,640,000
414202		JOINT SEAL (PREFORMED COMPRESSION)	LF	35,800	$ 9.00	$ 322,200
414242		ISOLATION JOINT SEAL (PREFORMED COMPRESSION)	LF	5020	$ 8.50	$ 42,670
418006		REMOVE CONCRETE PAVEMENT (CY)	CY	5050	$ 65.00	$ 328,250
420201		GRIND EXISTING CONCRETE PAVEMENT	SQYD	3140	$ 14.00	$ 43,960
498016		16" CAST-IN-DRILLED-HOLE CONCRETE PILING (SOUND WALL)	LF	2440	$ 90.00	$ 219,600
498052		60" CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	LF	150	$ 1,425.00	$ 213,750
498056		72" CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	LF	190	$ 1,590.00	$ 302,100
510059	F	STRUCTURE CONCRETE, RETAINING WALL (SOUND WALL)	CY	2000	$ 700.00	$ 1,400,000
510094	F	STRUCTURAL CONCRETE, DRAINAGE INLET	CY	195	$ 2,900.00	$ 565,500
510502	F	MINOR CONCRETE (MINOR STRUCTURE)	CY	16	$ 3,300.00	$ 52,800
520114	F	BAR REINFORCING STEEL, RETAINING WALL (SOUND WALL)	LB	315,187	$ 2.26	$ 712,323
560223	F	FURNISH SIGN STRUCTURE (BRIDGE MOUNTED WITHOUT WALKWAY)	LB	4300	$ 8.00	$ 34,400
560224	F	INSTALL SIGN STRUCTURE (BRIDGE MOUNTED WITHOUT WALKWAY)	LB	4300	$ 5.00	$ 21,500
560226		FURNISH SIGN STRUCTURE (VERSATILE TRUSS)	LB	346,000	$ 7.00	$ 2,422,000
560227		INSTALL SIGN STRUCTURE (VERSATILE TRUSS)	LB	346,000	$ 0.50	$ 173,000

SR-91 - Lakeview IC Improvements
100% Project Cost Estimate (M2 FUNDING)

Item No	Final Pay Item (F)	Item Description	Unit Pay	Est. Quantity	Unit Price	Amount
568046		REMOVE SIGN STRUCTURE (EA)	EA	4	$ 3,600.00	$ 14,400
568050		REMOVE BRIDGE MOUNTED SIGN	EA	3	$ 2,800.00	$ 8,400
582001	F	SOUND WALL (MASONRY BLOCK)	SQFT	35,476	$ 25.00	$ 886,900
600017		REMOVE RETAINING WALL (LF)	LF	630	$ 251.00	$ 158,130
600051		REMOVE SOUND WALL (LF)	LF	2580	$ 100.00	$ 258,000
621230		GROSS SOLIDS REMOVAL DEVICE LINEAR RADIAL TYPE LR-4 (4)	EA	2	$ 145,000.00	$ 290,000
650010		12" REINFORCED CONCRETE PIPE	LF	140	$ 350.00	$ 49,000
650014		18" REINFORCED CONCRETE PIPE	LF	990	$ 213.00	$ 210,870
650018		24" REINFORCED CONCRETE PIPE	LF	5270	$ 242.00	$ 1,275,340
705204		18" CONCRETE FLARED END SECTION	EA	2	$ 2,800.00	$ 5,600
705206		24" CONCRETE FLARED END SECTION	EA	3	$ 3,000.00	$ 9,000
707217		36" PRECAST CONCRETE PIPE MANHOLE	LF	53	$ 790.00	$ 41,870
707454		12" REINFORCED CONCRETE PIPE RISER	LF	65	$ 350.00	$ 22,750
710110		ABANDON INLET	EA	1	$ 2,500.00	$ 2,500
710114		ABANDON PIPELINE	EA	4	$ 3,200.00	$ 12,800
710136		REMOVE PIPE	LF	1300	$ 120.00	$ 156,000
710150		REMOVE INLET	EA	11	$ 2,400.00	$ 26,400
710167		REMOVE FLARED END SECTION (EA)	EA	5	$ 800.00	$ 4,000
710196		ADJUST INLET	EA	1	$ 1,885.00	$ 1,885
710260		REMOVE CONCRETE (CHANNEL)	CY	460	$ 125.00	$ 57,500
710262		CAP INLET	EA	2	$ 1,730.00	$ 3,460
721430		CONCRETE (CHANNEL LINING)	CY	2	$ 1,000.00	$ 2,000
721431		CONCRETE (CONCRETE APRON)	CY	4	$ 1,500.00	$ 6,000
721810		SLOPE PAVING (CONCRETE)	CY	470	$ 1,073.00	$ 504,310
730070		DETECTABLE WARNING SURFACE	SQFT	210	$ 51.50	$ 10,815
731502		MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	CY	480	$ 700.00	$ 336,000
731519		MINOR CONCRETE (STAMPED CONCRETE)	SQFT	5290	$ 17.00	$ 89,930
731710		REMOVE CONCRETE CURB (LF)	LF	1540	$ 114.00	$ 175,560
731780		REMOVE CONCRETE SIDEWALK (SQYD)	SQYD	1600	$ 62.00	$ 99,200
731790		REMOVE CONCRETE ISLAND (PORTIONS)(SQYD)	SQYD	360	$ 23.00	$ 8,280
731840		REMOVE CONCRETE (CURB AND GUTTER)	LF	2860	$ 22.50	$ 64,350
750001	F	MISCELLANEOUS IRON AND STEEL	LB	22,564	$ 5.00	$ 112,820
750010		MANHOLE FRAME AND COVER	EA	11	$ 1,800.00	$ 19,800
780400		ARCHITECTURAL TREATMENT (VENEER)	SQFT	670	$ 150.00	$ 100,500
802510		5' CHAIN LINK GATE (TYPE CL-6)	EA	1	$ 1,800.00	$ 1,800
803050		REMOVE CHAIN LINK FENCE	LF	260	$ 15.00	$ 3,900
810160		DELINEATOR (SPECIAL)	EA	42	$ 50.00	$ 2,100
810170		DELINEATOR (CLASS 1)	EA	3260	$ 50.00	$ 163,000
810190		GUARD RAILING DELINEATOR	EA	125	$ 28.00	$ 3,500
810230		PAVEMENT MARKER (RETROREFLECTIVE)	EA	5793	$ 3.50	$ 20,276
820113		TREATMENT BEST MANAGEMENT PRACTICE MARKER	EA	12	$ 265.00	$ 3,180
820130		OBJECT MARKER	EA	23	$ 130.00	$ 2,990
820250		REMOVE ROADSIDE SIGN	EA	72	$ 170.00	$ 12,240
820300		REMOVE ROADSIDE SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	29	$ 116.00	$ 3,364
820360		REMOVE SIGN PANEL	EA	2	$ 850.00	$ 1,700
820710		FURNISH LAMINATED PANEL SIGN (1"-TYPE A)	SQFT	3190	$ 28.00	$ 89,320
820750		FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED)	SQFT	822	$ 13.00	$ 10,686
820760		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-UNFRAMED)	SQFT	270	$ 17.00	$ 4,590
820780		FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-FRAMED)	SQFT	200	$ 20.50	$ 4,100
820790		FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-FRAMED)	SQFT	260	$ 21.00	$ 5,460
820810		METAL (ROADSIDE SIGN)	LB	180	$ 10.00	$ 1,800
820820		METAL (BARRIER MOUNTED SIGN)	LB	550	$ 16.00	$ 8,800
820840		ROADSIDE SIGN - ONE POST	EA	64	$ 450.00	$ 28,800
820850		ROADSIDE SIGN - TWO POST	EA	11	$ 900.00	$ 9,900
820860		INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	22	$ 170.00	$ 3,740
820890		INSTALL SIGN PANEL ON EXISTING FRAME	SQFT	420	$ 14.00	$ 5,880
832007		MIDWEST GUARDRAIL SYSTEM (WOOD POST)	LF	3065	$ 34.00	$ 104,210
839543		TRANSITION RAILING (TYPE WB-31)	EA	6	$ 4,420.00	$ 26,520
839576		END CAP (TYPE A)	EA	2	$ 240.00	$ 480
839578		END CAP (TYPE TC)	EA	4	$ 240.00	$ 960
839580		END ANCHOR ASSEMBLY (TYPE SFT-M)	EA	2	$ 860.00	$ 1,720
839640		CONCRETE BARRIER (TYPE 60M)	LF	1140	$ 134.00	$ 152,760

SR-91 - Lakeview IC Improvements
100% Project Cost Estimate (M2 FUNDING)

Item No	Final Pay Item (F)	Item Description	Unit Pay	Est. Quantity	Unit Price	Amount
839642		CONCRETE BARRIER (TYPE 60MC)	LF	260	$ 270.00	$ 70,200
839643		CONCRETE BARRIER (TYPE 60MD)	LF	940	$ 107.00	$ 100,580
839645		CONCRETE BARRIER (TYPE 60MG)	LF	610	$ 216.00	$ 131,760
839648		CONCRETE BARRIER (TYPE 60MGF)	LF	1570	$ 315.00	$ 494,550
839745	F	CONCRETE BARRIER TRANSITION	LF	450	$ 525.00	$ 236,250
839752		REMOVE GUARDRAIL	LF	3766	$ 6.00	$ 22,596
839774		REMOVE CONCRETE BARRIER	LF	965	$ 29.00	$ 27,985
840656		PAINT TRAFFIC STRIPE (2-COAT)	LF	5080	$ 1.75	$ 8,890
840666		PAINT PAVEMENT MARKING (2-COAT)	SQFT	3800	$ 2.65	$ 10,070
846008		6" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY) (BROKEN 8-4)	LF	340	$ 1.70	$ 578
846030		REMOVE THERMOPLASTIC TRAFFIC STRIPE	LF	153,400	$ 3.15	$ 483,210
846035		REMOVE THERMOPLASTIC PAVEMENT MARKING	SQFT	3730	$ 2.00	$ 7,460
846052		12" RUMBLE STRIP (CONCRETE PAVEMENT)	STA	41	$ 565.00	$ 23,165
847077		8" TRAFFIC STRIPE TAPE WITH CONTRAST WARRANTY (BROKEN 12-	LF	7300	$ 6.20	$ 45,260
847198		CONTRAST STRIPE THERMOPLASTIC	LF	113,400	$ 1.10	$ 124,740
847210		6" TRAFFIC STRIPE TAPE (WARRANTY)	LF	1300	$ 5.50	$ 7,150
847212		6" TRAFFIC STRIPE TAPE (WARRANTY) (BROKEN 6-1)	LF	330	$ 3.50	$ 1,155
847213		6" TRAFFIC STRIPE TAPE (WARRANTY) (BROKEN 17-7)	LF	2450	$ 4.70	$ 11,515
847214		6" TRAFFIC STRIPE TAPE (WARRANTY) (BROKEN 36-12)	LF	9020	$ 2.00	$ 18,040
847215		6" TRAFFIC STRIPE TAPE (WARRANTY) (BROKEN 8-4)	LF	200	$ 3.50	$ 700
847216		8" TRAFFIC STRIPE TAPE (WARRANTY)	LF	24,300	$ 5.30	$ 128,790
847218		6" TRAFFIC STRIPE TAPE WITH CONTRAST (WARRANTY)	LF	1610	$ 10.00	$ 16,100
847222		6" TRAFFIC STRIPE TAPE WITH CONTRAST (WARRANTY) (BROKEN 36-12)	LF	59,710	$ 4.00	$ 238,840
847224		8" TRAFFIC STRIPE TAPE WITH CONTRAST (WARRANTY)	LF	17,100	$ 9.50	$ 162,450
870009		MAINTAINING EXISTING TRAFFIC MANAGEMENT SYSTEM ELEMENTS DURING CONSTRUCTION	LS	1	$ 30,000.00	$ 30,000
870136		ELECTRIC SERVICE FOR IRRIGATION	LS	1	$ 24,000.00	$ 24,000
870200		LIGHTING SYSTEM (CITY)	LS	1	$ 93,000.00	$ 93,000
870300		SIGN ILLUMINATION SYSTEM	LS	1	$ 30,000.00	$ 30,000
872001		TEMPORARY LIGHTING SYSTEMS	LS	1	$ 1,259,000.00	$ 1,259,000
872002		TEMPORARY SIGNAL SYSTEMS	LS	1	$ 244,000.00	$ 244,000
872003		TEMPORARY RAMP METERING SYSTEMS	LS	1	$ 678,000.00	$ 678,000
872133		MODIFYING SIGNAL AND LIGHTING SYSTEMS	LS	1	$ 335,000.00	$ 335,000
872134		MODFIYING RAMP METERING SYSTEMS	LS	1	$ 113,000.00	$ 113,000
872137		MODIFYING CHANGEABLE MESSAGE SIGN SYSTEM	LS	1	$ 83,000.00	$ 83,000
872141		REMOVING LIGHTING SYSTEMS	LS	1	$ 40,000.00	$ 40,000
872143		REMOVING SIGNAL AND LIGHTING SYSTEMS	LS	1	$ 15,000.00	$ 15,000
872144		REMOVING RAMP METERING SYSTEMS	LS	1	$ 21,000.00	$ 21,000
999990		MOBILIZATION	LS	1	$ 4,165,537.00	$ 4,165,537
204096		MAINTAIN EXISTING PLANTED AREAS	LS	1	$ 40,000.00	$ 40,000
206402		OPERATE EXISTING IRRIGATION FACILITIES	LS	1	$ 10,000.00	$ 10,000
208448		RISER SPRINKLER ASSEMBLY	EA	39	$ 60.00	$ 2,340.00
208449		POP-UP SPRINKLER ASSEMBLY	EA	510	$ 80.00	$ 40,800.00
810171A		CHANNELIZER (EXPRESS LANE)	EA	1160	$ 58.00	$ 67,280
839648A	F	CONCRETE BARRIER (TYPE 842 MODIFIED)	LF	1760	$ 295.00	$ 519,200
839649		CONCRETE BARRIER (TYPE 60MS)	LF	625	$ 200.00	$ 125,000
846007		6" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	41,125	$ 1.00	$ 41,125
846012		THERMOPLASTIC CROSSWALK AND PAVEMENT MARKING (ENHANCED WET NIGHT VISIBILITY)	SQFT	19,700	$ 4.80	$ 94,560
846013		12" THERMOPLASTIC TRAFFIC STRIPE (ENHANCED WET NIGHT VISIBILITY)	LF	10,070	$ 2.40	$ 24,168
847220		6" TRAFFIC STRIPE TAPE WITH CONTRAST (WARRANTY) (BROKEN 6-1)	LF	230	$ 3.00	$ 690
847221		6" TRAFFIC STRIPE TAPE WITH CONTRAST (WARRANTY) (BROKEN 17-7)	LF	2660	$ 3.70	$ 9,842
871902A		MODIFYING FIBER OPTIC CABLE SYSTEMS	LS	1	$ 11,000.00	$ 11,000
872002A		TEMPORARY SIGNAL SYSTEMS (CITY)	LS	1	$ 516,000.00	$ 516,000
010636		MODIFYING SIGNAL AND LIGHTING SYSTEMS (CITY)	LS	1	$ 158,000.00	$ 158,000
872143A		REMOVING SIGNAL AND LIGHTING SYSTEMS (CITY)	LS	1	$ 15,000.00	$ 15,000
		5% CONTINGENCY			$ 2,161,000.00	$ 2,161,000
		SUBTOTAL COST OF ROADWAY				**$45,491,367**

Supplemental Work **M2**

Item No.	Item Code	Item Description	Unit	Est. Quantity	Price	Amount
1	066015	FEDERAL TRAINEE PROGRAM	LS	1	$ 20,000.00	$ 20,000.00
2	066070	MAINTAIN TRAFFIC	LS	1	$ 1,000,000.00	$ 1,000,000.00
3	066610	PARTNERING	LS	1	$ 70,000.00	$ 70,000.00
4	066670	PAYMENT ADJUSTMENTS FOR PRICE INDEX	LS	1	$ 72,600.00	$ 138,000.00
5	066595	WATER POLLUTION CONTROL MAINTENANCE SHARING	LS	1	$ 41,000.00	$ 39,800.00
6	066596	ADDITIONAL WATER POLLUTION CONTROL	LS	1	$ 10,000.00	$ 10,000.00
					Subtotal	$ 1,277,800
					Contingency (5%)	$ 63,890
		SUBTOTAL COST OF SUPPLEMENTAL WORK				**$ 1,341,690**

State Furnished Materials

Item No.	Item Code	Item Description	Unit	Est. Quantity	Price	Amount
1	066062	COZEEP CONTRACT	LS	1	$ 970,000.00	$ 970,000.00
2	066063	TRAFFIC MANAGEMENT PLAN - PUBLIC INFORMATION	LS	1	$ 595,000.00	$ 605,000.00
3	066105	RESIDENT ENGINEERS OFFICE	LS	1	$ 650,200.00	$ 770,200.00
5	066915	BOE TREATED WOOD WASTE GENERATION FEE	LS	1	$ 8,325.00	$ 8,325.00
					Subtotal	$ 2,353,525
					Contingency (5%)	$ 117,676
		SUBTOTAL COST OF STATE-FURNISHED MATERIALS				**$ 2,471,201**

From:	Walter, Hannah@CATC
To:	Ashby-Camp, Jennifer@DOT; Lopez, Kenneth@CATC
Cc:	Giese, Kayla@CATC; Yosgott, Matthew J@CATC
Subject:	RE: Question About: Funding changes for Cycle 3 SR 91 Operational and Multimodal Improvements
Date:	Wednesday, October 11, 2023 2:21:53 PM
Attachments:	image001.png image002.png

Thank you Jennifer, I think since the cost increases are to local funds, and the schedule has not changed, these changes are fine. Thank you

From: Ashby-Camp, Jennifer@DOT <Jennifer.Ashby-Camp@dot.ca.gov>
Sent: Wednesday, October 11, 2023 1:53 PM
To: Walter, Hannah@CATC <Hannah.Walter@CATC.CA.GOV>; Lopez, Kenneth@CATC <Kenneth.Lopez@catc.ca.gov>
Cc: Giese, Kayla@CATC <Kayla.Giese@catc.ca.gov>; Yosgott, Matthew J@CATC <Matthew.Yosgott@catc.ca.gov>
Subject: RE: Question About: Funding changes for Cycle 3 SR 91 Operational and Multimodal Improvements

Hi Hannah,

The local agency and district responded and included the latest signed ePPR (attached) which addresses the amount used for TCEP construction support. Please see responses below in green.

Regards,

Jennifer R. Ashby-Camp
SB 1 Trade Corridor Enhancement Program (TCEP) Coordinator, Districts 7-12
Office of Capital Improvement Programming (OCIP)
Jennifer.Ashby-Camp@dot.ca.gov / Cell 916-215-3859

Division of Financial Programming
Chat with me on Teams!

From: Walter, Hannah@CATC <Hannah.Walter@CATC.CA.GOV>
Sent: Thursday, September 28, 2023 2:56 PM
To: Ashby-Camp, Jennifer@DOT <Jennifer.Ashby-Camp@dot.ca.gov>; Lopez, Kenneth@CATC <Kenneth.Lopez@catc.ca.gov>
Cc: Giese, Kayla@CATC <Kayla.Giese@catc.ca.gov>; Yosgott, Matthew J@CATC <Matthew.Yosgott@catc.ca.gov>
Subject: RE: Question About: Funding changes for Cycle 3 SR 91 Operational and Multimodal Improvements

Thanks Jennifer, it looks like the schedule, year, and amount of TCEP funds is still the

same, so that's good. I looked back through my emails and files, and there are only 3 things I have a record of related to potential PPR changes:

- OCTA said they wanted to use $1.212 million of the TCEP for construction support. I don't see this broken out in the new PPR.

The ePPR has been revised to show this and is attached.

- At one point we had an internal note in our file to ask them to specify alternate funds for the federal earmark dollars. In the new PPR it looks like they removed these all together.

We were asked to provide alternate funds for the federal earmark – we have always had this $5 million federal earmark, just changed the name to "Other Federal - Community Project Funding Congressionally Directed

- We had a note in the funding questions document we shared with Caltrans staff that this funding relies on toll revenues. It looks like they increased the amount for toll revenues by $8.724 million.

Yes

- I don't have a record of us approving a cost increase or the local fund shifts I see in the PPR. What was the reason for the cost increase?

As the project has progressed, the cost for PS&E increased by $1.204 million from $7.299 million to $8.503 million. Other costs have decreased to offset this increase. The attached ePPR shows a total project cost of $108.056 million which represents a cost increase of $386,000 over the ePPR submitted with the grant application. (This is a decrease from the previous ePPR reviewed by CTC and Caltrans staff which showed an increase of $454,000.)

- Do you know I their toll revenue is already being collected?

Yes

Thank you,
Hannah Walter
California Transportation Commission
1 (279) 203-1364

From: Ashby-Camp, Jennifer@DOT <Jennifer.Ashby-Camp@dot.ca.gov>
Sent: Wednesday, September 27, 2023 5:58 PM
To: Lopez, Kenneth@CATC <Kenneth.Lopez@catc.ca.gov>
Cc: Walter, Hannah@CATC <Hannah.Walter@CATC.CA.GOV>; Giese, Kayla@CATC <Kayla.Giese@catc.ca.gov>
Subject: Question About: Funding changes for Cycle 3 SR 91 Operational and Multimodal Improvements

Hi Ken,

I am collaborating with the district on making the CTC approved changes to the ePPR for the TCEP Cycle 3 SR 91 Operational and Multimodal Improvements project for their Baseline Agreement package. The local agency submitted a draft ePPR to address requested changes, and it also included an updated funding plan. The attached ePPR (PPR-3395-DRAFT V3_udpates) shows the entries in RED for all the updates in the various funding sections that differ from the ePPR approved as part of the project application. I also attached the original ePPR for reference.

Are you able to approve these changes as the overall cost of the project has increased? Should we proceed with the funding plan that was included as part of the originally approved ePPR?

Regards,

Jennifer R. Ashby-Camp
(Pronouns: she/her) *(Here's why)*
SB 1 Trade Corridor Enhancement Program (TCEP) Coordinator, Districts 7-12
Office of Capital Improvement Programming (OCIP)
Jennifer.Ashby-Camp@dot.ca.gov / Cell 916-215-3859

Division of Financial Programming
Chat with me on Teams!

Attachment 2. Performance Metrics Form

Trade Corridor Enhancement Program

Existing Average Annual Vehicle Volume on Project Segment	106,159,812
Existing Average Annual Truck Percent on Project Segment	6%
Estimated Year 20 Average Annual Vehicle Volume on Project Segment with Project	111,404,862
Estimated Year 20 Average Annual Truck Percent on Project Segment with Project	6%

Measure	**Metric**	**Project Type**	**Build**	**Future No Build**	**Change**	**Increase/ Decrease**
Congestion Reduction (Freight)	Change in Daily Vehicle Hours of Delay	All	5,561	14,648	-9,087	Decrease
	Change in Daily Truck Hours of Delay	All (except rail)	278	732	-454	Decrease
	(Optional) Person Hours of Travel Time Saved	All	91,536,416	0	91,536,416	Increase
	(Optional) Daily Truck Trips Due to Mode Shift	Rail, Sea Port				
	(Optional) Daily Truck Miles Travelled Due to Mode Shift	Rail, Sea Port				
	(Optional) Other Information	All				
Throughput (Freight)	Change in Truck Volume	Highway, road, and port projects only	8,459	8,361	98	Increase

	Change in Rail Volume	Rail	0	0	0	
	(Optional) Change in Cargo Volume	Sea port, airport				
	(Optional) Other Information	All				
System Reliability (Freight)	Truck Travel Time Reliability Index (“No Build” Only) (Optional Metric)	National and State Highway System Only				
	(Optional) Other Information	All				
Velocity (Freight)	Travel time or total cargo transport time	All	0.031 hours	0.085 hours	-0.054 hours	Decrease
	(Optional) Change in Average Peak Period Weekday Speed for Road Facility	Road	44.7 mph	16.4 mph	28.3 mph	Increase
	(Optional) Average Peak Period Weekday Speed for Rail Facility	Rail				
	(Optional) Other Information	All				
Air Quality	Particulate Matter (PM 10)	All	0 tons	1 tons	-1 tons	Decrease
	Particulate Matter (PM 2.5)		0 tons	1 tons	-1 tons	Decrease
	Carbon Oxide (CO2)		0 tons	52,813 tons	-52,813 tons	Decrease
	Volatile Organic Compounds (VOC)		0 tons	19 tons	-19 tons	Decrease
	Sulphur Oxides (SOx)		0 tons	1 tons	-1 tons	Decrease
	Carbon Monoxide (CO)		0 tons	145 tons	-145 tons	Decrease
	Nitrogen Oxides (NOx)		0 tons	19 tons	-19 tons	Decrease
Safety	Number of Fatalities	Road and	0	0	0	

	Rate of Fatalities per 100 Million VMT	Land Port	0	0	0	
	Number of Serious Injuries		0	69	-69	Decrease
	Number of Serious Injuries per 100 Million VMT		0	17	-17	Decrease
	(Optional) Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries		0	0	0	
	(Optional) Other Information	All				
Cost Effectiveness	Cost Benefit Ratio	All	11.04	0	11.04	Increase
	(Optional) Other Information	All				
Economic Development	Jobs Created	All	1,200	0	1,200	Increase
	(Optional) Other Information	All				

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

Amendment (Existing Project) ☒ YES ☐ NO | Date 10/09/2023 09:57:08

Programs ☐ LPP-C ☐ LPP-F ☐ SCCP ☒ TCEP ☐ STIP ☐ Other

District	EA	Project ID	PPNO	Nominating Agency	
12	0K981	1220000029	4600A	Orange County Transportation Authority	
County	Route	PM Back	PM Ahead	Co-Nominating Agency	
Orange County				Caltrans HQ	
Orange County	91	9.400	10.800	MPO	Element
Orange County				SCAG	Capital Outlay

Project Manager/Contact	Phone	Email Address
Brian Santos	657-328-6624	Brian.Santos@dot.ca.gov

Project Title

State Route 91 Operational and Multimodal Improvements Project from SR-55 to Lakeview Avenue -TCEP

Location (Project Limits), Description (Scope of Work)

In Orange County from SR-55 to Lakeview Avenue. The project will improve operations, reliability, safety, and throughput thereby improving economic vitality of Orange County and beyond and include the following elements:

- Construct a new drop ramp for dedicated access to southbound SR-55 from Lakeview Avenue Bridge, which eliminates an existing weave, improving safety, and reducing collisions.
- Separate traffic on westbound (WB) SR-91 from southbound (SB) SR-55 for ¾ mile to improve safety.
- Replace the Lakeview Avenue Bridge to accommodate reconfiguration of the Lakeview Avenue/SR-91 interchange and increase bridge height to current standards
- Improve bicycle/pedestrian facility on Lakeview Avenue and connect to the regional Santa Ana River Trail for safe, convenient, and comfortable travel and access for all users.
- Reconfigure the WB ramps from partial cloverleaf to a diamond configuration.

Component	Implementing Agency
PA&ED	Orange County Transportation Authority
PS&E	Orange County Transportation Authority
Right of Way	Orange County Transportation Authority
Construction	Caltrans HQ

Legislative Districts					
Assembly:	68,55	Senate:	37,29	Congressional:	39,45

Project Milestone	Existing	Proposed
Project Study Report Approved		
Begin Environmental (PA&ED) Phase	01/19/2015	01/19/2015
Circulate Draft Environmental Document Document Type FONSI	12/21/2018	12/21/2018
Draft Project Report	11/15/2018	11/15/2018
End Environmental Phase (PA&ED Milestone)	06/22/2020	06/22/2020
Begin Design (PS&E) Phase	03/30/2020	03/30/2020
End Design Phase (Ready to List for Advertisement Milestone)	01/11/2023	01/11/2023
Begin Right of Way Phase	11/01/2021	11/01/2021
End Right of Way Phase (Right of Way Certification Milestone)	07/26/2023	07/26/2023
Begin Construction Phase (Contract Award Milestone)	02/29/2024	02/29/2024
End Construction Phase (Construction Contract Acceptance Milestone)	09/28/2027	09/28/2027
Begin Closeout Phase	09/29/2027	09/29/2027
End Closeout Phase (Closeout Report)	06/30/2028	06/30/2028

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

Date 10/09/2023 09:57:08

Purpose and Need

The project will reduce congestion and improve safety along the corridor by reducing merging and weaving and make operational improvements between major interchanges along the corridor facilitating the movement of people and goods along the SR-91 corridor. The Project will improve operations, travel time and reliability on the SR-91 and SR-55 and increase freight throughput and efficiency. Project will eliminate an existing weave between the closely spaced Lakeview interchange and the SR-91/SR-55 interchange resulting in reduced travel times on SR-91. Signal synchronization at the Lakeview interchange will promote safety by ensuring cars do not queue back onto local streets and freeway mainline.

NHS Improvements ☒ YES ☐ NO	Roadway Class 2	Reversible Lane Analysis ☒ YES ☐ NO

Inc. Sustainable Communities Strategy Goals ☒ YES ☐ NO Reduce Greenhouse Gas Emissions ☒ YES ☐ NO

Project Outputs

Category	Outputs	Unit	Total
Operational Improvement	Interchange modifications	EA	1
Active Transportation	Bicycle lane-miles	Miles	0.2
Operational Improvement	Channelization	EA	0.396
Bridge / Tunnel	Local reconstructed bridge/tunnels	SQFT	86,400
Operational Improvement	Intersection / Signal improvements	EA	1

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID

ePPR-6071-2023-0002 v1

Date 10/09/2023 09:57:08

Additional Information

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
Congestion Reduction	LPPC, SCCP, LPPF	Change in Daily Vehicle Miles Travelled	Miles	236,864	234,109	2,755
			VMT per Capita	0	0	0
	LPPC, SCCP, LPPF	Person Hours of Travel Time Saved (Only 'Change' required)	Person Hours	91,536,416	0	91,536,416
			Hours per Capita	0	0	0
	TCEP	Change in Daily Vehicle Hours of Delay	Hours	5,561	14,648	-9,087
	TCEP	Change in Daily Truck Hours of Delay	Hours	278	732	-454
Throughput (Freight)	TCEP	Change in Truck Volume	# of Trucks	8,459	8,361	98
	TCEP	Change in Rail Volume	# of Trailers	0	0	0
			# of Containers	0	0	0
System Reliability (Freight)	LPPC, SCCP, LPPF	Peak Period Travel Time Reliability Index (Only 'No Build' Required)	Index	0	0	0
	LPPC, SCCP, LPPF	Level of Transit Delay (if required)	% "On-time"	0	0	0
Velocity (Freight)	TCEP	Travel Time or Total Cargo Transport Time	Hours	0.031	0.085	-0.054
	Optional	Average Peak Period Weekday Speed for Road Facility	Miles per Hour	44.7	16.4	28.3
Air Quality & GHG (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Particulate Matter	PM 2.5 Tons	0	1	-1
			PM 10 Tons	0	1	-1
	LPPC, SCCP, TCEP, LPPF	Carbon Dioxide (CO2)	Tons	0	52,813	-52,813
	LPPC, SCCP, TCEP, LPPF	Volatile Organic Compounds (VOC)	Tons	0	19	-19
	LPPC, SCCP, TCEP, LPPF	Sulphur Dioxides (SOx)	Tons	0	1	-1
	LPPC, SCCP, TCEP, LPPF	Carbon Monoxide (CO)	Tons	0	145	-145
	LPPC, SCCP, TCEP, LPPF	Nitrogen Oxides (NOx)	Tons	0	19	-19
Safety	Optional	Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	Number	0	0	0
	LPPC, SCCP, TCEP, LPPF	Number of Fatalities	Number	0	0	0
	LPPC, SCCP, TCEP, LPPF	Fatalities per 100 Million VMT	Number	0	0	0
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries	Number	0	69	-69
	LPPC, SCCP, TCEP, LPPF	Number of Serious Injuries per 100 Million VMT	Number	0	17	-17
Accessibility	Optional	Number of Jobs Accessible by Mode	Number	0	0	0

Performance Indicators and Measures						
Measure	**Required For**	**Indicator/Measure**	**Unit**	**Build**	**Future No Build**	**Change**
	Optional	Number of Destinations Accessible by Mode	Number	0	0	0
	Optional	Percent of Population Defined as Low Income or Disadvantaged Within 1/2 Mile of Rail Station, Ferry Terminal, or High-Frequency Bus Stop	%	0	0	0
Economic Development	LPPC, SCCP, TCEP, LPPF	Jobs Created (Only 'Build' Required)	Number	1,200	0	1,200
Cost Effectiveness (only 'Change' required)	LPPC, SCCP, TCEP, LPPF	Cost Benefit Ratio	Ratio	11.04	0	11.04
System Preservation Pavement	Optional	Pavement Condition Index	Index	0	0	0
			Rating	Good	Good	
System Preservation Bridges	Optional	Bridge Superstructure Rating	Rating	Good	Good	
	Optional	Bridge Substructure Rating	Rating	Good	Good	
Vehicle Volume	LPPC, LPPF, SCCP	Existing Average Annual Vehicle Volume on Project Segment	Number	106,159,812	104,901,000	1,258,812
	LPPC, LPPF, SCCP	Estimated Year 20 Average Annual Vehicle Volume on Project Segment with Project	Number	111,404,862	107,943,129	3,461,733

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

District	County	Route	EA	Project ID	PPNO
12	Orange County, Orange County, Orange County	, 91	0K981	1220000029	4600A

Project Title

State Route 91 Operational and Multimodal Improvements Project from SR-55 to Lakeview Avenue -TCEP

Existing Total Project Cost ($1,000s)									
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Implementing Agency
E&P (PA&ED)	1,800							1,800	Orange County Transportation Autho
PS&E	8,503							8,503	Orange County Transportation Autho
R/W SUP (CT)	988							988	Orange County Transportation Autho
CON SUP (CT)		7,342						7,342	Caltrans HQ
R/W	4,938							4,938	Orange County Transportation Autho
CON		84,553						84,553	Caltrans HQ
TOTAL	16,229	91,895						108,124	
Proposed Total Project Cost ($1,000s)									Notes
E&P (PA&ED)	1,800							1,800	
PS&E	8,503							8,503	
R/W SUP (CT)	988							988	
CON SUP (CT)		14,007						14,007	
R/W	4,938							4,938	
CON		77,820						77,820	
TOTAL	16,229	91,827						108,056	

Fund #1:	Local Funds - Measure M (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)	30							30	Orange County Transportation Autho
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL	30							30	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)	30							30	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL	30							30	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

Fund #2:	Local Funds - Toll - Managed Lanes (Committed)								Program Code
Existing Funding ($1,000s)									20.10.400.100
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Orange County Transportation Autho
PS&E	8,503							8,503	SR-91 Express Lane Toll Revenues
R/W SUP (CT)	988							988	
CON SUP (CT)		7,342						7,342	
R/W	4,938							4,938	
CON		36,987						36,987	
TOTAL	14,429	44,329						58,758	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E	8,503							8,503	
R/W SUP (CT)	988							988	
CON SUP (CT)		7,795						7,795	
R/W	4,938							4,938	
CON		36,466						36,466	
TOTAL	14,429	44,261						58,690	
Fund #3:	RSTP - STP Local Regional (Committed)								Program Code
Existing Funding ($1,000s)									20.30.010.810
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)	1,770							1,770	Orange County Transportation Autho
PS&E									STBG
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL	1,770							1,770	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)	1,770							1,770	
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON									
TOTAL	1,770							1,770	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

Fund #4:	Other Fed - Community Proj Funding Congressionally Directed (Committed)								Program Code
Existing Funding ($1,000s)									20.30.010.300
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Orange County Transportation Autho
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		5,000						5,000	
TOTAL		5,000						5,000	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)		5,000						5,000	
R/W									
CON									
TOTAL		5,000						5,000	

Fund #5:	State SB1 TCEP - Trade Corridors Enhancement Account (Committed)								Program Code
Existing Funding ($1,000s)									20.XX.723.200
Component	Prior	23-24	24-25	25-26	26-27	27-28	28-29+	Total	Funding Agency
E&P (PA&ED)									Orange County Transportation Autho
PS&E									
R/W SUP (CT)									
CON SUP (CT)									
R/W									
CON		42,566						42,566	
TOTAL		42,566						42,566	
Proposed Funding ($1,000s)									Notes
E&P (PA&ED)									
PS&E									
R/W SUP (CT)									
CON SUP (CT)		1,212						1,212	
R/W									
CON		41,354						41,354	
TOTAL		42,566						42,566	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

PROJECT PROGRAMMING REQUEST (PPR)

PRG-0010 (REV 08/2020)

PPR ID
ePPR-6071-2023-0002 v1

Complete this page for amendments only Date 10/09/2023 09:57:08

District	County	Route	EA	Project ID	PPNO
12	Orange County, Orange County, Orange County	, 91	0K981	1220000029	4600A

SECTION 1 - All Projects

Project Background

In Orange County from SR-55 to Lakeview Avenue. The project will improve operations, reliability, safety, and throughput thereby improving economic vitality of Orange County and beyond and include the following elements:

- Construct a new drop ramp for dedicated access to southbound SR-55 from Lakeview Avenue Bridge, which eliminates an existing weave, improving safety, and reducing collisions.
- Separate traffic on westbound (WB) SR-91 from southbound (SB) SR-55 for ¾ mile to improve safety.
- Replace the Lakeview Avenue Bridge to accommodate reconfiguration of the Lakeview Avenue/SR-91 interchange and increase bridge height to current standards
- Improve bicycle/pedestrian facility on Lakeview Avenue and connect to the regional Santa Ana River Trail for safe, convenient, and comfortable travel and access for all users.
- Reconfigure the WB ramps from partial cloverleaf to a diamond configuration.

Programming Change Requested

Revise split between construction support and construction

Reason for Proposed Change

Caltrans construction support was previously included in construction in error

If proposed change will delay one or more components, clearly explain 1) reason for the delay, 2) cost increase related to the delay, and 3) how cost increase will be funded

No delay

Other Significant Information

NA

SECTION 2 - For SB1 Project Only

Project Amendment Request (Please follow the individual SB1 program guidelines for specific criteria)

Total project cost decrease from $108.124 million to $108,056 million
Construction support increase from $7.342 million funded entirely by Toll - Managed Lane local revenues to $14.007 million funded by $7.795 million in Toll - Managed Lane local revenues, $5 million in Community Proj. Funding Congressionally Directed federal funds, and $1.212 million in TCEP.
Construction decreased from $84.553 million funded by $36.987 million in Toll - Managed Lane local revenues, $5 million in Community Proj. Funding Congressionally Directed federal funds and $42.566 million in TCEP to $77.820 million funded by $36.466 million in Toll - Managed Lane local revenues and $41.354 million in TCEP.

Approvals

I hereby certify that the above information is complete and accurate and all approvals have been obtained for the processing of this amendment request.

Name (Print or Type)	Signature	Title	Date
Kurt Brotcke	Kurt Brotcke	Director, Strategic Planning	10.11.23

PPR ID
ePPR-6071-2023-0002 v1

SECTION 3 - All Projects

Attachments
1) Concurrence from Implementing Agency and/or Regional Transportation Planning Agency
2) Project Location Map

12-ORA-91-PM 4.7/R10.8
12-ORA-57-PM 15.5/16.2
12-ORA-55-PM 17.4/R17.9
EA 0K9800 – PN 1200020098
Program Code 20.10.400.000
June 2020

Project Report

For Project Approval

On Route 91

Between State College Boulevard

And Lakeview Avenue

On Route 57

Between SR-91

And La Jolla Street

On Route 55

Between SR-91

And Santa Ana Canyon Road

I have reviewed the right of way information contained in this report and the right of way data sheet attached hereto, completed by Orange County Transportation Authority, and find the data to be complete, current and accurate:

6/24/2020

Benjamin D. Martin, Ed. D. **Date**
Acting Office Chief
Right of Way and Right of Way Engineering

APPROVAL RECOMMENDED:

June 24, 2020

Andrew Oshrin **Date**
Chief, Design Branch D

6/24/2020

Brian Santos **Date**
Project Manager

APPROVED:

6/24/2020

Adnan Maiah **Date**
Deputy District Director, Single Focal Point
Strategic Portfolio Management

Ryan Chamberlain
District 12 Director

Vicinity Map

This project report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

June 19, 2020

Karen Cohoe, REGISTERED CIVIL ENGINEER *DATE*

CONCURRENCE BY:

ENVIRONMENTAL: Smita Deshpande 6/19/2020

Smita Deshpande **Date**
Chief, Generalists Branch, Division of Environmental Analysis

Table of Contents

1. INTRODUCTION

The California Department of Transportation (Caltrans) District 12, in cooperation with the Orange County Transportation Authority (OCTA), is proposing to improve traffic operations on State Route 91 (SR-91) from Post Mile (PM) 4.7 to PM R10.8, State Route 57 (SR-57) from PM 15.5 to PM 16.2, and on State Route 55 (SR-55) from PM 17.4 to PM R17.9 in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County, California, a distance of approximately 5.6 miles. The proposed project includes one No Build and one Build Alternative. The proposed project build alternative would include widening and related improvements along SR-91 from west of State College Boulevard (Blvd) to east of Lakeview Avenue (Ave). The Project Location and Project Vicinity are shown in Attachment A.

In March 2019, following the public circulation of the draft environmental document, the Build Alternative was identified as the Preferred Alternative (PA) for the SR-91 Widening Project. The PA would add a single general purpose (GP) lane in the eastbound (EB) direction of SR-91 between SR-57 and SR-55 and would also include modifications to various interchanges (including major modifications for WB SR-91 from SR-57 to State College Blvd and from SR-55 to Lakeview Ave), connectors, ramps, and intersections. The full description of the Build (Preferred) Alternative is included in Section 5, ALTERNATIVES.

The project is in the Project Approval/Environmental Document (PA/ED) phase. The final environmental document prepared for this project is an Initial Study (IS) with Mitigated Negative Declaration (MND)/Environmental Assessment (EA) with Finding of No Significant Impacts (FONSI). Caltrans is the lead agency for the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). OCTA is the project sponsor. The project study is based on the anticipated opening year 2030 and design year 2050. The Project is classified as Category 4A, as described in Chapter 8 of the Project Development Procedures Manual.

The Build (Preferred) Alternative is included in the 2019 Federal Transportation Improvement Program (FTIP) as project ID ORA150110. The 2019 FTIP was adopted by the Southern California Association of Governments (SCAG) on October 1, 2018 and approved for air quality conformity by the Federal Highway Administration (FHWA) on December 17, 2018. The Build (Preferred) Alternative is also included in the financially constrained project list of the approved SCAG 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (2016 RTP/SCS) as project ID 2M0736. The project description in the RTP/SCS and FTIP is: "SR-91 (SR-57 to SR-55) - Add 1 MF lane EB from 55 to 57; Add 1 MF lane WB from Glassell to State College; Improve interchanges and merging from Lakeview to Raymond (PA&ED phase). Auxiliary lanes will be added in certain segments (PA&ED phase)." In addition, the PA is included in the Measure M2 (also known as OC Go) Freeway Program and the Next 10 Delivery Plan (2017-2026) adopted by OCTA in November 2016.

The Build (Preferred) Alternative is estimated to cost $300 million in current dollars or $352 million in the future expenditure year. OCTA identified net excess 91 Express Lanes revenue to advance this project implementation. A summary of the project information is provided in Table 1.

Table 1: Key Project Information

Project Limits	12-ORA-91-PM 4.7/R10.8 12-ORA-57-PM 15.5/16.2 12-ORA-55-PM 17.4/R17.9	
Number of Alternatives	1 No Build Alternative, 1 Build Alternative	
	Current Cost Estimate (Total Project):	**Escalated Cost Estimate (Total Project):**
Capital Outlay Support	$60.3 million	$67.7 million
Capital Outlay Construction	$215.3 million	$257.2 million
Capital Outlay Right of Way	$24.4 million	$27.5 million
Funding Source	The Surface Transportation Block Grant (STGB) funded part of preliminary engineering for the project and agency funds (Measure M2 and net excess 91 Express Lanes revenue) are programmed.	
Funding Year	FY 2020/2021 through FY 2026/2027	
Type of Facility	Freeway	
Number of Structures	Eight (four new bridges, three widened bridges, one new tunnel)	
Environmental Determination or Document	MND/FONSI	
Legal Description	In Orange County, on Route 91 from State College Blvd to Lakeview Ave, on Route 57 from Route 91 to La Jolla Street, and on Route 55 from Route 91 to Santa Ana Canyon Road.	
Project Development Category	4A	

For programming, final design, and construction purposes, the SR-91 Widening Project is proposed to be segmented as follows:

- Segment 1 – SR-91/SR-55 Interchange to East Project Limits (12-ORA-91-PM R9.1/R10.8, 12-ORA-55-PM 17.4/R17.9)
- Segment 2 – Eastbound Improvements from SR-57 to SR-91/SR-55 Interchange (12-ORA-91-PM 6.4/R9.1)
- Segment 3 –Westbound Improvements from West Project Limits to La Palma Ave (12-ORA-91-PM 4.7/6.4, 12-ORA-57-PM 15.5/16.2)

- Highway Planting[1] – West Project Limits to East Project Limits

Segmenting of the project would facilitate more competitive bidding for contractors as there would be a greater chance of multiple bidders for smaller capital projects as compared to one large project contract.

The limits of the three segments are shown in the Project Location Map in Attachment A.

2. RECOMMENDATION

It is recommended that the project be approved using the Build (Preferred) Alternative. The affected local agencies have been consulted with respect to the recommended plan and their views have been considered. Affected local agencies are in general accord for implementation of the Alternative improvements. The draft environmental document for the project has been circulated for public review and all comments have been addressed.

3. BACKGROUND

3A. Project History

In 2008, OCTA initiated the SR-91 from SR-57 to SR-55 Feasibility Study, which provided findings for the development of alternatives and design options that could improve mobility within the study area. The feasibility study also estimated the capital outlay costs necessary to complete the project. The feasibility study was completed in June 2009.

The Project Study Report-Project Development Support (PSR-PDS) was approved by Caltrans on October 23, 2014. The PSR-PDS found that SR-91 currently experiences significant congestion, which is forecast to worsen in the absence of physical and operational improvements. To address this, the PSR-PDS proposed widening SR-91 in the EB direction and providing operational improvements at the SR-57 and SR-55 interchanges. The improvements identified in the PSR-PDS included multiple full parcel acquisitions, including multi-family residential and commercial uses. In addition, a viaduct was proposed to accommodate the EB SR-91 off-ramp to Tustin Ave in order to preserve the existing North Olive Union Pacific Railroad Underpass (UP). Additional information regarding the elements of the PSR-PDS alternatives is included in Section 5B, Rejected Alternatives.

The project is currently in the PA/ED phase with two alternatives that have been considered. Alternative 1 is the No Build Alternative and Alternative 2 proposes the addition of one EB GP lane. The PA/ED phase was initiated with preparation of the SR-91/SR-55 System Interchange and Lakeview Interchange Feasibility Study (September 2015) to determine various configurations for the Lakeview Ave interchange and SR-55/SR-91 system interchange. The preferred interchange configuration has been incorporated into the Build (Preferred) Alternative.

[1] The highway planting segment is required in accordance with the Caltrans Highway Planting General Policy. For this reason, replacement planting will be split from the roadway construction contract and be implemented as a separate follow-up contract.

The draft environmental document for the project, an Initial Study (IS)/Environmental Assessment (EA), was completed and approved in November 2018. The document was circulated for a 30-day public review period between November 20, 2018 and December 21, 2018. A public hearing was held on December 11, 2018. In March 2019, the alternatives were evaluated by the PDT and the Build (Preferred) Alternative was recommended as the PA to be implemented.

3B. Community Interaction

Agency and tribal consultation as well as public participation for this project have been accomplished through a variety of formal and informal methods, including interagency coordination meetings, public meetings, public notices, PDT meetings, a public meeting, interagency coordination, and consultation with interested parties. This section summarizes the results of Caltrans efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

Interagency Coordination and Consultation

Formulation of the project alternatives and environmental evaluation has been carried out through a cooperative dialogue among representatives of the following agencies and organizations:

- OCTA
- Native American representatives
- Historical groups
- State Historic Preservation Officer (SHPO)
- National Marine Fisheries Service (NMFS)
- U.S. Fish and Wildlife Service (USFWS)
- OC Parks
- Federal Highway Administration (FHWA)
- California Department of Fish and Wildlife (CDFW)
- City of Anaheim
- City of Orange
- City of Placentia
- City of Fullerton

History of Community Outreach

On March 14, 2018, a public information meeting for the proposed project was held from 5 p.m. to 8 p.m. at Rio Vista Elementary School in the city of Anaheim. The meeting informed the public of the proposed project and explained the purpose and need for the proposed project. The anticipated project schedule was also outlined. Caltrans and OCTA listened to public feedback, provided a forum for public discussion, and explained how to be notified regarding the project.

Approximately 55 individuals attended the meeting. Attendees were given the opportunity to submit written comments on comment cards. In total, nine comments were submitted on the cards. Below are the primary requests and concerns from the comment cards.

- Requested that information be shared in a less technical way
- Requested improvements to the eastbound off-ramp at Glassell Street/Kraemer Place; claimed that there are weekly accidents at Frontera Street/Kraemer Place
- Requested minimal environmental impacts
- Requested that the project schedule be displayed on the flyer and that the meeting format be emphasized
- Concerned that narrowing Frontera Street will negatively affect the safety of vehicles and cyclists and increase vibrations at adjacent homes
- Requested that the project team provide information regarding where the draft environmental document will be made available for public review
- Submitted questions regarding the alternatives
- Requested that more information regarding direct impacts on local residents be provided at public information meetings

These comments have been recorded and were taken into consideration when preparing the environmental documentation for the proposed project.

Project Development Team

The City of Anaheim participated in the regular PDT meetings conducted by Caltrans and OCTA for the proposed project. The cities of Fullerton, Orange, and Placentia were also been invited to participate in PDT meetings. The PDT meetings covered a wide range of topics related to the proposed project, including development and evaluation of alternatives, engineering considerations, environmental considerations, the environmental document, and the documentation process.

Orange County Transportation Authority Project Website
OCTA has a webpage (https://bit.ly/2GMpslO) that provides information to the public regarding the proposed project, the status of the environmental document, and the environmental documentation process for the project.

Public Hearing

The public hearing (open house format) took place on December 11, 2018 from 5:30 p.m. to 7:30 p.m. at Rio Vista Elementary School in Anaheim.

To maximize awareness and attendance of the public hearing, an extensive public communications campaign was developed and executed. The target audience included residents and business in the project study area, as well as those with professional and/or civic interests. Consistent with the spirit of Title VI, the public communications effort included outreach in Spanish, which is extensively spoken in the project area. One completed Title VI survey was received during this process. Communications and outreach methods

included, but were not limited to: briefings, print and electronic notifications, and targeted community outreach. The public hearing process is further described in Section 7A.

A total of approximately 54 individuals attended the meeting. Forty-four individuals signed in, but it is estimated that seven to 10 individuals did not sign in because they arrived with another person that did sign in. Among those in attendance were Norma Campos Kurtz, District Director, Office of Assemblymember Tom Daly, 69th District, and Doug Keys, City of Orange Public Works, Traffic Division. The public hearing served to collect feedback from meeting participants. At the hearing, nine comment cards were submitted in writing and 12 verbal comments were received by the court reporter present at the meeting. The primary topics raised during the public hearing consisted of:

- Request for sound-proof windows
- Concern regarding property impacts
- Request for more effective signage on freeways
- Request for more information about traffic plans during construction
- Request for improved access to the SR-91 Express Lanes

3C. Existing Facility

SR-91 Mainline

In Orange County, SR-91 generally consists of an eight-lane freeway facility with three general purpose (GP) lanes and one HOV lane in each direction. Additionally, east of the SR-91/SR-55 interchange, there are two toll lanes in each direction (91 Express Lanes). The SR-91/SR-55 interchange marks the beginning (EB direction) and end (WB direction) of the 91 Express Lanes toll corridor.

Beginning in the western portion of the project limit heading in the eastbound direction, the SR-91 facility has three general-purpose (GP) travel lanes, one High Occupancy Vehicle (HOV) lane, and one auxiliary lane beginning at State College Blvd. The HOV lane in the EB direction merges into the GP lanes 1,100 feet west of Tustin Ave OC. One 91 Express Lane is added at the Santa Ana River, approximately 2,000 feet west of SR-91/SR-55 interchange. The NB SR-55 freeway terminates at the SR-91/SR-55 interchange adding one Express Lane, three GP lanes, and one auxiliary lane to EB SR-91. East of SR-91/SR-55 interchange, EB SR-91 includes two 91 Express Lanes buffer separated from six GP lanes and one auxiliary lane.

Beginning in the eastern portion of the project limit heading in the westbound direction, the SR-91 facility has five GP travel lanes and two 91 Express Lanes. One EB SR-91 Express Lane and two GP lanes diverge at the SR-91/SR-55 interchange, establishing the SB SR-55. West of the SR-91/SR-55 interchange, the 91 Express Lane becomes a GP lane at the Tustin Ave interchange. The WB SR-91 is four GP lanes with a fifth lane added with the WB Tustin Ave on-ramp and an HOV lane opening at the WB Tustin Ave on-ramp merge with the mainline. At the SR-91/SR-57 interchange, two GP lanes diverge to the SR-57 NB/SB connector and a fourth GP lane is added from the SB SR-57/WB SR-91 connector.

SR-91 Interchanges

The SR-91 Improvement Project traverses two system interchanges and four local interchanges, as listed below, from west to east:

1. SR-91/State College Blvd interchange
2. SR-91/SR-57 system interchange
3. SR-91/Kraemer Blvd/Glassell Street (St) interchange
4. SR-91/Tustin Ave interchange
5. SR-91/SR-55 system interchange
6. SR-91/Lakeview Ave interchange

The SR-91/State College Boulevard interchange is a Type L-1 diamond interchange with two eastbound ramps and two westbound ramps. In the EB direction, the ramp arrangement consists of an EB off-ramp to State College Blvd and an EB direct on-ramp from State College Blvd. In the WB direction, the ramp arrangement consists of a WB off-ramp to State College Blvd and a WB direct on-ramp from State College Blvd. The EB and WB ramps form two signalized intersections with State College Blvd. State College Blvd crosses SR-91 via an undercrossing structure.

The SR-91/SR-57 system interchange is a modified Type F-2 interchange which provides all traffic movements between these two freeways. In the EB direction, the ramp arrangement consists of a branch diverge that splits to provide access to NB SR-57 (flyover) and SB SR-57 (direct), a branch merge from NB SR-57 (direct), and a branch merge from SB SR-57 (loop). In the WB direction, the ramp arrangement consists of a branch diverge that splits to provide access to NB SR-57 (direct) and SB SR-57 (flyover), a branch merge from NB SR-57 (loop), and a branch merge from SB SR-57 (direct). Additionally, an HOV direct connector (flyover) is included in the median that provides access from EB SR-91 to NB SR-57 and SB SR-57 to WB SR-91. SR-57 crosses over SR-91 via an overcrossing structure, with separate structures for the connector loop ramps.

The SR-91/Kraemer Boulevard/Glassell Street is a partial cloverleaf with four EB ramps and three WB ramps. In the EB direction, the ramp arrangement consists of an EB off-ramp to SB Glassell St, an EB loop off-ramp to NB Glassell St, an EB loop on-ramp from SB Glassell St, and an EB direct on-ramp from NB Glassell St. In the westbound direction, the ramp arrangement consists of a WB off-ramp to NB and SB Kraemer Blvd, a WB loop on-ramp from NB Kraemer Blvd, and a WB direct on-ramp from SB Kraemer Blvd. Kraemer Blvd/Glassell St crosses SR-91 via an overcrossing structure.

The SR-91/Tustin Avenue interchange consists of two EB ramps and two WB ramps. In the EB direction, the ramp arrangement consists of an EB off-ramp to Tustin Ave and an EB loop on-ramp from Tustin Ave. In the WB direction, the ramp arrangement consists of a WB off-ramp to Tustin Ave and a WB direct on-ramp from Tustin Ave. Tustin Ave crosses SR-91 via an overcrossing structure.

The SR-91/SR-55 interchange is a Type F-5 interchange because the SR-55 terminates at the SR-91. In the EB direction, the ramp arrangement consists of a branch diverge to SB SR-55 (direct). In the WB direction, the ramp arrangement consists of a branch diverge (grade separated left exit) to SB SR-55. Additionally, a separate facility (grade separated) is provided for 91 Express Lane traffic to SB SR-55. EB SR-91 crosses the SR-55 ramps via an overcrossing structure.

The SR-91/Lakeview Avenue interchange is a partial cloverleaf with three EB ramps and three WB ramps. In the EB direction, the ramp arrangement consists of an EB hook off-ramp to Santa Ana Canyon Road (Rd), an EB loop on-ramp from SB Lakeview Ave, and an EB direct on-ramp from NB Lakeview Ave. In the WB direction, the ramp arrangement consists of a WB off-ramp to Lakeview Ave, a WB loop on-ramp from NB Lakeview Ave, and a WB direct on-ramp from SB Lakeview Ave.

Existing Pavement Structural Sections

Existing pavement along the SR-91 corridor is generally comprised of the following:

- The mainline HOV and GP lane pavement is typically Portland Cement Concrete (PCC).
- Auxiliary lane pavement is typically PCC.
- Inside and outside shoulders typically consist of Asphalt Concrete (AC) pavement.
- Ramps typically consist of AC pavement.

Existing Structures

Table 2 provides a list of existing structures along the SR-91 project corridor from west to east.

Table 2: Existing Structures along SR-91

No.	Post Mile	Structure Name	Bridge No.
1	4.76	Acacia Street UC	55-0218
2	5.26	State College UC	55-0852
3	5.53	Placentia Avenue OC	55-0853
4	5.60	91-57 HOV Connector Separation	55-0849E
5	5.89	Sunkist Street OC	55-0854
6	5.95	N57-W91/91 Connector Separation	55-0446G
7	5.96	Route 57/91 Separation	55-0446
8	5.96	E91-N57/91&57 Connector Separation	55-0447G
9	5.96	Miraloma Avenue OC	55-0855
10	5.97	S57-E91/91 Connector Separation	55-0446F
11	6.16	W91-S57 Connector OC	55-0448F
12	6.42	La Palma Avenue OC	55-0418
13	7.27	Carbon Canyon Diversion Channel	55-0396, 55-0396S
14	7.37	Kraemer Blvd OC	55-0404
15	8.19	North Olive UP	55-0195
16	8.39	Tustin Avenue OC	55-0414
17	8.57	Santa Ana River Bridge	55-0106

No.	Post Mile	Structure Name	Bridge No.
18	8.80	Riverdale Avenue OC	55-0427
19	R9.09	N55-W91/91 Connector Separation	55-0713R
20	R9.19	E91/91-55 Fasttrack Separation	55-0493R
21	R9.91	91-55FT/W91-S55 Connector Separation	55-0714
22	R10.09	Lakeview Avenue OC	55-0475
23	R10.50	Roadside Ditch Drain 'A'	55-0604

Existing Drainage Facilities

The project corridor is located both within the San Gabriel-Coyote Creek Watershed and Santa Ana River watershed. The receiving water bodies for the project area are Carbon Creek, Coyote Creek, San Gabriel River Reach 1, San Gabriel Estuary, Carbon Canyon Diversion Channel, Santa Ana River Reach 2, Santa Ana River Reach 1 and Pacific Ocean. Runoff from State College Blvd Intersection to N. Kraemer Blvd/Glassell St Intersection discharges into Carbon Canyon Creek to Coyote Creek, San Gabriel River Reach 1, San Gabriel River Estuary and ultimately into the Pacific Ocean. Runoff from N. Kraemer Blvd/Glassell St Intersection to the Santa Ana River Bridge (North Bank) discharges into Carbon Canyon Diversion Channel to Santa Ana River Reach 2, Santa Ana River Reach 1 and ultimately into the Pacific Ocean. Runoff from Santa Ana River Bridge (North Bank) to the Lakeview Ave Intersection discharges into Santa Ana River Reach 2 to Santa Ana River Reach 1 and ultimately into the Pacific Ocean.

The offsite stormwater in the vicinity of the project area generally flows from east to west. Runoff that sheet flows towards SR-91 is generally collected by parallel channels or local drainage systems and directed to large flood control facilities via drainage culverts or bridge structures.

The onsite drainage within the project area is generally captured and conveyed via a combination of open channel flows (ditches, channels, and swales) and underground storm drain systems, which ultimately discharge to larger flood control facilities. The onsite drainage system also includes water-carrying barriers in the median of the SR-91 freeway with catch basins in the median shoulders.

Major flood control facilities in vicinity of the SR-91 project corridor that have the potential to be impacted by the project are listed in Table 3, from west to east.

Table 3: Existing Major Drainage Facilities

No.	Channel Name	Owner	Type of Existing Facility
1	Carbon Canyon Diversion Channel	OCFCD	Bridge No. 55-0396
2	Unnamed culvert (east of Lakeview Ave)	Caltrans	Triple 8'x4' RCB

OCFCD=Orange County Flood Control District
RCB=reinforced concrete box

The ownership and maintenance responsibility for the unnamed culvert located east of Lakeview Avenue will need to be verified during the PS&E phase.

Existing Utilities

The following agencies/companies have utilities within or adjacent to the study limits:

- City of Anaheim – Water
- Golden State Water – Water
- Metropolitan Water District – Water
- OCWD – Water
- City of Anaheim – Sewer
- City of Placentia – Sewer
- OCSD – Sewer
- Southern California Gas – Gas
- City of Anaheim – Power
- Southern California Edison – Power
- AT&T – Telecom
- Time Warner Cable – Telecom
- CenturyLink – Telecom
- Sunesys LLC – Telecom
- Level 3 Communications – Telecom
- Wilshire Connection - Telecom

4. PURPOSE AND NEED

Purpose:
The purpose of the proposed project within the corridor is to:

- Improve capacity and reduce congestion.
- Reduce weaving and merging between successive ramps at several interchanges.

Need:
The current deficiencies on SR-91 within the project limits are as follows:

- Existing and projected SR-91 mainline peak-period traffic demand exceeds available capacity in numerous locations within the project limits.
- Congestion due to weaving and merging between successive ramps at several interchanges creates bottlenecks along WB SR-91.

The portion of the SR-91 corridor between State College Blvd and Lakeview Ave is currently experiencing congestion and long traffic delays during morning (AM) and evening (PM) peak periods due to local, regional, and interregional traffic demand exceeding capacity. In addition, forecasted local and regional traffic demand is expected to increase, resulting in an increase in the daily traffic volumes along the project corridor from approximately 185,500 vehicles per day in 2014 to approximately 197,700 vehicles per day by the design year 2050.

4A. Problem, Deficiencies, Justification

The current configuration of the SR-91 corridor has several current and future geometric and infrastructure deficiencies on the mainline and interchange ramps. Notable deficiencies include choke points along the freeway mainline, close interchange spacing and insufficient weaving distances, and inadequate ramp capacity.

In the existing condition, on the west end of the project limits from State College Blvd to SR-57, congestion occurs due to weaving in the WB direction at the State College Blvd off-ramp because of the large volume of traffic entering from SB SR-57. There is also an existing weaving deficiency in the WB direction because of the short merge from the NB SR-57 to WB SR-91 loop connector into WB SR-91.

From SR-57 to SR-55, there is one additional existing GP lane on WB SR-91, for a total of four GP lanes and one HOV lane (generally), while there are only three GP lanes and one HOV lane in the EB direction. Additionally, in the EB direction, operational deficiencies (weaving) occur at the SR-55 connector ramp due to high traffic volumes, which results in delay and queuing upstream of this area. In the WB direction, similar operational deficiencies take place at the SR-57 connector ramp. There are also existing weaving deficiencies in the EB direction because of (1) the existing collector-distributor (C-D) road between the Kraemer Blvd/Glassell St loop ramps and (2) the short weaving distance between the Kraemer Blvd/Glassell St on-ramp and the Tustin Ave off-ramp.

On the east end of the project limits from SR-55 to Lakeview Ave, there is an operational deficiency (weaving) in the EB direction at SR-55 because of the short distance between Lakeview Ave and SR-55 and the large volume of traffic accessing SR-55, both from SR-91 and from Lakeview Ave. Because of the number of movements in this short distance, there are also existing weaving deficiencies that contribute to the congestion in this area.

Overall, SR-91 has insufficient capacity to accommodate either the existing travel demand or the projected travel demand for the design year 2050. Without infrastructure improvements, the increase in travel demand is expected to result in increased travel time, increased delays, and LOS F operating conditions on almost all freeway mainline segments, ramp junctions, and weaving sections.

4B. Regional and System Planning

4.B.1. Identify Systems

The Riverside Freeway, SR-91, was initially opened in 1965 and is an east-west freeway traversing the Cities of Buena Park, Fullerton, Anaheim, Placentia, and Yorba Linda within Orange County and is used for interstate, interregional and intraregional travel. Its westerly terminus is located at Interstate 110 (I-110) in the City of Gardena, and its easterly terminus is in the City of Riverside at the junction with State Route 60 (SR-60). SR-91 is part of the California Freeway and Expressway System and is the only freeway that links Los Angeles, Orange, and Riverside Counties.

SR-91 is functionally classified as a freeway and an urban principal arterial and is included in the National Highway System (NHS). SR-91 is also a High Emphasis Route, a Lifeline Route, and a Goods Movement Route. The segments within the project area are currently designated as urbanized. It is also a Surface Transportation Assistance Act (STAA) National Network Route for use by oversized trucks and is approximately 59 miles in length.

4.B.2. State Planning

The SR-91 Federal/State functional classification is Other Freeway or Expressway throughout Orange County.

The SR-91 Route Concept Report (RCR) (Caltrans, October 1999) is in the process of being updated to reflect more recent analysis data and may identify additional lanes needed to meet the desired LOS F0. The current RCR shows the ultimate concept for 8 mixed flow and 2 HOV lanes resulting in a 10-lane concept from the L.A. County Line to SR-55. The proposed project would exceed the RCR concept in this segment with 10 mixed flow and 2 HOV lanes, resulting in a 12-lane concept. The concept for SR-91 between SR-55 and the Riverside County Line was also completed in December 1995 with the addition of 2 toll lanes in each direction, known as the 91 Express Lanes, making a 12-lane concept from SR-55 to the Riverside County Line. The proposed project would exceed the RCR concept in this segment east of SR-55 with 11 mixed flow and 4 HOT lanes, resulting in a 15-lane concept. By the year 2020, the RCR expects the LOS will worsen to F3 for some segments. The RCR report does not outline the specifics of interchange geometry, entrance or exit ramps, or auxiliary lanes.

The Corridor System Management Plan (CSMP) - Orange County SR-91 Corridor Final Report (August 2010) was a result of the 2006 voter-approved Proposition 1B ballot measure and California Transportation Commission (CTC) guidelines to describe how mobility gains from funded corridor improvements would be maintained over time, with a focus on operational strategies, incorporation of all travel modes, parallel roadways, and improvements to maintain or improve corridor performance. It should be noted that the CSMP does analyze the proposed project (although with PSR-PDS improvements that have since been modified) within a scenario that also includes constructing a standard right-hand connector exit for WB SR-91 to SB SR-55, which is not a part of the proposed project. The proposed project would provide the additional lanes and auxiliary lanes along the project corridor, which would meet or exceed the strategies considered in the CSMP and which would not preclude other CSMP strategies from being implemented in the future.

4.B.3. Regional Planning

The Build (Preferred) Alternative is included in the 2019 Federal Transportation Improvement Program (FTIP) as project ID ORA150110. The 2019 FTIP was adopted by the Southern California Association of Governments (SCAG) on October 1, 2018 and approved for air quality conformity by the Federal Highway Administration (FHWA) on December 17, 2018. The Build (Preferred) Alternative is also included in the financially constrained project list of the approved SCAG 2016-2040 Regional Transportation Plan/Sustainable

Communities Strategy (2016 RTP/SCS) as project ID 2M0736. The project description in the RTP/SCS and FTIP is: "SR-91 (SR-57 to SR-55) - Add 1 MF lane EB from 55 to 57; Add 1 MF lane WB from Glassell to State College; Improve interchanges and merging from Lakeview to Raymond (PA&ED phase). Auxiliary lanes will be added in certain segments (PA&ED phase)."

The proposed project is also consistent with the 2009 OCTA Commuter Bikeways Strategic Plan (May 2009) with the project being located within the Anaheim Canyon Business Center bikeway priority zone. Facilities are being proposed for bicycle (and pedestrian) users for each bridge reconstruction over SR-91 (including La Palma Ave, Glassell St, and Lakeview Ave).

4.B.4. Local Planning

For reference purposes, SR-91 is classified as a State Freeway on the OCTA's County Master Plan of Arterial Highways (MPAH).

OCTA's Measure M (M1) one-half cent sales tax funded delivery of transportation improvements between 1990 and 2011. After experiencing the success and progress of M1, Orange County voters renewed the half-cent sales tax for transportation improvements in November 2006 for another 30 years to 2041 to launch the Renewed Measure M (M2).

In 2012, the M2020 Plan was approved by the OCTA Board to provide guidance on program delivery priorities between 2013 and 2020. This plan was developed as a self-sustaining sales tax measure; however, due to slower than anticipated growth in the M2 sales tax revenue proceeds, the M2020 Plan objectives were reevaluated in 2016 to: assess implications of the revised long-term revenue forecast, determine what had been accomplished to date, and assess what can be assumed to move forward. The OCTA Board approved the Next 10 Delivery Plan (Next 10 Plan) on November 14, 2016 as the replacement for the M2020 Plan. The Next 10 Plan provides guidance regarding what can be accomplished over the 10 years between 2017 and 2026. The proposed project is listed as Project I in the Next 10 Plan.

The proposed project is included in the OCTA's 2014 Long Range Transportation Plan (LRTP) titled, "Outlook 2035: Because Mobility Matters" (September 12, 2014). OCTA is responsible for planning and implementation of countywide transportation systems and projects. In this role, OCTA leads the effort to develop the LRTP as its vision for mobility of the next 20+ years. The LRTP is updated every 4 years to reflect changing demographics, economic trends, and mobility needs.

As the proposed project is located predominantly within the City of Anaheim, and in and around the cities of Fullerton, Orange, and Yorba Linda, planning with these local cities has been on-going. There is one residential development undergoing construction during preparation of the PA/ED on Riverdale Ave near WB SR-91 just west of Lakeview Ave in the City of Anaheim. Another redevelopment of a commercial property to a homeless shelter, also in Anaheim, is undergoing construction and occupancy during the preparation of

the PA/ED on Kraemer Place, adjacent to the WB SR-91 on-ramp at Kraemer Blvd. Both developments would likely be completed by the time the SR-91 improvement project starts construction and coordination has been ongoing with the City of Anaheim. The proposed project is consistent with local transportation plans, including the City of Anaheim Bicycle Master Plan (May 23, 2017).

4.B.5. Transit Operator Planning

The project area is served by OCTA buses (OC Bus and Express Bus), Riverside Transit Agency (RTA) buses, and Metrolink. OCTA provides local bus routes throughout the study area. In addition, OCTA has a shared-ride service for people who are unable to use the regular, fixed-route bus service because of functional limitations caused by disability, as well as a Senior Mobility Program (SMP) and an American with Disabilities Act (ADA) paratransit service. Further, OCTA offers Rideshare, vanpool, and Carpool programs that help individuals find alternative commute modes to driving alone.

On SR-91, Express Bus service is provided between Riverside and Orange counties by the following routes:

- OCTA Route 794 from Riverside County to Hutton Centre and South Coast Metro (along SR-91 and SR-55)
- RTA Route 200 from San Bernardino/Riverside to the Anaheim Resort (along SR-91 and SR-57)
- RTA Route 205 from Temecula/Corona to the Village at Orange (along SR-91 and SR-55)
- RTA Route 216 between the Village at Orange and Downtown Riverside (along SR-91 and SR-55)

Reduced travel time resulting from project improvements and improved traffic operations would enhance these services.

The La Palma/Lincoln Transit Opportunity Corridor, as recommended in the "OC Transit Vision: Transit Opportunity Corridors – Initial Screening and Preliminary Recommendations" report (June 2017), could benefit from the proposed project as highway-avoidance traffic would be drawn back to SR-91 and off La Palma Ave from the Anaheim Canyon Metrolink Station (easterly corridor limit, near Tustin Ave) to east of State College Blvd.

Metrolink is a commuter rail line that provides service to and from the City of Anaheim and other areas, including downtown Los Angeles, Riverside, and several locations in Orange County. Metrolink is operated by the Southern California Regional Rail Authority (SCRRA), which provides transit services to the Orange, San Bernardino, Ventura, Riverside, San Diego, and Los Angeles counties. The Anaheim Canyon Metrolink Station is within the immediate project vicinity near Tustin Ave on the Inland Empire-OC Line. The proposed Placentia Metrolink Station will be a new station on the 91/Perris Valley Line and construction will begin pending negotiations with BNSF Railway (location will be just east

of SR-57 and approximately 1.3 miles north of SR-91). The Fullerton Metrolink Station is approximately 2.5 miles away from the westerly end of the proposed project. The Anaheim Regional Transportation Intermodal Center (ARTIC) is located just over 3 miles south of the proposed project along SR-57.

The Anaheim Canyon Metrolink Station improvement project includes the addition of a second track, platform, extensions of the platform, and associated passenger amenities. Construction of the Anaheim Canyon Metrolink Station improvement project is anticipated to begin in late 2019.

4C. Traffic

A Traffic Study Report (TSR) was prepared for the existing (2014), opening year (2030), and forecasted future (2050) traffic volume and demand. The TSR was approved by Caltrans on July 17, 2018. Detailed data analysis and methodologies used can be referenced in the TSR.

The No Build alternative incorporates projects from the approved 2012 Southern California Association of Governments (SCAG) Financially Constrained Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). The SR-91 Baseline plan includes the existing conditions and the following recently constructed projects:

- EA 12-0C5604 - Addition of a new exit bypass lane from east of NB SR-55/WB SR-91 connector to the Tustin Ave WB off-ramp
- EA 12-0G3304 - Construction of a new GP lane on EB SR-91 from SR-91/SR-55 connector to the east of Weir Canyon Rd interchange
- EA 12-0C5704 - Construction of a new GP lane on WB SR-91 from east of State College Blvd to east of I-5.

Although these projects were recently constructed, existing conditions analyses did not include them as they were under construction at the time of the analysis. Therefore, they were only included in the future condition analysis. Further details can be found in the TSR regarding the use of traffic data prior to construction within the study area.

4.C.1. Current and Forecasted Traffic

There are two primary areas along WB SR-91 that are currently operating at oversaturated conditions. The first area, east of the SR-91/SR-55 split, is due to a primary WB bottleneck at the SR-91/SR-55 interchange that queues back to the Lakeview Ave WB off-ramp. The second area, east of the State College Blvd WB on-ramp, is a WB bottleneck that queues back to the SR-57 interchange. The traffic demand either exceeds capacity or is at capacity at these bottleneck locations resulting in traffic queuing upstream. Weaving operations are also deficient in the segment from NB SR-55 to Tustin Ave due to the high entry volumes from the NB SR-55 connector on-ramp. In the EB direction of SR-91, the segment from State College Blvd to the SR-57 connector off-ramp currently operates with oversaturated conditions. Weaving analysis for the project indicates that operations are also deficient from the Glassell St on-ramp to the Tustin Ave off-ramp due to the capacity constraints of the

existing through lanes within this location. Traffic operations are projected to continue to degrade at these locations under Opening Year (2030) and Design Year (2050) conditions. Truck traffic along the SR-91 project corridor accounts for approximately 6 percent of the mainline ADT volumes under the existing condition.

Existing and Future Year Mainline Analysis

Table 4 summarizes the existing average daily traffic volumes for mainline and HOV/HOT lanes. Table 5, Table 6, Table 7, and Table 8 summarize the AM and PM traffic forecast volumes along the freeway mainline segments and ramps for existing year 2014, No-Build for opening year 2030, and No-Build for design year 2050. These tables illustrate that traffic demand is forecast to continue to grow, and without improvements will lead to a further increase in travel times and delays.

Table 4: Existing Average Daily Traffic Volumes – Year 2014

Location	ADT Volumes	
	Mainline	HOV/HOT
SR-91 WB		
State College Blvd On-Ramp to Raymond Ave Off-Ramp	108,223	14,800
SR-57 On-Ramp to State College Blvd Off-Ramp	105,753	10,400
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	104,489	10,400
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	97,984	7,000
SR-91/SR-55 Split to Tustin Ave Off-Ramp	97,529	6,800
Lakeview Ave SB On-Ramp to SR-91/SR-55 Split	136,342	16,000
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	119,171	16,000
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	113,898	16,000
SR-91 EB		
East St On-Ramp to State College Blvd Off-Ramp	106,496	14,100
State College Blvd On-Ramp to SR-57 Off-Ramp	101,837	10,400
SR-57 On-Ramp to Glassell St Off-Ramp	95,963	9,900
Glassell St On-Ramp to Tustin Ave Off-Ramp	87,543	11,200
Tustin Ave On-Ramp to SR-91/SR-55 Split	89,624	7,800
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	128,982	18,100
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	113,675	18,100
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	106,136	18,100
SR-55 NB		
North of Lincoln Ave	109,188	10,200
SR-55 SB		
North of Lincoln Ave	108,621	9,200
SR-57 NB		
North of Lincoln Ave	110,056	13,000
At East La Jolla St	129,657	12,900
SR-57 SB		
North of Lincoln Ave	122,165	17,600

Location	ADT Volumes	
	Mainline	HOV/HOT
At East La Jolla St	125,656	18,500

Source: Exhibit 17, Traffic Study Report (2018).

Table 5: Existing Freeway Mainline Peak Volume/LOS – Year 2014

Location	AM		PM	
	Volume	LOS	Volume	LOS
SR-91 WB (Mainline)				
State College Blvd On-Ramp to Raymond Ave Off-Ramp	6,090	F	5,490	F
SR-57 On-Ramp to State College Blvd Off-Ramp	6,490	F*	5,710	F*
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	8,260	F*	6,970	F*
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	7,460	C	6,240	C
SR-91/SR-55 Split to Tustin Ave Off-Ramp	6,990	F	6,090	F
Lakeview Ave SB On-Ramp to SR-91/SR-55 Split	7,770	F**	7,040	F**
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	7,530	F*	7,140	F*
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	6,340	C	6,310	C
SR-91 EB (Mainline)				
East St On-Ramp to State College Blvd Off-Ramp	7,310	E	7,130	E
State College Blvd On-Ramp to SR-57 Off-Ramp	7,040	F**	7,390	F**
SR-57 On-Ramp to Glassell St Off-Ramp	6,520	B	7,050	B
Glassell St On-Ramp to Tustin Ave Off-Ramp	5,750	F	6,860	F
Tustin Ave On-Ramp to SR-91/ SR-55 Split	6,820	D	8,650	E
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	6,570	C	6,730	C
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	6,590	C	6,310	B
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	6,360	C	5,440	C
SR-57 NB (Mainline)				
North of Lincoln Ave	7,220	-	6,340	-
At East La Jolla St	9,170	E	8,270	F*

Source: Exhibits 13, 33, 34, and 35, Traffic Study Report (2018).

1. *F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*
2. *F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*

Table 6: No-Build Freeway Mainline Peak Volume/LOS – Year 2030

Location	AM		PM	
	Volume	LOS	Volume	LOS
SR-91 WB (Mainline)				
State College Blvd On-Ramp to Raymond Ave Off-Ramp	8,400	E	8,450	E
SR-57 On-Ramp to State College Blvd Off-Ramp	8,060	F*	7,790	F*
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	8,920	F*	8,010	F*
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	7,750	D	7,020	D
SR-91/SR-55 Split to Tustin Ave Off-Ramp	7,960	F	7,230	F
Lakeview Ave SB On-Ramp to SR-91/SR-55 Split	8,410	F*	8,240	F*
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	8,360	F*	8,420	F*
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	7,390	F*	7,900	F*
SR-91 EB (Mainline)				
East St On-Ramp to State College Blvd Off-Ramp	6,970	E	7,140	F
State College Blvd On-Ramp to SR-57 Off-Ramp	7,790	F**	7,910	F**
SR-57 On-Ramp to Glassell St Off-Ramp	6,370	B	7,340	F*
Glassell St On-Ramp to Tustin Ave Off-Ramp	5,190	F	6,350	F**
Tustin Ave On-Ramp to SR-91/ SR-55 Split	6,590	C	7,780	F
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	8,570	B	8,110	B
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	7,800	C	7,300	C
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	7,960	D	6,440	C
SR-57 NB (Mainline)				
North of Lincoln Ave	8,420	-	7,160	-
At East La Jolla St	9,970	F	8,820	F*

Source: Exhibits 18, 42, 43, and 44, Traffic Study Report (2018).

1. *F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*
2. *F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*

Table 7: No-Build Freeway Mainline Peak Volume/LOS – Year 2050

Location	AM		PM	
	Volume	LOS	Volume	LOS
SR-91 WB (Mainline)				
State College Blvd On-Ramp to Raymond Ave Off-Ramp	9,300	E	9,260	E
SR-57 On-Ramp to State College Blvd Off-Ramp	8,980	F**	8,590	F**
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	9,770	F*	8,640	F*
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	8,260	F*	7,500	F*
SR-91/SR-55 Split to Tustin Ave Off-Ramp	8,440	F	7,690	F
Lakeview Ave SB On-Ramp to SR-91/ SR-55 Split	9,940	F**	9,760	F**
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	8,990	F*	9,000	F*
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	8,030	F*	8,500	F*
SR-91 EB (Mainline)				
East St On-Ramp to State College Blvd Off-Ramp	7,380	F	7,460	F
State College Blvd On-Ramp to SR-57 Off-Ramp	8,240	F**	8,270	F**
SR-57 On-Ramp to Glassell St Off-Ramp	6,810	B	7,730	F*
Glassell St On-Ramp to Tustin Ave Off-Ramp	6,840	F	7,890	F**
Tustin Ave On-Ramp to SR-91/SR-55 Split	8,020	D	10,010	F
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	8,130	C	7,500	B
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	8,470	D	7,760	C
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	8,690	-	6,880	-
SR-57 NB (Mainline)				
North of Lincoln Ave	9,070	-	7,660	-
At East La Jolla St	10,570	F	9,310	F*

Source: Exhibits 26, 48, 49, and 50, Traffic Study Report (2018).

1. *F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*
2. *F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*

Existing and Future Year Ramp Analysis

Ramp analysis was conducted for the on- and off-ramps along SR-91 and NB SR-57 for existing year (2014), opening year (2030), and future year (2050). In 2030, the SR-55 connector ramp has demand that exceeds capacity. In 2050, the SR-55 connector ramp and SR-57 connector ramps are projected to have demand that exceeds capacity. The peak ramp volumes are summarized in Table 8.

Table 8: Freeway Ramp Peak Volume

Location	2014				2030 No-Build				2050 No-Build			
	AM		PM		AM		PM		AM		PM	
	Vol	V/C	Vol	V/C	Vol	D/C	Vol	D/C	Vol	D/C	Vol	D/C
SR-91 WB (Ramp)												
Imperial Highway Off-Ramp	630	0.21	580	0.19	900	0.30	880	0.29	1,030	0.34	990	0.33
NB Imperial Highway On-Ramp	810	0.43	650	0.34	960	0.51	660	0.35	1,010	0.53	700	0.37
SB Imperial Highway On-Ramp	1,170	0.59	910	0.46	1,060	0.53	840	0.42	1,130	0.57	900	0.45
Lakeview Ave Off-Ramp	370	0.19	300	0.15	380	0.19	330	0.17	400	0.20	350	0.18
NB Lakeview Ave On-Ramp	430	0.23	150	0.08	480	0.25	160	0.08	500	0.26	170	0.09
SB Lakeview Ave On-Ramp	830	0.42	940	0.47	920	0.46	1,030	0.52	950	0.48	1,070	0.54
Lakeview Ave On-Ramp to SR-91	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lakeview Ave On-Ramp to SR-55	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
WB SR-91 to SB SR-55 Connector Off-Ramp	3,500	0.80	3,760	0.85	3,640	0.83	4,740	1.08	3,790	0.86	5,010	1.14
NB SR-55 to WB SR-91 Connector On-Ramp	3,080	0.70	3,050	0.69	3,210	0.73	3,230	0.73	3,390	0.77	3,430	0.78
Tustin Ave Off-Ramp	1,200	0.60	1,200	0.60	1,380	0.35	1,390	0.35	1,450	0.36	1,470	0.37
Tustin Ave On-Ramp	830	0.42	840	0.42	930	0.47	970	0.49	1,000	0.50	1,030	0.52
Kraemer Blvd Off-Ramp	900	0.45	800	0.40	1,050	0.52	940	0.47	1,120	0.56	1,000	0.50
NB Kraemer Blvd On-Ramp	450	0.24	320	0.17	530	0.28	450	0.24	560	0.29	510	0.27
SB Kraemer Blvd On-Ramp	410	0.21	790	0.40	800	0.40	1,140	0.57	960	0.47	1,270	0.64
WB SR-91 to SR-57 Connector Off-Ramp	3,520	0.80	3,360	0.76	3,540	0.80	3,220	0.73	3,750	0.85	1,700	0.39
WB SR-91 to NB SR-57 Connector Off-Ramp	1,760	0.80	1,680	0.76	1,760	0.80	1,610	0.73	1,850	0.84	1,700	0.77
WB SR-91 to SB SR-57 Connector Off-Ramp	1,760	0.80	1,680	0.76	1,780	0.81	1,610	0.73	1,900	0.86	1,720	0.78

Location	2014				2030 No-Build				2050 No-Build			
	AM		PM		AM		PM		AM		PM	
	Vol	V/C	Vol	V/C	Vol	D/C	Vol	D/C	Vol	D/C	Vol	D/C
NB SR-57 to WB SR-91 Connector On-Ramp	800	0.40	910	0.46	1,210	0.61	1,030	0.52	1,360	0.68	1,150	0.58
SB SR-57 to WB SR-91 Connector On-Ramp	960	0.44	1,190	0.54	1,470	0.67	1,980	0.90	1,600	0.73	2,200	1.01
State College Blvd Off-Ramp	400	0.20	490	0.25	530	0.27	570	0.29	600	0.30	620	0.31
State College Blvd On-Ramp	820	0.41	1,140	0.57	910	0.46	1,250	0.63	960	0.48	1,320	0.66
SR-91 EB (Ramp)												
State College Blvd Off-Ramp	910	0.46	650	0.33	880	0.44	670	0.34	920	0.46	680	0.34
State College Blvd On-Ramp	770	0.39	840	0.42	790	0.40	770	0.39	840	0.42	820	0.41
EB SR-91 to SR-57 Connector Off-Ramp	3,450	0.78	3,110	0.71	3,630	0.83	3,170	0.72	3,820	0.87	3,290	0.75
EB SR-91 to NB SR-57 Connector Off-Ramp	2,120	0.64	1,970	0.60	2,240	0.68	1,960	0.59	2,360	0.72	2,040	0.62
EB SR-91 to SB SR-57 Connector Off-Ramp	1,330	0.60	1,140	0.52	1,390	0.63	1,210	0.55	1,460	0.66	1,250	0.57
SB SR-57 to EB SR-91 Connector On-Ramp	720	0.36	730	0.37	1,070	0.54	1,330	0.67	1,180	0.59	1,390	0.70
NB SR-57 to EB SR-91 Connector On-Ramp	980	0.45	1,060	0.48	1,140	0.52	1,260	0.57	1,210	0.55	1,370	0.62
Glassell St SB Off-Ramp (Glassell St Off-Ramp Build)	599	0.20	387	0.13	630	0.21	554	0.18	666	0.22	630	0.21
Glassell St SB On-Ramp	700	0.37	735	0.39	1,043	0.55	1,001	0.53	1,309	0.69	1,253	0.66
Glassell St NB Off-Ramp	732	0.39	473	0.25	770	0.41	677	0.36	814	0.43	770	0.41
Glassell St NB On-Ramp	300	0.15	315	0.16	447	0.22	429	0.21	561	0.28	537	0.27
Tustin Ave Off-Ramp	1,040	0.52	850	0.43	1,110	0.56	1,080	0.54	1,170	0.59	1,150	0.58
Tustin Ave On-Ramp	1,130	0.59	1,280	0.67	1,370	0.72	1,410	0.74	1,450	0.76	1,500	0.79
EB SR-91 to SB SR-55 Connector Off-Ramp	2,770	0.92	2,410	0.80	3,270	1.09	2,750	0.92	3,530	1.18	2,930	0.98
NB SR-55 to EB SR-91 Connector On-Ramp	3,480	0.58	2,990	0.50	4,520	0.57	4,220	0.53	4,960	0.62	4,480	0.56

Location	2014				2030 No-Build				2050 No-Build			
	AM		PM		AM		PM		AM		PM	
	Vol	V/C	Vol	V/C	Vol	D/C	Vol	D/C	Vol	D/C	Vol	D/C
Lakeview Ave Off-Ramp	910	0.46	930	0.49	1,080	0.36	1,380	0.46	1,150	0.38	1,430	0.48
SB Lakeview Ave On-Ramp	240	0.13	170	0.09	270	0.14	220	0.12	290	0.15	250	0.13
NB Lakeview Ave On-Ramp	40	0.02	20	0.01	50	0.13	15	0.01	50	0.03	20	0.01
Imperial Highway Off-Ramp	1,220	0.31	1,390	0.35	1,100	0.28	1,680	0.42	1,200	0.30	1,800	0.45
SB Imperial Highway On-Ramp	490	0.26	240	0.13	470	0.25	350	0.18	500	0.26	370	0.19
NB Imperial Highway On-Ramp	260	0.13	230	0.12	470	0.24	290	0.15	540	0.27	320	0.16
SR-57 NB (Ramp)												
NB SR-57 to EB SR-91 Connector Off-Ramp	980	0.22	1,060	0.24	1,140	0.26	1,260	0.29	1,210	0.28	1,370	0.44
NB SR-57 to WB SR-91 Connector Off-Ramp	800	0.40	910	0.46	1,210	0.61	1,030	0.52	1,360	0.68	1,150	0.69
NB SR-57 Off-Ramp to Orangethorpe Ave	470	0.24	330	0.17	510	0.26	370	0.19	550	0.28	390	0.37

Source: Exhibits 15, 22, 30, 36, 54, and 55, Traffic Study Report (2018).

Existing and Future Year Intersection Analysis

Intersection LOS analysis was conducted for affected ramp terminal and key intersections within the study limits. Table 9 provides a summary of existing and projected LOS for each intersection.

Table 9: Intersection LOS

Location	2014		2030 No-Build		2050 No-Build	
	AM	PM	AM	PM	AM	PM
SR-91 WB/State College Blvd	B	B	B	B	B	B
SR-91 EB/State College Blvd	C	C	C	C	C	C
La Palma Ave/Kraemer Blvd	F	E	F	F	F	F
SR-91 WB/Kraemer Blvd	B	B	B	B	C	B
SR-91 EB/Kraemer Blvd	C	E	C	C	C	C
Frontera St/Glassell St	B	B	B	B	B	A
La Palma Ave/Tustin Ave	C	D	D	E	D	E
SR-91 WB/Tustin Ave	F	F	D	D	E	D
SR-91 EB/Tustin Ave	C	C	C	C	C	C
East Riverdale Ave/Tustin Ave	C	C	C	C	C	C
East Riverdale Ave/Lakeview Ave	D	D	E	E	E	E
SR-91 WB/Lakeview Ave	B	B	B	B	B	B
Lakeview Ave/Santa Ana Canyon Rd	E	D	F	E	F	E
SR-91 EB Off-Ramp/Lakeview Ave	B	B	B	B	B	B
Orangethorpe Ave/SR-57 NB	C	C	C	D	C	D
Orangethorpe Ave/SR-57 SB	C	D	D	D	C	D
Orangethorpe Ave/State College Blvd	C	D	C	D	C	E
State College Blvd/La Palma Ave	D	D	D	E	D	E
State College Blvd/Lincoln Ave	D	D	D	D	D	E
SR-57 NB Ramps & Lincoln Ave	C	C	C	C	C	C
SR-57 SB Ramps & Lincoln Ave	C	C	C	C	C	C
Glassell St/East Riverdale Ave	B	B	B	B	B	C
Tustin Ave/SR-55 SB Off-Ramp	B	B	B	B	B	B
Tustin Ave/Lincoln Ave	F	F	F	F	F	F
Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	D	C	D	C	E	C
Santiago Blvd/SR-55 NB Ramps	C	C	C	C	C	C
La Palma Ave/Lakeview Ave	C	D	C	D	C	D
Imperial Highway/La Palma Ave	D	D	E	E	E	E
Imperial Highway/SR-91 WB Ramps	B	B	B	B	B	B
Imperial Highway/SR-91 EB Ramps	B	B	B	C	B	C
Imperial Highway/Santa Ana Canyon Road	D	E	E	F	E	F

Source: Exhibits 39 and 61, Traffic Study Report (2018).

4.C.2. Collision Analysis

Traffic collision data for the SR-91 freeway and interchange ramps within the project study limits were obtained from Caltrans Traffic Accident Surveillance and Analysis Systems (TASAS) Table B and TASAS Selective Accident Retrieval (TSAR) for a 3-year period between July 1, 2013 and June 30, 2016.

SR-91 Mainline

Table 10 below presents the 3-year collision data between July 1, 2013 and June 30, 2016 for the SR-91 freeway. As shown in the table, the actual total collision rates for EB SR-91 are lower than the statewide average for similar facilities in all 12 segments, while 4 of the 12 segments are moderately higher than the statewide average for WB SR-91. In 1 out of 12 segments for EB SR-91, the fatality collision rate is higher than the statewide average, while 5 of the 12 segments for WB SR-91 are higher than statewide average. These locations are shown in boldface in the table. The breakdown of the collisions by type that occurred on eastbound and westbound SR-91 during the 3-year review period is summarized in Table 11.

Table 10: SR-91 Mainline Collision Data

Segment	No. of Collisions			No. of Persons		Collision Rate (a/mvm)					
						Actual Rate			Average Rate		
	F	F+I	TOT	F	I	F	F+I	TOT	F	F+I	TOT
SR-91 EB											
East of State College (PM 4.500 to 4.999)	1	12	46	1	20	**0.010**	0.12	0.45	0.005	0.39	1.25
East of State College to East of SR-57 (PM 5.000 to 5.499)	0	15	79	0	21	0.000	0.15	0.79	0.003	0.32	1.04
East of SR-57 to SR-91/SR-57 IC (PM 5.500 to 5.999)	0	13	40	0	19	0.000	0.12	0.37	0.003	0.28	0.92
SR-91/SR-57 IC to La Palma (PM 6.000 to 6.499)	0	10	37	0	14	0.000	0.16	0.60	0.003	0.31	1.00
La Palma to East of Kraemer/Glassell (PM 6.500 to 6.999)	0	7	21	0	9	0.000	0.12	0.35	0.003	0.26	0.85
East of Kraemer/ Glassell to Kraemer (PM 7.000 to 7.499)	0	15	39	0	17	0.000	0.25	0.66	0.004	0.30	0.95
Kraemer/Glassell to East of Tustin (PM 7.500 to 7.999)	0	6	18	0	12	0.000	0.10	0.31	0.003	0.29	0.94
East of Tustin to Tustin (PM 8.000 to 8.499)	0	17	92	1	24	0.000	0.29	1.56	0.003	0.30	0.99
Tustin to SR-91/ SR-55 IC (PM 8.500 to R8.999)	0	6	33	0	6	0.000	0.10	0.53	0.003	0.32	1.02
SR-91/SR-55 IC to East of Lakeview (PM R9.000 to R9.499)	0	5	26	0	6	0.000	0.06	0.34	0.006	0.44	1.40
East of Lakeview to Lakeview (PM R9.500 to R9.999)	0	10	26	0	19	0.000	0.12	0.30	0.003	0.32	1.05
Lakeview to West of Lakeview (PM R10.000 to R10.499)	0	21	49	0	27	0.000	0.26	0.60	0.003	0.35	1.14
SR-91 WB											
East of State College (PM 4.500 to 4.999)	0	33	107	0	54	0.000	0.32	1.05	0.005	0.39	1.25
East of State College to East of SR-57 (PM 5.000 to 5.499)	0	39	136	0	65	0.000	**0.39**	**1.36**	0.003	0.32	1.04

Segment	No. of Collisions			No. of Persons		Collision Rate (a/mvm)					
						Actual Rate			Average Rate		
	F	F+I	TOT	F	I	F	F+I	TOT	F	F+I	TOT
East of SR-57 to SR-91/SR-57 IC (PM 5.500 to 5.999)	0	23	85	0	30	0.000	0.21	0.79	0.003	0.28	0.92
SR-91/SR-57 IC to La Palma (PM 6.000 to 6.499)	0	36	129	0	49	0.000	**0.58**	**2.08**	0.003	0.31	1.00
La Palma to East of Kraemer/Glassell (PM 6.500 to 6.999)	0	15	50	0	20	0.000	0.25	0.83	0.003	0.26	0.85
East of Kraemer/ Glassell to Kraemer (PM 7.000 to 7.499)	1	27	88	1	41	**0.017**	**0.45**	**1.48**	0.004	0.30	0.95
Kraemer/Glassell to East of Tustin (PM 7.500 to 7.999)	0	10	23	0	17	0.000	0.17	0.40	0.003	0.29	0.94
East of Tustin to Tustin (PM 8.000 to 8.499)	0	9	29	0	11	0.000	0.15	0.49	0.003	0.30	0.99
Tustin to SR-91/ SR-55 IC (PM 8.500 to R8.999)	0	17	53	0	18	0.000	0.27	0.85	0.003	0.32	1.02
SR-91/SR-55 IC to East of Lakeview (PM R9.000 to R9.499)	0	10	66	0	13	0.000	0.13	0.85	0.006	0.44	1.40
East of Lakeview to Lakeview (PM R9.500 to R9.999)	0	14	67	0	17	0.000	0.16	0.77	0.003	0.32	1.05
Lakeview to West of Lakeview (PM R10.000 to R10.499)	0	55	170	0	89	0.000	**0.67**	**2.07**	0.003	0.35	1.14

a/mvm=accidents per million vehicle miles; F=Fatality; I=Injury; TOT=Total
Boldface indicates that the actual collision rate is higher than the statewide average

Table 11: SR-91 Mainline Collisions by Type

Location	No. of Collisions and Percent by Type									
	Head On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
SR-91 EB										
PM 4.500 to 4.999	0	9	29	1	6	1	0	0	0	46
	0%	20%	63%	2%	13%	2%	0%	0%	0%	100%
PM 5.000 to 5.499	0	20	48	3	6	1	0	1	0	79
	0%	25%	61%	4%	8%	1%	0%	1%	0%	100%
PM 5.500 to 5.999	0	12	18	0	9	0	1	0	0	40
	0%	30%	45%	0%	23%	0%	2%	0%	0%	100%
PM 6.000 to 6.499	0	9	22	0	5	0	0	1	0	37
	0%	24%	60%	0%	13%	0%	0%	3%	0%	100%
PM 6.500 to 6.999	0	8	12	0	1	0	0	0	0	21
	0%	38%	57%	0%	5%	0%	0%	0%	0%	100%
PM 7.000 to 7.499	0	4	27	0	7	0	0	1	0	39
	0%	10%	69%	0%	18%	0%	0%	3%	0%	100%
PM 7.500 to 7.999	0	2	11	1	3	0	0	0	1	18
	0%	11%	61%	6%	17%	0%	0%	0%	5%	100%
PM 8.000 to 8.499	0	21	66	0	3	2	0	0	0	92
	0%	23%	72%	0%	3%	2%	0%	0%	0%	100%
PM 8.500 to R8.999	0	13	19	0	1	0	0	0	0	33
	0%	39%	58%	0%	3%	0%	0%	0%	0%	100%

Location	No. of Collisions and Percent by Type									
	Head On	**Side-swipe**	**Rear End**	**Broad-side**	**Hit Object**	**Over-turn**	**Auto-Ped**	**Other**	**Not Stated**	**Total**
PM R9.000 to R9.499	0	14	7	0	5	0	0	0	0	26
	0%	54%	27%	0%	19%	0%	0%	0%	0%	100%
PM R9.500 to R9.999	0	10	8	3	5	0	0	0	0	26
	0%	39%	31%	11%	19%	0%	0%	0%	0%	100%
PM R10.000 to R10.499	0	14	20	2	9	2	0	1	1	49
	0%	29%	41%	4%	18%	4%	0%	2%	2%	100%
SR-91 WB										
PM 4.500 to 4.999	1	20	80	1	3	0	0	0	1	107
	1%	19%	75%	1%	3%	0%	0%	0%	1%	100%
PM 5.000 to 5.499	0	30	93	0	11	1	0	0	1	136
	0%	22%	68%	0%	8%	1%	0%	0%	1%	100%
PM 5.500 to 5.999	1	20	57	0	5	2	0	0	0	85
	1%	24%	67%	0%	6%	2%	0%	0%	0%	100%
PM 6.000 to 6.499	0	26	92	1	8	2	0	0	0	129
	0%	20%	71%	1%	6%	2%	0%	0%	0%	100%
PM 6.500 to 6.999	0	8	41	0	1	0	0	0	0	50
	0%	16%	82%	0%	2%	0%	0%	0%	0%	100%
PM 7.000 to 7.499	1	23	55	0	6	2	0	1	0	88
	1%	26%	63%	0%	7%	2%	0%	1%	0%	100%
PM 7.500 to 7.999	0	2	18	0	3	0	0	0	0	23
	0%	9%	78%	0%	13%	0%	0%	0%	0%	100%
PM 8.000 to 8.499	0	13	10	0	4	1	0	1	0	29
	0%	45%	35%	0%	14%	3%	0%	3%	0%	100%
PM 8.500 to R8.999	0	12	31	0	6	3	0	1	0	53
	0%	23%	59%	0%	11%	6%	0%	2%	0%	100%
PM R9.000 to R9.499	0	19	36	0	11	0	0	0	0	66
	0%	29%	55%	0%	17%	0%	0%	0%	0%	100%
PM R9.500 to R9.999	0	15	46	0	6	0	0	0	0	67
	0%	22%	69%	0%	9%	0%	0%	0%	0%	100%
PM R10.000 to R10.499	0	35	119	2	10	3	0	1	0	170
	0%	21%	70%	1%	6%	2%	0%	1%	0%	100%

As shown in Table 11, the predominant type of collisions along the SR-91 mainline is rear end collisions, followed by sideswipes. The collision data above suggests that the prevalent cause of collisions along the SR-91 mainline is traffic congestion, resulting in these types of collisions. The SR-91 Widening Project would add one GP lane in the EB direction to increase capacity, as well as provide additional auxiliary lanes, where warranted, to improve lane continuity and traffic flow. These operational improvements are anticipated to reduce congestion and may lead to a decrease in the collision rates on the freeway mainline, especially for congestion-related accidents.

Freeway Ramps

Table 12 and Table 13 summarize a 3-year collision history between July 1, 2013 and June 30, 2016 for the interchange ramps along the SR-91 project corridor.

Table 12: SR-91 EB Freeway Ramp Collision Data

EB Ramp Location	No. of Collisions			No. of Persons		Collision Rate (a/mvm)					
						Actual Rate			Average Rate		
	F	F+I	TOT	F	I	F	F+I	TOT	F	F+I	TOT
EB Off to Kraemer/ Glassell (PM 7.046)	0	0	3	0	0	0.000	0.00	0.10	0.002	0.08	0.25
EB Off Lakeview Ave (PM R9.856)	0	9	14	1	14	0.000	**0.53**	**0.83**	0.002	0.23	0.78
EB Off to NB Kraemer (PM 7.910)	0	3	14	0	3	0.000	0.22	**1.05**	0.004	0.30	0.93
EB Off to SB Glassell (PM 7.191)	0	2	5	0	3	0.000	**0.29**	**0.72**	0.003	0.24	0.69
EB Off to SB Rte 55 (PM R8.986)	0	0	4	0	0	0.000	0.00	0.15	0.003	0.12	0.37
EB Off to Rte 57 (PM 5.850)	0	0	2	0	0	0.000	0.00	0.03	0.002	0.08	0.25
EB Off State College Blvd (PM 5.088)	0	3	7	0	6	0.000	0.28	0.66	0.04	0.32	0.92
EB Off to Tustin Ave (PM 8.179)	0	4	8	0	8	0.000	**0.34**	0.68	0.004	0.32	0.92
EB On from Kraemer/ Glassell (PM 7.591)	0	0	1	0	0	0.000	0.00	0.04	0.001	0.06	0.20
EB On from NB Glassell (PM 7.518)	0	0	1	0	0	0.000	0.00	0.23	0.003	0.19	0.56
EB On from NB Lakeview Ave (PM R10.272)	0	0	0	0	0	0.000	0.00	0.00	0.003	0.19	0.56
EB On from NB Rte 55 (PM R9.223)	0	0	0	0	0	0.000	0.00	0.00	0.002	0.11	0.32
EB On from SB Kraemer (PM 7.517)	0	1	10	0	1	0.000	0.12	**1.22**	0.003	0.23	0.71
EB On from State College Blvd (PM 5.398)	0	6	9	0	6	0.000	**0.57**	**0.86**	0.002	0.21	0.60
EB On from Tustin Ave (PM 8.379)	0	1	7	0	1	0.000	0.05	0.36	0.001	0.23	0.67
EB On from Lakeview Ave (PM R10.078)	0	0	1	0	0	0.000	0.00	0.28	0.001	0.23	0.67

a/mvm=accidents per million vehicle miles; F=Fatality; I=Injury; TOT=Total
Boldface indicates that the actual collision rate is higher than the statewide average

Table 13: SR-91 WB Freeway Ramp Collision Data

WB Ramp Location	No. of Collisions			No. of Persons		Collision Rate (a/mvm)					
						Actual Rate			Average Rate		
	F	F+I	TOT	F	I	F	F+I	TOT	F	F+I	TOT
WB On from NB Glassell (PM 7.396)	0	0	3	0	0	0.000	0.00	0.65	0.003	0.23	0.71
WB On from SB Kraemer (PM 7.200)	0	3	9	0	3	0.000	0.32	0.97	0.003	0.19	0.56
WB Off Lakeview Ave (PM R10.262)	0	4	7	0	5	0.000	0.60	1.04	0.004	0.32	0.92
WB Off to Kraemer/ Glassell (PM 7.538)	0	4	11	0	4	0.000	0.22	0.61	0.004	0.32	0.92
WB Off to SB Rte 55 (PM R9.371)	0	3	13	0	8	0.000	0.04	0.15	0.003	0.12	0.37
WB Off to Rte 57 (PM 6.491)	0	3	8	0	4	0.000	0.07	0.18	0.002	0.08	0.25

WB Ramp Location	No. of Collisions			No. of Persons		Collision Rate (a/mvm)					
						Actual Rate			Average Rate		
	F	F+I	TOT	F	I	F	F+I	TOT	F	F+I	TOT
WB Off State College Blvd (PM 5.379)	0	8	12	0	10	0.000	0.90	1.34	0.004	0.32	0.92
WB Off to Tustin Ave (PM 8.485)	0	3	24	0	6	0.000	0.27	1.07	0.004	0.32	0.92
WB On from NB Rte 55 (PM 8.904)	0	4	12	0	5	0.000	0.15	0.45	0.002	0.13	0.39
WB On from State College Blvd (PM 5.086)	0	4	8	0	7	0.000	0.27	0.54	0.002	0.21	0.60
WB On from Tustin Ave (PM 8.284)	0	6	12	0	6	0.000	0.56	1.12	0.002	0.21	0.60
WB On from NB Lakeview Ave (PM R10.139)	0	2	3	0	2	0.000	0.75	1.12	0.003	0.23	0.71
WB On from SB Lakeview Ave (PM R9.952)	0	2	2	0	2	0.000	0.20	0.20	0.003	0.19	0.56

a/mvm=accidents per million vehicle miles; F=Fatality; I=Injury; TOT=Total
Boldface indicates that the actual collision rate is higher than the statewide average

Table 14: SR-91 EB Ramp Collisions by Type

EB Ramp Location	No. of Collisions and Percent by Type									
	Head On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
EB Off to Kraemer/ Glassell (PM 7.046)	0	2	0	0	0	1	0	0	0	3
	0%	67%	0%	0%	0%	33%	0%	0%	0%	100%
EB Off Lakeview Ave (PM R9.856)	0	0	4	1	7	1	0	1	0	14
	0%	0%	29%	7%	50%	7%	0%	7%	0%	100%
EB Off to NB Kraemer (PM 7.910)	0	2	5	0	7	0	0	0	0	14
	0%	14%	36%	0%	50%	0%	0%	0%	0%	100%
EB Off to SB Glassell (PM 7.191)	0	1	1	1	2	0	0	0	0	5
	0%	20%	20%	20%	40%	0%	0%	0%	0%	100%
EB Off to SB Rte 55 (PM R8.986)	0	1	0	0	2	1	0	0	0	4
	0%	25%	0%	0%	50%	25%	0%	0%	0%	100%
EB Off to Rte 57 (PM 5.850)	0	2	0	0	0	0	0	0	0	2
	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
EB Off State College Blvd (PM 5.088)	0	1	0	5	0	0	0	0	1	7
	0%	14%	0%	72%	0%	0%	0%	0%	14%	100%
EB Off to Tustin Ave (PM 8.179)	0	1	1	5	0	1	0	0	0	8
	0%	13%	13%	62%	0%	12%	0%	0%	0%	100%
EB On from Kraemer/ Glassell (PM 7.591)	0	0	0	0	1	0	0	0	0	1
	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
EB On from NB Glassell (PM 7.518)	0	0	1	0	0	0	0	0	0	1
	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
EB On from NB Lakeview Ave (PM R10.272)	0	0	0	0	0	0	0	0	0	0
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EB On from NB Rte 55 (PM R9.223)	0	0	0	0	0	0	0	0	0	0
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EB On from SB Kraemer (PM 7.517)	0	3	6	0	1	0	0	0	0	10
	0%	30%	60%	0%	10%	0%	0%	0%	0%	100%
EB On from State College Blvd (PM 5.398)	0	1	1	4	2	1	0	0	0	9
	0%	11%	11%	45%	22%	11%	0%	0%	0%	100%

EB Ramp Location	No. of Collisions and Percent by Type									
	Head On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
EB On from Tustin Ave (PM 8.379)	0	3	2	1	1	0	0	0	0	7
	0%	43%	29%	14%	14%	0%	0%	0%	0%	100%
EB On from Lakeview Ave (PM R10.078)	0	0	1	0	0	0	0	0	0	1
	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%

Table 15: SR-91 WB Ramp Collisions by Type

WB Ramp Location	No. of Collisions and Percent by Type									
	Head On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
WB On from NB Glassell (PM 7.396)	0	0	2	0	0	1	0	0	0	3
	0%	0%	67%	0%	0%	33%	0%	0%	0%	100%
WB On from SB Kraemer (PM 7.200)	0	3	4	0	1	1	0	0	0	9
	0%	33%	45%	0%	11%	11%	0%	0%	0%	100%
WB Off Lakeview Ave (PM R10.262)	0	0	3	2	2	0	0	0	0	7
	0%	0%	43%	29%	29%	0%	0%	0%	0%	100%
WB Off to Kraemer/ Glassell (PM 7.538)	1	2	3	2	2	0	0	0	1	11
	9%	18%	27%	18%	18%	0%	0%	0%	9%	100%
WB Off to SB Rte 55 (PM R9.371)	0	1	8	0	4	0	0	0	0	13
	0%	8%	62%	0%	30%	0%	0%	0%	0%	100%
WB Off to Rte 57 (PM 6.491)	0	1	6	0	1	0	0	0	0	8
	0%	13%	75%	0%	12%	0%	0%	0%	0%	100%
WB Off State College Blvd (PM 5.379)	0	0	2	9	1	0	0	0	0	12
	0%	0%	17%	75%	8%	0%	0%	0%	0%	100%
WB Off to Tustin Ave (PM 8.485)	0	5	17	1	0	0	0	0	1	24
	0%	21%	71%	4%	0%	0%	0%	0%	4%	100%
WB On from NB Rte 55 (PM 8.904)	0	2	4	0	6	0	0	0	0	12
	0%	17%	33%	0%	50%	0%	0%	0%	0%	100%
WB On from State College Blvd (PM 5.086)	0	0	2	5	0	1	0	0	0	8
	0%	0%	25%	63%	0%	12%	0%	0%	0%	100%
WB On from Tustin Ave (PM 8.284)	0	1	6	0	5	0	0	0	0	12
	0%	8%	50%	0%	42%	0%	0%	0%	0%	100%
WB On from NB Lakeview Ave (PM R10.139)	0	0	2	0	1	0	0	0	0	3
	0%	0%	67%	0%	33%	0%	0%	0%	0%	100%
WB On from SB Lakeview Ave (PM R9.952)	0	0	0	0	1	0	0	0	0	1
	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%

5. ALTERNATIVES

5A. Viable Alternatives

Viable alternatives for the project include a No Build Alternative and a Build Alternative, which are described in the following sections. Rejected alternatives are described in Section 5B.

Preferred Alternative

On March 21, 2019, the PDT evaluated the alternatives under consideration and identified the Build (Preferred) Alternative as the Preferred Alternative (PA) for the SR-91 Improvement Project. As part of the evaluation, considerations were given to the project purpose and need; input from the public and government agencies; local, regional, state, and federal goals and policies; as well as environmental, social, and economic impacts. After reviewing these factors, seven evaluation criteria were established to compare the alternatives, as shown in Table 16. The PDT also determined a weight factor for each of the evaluation criteria based on the relative importance that was applied to the final score. The alternatives were then compared and ranked for their relative performance, and the scores were computed.

Table 16: Alternative Evaluation

Evaluation Criteria		W(1)	Performance Ranking		Score	
			No Build	Build	No Build	Build
1	Improve Capacity EB from SR-57 to SR-55	3	1	2	3	6
2	Reduce Congestion	3	1	2	3	6
3	Improve Mobility	3	1	2	3	6
4	Improve Weaving and Merging	3	1	2	3	6
5	Consistency with Regional Plans	2	1	2	2	4
6	Public Comment	3	1	2	3	6
7	Cost Effective	2	1	2	2	4
Weighted Total Score					**19**	**38**

(1) – Weight Factor: 3=High, 2=Medium, 1=Low

As shown in the above table, the Build (Preferred) Alternative received the highest total score of 38, as compared to the No Build Alternative with a total score of 19. The Build (Preferred) Alternative meets the project's purpose of adding mainline capacity to reduce corridor congestion and improve mobility. Additionally, the Build (Preferred) Alternative is consistent with the OCTA Measure M2 Freeway Program, regional programs for transportation improvements, and the Caltrans RCR. As such, the Build (Preferred) Alternative was identified by the PDT as the PA to move forward for implementation.

Design Modifications After Public Review

One design modification to the Build (Preferred) Alternative was proposed as a result of the public circulation period for the draft environmental document. The EB off-ramp to Tustin

Ave was realigned to perpetuate the existing condition, which has driveway access opposite the terminus of the ramp (which provides nonstandard access control). This modification is reflected in the geometric plans included as Attachment G.

Additionally, through the soundwall survey performed during November/December 2018, the soundwall initially recommended in the draft environmental document (S-457) was not supported by the potential benefitted residences and is therefore not recommended for implementation. One additional existing soundwall was also identified and evaluated for replacement as part of the project. Further details are included in Section 5.A.3.10.

5.A.1. No Build Alternative

Upon identification of the Build (Preferred) Alternative as the PA, no further analysis was carried out for the No Build Alternative; and therefore, the No Build Alternative description provided below has not changed from the Draft Project Report (DPR).

Under the No-Build Alternative, no reconstruction or improvements would be made to the existing SR-91 freeway mainline and various interchanges, ramps, intersections, other than routine roadway maintenance and proposed improvements currently programmed or under development. This alternative does not improve capacity, reduce congestion, or reduce weaving and merging between successive ramps at several interchanges. As a result, the No Build Alternative is not consistent with the need and purpose of this project. This alternative, however, does not preclude the construction of future improvements.

5.A.2. Build (Preferred) Alternative

The Build (Preferred) Alternative was identified as the PA in March 2019 because it meets the project's purpose and need and received the highest score in the alternative evaluation for the SR-91 Improvement Project.

The Build (Preferred) Alternative would include improvements along SR-91, primarily in the EB direction, from west of State College Blvd to east of Lakeview Ave. As mentioned previously, the proposed project limits would be located on SR-91 between PM 4.7 and PM R10.8 (from west of State College Blvd to east of Lakeview Ave), on SR-57 between PM 15.5 and PM 16.2 (from just south of SR-91 to just north of SR-91), and on SR-55 between PM 17.4 and PM R17.9 (from south of SR-91 to SR-91) in the cities of Anaheim, Fullerton, Orange, and Placentia in Orange County.

The Build (Preferred) Alternative assumes completion of all baseline improvements programmed to be completed within the project limits. The Build (Preferred) Alternative is consistent with the OCTA Go Freeway program.

5.A.2.1. Build (Preferred) Alternative Proposed Engineering Features

Proposed engineering features of the Build (Preferred) Alternative are as follows:

Build (Preferred) Alternative Mainline Improvements

- Add one GP lane and replace shoulder on EB SR-91 between SR-57 and SR-55.
- Restore auxiliary lanes as needed throughout the project limits.
- Add a fourth GP lane along WB SR-91 from the NB SR-57 to WB SR-91 connector.
- Extend the SB SR-57 to WB SR-91 connector auxiliary lane through the State College Blvd interchange, tying in to the existing WB SR-91 auxiliary lane west of State College Blvd that ends at the Raymond Blvd/East St off-ramp.
- Reconfigure the WB SR-91 to NB/SB SR-57 connector to provide dedicated exits to NB SR-57 and SB SR-57.

SR-91/Lakeview Ave Interchange Reconstruction

At the SR-91/Lakeview Ave Interchange, the existing SR-91 WB on- and off-ramps would be replaced with tight diamond ramps. The new WB SR-91 on-ramp would include two lanes that taper to one lane before joining WB SR-91 (access to SB SR-55 would be precluded from this ramp). The new WB SR-91 off-ramp would include one lane that would widen to three lanes at the intersection with Lakeview Ave (one dedicated left turn lane, one shared left/right turn lane, and one dedicated right turn lane). The project would also include the construction of a drop ramp for dedicated access to SB SR-55 (access to WB SR-91 would not be provided on this ramp). The proposed drop ramp would include two lanes that would taper to one lane prior to joining the SR-55 mainline. Because of the introduction of this drop ramp, the diverge point for WB SR-91 and SB SR-55 will be moved to the east of the Lakeview Ave interchange. To accommodate the drop ramp, the outside lanes along SR-91 would be shifted to the north through the Lakeview Ave interchange. The intersections of Lakeview Ave with both the WB SR-91 on-ramp and the SR-55 drop ramp would be signalized and operate as a single intersection.

Improvements on Lakeview Ave would extend from just north of the intersection with Riverdale Ave to the intersection with Santa Ana Canyon Rd. In the SB direction, Lakeview Ave would consist of three through lanes and an 8-foot sidewalk, with a dedicated right turn lane at the WB SR-91 on-ramp. At the SR-55 drop ramp, one of the through lanes would become a dedicated right turn lane with two through lanes continuing across the bridge. At the intersection with Santa Ana Canyon Rd, there would be three lanes with one dedicated right turn lane, one shared through/left turn lane, and one dedicated left turn lane. In the NB direction on Lakeview Ave, there would be two through lanes and a 15-foot shared pedestrian/bicycle facility, with two dedicated left turn lanes on the bridge. An additional through lane would be added north of the WB SR-91 ramps/Lakeview Ave intersection. No planter wells or landscaping elements are proposed along the 15-foot sidewalk. The area for potential BMPs will be further considered in the PS&E phase.

SR-91/Kraemer Blvd/Glassell St Interchange Reconstruction

For the SR-91/Kraemer Blvd/Glassell St interchange, in the EB direction, the existing Glassell St on- and off-ramps and the loop on-ramp would be replaced. The loop-off ramp is proposed to be removed. The new EB off-ramp would consist of one dedicated exit lane and one optional exit lane (matching the existing two-lane exit configuration) at the diverge, which would widen to four lanes at the intersection with Glassell St (two dedicated left turn lanes; one shared left/right turn lane; and one dedicated right turn lane). The EB direct on-ramp would consist of two lanes, that taper to a single lane prior to merging with EB SR-91. The EB loop on-ramp would consist of two lanes, that taper to a single lane prior to joining EB SR-91 as an auxiliary lane.

In the WB direction, the existing off- and on-ramps would be replaced and reconfigured. The WB off-ramp would consist of one lane that would widen to four lanes at the intersection with Kraemer Blvd (one dedicated left turn lane and three dedicated right turn lanes). The WB loop on-ramp would be two lanes, that taper to a single lane prior to merging with WB SR-91. The WB direct on-ramp would consist of two 12-foot lanes, that taper to a single 12-foot lane prior to merging with WB SR-91. Both new ramp intersections with Kraemer Blvd-Glassell St would be signalized.

Improvements along Kraemer Blvd would include reconstruction of the overcrossing and improvements would extend approximately 400 feet north of the new WB SR-91 off-ramp intersection. Improvements on Glassell St would extend south to the intersection with Frontera St. NB Glassell St would consist of three lanes with a 6-foot bike lane and 6.5-foot sidewalk, with a dedicated right turn lane at the EB SR-91 on-ramp and the WB SR-91 loop on-ramp. SB Kraemer Blvd would consist of three lanes with a 6-foot bike lane and 6.5-foot sidewalk and a dedicated right turn lane at the EB loop on-ramp transitioning to two SB through lanes and a dedicated right turn lane and dedicated left turn lane south of the EB SR-91 ramps at the intersection with Frontera St. A replacement access easement will be provided for the existing maintenance access utilized by the County of Orange (via an existing access easement) for the Carbon Canyon Diversion Channel located between the EB loop on-ramp and off-ramp. The access to the channel on the north side of the interchange will not be impacted.

Build (Preferred) Alternative Ramp Improvements

The Build (Preferred) Alternative would require reconstruction of several system and local interchange ramps to accommodate the SR-91 widening. Table 17 provides a summary of ramp improvements that are included in the Build (Preferred) Alternative.

Table 17: Build (Preferred) Alternative Ramp Improvements

Interchange	Ramp Type	Line	Proposed Ramp Work
Westbound			
State College Blvd	WB Off Direct	"ST-1"	Reconstruct (partial)
	WB On Direct	"ST-2"	Reconstruct (partial)

Interchange	Ramp Type	Line	Proposed Ramp Work
SR-57	WB On Direct	"57-5"	Reconstruct
	WB On Loop	"57-3"	Reconstruct (partial)
	WB Off Direct (to NB SR-57)	"57-2"	Reconstruct
	WB Off Direct (to SB SR-57)	"57-1"	Reconstruct (partial)
Kraemer Blvd/ Glassell St	*See description of "SR-91/Kraemer Blvd/Glassell St Interchange Reconstruction" above*		
Tustin Ave	WB Off Direct	N/A	No work
	WB On Direct	N/A	No work
SR-55	*See description of "SR-91/Lakeview Ave Interchange Reconstruction" above*		
Lakeview Avenue	*See description of "SR-91/Lakeview Ave Interchange Reconstruction" above*		
Eastbound			
State College Blvd	EB Off Direct	N/A	No work
	EB On Direct	N/A	No work
SR-57	EB Off Direct (to NB/SB SR-57)	N/A	No work
	EB On Direct (from SB SR-57)	N/A	No work
	EB On Direct (from NB SR-57)	N/A	No work
Kraemer Blvd/ Glassell St	*See description of "SR-91/Kraemer Blvd/Glassell St Interchange Reconstruction" above*		
Tustin Ave	EB Off Direct	"TU-3"	Reconstruction
	EB On Loop	"TU-4"	Reconstruction
SR-55	*See description of "SR-91/Lakeview Ave Interchange Reconstruction" above*		
Lakeview Avenue	*See description of "SR-91/Lakeview Ave Interchange Reconstruction" above*		

Build (Preferred) Alternative Structure Improvements

The Build (Preferred) Alternative would necessitate several structure improvements, as summarized in Table 18 on the following page. Four bridges are proposed to be replaced as part of the project, which are described below.

La Palma Avenue OC (Bridge No. 55-0418). The La Palma Avenue OC is proposed to be replaced to accommodate the widening of the WB SR-91 and the modifications to the WB SR-91 to SR-57 connectors. The new 390-foot long, two-span bridge would include four 12-foot lanes (two lanes in each direction), 9-foot median, a 6-foot shoulder on each side, a 6.67-foot sidewalk on each side, and a 1-foot barrier on each side, for a total width of 84.4 feet.

Kraemer Blvd OC (Bridge No. 55-0404). The Kraemer Blvd OC will be replaced to accommodate the EB widening and interchange reconstruction, as described in the "SR-91/Kraemer Blvd/Glassell St Interchange Reconstruction" above.

Tustin Avenue OC (Bridge No. 55-0414). The Tustin Avenue OC is proposed to be replaced to accommodate the widening of the EB SR-91 and the modifications to the EB loop on-ramp from Tustin Avenue. The new 215-foot long, two-span bridge would include three through lanes and a dedicated left turn lane in the NB direction, four through lanes and a dedicated right turn lane in the SB direction, an 8-foot sidewalk on the west side of the bridge, and a 15-foot sidewalk on the east side of the bridge (to accommodate a future bicycle and pedestrian facility), for a total width of 135 feet.

Lakeview Avenue OC (Bridge No. 55-0475). The Lakeview Avenue OC will be replaced to accommodate the interchange reconstruction, as described in the "SR-91/Lakeview Ave Interchange Reconstruction" above.

The abutments for all replaced structures have been set back to accommodate a future full-standard cross section on SR-91. These structures are not intended to accommodate adding lanes, as there is no future plan to add general purpose lanes, high occupancy toll (HOT) lanes, or a second HOV lane. The final abutment type will be confirmed in the PS&E phase.

Structure Advance Planning Studies (APSs) were prepared in 2017 for the proposed new structures, bridge widenings, and ground anchor walls. These reports defined the scope and cost of the structure work on the project. The APSs also discuss conceptual stage construction and falsework requirements and include the Structure Preliminary Geotechnical Report (SPGR), which provides preliminary geotechnical, seismic, and foundation recommendations for the structure improvements. The APS general plans are included in Attachment H.

Table 18: Build (Preferred) Alternative Structure Improvements

No.	PM	Structure Name	Bridge No.	Proposed Work
1	4.76	Acacia Street UC	55-0218	No work
2	5.26	State College UC	55-0852	Widen WB side (870 ft^2)
3	5.53	Placentia Avenue OC	55-0853	Construct ground anchor wall (668 ft^2)
4	5.60	91-57 HOV Connector Separation	55-0849E	No work
5	5.89	Sunkist Street OC	55-0854	No work
6	5.95	N57-W91/91 Connector Separation	55-0446G	No work
7	5.96	Route 57/91 Separation	55-0446	No work
8	5.96	E91-N57/91&57 Connector Separation	55-0447G	No work
9	5.96	SR-91W/SR-57 Connector Tunnel	55-0448Y	Construct connector tunnel
10	5.96	Miraloma Avenue OC	55-0855	Construct ground anchor wall (510 ft^2)
11	5.97	S57-E91/91 Connector Separation	55-0446F	No work
12	6.16	W91-S57 Connector OC	55-0448F	No work
13	6.42	La Palma Avenue OC	55-0418	Replace structure
14	7.27	Carbon Canyon Diversion Channel	55-0396, 55-0396S	Widen WB side (221 ft^2)

No.	PM	Structure Name	Bridge No.	Proposed Work
15	7.37	Kraemer Blvd OC	55-0404	Replace structure
16	8.19	North Olive UP	55-0195	No work
17	8.39	Tustin Avenue OC	55-0414	Replace structure
18	8.57	Santa Ana River Bridge	55-0106	Widen EB side (10,415 ft^2)
19	8.80	Riverdale Avenue OC	55-0427	No work
20	R9.09	N55-W91/91 Connector Separation	55-0713R	No work
21	R9.19	E91/91-55 Fasttrack Separation	55-0493R	No work
22	R9.91	91-55FT/W91-S55 Connector Separation	55-0714	No work
23	R10.09	Lakeview Avenue OC	55-0475	Replace structure
24	R10.09	Lakeview Ave/SB SR-55 On-Ramp	55-XXXX	New drop ramp structure
25	R10.50	Roadside Ditch Drain 'A'	55-0604	No work

Build (Preferred) Alternative Drainage Improvements

The proposed freeway widening would result in an increase in onsite runoff. It is anticipated that existing inlets and drainage pipes would have to be upgraded to accommodate higher discharges and/or additional inlets added. The roadway widening would also require relocation of existing inlets to the new edge of pavement. In addition, some major drainage structures along the project corridor are anticipated to require modifications/improvements as summarized in Table 19.

Table 19: Build (Preferred) Alternative Proposed Offsite Drainage Improvements

No.	Channel Name	Owner	Type of Existing Facility	Proposed Improvements
1	Carbon Canyon Diversion Channel	OCFCD	Bridge No. 55-0396	Widen bridge (WB side)
2	Unnamed culvert (east of Lakeview Ave)	Caltrans	Triple 8'x4' RCB	Protect in place

OCFCD=Orange County Flood Control District
RCB=reinforced concrete box

Drainage facilities that are owned by entities other than Caltrans will require coordination and agreements with the owner to proceed with the proposed modifications. A Construction Encroachment Permit will be obtained for any improvements to County of Orange drainage facilities. Ownership of existing facilities will be confirmed during the PS&E phase.

Build (Preferred) Alternative Plans

See Attachment G for geometric drawings for the Build (Preferred) Alternative.

5.A.2.2. Build (Preferred) Alternative Background

The proposed project Build (Preferred) Alternative was derived using elements from the PSR-PDS Build Alternatives 2A (nonstandard) and 2B (standard), and was analyzed in the Traffic Study Report as Build Alternative 2B "Modified." The primary difference between the two PSR-PDS Build Alternatives was the use of standard and nonstandard geometric design. The OCTA guidelines for the Measure M2 Freeway program highlight the need to maintain improvements within existing State Highway right of way to the extent feasible, therefore the standard geometric improvements from PSR-PDS Alternative 2B were incorporated where possible without extensive right of way acquisition. PSR-PDS Build Alternative 2A (nonstandard) was used in key areas, where full right of way acquisition would be required to meet geometric standards. Decisions to use nonstandard geometry have been made on a case by case basis with consideration given to safety as well as the impacts to right of way.

There were other improvements proposed in the PSR-PDS that were refined through the extensive PA/ED traffic analysis and modeling process. These include:

WB SR-91 Median Shoulder Widening

The PSR-PDS Alternative 2B also included widening WB SR-91 to replace the nonstandard median shoulder width to meet the 10-foot standard. Little operational benefit would be achieved with this proposed PSR-PDS improvement at great expense both economically and in terms of construction related delays. As such, this PSR-PDS improvement was not included in the proposed project Build (Preferred) Alternative.

WB SR-91 PSR-PDS Improvements between State College Blvd and SR-57

The SB SR-57 to WB SR-91 connector joins the WB SR-91 as an auxiliary lane (5th lane) and is extended through the State College Blvd interchange and ties into the existing auxiliary lane between the WB direct on-ramp from State College Blvd and the WB off-ramp at Raymond Ave-East St. This configuration would preserve the operational improvements gained by the recently constructed WB SR-91 improvement project from SR-57 to I-5 (EA 12-0C5704) through the State College Blvd interchange. The project limit was moved westerly from that of the PSR-PDS to accommodate improvements to the west of State College Blvd as described.

WB SR-91 PSR-PDS Improvements between SR-57 and Kraemer Blvd

The PSR-PDS proposed to add a GP lane on WB SR-91 from the WB Kraemer Blvd direct on-ramp, which would extend through the SR-57/SR-91 interchange as a 4th lane and dropped the proposed lane to the WB State College Blvd off-ramp. The traffic analysis and modeling revealed that a 4th GP lane was not required through the SR-57/SR-91 interchange and that the proposed improvements would effectively reintroduce the geometrics that led to inefficient traffic operations that were just improved by the recently constructed WB SR-91 improvement project from SR-57 to I-5 (EA 12-0C5704). The PSR-PDS also added an

additional WB weaving lane between the closely spaced interchanges from the Kraemer Blvd WB on-ramp and the SR-57 connector exit. Subsequent traffic analysis showed that four WB GP lanes through the SR-57/SR-91 interchange was not required to meet future traffic demand and did not address the high traffic volumes and slow-moving truck traffic from the NB SR-57 to WB SR-91 connector (loop configuration). For this reason, the additional WB 4th GP lane was added for the proposed project from the NB SR-57 to WB SR-91 connector.

Tustin Ave EB SR-91 Off-Ramp Viaduct

The PSR-PDS build alternatives include a viaduct for the Tustin Ave EB SR-91 off-ramp to avoid conflicts with the North Olive Railroad Bridge. This specific design element was dismissed from further review since the design team determined that an at-grade solution was superior in that it did not require a bridge structure, reduced project costs and long-term maintenance requirements, and would not impact views within the project corridor. The existing 15'-4" nonstandard vertical clearance over the WB SR-91 lanes is proposed to remain since meeting the standard vertical clearance would require extensive rail reconstruction to the Anaheim Canyon Station and the Santa Ana River Bridge or reprofiling SR-91.

WB SR-91 PSR-PDS Improvements between SR-55 and Lakeview Ave

Further PA/ED traffic analysis was conducted for the WB improvements between Lakeview Ave and the SR-55/SR-91 interchange. The PSR-PDS did not recommend revising the interchange complex area with an additional Lakeview Ave drop ramp to SB SR-55; however, traffic modeling and a Feasibility Study conducted at the onset of the PA/ED phase showed a significant potential benefit to separating the WB SR-91 from the SB SR-55 to the east of Lakeview Ave and constructing a barrier separation along with a dedicated drop ramp for SB SR-55 from the Lakeview Ave interchange to eliminate the weaving issues that plague the existing configuration. Therefore, the project limit was moved easterly from that of the PSR-PDS to accommodate improvements between Lakeview Ave and SR-55.

5.A.2.3. Build (Preferred) Alternative Traffic Analysis

The traffic information discussed in this section is a summary of the traffic analysis performed for the project and presented in the approved Traffic Study Report.

Build (Preferred) Alternative Mainline Analysis

In assessing and comparing the future No Build and Build SR-91 freeway mainline performance for years 2030 (opening year) and 2050 (design year), additional performance measures were evaluated in addition to the traditional peak hour LOS determination. These additional measures were evaluated as the LOS is a qualitative measure and does not provide quantitative performance comparison through the entire corridor. Utilizing only LOS would insufficiently evaluate the results when the LOS remains deficient levels during peak hours even with the improvements. Significant benefits and value of operational improvement projects can be found particularly in the reduction of peak periods and overall congestion.

With the project, although qualitatively most of the congested areas are expected to remain at LOS F during the AM and PM peak hour, the overall amount of congestion and the length of congestion periods are anticipated to be significantly reduced with the proposed improvements (see Figures 1 and 2).

Therefore, other performance metrics are needed to assess and differentiate the alternatives sufficiently. Microsimulation modeling was used to conduct and estimate these additional performance measures including vehicle miles traveled (VMT), vehicle hours of delay, and peak average travel times for AM and PM peak periods.

Conservatively, the AM and PM peak period VMT and delay amounts were aggregated to represent a 24-hour period (additional benefits are expected during the off-peak hours with the project) and then calculated as an annual amount. These annual totals were then compared among the future No Build and Build alternatives. As presented in Figure 1 below, the Build (Preferred) alternative would result in almost 50 percent reduction in corridor delay from 5,705,500 to 2,885,000 vehicle hours of delay (VHD) in 2030, while VMT remains relatively unchanged by year 2030. This is even more pronounced by 2050 with 9,772,500 hours of delay for No Build compared to 4,712,500 hours for 2050 Build conditions.

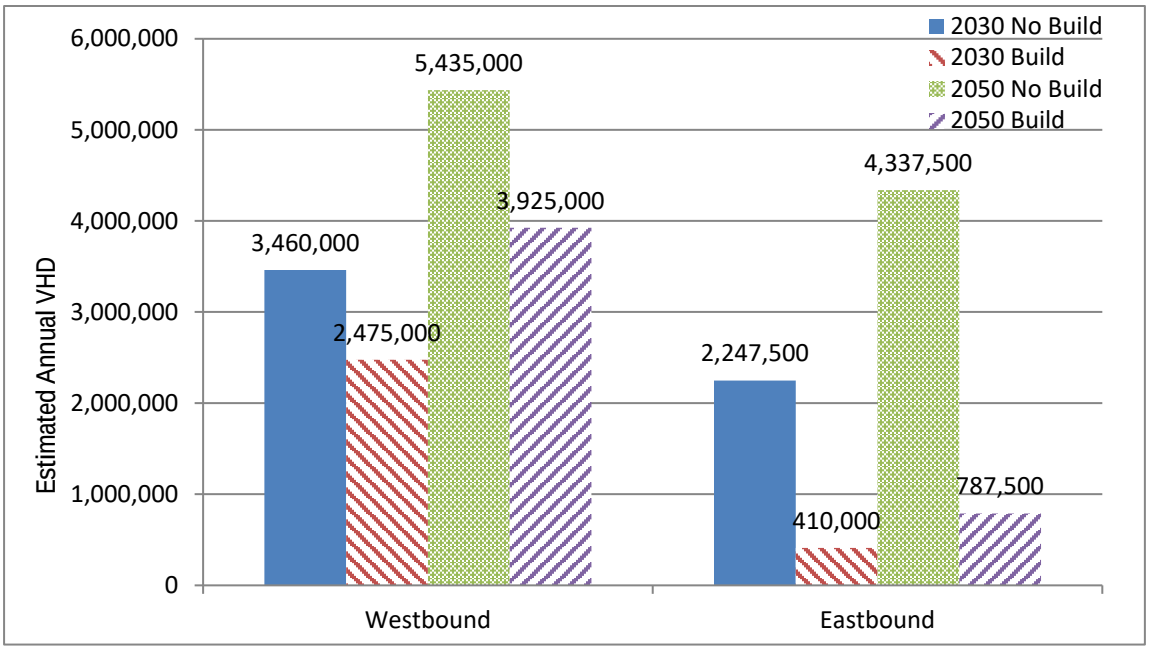


Figure 1: Estimated Annual Vehicle Hours Delay by Year 2030 and 2050

Source: Exhibit 64, Traffic Study Report (2018).

Year 2030 ADT volumes were derived by interpolating between years 2010 and 2035 volumes to obtain growth rates for the 2030 Build and No Build conditions. These growth rates were then applied to existing volumes to obtain potential volumes in 2030, which were used to perform conditions traffic analysis for all facility types. Future peak hour traffic

volumes were derived similar to the ADT forecast process. Table 20 and Table 21 show the freeway mainline directional ADT volumes and respective growth rates from existing to the future forecast years. As illustrated in the tables, travel demand is anticipated to increase by approximately 2.4% to 16.4% by 2030 for the No-Build and 3.2% to 22.8% by 2050 for the No-Build within the traffic study limits. This increase in demand on the already congested freeway will cause further congestion and delay within the corridor.

Table 20: SR-91 and SR-57 Project Area ADT Volumes and Growth Rates - Mainline

Dir	Freeway Segment		Existing ADT	2030				2050			
	From	To		2030 No Build ADT	2030 No Build Growth from Existing	2030 Build ADT	2030 Build Growth from Existing	2050 No Build ADT	2050 No Build Growth from Existing	2050 Build ADT	2050 Build Growth from Existing
SR-91											
EB	East St On Ramp	State College Blvd Off Ramp	106,496	109,000	2.4%	110,200	3.5%	109.900	3.2%	111,500	4.7%
WB	State College Blvd On Ramp	Raymond Ave Off Ramp	108,223	115,200	6.4%	115,800	7.0%	117,800	8.8%	118,600	9.6%
EB	State College Blvd On Ramp	SR-57 Off Ramp	101,837	104,900	3.0%	106,900	5.0%	106,100	4.2%	108,800	6.8%
WB	SR-57 On Ramp	State College Blvd Off Ramp	105,753	112,800	6.7%	115,800	9.5%	115,500	9.2%	119,700	13.2%
EB	SR-57 On Ramp	Glassell St Off Ramp	95,963	101,600	5.9%	106,200	10.7%	103,700	8.1%	110,100	14.7%
WB	Kraemer Blvd SB On Ramp	SR-57 Off Ramp	104,489	110,000	5.3%	113,500	8.6%	112,000	7.2%	116,900	11.9%
EB	Glassell St On Ramp	Tustin Ave Off Ramp	87,543	94,100	7.5%	99,000	13.1%	96,500	10.2%	103,400	18.1%
WB	Tustin Ave On Ramp	Kraemer Blvd Off Ramp	97,984	100,300	2.4%	103,400	5.5%	101,200	3.3%	105,400	7.6%
EB	Tustin Ave On Ramp	SR-91/SR-55 Split	86,624	100,200	11.8%	104,400	16.5%	104,300	16.4%	110,200	23.0%
WB	SR-91/SR-55 Split	Tustin Ave Off Ramp	97,529	105,600	8.3%	109,400	12.2%	108,700	11.5%	113,900	16.8%
EB	SR-91/SR-55 Split	Lakeview Ave Off Ramp	128,982	146,900	13.9%	148,000	14.7%	153,900	19.3%	155,500	20.6%
WB	Lakeview Ave SB On Ramp	SR-91/SR-55 Split	136,342	145,000	6.4%		7.7%	148,300	8.8%		10.7%
WB	Lakeview Ave	WB SR-91				70,500				72,400	
WB	WB SR-91	SR-55				76,400				78,500	
EB	Lakeview Ave NB On Ramp	Imperial Hwy Off Ramp	113,675	132,300	16.4%	132,700	16.7%	139,600	22.8%	140,300	23.4%
WB	Imperial Hwy On Ramp	Lakeview Ave Off Ramp	119,171	132,000	10.8%	132,600	11.3%	137,000	15.0%	137,800	15.6%
EB	Imperial Hwy On Ramp	East of Imperial Hwy On Ramp	106,136	123,300	16.2%	123,500	16.4%	130,100	22.6%	130,400	22.9%
WB	East of Imperial Hwy Off Ramp	Imperial Hwy Off Ramp	113,898	128,300	12.6%	128,400	12.7%	133,900	17.6%	134,000	17.6%

Dir	Freeway Segment		Existing ADT	2030				2050			
	From	To		2030 No Build ADT	2030 No Build Growth from Existing	2030 Build ADT	2030 Build Growth from Existing	2050 No Build ADT	2050 No Build Growth from Existing	2050 Build ADT	2050 Build Growth from Existing
SR-55											
NB	North of Lincoln Ave		109,188	124,300	13.8%	123,800	13.4%	130,100	19.2%	129,600	18.7%
SB	North of Lincoln Ave		108,621	116,800	7.5%	117,300	8.0%	119,900	10.4%	120,700	11.1%
SR-57											
NB	North of Lincoln Ave		110,056	124,200	12.9%	125,800	14.3%	129,800	17.9%	132,000	19.9%
SB	North of Lincoln Ave		122,165	131,600	7.7%	130,900	7.2%	135,200	10.7%	134,200	9.9%
NB	At East La Jolla St		129,657	142,000	9.5%	144,600	11.5%	146,700	13.1%	150,300	15.9%
SB	At East La Jolla St		125,656	133,900	6.6%	134,800	7.3%	137,100	9.1%	138,300	10.1%

Source: Exhibit 17, Traffic Study Report (2018).

Table 21: SR-91 and SR-57 Project Area ADT Volumes and Growth Rates – HOVL/HOTL

Dir	Freeway Segment		Existing ADT	2030		2050	
	From	To		2030 No Build ADT	2030 Build ADT	2050 No Build ADT	2050 Build ADT
SR-91							
EB	East St On Ramp	State College Blvd Off Ramp	14,100	17,700	17,700	19,200	19,100
WB	State College Blvd On Ramp	Raymond Ave Off Ramp	14,800	14,900	14,900	14,900	14,900
EB	State College Blvd On Ramp	SR-57 Off Ramp	10,400	16,200	16,200	18,900	18,900
WB	SR-57 On Ramp	State College Blvd Off Ramp	10,400	13,300	13,000	14,500	14,000
EB	SR-57 On Ramp	Glassell St Off Ramp	9,900	15,000	14,700	17,300	16,900
WB	Kraemer Blvd SB On Ramp	SR-57 Off Ramp	10,400	13,900	14,100	15,400	15,600
EB	Glassell St On Ramp	Tustin Ave Off Ramp	11,200	15,400	15,100	17,300	16,800
WB	Tustin Ave On Ramp	Kraemer Blvd Off Ramp	7,000	12,500	12,700	15,400	15,700
EB	Tustin Ave On Ramp	SR-91/SR-55 Split	7,800	9,200	9,300	9,700	9,900
WB	SR-91/SR-55 Split	Tustin Ave Off Ramp	6,800	7,300	7,300	7,400	7,500
EB	SR-91/SR-55 Split	Lakeview Ave Off Ramp	18,100	18,100	18,100	18,100	18,100
WB	Lakeview Ave SB On Ramp	SR-91/SR-55 Split	16,000	16,100	16,100	16,100	16,100
EB	Lakeview Ave NB On Ramp	Imperial Hwy Off Ramp	18,100	18,100	18,100	18,100	18,100
WB	Imperial Hwy On Ramp	Lakeview Ave Off Ramp	16,000	16,100	16,100	16,100	16,100
EB	Imperial Hwy On Ramp	East of Imperial Hwy On Ramp	18,100	18,100	18,100	18,100	18,100
WB	East of Imperial Hwy Off Ramp	Imperial Hwy Off Ramp	16,000	16,100	16,100	16,100	16,100
SR-55							
NB	North of Lincoln Ave		10,200	10,300	10,300	10,300	10,300
SB	North of Lincoln Ave		9,200	9,200	9,200	9,200	9,200
SR-57							
NB	North of Lincoln Ave		13,000	15,300	15,300	16,200	16,200
SB	North of Lincoln Ave		17,600	19,500	19,300	20,200	19,900
NB	At East La Jolla St		12,900	15,000	14,700	15,800	15,400
SB	At East La Jolla St		18,500	21,000	21,000	22,000	21,900

Source: Exhibit 17, Traffic Study Report (2018).

Mobility gains are apparent when considering the projected travel times. Average travel times along SR-91 are expected to improve by 15 percent in the WB direction and by over 50 percent in the EB direction during the PM peak period. See Table 22 for existing, 2030 and 2050 conditions including mainline corridor performance measures of VMT, VHD, and peak average travel times for the AM and PM peak periods (minutes). This table highlights the performance of the Build (Preferred)

Alternative in that it significantly reduces VHD, and this despite managing an increase in VMT for the WB direction.

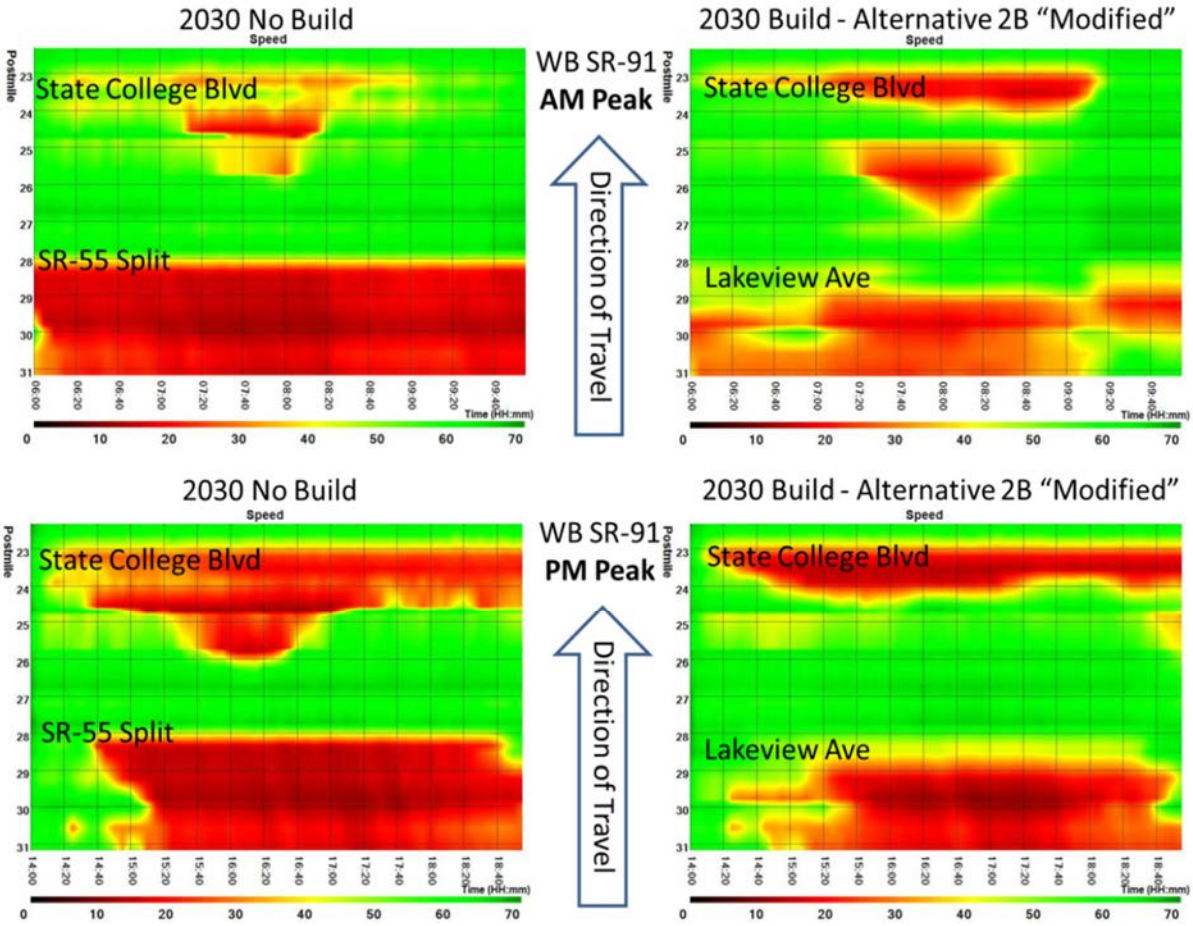
Table 22: SR-91 Freeway Mainline Performance

Mainline Corridor Performance Measures	Existing		2030 No Build		2030 Build		2050 No Build		2050 Build	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
Westbound SR-91 (Imperial Hwy to Raymond Ave/East St)										
Vehicle Miles Traveled (VMT)	336,800	308,700	381,000	376,000	394,800	380,000	427,400	447,500	455,900	455,100
Vehicle Hours Delay (VHD)	4,050	2,290	6,070	7,770	3,790	6,110	8,210	13,530	5,100	10,600
Peak Avg Travel Time (Mins)	19.6	17.6	24.7	29.4	20.5	24.6	n/a	n/a	n/a	n/a
Eastbound SR-91 (Raymond Ave/East St to Imperial Hwy)										
Vehicle Miles Traveled (VMT)	288,000	365,000	353,000	367,000	340,900	358,300	422,300	370,000	396,600	351,300
Vehicle Hours Delay (VHD)	260	780	3,190	5,800	1,140	500	6,270	11,080	2,200	950
Peak Avg Travel Time (Mins)	10,2	11.7	17.7	23.4	12.0	10.1	n/a	n/a	n/a	n/a

Source: Exhibits 33, 34, 42, 43, 45, 46, 48 and 49, Traffic Study Report (2018).
n/a – 2050 travel times could not be reasonably projected or estimated.

The congestion reduction and mobility benefits with the project (Build [Preferred] Alternative) are also clear when reviewing the speed contour plots of the microsimulation analysis results for year 2030, presented in Figure 2 below. The time of peak period is depicted on the x-axis and the length of corridor on the y-axis. The color represents the speeds where darker shades of red indicate slower speeds. As the exhibit of the WB SR-91 shows, the amount of congested red color (darker areas) reduces significantly from No Build to the Build, during both the AM peak period and the PM peak period. (Areas with less congestion are shown in green, or lighter areas.) The bottleneck location between Lakeview Ave and the SR-55 split improves dramatically during the AM peak period. With the increased downstream traffic volumes moving through Lakeview Ave, the conditions at the downstream bottleneck at State College Blvd get slightly increased congestion. During the PM peak period, conditions at both bottlenecks improve with the project.

Figure 2: 2030 No Build and Build (Preferred) Alternative Speed Contour Plot from Microsimulation Modeling



Source: Exhibit 65, Traffic Study Report (2018).

In addition, implementation of a SB right-turn arrow signal (similar to a right-turn overlap) should be considered at the EB SR-91 loop on-ramp at Kraemer Blvd-Glassell St signalized intersection. This would ensure that the queuing would be minimized in the SB right-turn lane. The right-turn arrow would allow the traffic to continuously access the EB SR-91 on-ramp without having to stop, unless a pedestrian call-button is pressed. It is anticipated that this operation would be implemented and utilized only during peak hours in the future when queues become an issue.

Table 23 and Table 24 summarize the analysis results of the 2030 and 2050 Build conditions for freeway mainline peak hour volume and LOS. The table illustrates that generally the Build conditions maintain LOS despite managing higher volumes (in most cases), with some locations improving the LOS.

Table 23: Freeway Mainline Peak Volume/LOS – Year 2030

Location	AM		PM	
	Volume	LOS	Volume	LOS
SR-91 WB (Mainline)				
State College Blvd On-Ramp to Raymond Ave Off-Ramp	8,420	E	9,020	E
SR-57 On-Ramp to State College Blvd Off-Ramp	8,290	F*	8,650	F*
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	9,290	F*	8,800	F*
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	8,770	D	7,080	C
SR-91/SR-55 Split to Tustin Ave Off-Ramp	9,050	F	7,210	F
Lakeview Ave SB On-Ramp to SR-91/SR-55 Split	9,590	F**	9,590	F**
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	8,590	F*	8,640	F*
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	7,470	F*	8,070	F*
SR-91 EB (Mainline)				
East St On-Ramp to State College Blvd Off-Ramp	7,130	E	7,240	E
State College Blvd On-Ramp to SR-57 Off-Ramp	7,670	F**	7,920	F**
SR-57 On-Ramp to Glassell St Off-Ramp	6,370	B	6,910	B
Glassell St On-Ramp to Tustin Ave Off-Ramp	5,160	E	5,760	F
Tustin Ave On-Ramp to SR-91/ SR-55 Split	6,870	C	7,420	D
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	8,540	B	7,910	B
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	7,720	C	7,000	C
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	7,690	D	5,890	C
SR-57 NB (Mainline)				
North of Lincoln Ave	8,590	-	7,560	-
At East La Jolla St	10,140	F	8,940	F*

Source: Exhibits 20, 45, 46 and 47, Traffic Study Report (2018).

1. *F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*
2. *F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*

Table 24: Freeway Mainline Peak Volume/LOS – Year 2050

Location	AM		PM	
	Volume	LOS	Volume	LOS
SR-91 WB (Mainline)				
State College Blvd On-Ramp to Raymond Ave Off-Ramp	9,330	E	9,910	E
SR-57 On-Ramp to State College Blvd Off-Ramp	9,280	F*	9,730	F*
Kraemer Blvd SB On-Ramp to SR-57 Off-Ramp	10,250	F*	9,680	F*
Tustin Ave On-Ramp to Kraemer Blvd Off-Ramp	9,510	E	7,490	C
SR-91/SR-55 Split to Tustin Ave Off-Ramp	9,780	F	7,580	F
Lakeview Ave SB On-Ramp to SR-91/SR-55 Split	10,350	F**	10,320	F**
Imperial Highway On-Ramp to Lakeview Ave Off-Ramp	9,290	F*	9,280	F*
East of Imperial Highway Off-Ramp to Imperial Highway Off-Ramp	8,140	F*	8,720	F*
SR-91 EB (Mainline)				
East St On-Ramp to State College Blvd Off-Ramp	7,580	F	7,600	E
State College Blvd On-Ramp to SR-57 Off-Ramp	8,080	F**	8,250	F**
SR-57 On-Ramp to Glassell St Off-Ramp	6,810	B	7,240	C
Glassell St On-Ramp to Tustin Ave Off-Ramp	5,320	F	5,840	F
Tustin Ave On-Ramp to SR-91/ SR-55 Split	7,440	C	7,860	D
SR-91/SR-55 Split to Lakeview Ave Off-Ramp	9,330	B	8,420	B
Lakeview Ave NB On-Ramp to Imperial Highway Off-Ramp	8,440	C	7,440	C
Imperial Highway On-Ramp to East of Imperial Highway On-Ramp	8,410	D	6,240	C
SR-57 NB (Mainline)				
North of Lincoln Ave	9,290	-	8,170	-
At East La Jolla St	10,780	F	9,460	F*

Source: Exhibits 28, 51, 52 and 53, Traffic Study Report (2018).

1. *F* denotes saturated conditions where vehicles are in queue, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*
2. *F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on Caltrans PeMS speed contours, as shown in Exhibit 32, Traffic Study Report (2018).*

Build (Preferred) Alternative Ramp Analysis

Table 25 includes freeway ramp peak volumes and illustrates the growth from existing to 2030 and 2050 Build conditions. Ramp conditions are mostly comparable in volumes, with a few exceptions. Ramp analysis was conducted to determine the D/C ratio for the on-ramps and off-ramps along SR-91 and NB SR-57. Along the SR-91, only the SR-55 ramps have demand that exceed the ramp capacity. Connector ramps at SR-55 and SR-57 are projected to have demands exceeding ramp capacities.

Table 25: Freeway Ramp Peak Volume

Location	2030 Build				2050 Build			
	AM	D/C	PM	D/C	AM	D/C	PM	D/C
SR-91 WB (Ramp)								
Imperial Highway Off-Ramp	870	0.29	880	0.29	980	0.33	980	0.33
NB Imperial Highway On-Ramp	1,050	0.55	720	0.38	1,160	0.61	790	0.42
SB Imperial Highway On-Ramp	1,070	0.54	840	0.42	1,140	0.57	890	0.45
Lakeview Ave Off-Ramp	400	0.20	350	0.18	430	0.22	380	0.19
NB Lakeview Ave On-Ramp	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SB Lakeview Ave On-Ramp	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lakeview Ave On-Ramp to SR-91	830	0.42	715	0.36	880	0.44	781	0.39
Lakeview Ave On-Ramp to SR-55	680	0.34	585	0.29	720	0.36	639	0.32
WB SR-91 to SB SR-55 Connector Off-Ramp	3,590	0.82	4,670	1.06	3,730	0.85	4,920	1.12
NB SR-55 to WB SR-91 Connector On-Ramp	3,210	0.73	3,190	0.73	3,400	0.77	3,370	0.77
Tustin Ave Off-Ramp	1,380	0.35	1,390	0.35	1,440	0.36	1,460	0.37
Tustin Ave On-Ramp	930	0.47	1,050	0.53	980	0.49	1,140	0.57
Kraemer Blvd Off-Ramp	1,050	0.53	950	0.48	1,120	0.56	1,010	0.51
NB Kraemer Blvd On-Ramp	540	0.28	510	0.27	600	0.32	580	0.31
SB Kraemer Blvd On-Ramp	820	0.41	1,140	0.57	950	0.48	1,270	0.64
WB SR-91 to SR-57 Connector Off-Ramp	n/a	n/a	n/a	n/a	1,870	n/a	1,770	n/a
WB SR-91 to NB SR-57 Connector Off-Ramp	1,780	0.54	1,670	0.51	1,870	0.57	1,770	0.54
WB SR-91 to SB SR-57 Connector Off-Ramp	1,910	0.58	1,640	0.50	2,080	0.63	1,760	0.53
NB SR-57 to WB SR-91 Connector On-Ramp	1,220	0.61	1,370	0.69	1,380	0.69	1,590	0.80
SB SR-57 to WB SR-91 Connector On-Ramp	1,470	0.67	1,800	0.82	1,600	0.73	1,990	0.90
State College Blvd Off-Ramp	730	0.37	870	0.44	850	0.43	1,000	0.50
State College Blvd On-Ramp	910	0.46	1,220	0.61	950	0.48	1,280	0.64
SR-91 EB (Ramp)								
State College Blvd Off-Ramp	850	0.43	680	0.34	880	0.44	690	0.35
State College Blvd On-Ramp	900	0.45	820	0.41	980	0.49	870	0.44
EB SR-91 to SR-57 Connector Off-Ramp	3,700	0.84	3,770	0.86	3,910	0.89	4,010	0.91

Location	2030 Build				2050 Build			
	AM	D/C	PM	D/C	AM	D/C	PM	D/C
EB SR-91 to NB SR-57 Connector Off-Ramp	2,390	0.72	2,520	0.76	2,550	0.77	2,710	0.82
EB SR-91 to SB SR-57 Connector Off-Ramp	1,310	0.60	1,250	0.57	1,360	0.62	1,300	0.59
SB SR-57 to EB SR-91 Connector On-Ramp	1,060	0.53	1,420	0.71	1,170	0.59	1,510	0.76
NB SR-57 to EB SR-91 Connector On-Ramp	1,330	0.60	1,340	0.61	1,460	0.66	1,490	0.68
Glassell St SB Off-Ramp (Glassell St Off-Ramp Build)	1,430	0.48	1,220	0.41	1,480	0.49	1,400	0.47
Glassell St SB On-Ramp	1,043	0.55	1,001	0.53	1,309	0.69	1,253	0.66
Glassell St NB Off-Ramp	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Glassell St NB On-Ramp	447	0.22	429	0.21	561	0.28	537	0.27
Tustin Ave Off-Ramp	1,100	0.37	1,100	0.37	1,160	0.39	1,160	0.39
Tustin Ave On-Ramp	1,370	0.72	1,420	0.75	1,440	0.76	1,510	0.79
EB SR-91 to SB SR-55 Connector Off-Ramp	3,570	1.19	3,090	1.03	3,920	1.31	3,370	1.12
NB SR-55 to EB SR-91 Connector On-Ramp	4,460	0.56	4,240	0.53	4,880	0.61	4,510	0.56
Lakeview Ave Off-Ramp	1,160	0.39	1,380	0.46	1,230	0.41	1,430	0.48
SB Lakeview Ave On-Ramp	270	0.14	160	0.08	290	0.15	170	0.09
NB Lakeview Ave On-Ramp	60	0.03	20	0.01	55	0.03	20	0.01
Imperial Highway Off-Ramp	1,120	0.28	1,710	0.43	1,230	0.31	1,840	0.46
SB Imperial Highway On-Ramp	460	0.24	360	0.19	490	0.26	380	0.20
NB Imperial Highway On-Ramp	510	0.26	280	0.14	600	0.30	300	0.15
SR-57 NB (Ramp)								
NB SR-57 to EB SR-91 Connector Off-Ramp	1,330	0.40	1,340	0.41	1,460	0.44	1,490	0.45
NB SR-57 to WB SR-91 Connector Off-Ramp	1,220	0.61	1,370	0.69	1,380	0.69	1,590	0.80
NB SR-57 Off-Ramp to Orangethorpe Ave	650	0.33	470	0.24	730	0.37	530	0.27

Source: Exhibits 22, 30, 52, and 55, Traffic Study Report (2018).
Shaded areas indicate demand exceeds capacity.

Build (Preferred) Alternative Ramp Meter Queue Analysis

A ramp metering and queuing analysis, summarized in Table 26, Table 27, and Table 28, was also conducted for the on-ramps to determine whether the storage capacity would be adequate to address queuing in the future. The current ramp metering rates were obtained from Caltrans District 12. With lack of any information on future metering rates, the current rates were used in the future analysis.

As shown in the tables, in the Build condition, the WB SR-91 corridor at NB Imperial Highway on-ramp, Tustin Ave on-ramp, and SB Kraemer Blvd on-ramp are projected to experience queuing on the ramps during one or both of the peak hours in both 2030 and 2050.

With the Build conditions, the WB SR-91 corridor at the Imperial Highway on-ramp is projected to experience queues over 9,500 feet during the 2050 AM peak hour, higher than with No Build conditions because of the high demand volumes. The Tustin Ave and Kraemer Blvd on-ramps are projected to experience over 1,000 feet and 3,300 feet of queuing during the 2050 AM peak hour, respectively. These ramps currently have ramp metering rates set below 600 vehicles per hour (vph). Caltrans Ramp Metering Design Manual allows an upper limit ramp metering rate of 900 vph. Should these ramp metering rates be set to higher rates, the NB Imperial Highway on-ramp would experience a queue of about 800 feet during the 2050 AM peak hour.

Table 26: 2030 Build Ramp Metering & Queuing Analysis

Location	Number of Ramp Lane		Ramp Metering Rate		2030 AM Peak Hour			2030 PM Peak Hour		
						Queue/Lane			Queue/Lane	
	GP	HOV	AM	PM	Demand	Veh	Feet	Demand	Veh	Feet
Westbound SR-91										
NB Imperial Highway On-Ramp	1	1	600	600	1,050	240	6,960	720	0	0
SB Imperial Highway On-Ramp	2		1,800	1,800	930	0	0	720	0	0
Lakeview Ave On-Ramp to SR-91	2		1,440	1,800	770	0	0	715	0	0
Lakeview Ave On-Ramp to SR-55	2		1,440	1,800	630	0	0	585	0	0
Tustin Ave On-Ramp	2		840	1,200	860	10	290	1,050	0	0
NB Kraemer Blvd On-Ramp	2		1,440	1,440	540	0	0	510	0	0
SB Kraemer Blvd On-Ramp	2		720	1,440	820	50	1,450	1,140	0	0
State College Blvd On-Ramp	2		1,800	1,800	880	0	0	1,220	0	0
Eastbound SR-91										
State College Blvd On-Ramp	2		960	960	900	0	0	820	0	0
Glassell St SB On-Ramp	2		1,800	1,800	1,013	0	0	1,058	0	0
Glassell St NB On-Ramp	2		1,200	1,200	477	0	0	372	0	0
Tustin Ave On-Ramp	2		1,800	1,800	1,280	0	0	1,270	0	0
SB Lakeview Ave On-Ramp	1	1	480	480	270	0	0	160	0	0
Lakeview Ave On-Ramp	1		480	480	50	0	0	20	0	0
SB Imperial Highway On-Ramp	1	1	480	480	460	0	0	260	0	0
NB Imperial Highway On-Ramp	2		960	960	510	0	0	250	0	0

Note: Ramp metering based on current rates (2008 data).
Source: Exhibit 57, Traffic Study Report (2018)

Table 27: 2050 Build Ramp Metering & Queuing Analysis

Location	Number of Ramp Lane		Ramp Metering Rate		2030 AM Peak Hour			2030 PM Peak Hour		
						Queue/Lane			Queue/Lane	
	GP	HOV	AM	PM	Demand	Veh	Feet	Demand	Veh	Feet
Westbound SR-91										
NB Imperial Highway On-Ramp	1	1	600	600	1,160	328	9,512	790	32	928
SB Imperial Highway On-Ramp	2		1,800	1,800	970	0	0	750	0	0
Lakeview Ave On-Ramp to SR-91	2		1,440	1,800	820	0	0	781	0	0
Lakeview Ave On-Ramp to SR-55	2		1,440	1,800	671	0	0	639	0	0
Tustin Ave On-Ramp	2		840	1,200	910	35	1,015	1,140	0	0
NB Kraemer Blvd On-Ramp	2		1,440	1,440	600	0	0	580	0	0
SB Kraemer Blvd On-Ramp	2		720	1,440	950	115	3,335	1,270	0	0
State College Blvd On-Ramp	2		1,800	1,800	930	0	0	1,280	0	0
Eastbound SR-91										
State College Blvd On-Ramp	2		960	960	980	10	290	870	0	0
Glassell St SB On-Ramp	2		1,800	1,800	1,272	0	0	1,325	0	0
Glassell St NB On-Ramp	2		1,200	1,200	598	0	0	465	0	0
Tustin Ave On-Ramp	2		1,800	1,800	1,350	0	0	1,340	0	0
SB Lakeview Ave On-Ramp	1	1	480	480	290	0	0	170	0	0
Lakeview Ave On-Ramp	1		480	480	50	0	0	20	0	0
SB Imperial Highway On-Ramp	1	1	480	480	470	0	0	270	0	0
NB Imperial Highway On-Ramp	2		960	960	600	0	0	270	0	0

Note: Ramp metering based on current rates (2008 data).
Source: Exhibit 57, Traffic Study Report (2018)

As shown in Table 28, with proposed improvements to the various ramps, queuing does not exceed the storage capacities provided by the off-ramps within the study area.

Table 28: Future Off-Ramp Queueing

Off-Ramp Location	95th Percentile Queue Length (ft)								Storage Length (ft)
	2030 No Build		2030 Build		2050 No Build		2050 Build		
	AM	PM	AM	PM	AM	PM	AM	PM	
SR-91 WB off-ramp to State College Blvd	123	238	127	256	124	281	132	272	1,735
SR-91 EB off-ramp to State College Blvd	158	185	157	187	158	190	151	191	1,850
SR-57 SB off-ramp to Orangethorpe Ave	254	143	210	140	226	133	258	143	1,890
SR-57 NB off-ramp to Orangethorpe Ave	343	398	396	509	379	428	511	580	1,575
SR-91 WB off-ramp to Kraemer Blvd	221	213	221	214	235	221	235	246	2,390
SR-91 EB off-ramp to Glassell St	315	209	324	231	319	218	338	265	2,850
SR-91 WB off-ramp to Tustin Ave	537	510	527	503	585	555	574	547	1,800
SR-91 EB off-ramp to Tustin Ave	420	342	336	56	480	378	361	310	3,255
SR-55 NB off-ramp to Santiago Blvd	226	397	226	403	250	411	250	416	3,200
SR-55 SB off-ramp to Tustin Ave	192	178	192	178	192	178	192	178	2,260
SR-57 SB off-ramp to Lincoln Ave	299	251	293	251	323	265	313	264	2,450
SR-57 NB off-ramp to Lincoln Ave	217	344	162	342	180	374	180	371	1,650
SR-91 WB off-ramp to Lakeview Ave	208	217	112	100	218	231	127	109	1,520
SR-91 EB off-ramp to Santa Ana Cyn Rd	165	230	213	234	178	257	239	253	3,480
SR-91 WB off-ramp to Imperial Hwy	231	222	233	222	241	233	242	234	3,450
SR-91 EB off-ramp to Imperial Hwy	280	464	287	527	306	589	333	618	3,014

Source: Exhibit 62, Traffic Study Report (2018).

Build (Preferred) Alternative Intersection Analysis

Table 29 includes intersection LOS for AM and PM peak hours for 2030 and 2050 in the Build condition. The table illustrates that despite growth in the 2030 and 2050 future years, the Build condition generally improves LOS compared with the No-Build. The Build condition, despite higher volumes, also manages to maintain LOS as compared with existing conditions for some locations.

Table 29: Intersection LOS

Location	2030 Build		2050 Build	
	AM	PM	AM	PM
SR-91 WB/State College Blvd	B	B	B	B
SR-91 EB/State College Blvd	C	C	C	C

Location	2030 Build		2050 Build	
	AM	PM	AM	PM
La Palma Ave/Kraemer Blvd	F	F	F	F
SR-91 WB/Kraemer Blvd	B	B	C	B
SR-91 EB/Kraemer Blvd	D	C	E	C
Frontera St/Glassell St	B	B	B	B
La Palma Ave/Tustin Ave	D	E	D	E
SR-91 WB/Tustin Ave	D	D	D	D
SR-91 EB/Tustin Ave	B	B	B	B
East Riverdale Ave/Tustin Ave	C	C	C	C
East Riverdale Ave/Lakeview Ave	D	D	D	E
SR-91 WB/Lakeview Ave	C	B	C	B
Lakeview Ave/Santa Ana Canyon Rd	E	D	E	D
SR-91 EB Off-Ramp/Lakeview Ave	B	B	B	B
Orangethorpe Ave/SR-57 NB	C	D	C	D
Orangethorpe Ave/SR-57 SB	C	D	D	D
Orangethorpe Ave/State College Blvd	C	D	C	D
State College Blvd/La Palma Ave	D	E	D	E
State College Blvd/Lincoln Ave	D	D	D	D
SR-57 NB Ramps & Lincoln Ave	C	C	C	C
SR-57 SB Ramps & Lincoln Ave	C	C	C	C
Glassell St/East Riverdale Ave	B	B	B	B
Tustin Ave/SR-55 SB Off-Ramp	B	B	B	B
Tustin Ave/Lincoln Ave	F	F	F	F
Nohl Ranch Rd/Santiago Blvd/Lincoln Ave	D	C	D	C
Santiago Blvd/SR-55 NB Ramps	C	C	C	C
La Palma Ave/Lakeview Ave	C	D	C	D
Imperial Highway/La Palma Ave	E	E	E	E
Imperial Highway/SR-91 WB Ramps	B	B	B	B
Imperial Highway/SR-91 EB Ramps	B	C	B	C
Imperial Highway/Santa Ana Canyon Road	E	E	E	F

Source: Exhibits 61, Traffic Study Report (2018).

As shown in the table, the following 2030 No Build condition intersections exceed the LOS 'D' threshold for acceptable LOS:

- La Palma Ave/Kraemer Blvd (AM/PM)
- La Palma Ave/Tustin Ave (PM)
- SR-91 WB/Tustin Ave (AM)
- East Riverdale Ave/Lakeview Ave (AM/PM)
- Lakeview Ave/Santa Ana Canyon Rd (AM/PM)
- Orangethorpe Ave/State College Blvd (PM)
- State College Blvd/La Palma Ave (PM)
- State College Blvd/Lincoln Ave (PM)
- Tustin Ave/Lincoln Ave (AM/PM)
- Imperial Hwy/La Palma Ave (AM/PM)
- Imperial Hwy/Santa Ana Canyon Rd (AM/PM)

The 2050 No Build conditions intersections that currently fail to meet the LOS 'D' threshold for acceptable level of service include the following:

- La Palma Ave/Kraemer Blvd (AM/PM)
- La Palma Ave/Tustin Ave (PM)
- SR-91 WB/Tustin Ave (AM)
- East Riverdale Ave/Lakeview Ave (AM/PM)
- Lakeview Ave/Santa Ana Canyon Rd (AM/PM)
- Orangethorpe Ave/State College Blvd (PM)
- State College Blvd/La Palma Ave (PM)
- State College Blvd/Lincoln Ave (PM)
- Tustin Ave/Lincoln Ave (AM/PM)
- Nohl Ranch Rd/Santiago Blvd/Lincoln Ave (AM)
- Imperial Hwy/La Palma Ave (AM/PM)
- Imperial Hwy/Santa Ana Canyon Rd (AM/PM)

The No Build future conditions analysis includes the three projects that were recently in progress during the existing years from which data was obtained. With implementation of the proposed project, the 11 intersections that were projected to operate at LOS 'E' or 'F' during 2030 No Build conditions are estimated to experience delay reductions. Only the intersections of East Riverdale Ave (during both the AM and PM peak) and Santa Ana Canyon Rd (during the PM peak hour) at Lakeview Ave are projected to improve from LOS 'E' and 'F' to LOS 'D'.

Similarly, in 2050, the 12 intersections that are projected to operate with LOS 'E' or F during one or both of the peak hours during the No Build conditions are projected to improve operations with reduced delays during the Build conditions. The following intersections are projected to also improve from LOS 'E' to LOS 'D' in 2050 Build Conditions:

- SR-91 WB/Tustin Ave (AM)
- East Riverdale Ave/Lakeview Ave (AM)
- Lakeview Ave/Santa Ana Canyon Rd (PM)
- Orangethorpe Ave/State College Blvd (PM)
- Nohl Ranch Rd/Santiago Blvd/Lincoln Ave (AM)

Also, although the 2050 operating conditions at the SR-91 EB at Kraemer Blvd/Glassell St is projected to be LOS D with the proposed design configuration, the southbound Kraemer Blvd traffic would have to stop at the intersection at red signal light before entering the eastbound SR-91 on-ramp. This condition would cause some queuing to occur on the southbound right-turn lane, albeit unnecessarily as there are no conflicting traffic movement. The stop is intended to allow pedestrians to cross the intersection. Alternatively, a right-turn arrow signal (similar to a right-turn overlap) could be implemented that would allow the traffic to continuously access the

on-ramp without having to stop, unless a pedestrian call button is pressed. A pedestrian signal call would interrupt the right-turn phase to red light, forcing vehicles to stop only long enough to allow the pedestrian(s) to cross the intersection. The right-turn arrow would ensure that the queuing would be minimized.

In reviewing the Caltrans PeMS data as well as firsthand peak hour traffic experience, traffic often backs up during the PM peak hours in the existing conditions due to queuing from downstream bottlenecks and congestion spillback. Unless significant improvements are made to address the downstream condition, the congestion and delay are expected to worsen in the future.

5.A.2.4. Build (Preferred) Alternative Design Exceptions

A Design Standard Decision Document (DSDD) has been prepared to document the bold and underline design exceptions required by the Build (Preferred) Alternative as part of the PA/ED approval. Table 30 and Table 31 below provide a summary of the bold and underline design exceptions, respectively, that have been identified for the Build (Preferred) Alternative. The design exceptions are based on the 6th Edition Highway Design Manual (HDM) dated December 14, 2018. Additional design exceptions may be discovered during the final design phase, which will need to be documented in a Supplemental DSDD.

Table 30: Build (Preferred) Alternative Bold Design Exceptions

HDM Index	Location and Description	HDM Standard	Existing	Proposed
201.1 – Sight Distance	1. Vertical SSD, WB SR-91 State College Off-Ramp ("ST-1" Sta 36+75)	430'	389'	411'
	2. Horizontal SSD, SR-91 WB HOV Lane ("A" Sta 374+25 to 352+25)	750'	616'	584'
	3. Horizontal SSD, SB SR-57 to WB SR-91 Connector ("57-5" Sta 68+30 to 69+95)	430'	320'	375'
	4. Vertical SSD, La Palma Ave ("LP" Sta 22+00)	500'	338'	196'
	5. Vertical SSD, La Palma Ave ("LP" Sta 29+92)	500'	403'	383'
	6. Vertical SSD, La Palma Ave ("LP" Sta 36+82)	500'	238'	195'
	7. Horizontal SSD, WB SR-91 Kraemer Blvd/Glassell St Off-Ramp ("GL-1" Sta 48+25 to 52+75)	430'	307'	307'
	8. Vertical SSD, SR-91 ("A" Sta 479+00)	750'	424'	424'
	9. Horizontal SSD, WB SR-91 ("A" Sta 486+75 to 509+50)	750'	410'	410'
	10. Vertical SSD, SR-91 ("A" Sta 486+60)	750'	457'	457'

HDM Index	Location and Description	HDM Standard	Existing	Proposed
	11. Vertical SSD, EB SR-91 Tustin Ave Loop On-Ramp ("TU-4" Sta 14+35)	430'	N/A	261'
	12. Vertical SSD, SR-91 ("A" Sta 504+00)	750'	546'	546'
	13. Vertical SSD, SR-91 ("A" Sta 524+32.33)	750'	458'	458'
	14. Horizontal SSD, WB SR-91 ("C" Sta 192+50 to 200+50)	750'	610'	622'
	15. Vertical SSD, Lakeview Ave ("LK" Sta 108+07)	360'	362'	267'
202.2(1) - Superelevation	1. SR-91 "A" Sta 333+59.83 to 347+98.92	5.8%	3%	3%
	2. SR-91 "A" Sta 390+88.39 to 428+74.24	4.4%	2%	2%
	3. SR-91 "A" Sta 484+04.00 to 504+59.54	9.4%	6%	6%
	4. EB SR-91 Tustin Ave Off-Ramp "TU-3" Sta 24+67.24 to 27+53.94	12%	N/A	4%
	5. WB SR-91 "C" Sta 174+93.83 to 183+85.99	2.4%	2%	2%
	6. WB SR-91 "C" Sta 187+79.14 to 198+89.75	6.8%	4%	4%
	7. Lakeview Ave SB SR-55 Drop Ramp "LK-3" Sta 4+55.00 to 7+54.88	5.4%	N/A	4%
	8. WB SR-91 "C" Sta 219+85.42 to 243+32.30	6.4%	4%	4%
	9. Tustin Ave "TU" Sta 39+42.35 to 46+84.16	5.1%	1.5%	1-2%
	10. Lakeview Ave "LK" Sta 97+31.81 to 108+12.11	5.1%	N/A	2%
301.1 – Lane Width	1. WB SR-91 "A" Sta 309+33.70 to 381+00	12'	12'	11'
302.1 – Shoulder Width	1. WB SR-91, Left Shoulder, "A" Sta 309+33.70 to 358+50.63	10'	4'-10'	4'-10'
	2. WB SR-91, Right Shoulder, "A" Sta 314+82.80 to 319+04.34	10'	10'	8.6'-10'
	3. WB SR-91, Right Shoulder, "A" Sta 349+48.73 to 359+97.75	10'	10'	4.5'-10'
	4. WB SR-91, Left Shoulder – HOV #1 Lane, "A" Sta 388+07 to 452+54	10'	5'	5'-10'
	5. WB SR-91, Left Shoulder – HOV #1 Lane, "A" Sta 374+53 to 381+00	10'	3.7'	5'-10'
	6. WB SR-91 to SB SR-57 Connector, Right Shoulder, "57-1" Sta 92+10 to 94+50	10'	9'-10'	6'-10'
	7. EB SR-91 Tustin Ave Off-Ramp, Right Shoulder, "TU-3" Sta 15+39.49 to 15+73.06	10'	N/A	8'
	8. EB SR-91, Left Shoulder, "A" Sta 493+00 to 504+90	10'	8'	7.8'-10'
	9. EB SR-91 Express Lanes, Left Shoulder, "A" Sta 506+50.80 to "B" Sta 531+13.20	10'	4'-10'	4'-10'
	10. WB SR-91, Left Shoulder, "C" Sta 174+50 to 199+06.33	10'	5'	4'-10'
	11. EB SR-91, Left Shoulder, "A" Sta 482+80 to 490+42	10'	2'-5'	8'-10'
	12. EB SR-91, Left Shoulder – HOV #1 Lane, "A" Sta 460+10 to 482+80	10'	5'-9'	4'-10'

HDM Index	Location and Description	HDM Standard	Existing	Proposed
305.1 – Median Width	1. SR-91 "A" Sta 309+33.70 to 528+01.80 and "B" Sta 528+00 to 531+13.20	22'	10'-22'	9'-16'
309.2(1)(a) – Vertical Clearance	1. North Olive Union Pacific UP "A" Sta 486+10	16'-6"	15'-4"	15'-4"
501.3 – Interchange Spacing	1. State College Blvd IC to SR-91/SR-57 IC	2 miles	0.85 miles	0.85 miles
	2. Orangethorpe Ave IC to SR-91/SR-57 IC	2 miles	0.81 miles	0.81 miles
	3. SR-91/SR-57 IC to Kraemer Blvd/Glassell St IC	2 miles	1.23 miles	1.23 miles
	4. Tustin Ave IC to SR-91/SR-55 IC	2 miles	0.69 miles	0.69 miles
	5. SR-91/SR-55 IC to Lakeview Ave IC	2 miles	0.98 miles	0.98 miles
504.2(1) – Freeway Entrances and Exits	1. WB SR-91 to SB SR-55 Connector	WB SR-91 to SB SR-55 connector Exit WB SR-91 from the Right	WB SR-91 to SB SR-55 connector Exit WB SR-91 from the Left	WB SR-91 to SB SR-55 connector Exit WB SR-91 from the Left
504.3(3) – Ramp Intersection Location	1. EB SR-91 Kraemer Blvd/Glassell St Off-Ramp	400'	61'	46'
	2. EB SR-91 Kraemer Blvd/Glassell St On-Ramp	400'	82'	141'
504.7 – Weaving Sections	1. WB SR-91 Tustin Ave Off-Ramp to NB SR-55/WB SR-91 Connector	5,000'	1,772'	1,772'
	2. SB SR-57/WB SR-91 Connector to WB SR-91 State College Blvd Off-Ramp	5,000'	2,363'	2,488'
	3. SR-91/SR-57 Connector to NB SR-57 Orangethorpe Ave Off-Ramp	5,000'	1,561'	1,518'
	4. NB SR-57/EB SR-91 Connector to EB SR-91 Kraemer Blvd/Glassell St Of-Ramp	5,000'	3,305'	3,874'
	5. WB SR-91 Kraemer Blvd/Glassell St On-Ramp for WB SR-91 NB SR-57 Connector	5,000'	3,200'	2,998'
	6. EB SR-91 Tustin Ave Loop On-Ramp to SB SR-55 Connector	5,000'	2,439'	2,486'
504.2(2) – Deceleration Length	1. Tustin Ave EB Off-Ramp ("TU" Sta 15+32 to 18+98.51)	470'	712'	366.5'
504.8 – Access Control	1. Tustin Ave/Tustin Ave EB Off-Ramp ("TU" 41+20)	50'	0'	0'

Additional Bold Design Exceptions

During the PS&E phase, a Bold Design Exception may be needed for the WB SR-91 to NB SR-57 connector per HDM Index 201.1, Sight Distance. The crest vertical curve for this ramp at STA 74+08 will need to be further evaluated to determine if it can provide standard Stopping Sight Distance (SSD) of 430 feet for a design speed of 50 mph. If the standard is not able to be achieved, a supplemental DSDD will be required to prepared to document the nonstandard vertical SSD.

Table 31: Build (Preferred) Alternative Underline Design Exceptions

HDM Index	Location and Description	HDM Standard	Existing	Proposed
201.7 – Decision Sight Distance	1. Tustin Ave EB Off-Ramp	1,105’	1,105’	350’ Outside Exit Only Lane 540’ Optional Exit Lane
201.5(1) and 201.5(2) – Superelevation Transition and Runoff	1. WB SR-91 Kraemer Blvd/Glassell St Off-Ramp (“GL-1” Sta 40+50.00 to 40+95.83)	150’	30’±	45.83’
	2. WB SR-91 Kraemer Blvd/Glassell St Off-Ramp (“GL-1” Sta 40+95.83 to 42+95.83)	300’	150’±	200’
	3. WB SR-91 Kraemer Blvd/Glassell St Off-Ramp (“GL-1” Sta 41+52.99 BC)	2/3 Runoff on Tangent	½ Runoff on Tangent	¼ Runoff on Tangent
	4. WB SR-91/Kraemer Blvd/Glassell St Off-Ramp (“GL-1” Sta 43+69.65 to 45+69.65)	300’	300’±	200’
	5. WB SR-91 Kraemer Blvd/ Glassell St Off-Ramp (“GL-1” Sta 45+69.65 to 47+69.65)	300’	150’±	200’
	6. WB SR-91 Kraemer Blvd/ Glassell St Off-Ramp (“GL-1” Sta 44+44.81 EC)	2/3 Runoff on Tangent	2/3 Runoff on Tangent	5/8 Runoff on Tangent
	7. WB SR-91 Kraemer Blvd/ Glassell St Off-Ramp (“GL-1” Sta 46+94.49 BC)	2/3 Runoff on Tangent	1/2 Runoff on Tangent	5/8 Runoff on Tangent
	8. WB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-1” Sta 49+80.00 EC)	2/3 Runoff on Tangent	2/3 Runoff on Tangent	No Runoff on Tangent
	9. WB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-5” Sta 47+05.65 to 49+05.65)	300’	300’±	200’
	10. WB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-5” Sta 49+05.65 to 49+51.48)	150’	200’±	45.83’
	11. WB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-5” Sta 49+12.23 EC)	2/3 Runoff on Tangent	1/3 Runoff on Tangent	No Runoff on Tangent
	12. EB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-7” Sta 35+99.81 to 37+99.81)	300’	200’±	200’
	13. EB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-7” Sta 37+99.81 to 39+99.81)	300’	150’±	200’
	14. EB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-7” Sta 36+71.87 EC)	2/3 Runoff on Tangent	2/3 Runoff on Tangent	5/8 Runoff on Tangent
	15. EB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-7” Sta 40+21.07 to 42+21.07)	300’	200’±	200’
	16. EB SR-91 Kraemer Blvd/ Glassell St Off-ramp (“GL-7” Sta 41+57.79 EC)	2/3 Runoff on Tangent	1/3 Runoff on Tangent	1/3 Runoff on Tangent
	17. EB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-8” Sta 34+00.00 to 34+48.90)	150’	0	48.90’
	18. EB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-8” Sta 34+48.90 to 36+48.90)	300’	300’±	200’
	19. EB SR-91 Kraemer Blvd/ Glassell St Loop On-ramp (“GL-8” Sta 35+34.20 BC)	2/3 Runoff on Tangent	0 Runoff on Tangent	1/3 Runoff on Tangent
	20. EB SR-91 Kraemer Blvd/ Glassell St On-ramp (“GL-9” Sta 47+05.39 to 49+19.95)	300’	125’±	214.56’
	21. SR-91 (“A” Sta 482+25 to 485+25)	510’	300’±	300’
	22. SR-91 (“A” Sta 503+25 to 505+29)	510’	204’±	204’

HDM Index	Location and Description	HDM Standard	Existing	Proposed
	23. EB SR-91 Tustin Ave Off-ramp ("TU-3" Sta 21+62.81 to 24+11.83)	300'	180'±	249.02'
	24. EB SR-91 Tustin Ave Off-ramp ("TU-3" Sta 24+11.83 to 24+94.84)	150'	180'±	83.01'
	25. EB SR-91 Tustin Ave Off-ramp ("TU-3" Sta 26+94.25 to 27+60.92)	150'	60'±	66.67'
	26. EB SR-91 Tustin Ave Off-ramp ("TU-3" Sta 27+60.92 to 28+10.92)	150'	30'±	50'
201.5(1) and 201.5(2) – Superelevation Transition and Runoff (cont.)	27. EB SR-91 Tustin Ave Off-ramp ("TU-3" Sta 27+53.94 EC)	2/3 Runoff on Tangent	1/3 Runoff on Tangent	No Runoff on Tangent
	28. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 8+84.00 to 10+84.00)	300'	150'±	200'
	29. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 8+34.00 to 8+84.00)	150'	150'±	50'
	30. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 8+72.58 BC)	2/3 Runoff on Tangent	1/2 Runoff on Tangent	1/8 Runoff on Tangent
	31. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 14+51.19 to 15+51.19)	300'	150'±	100'
201.5(1) and 201.5(2) – Superelevation Transition and Runoff (cont.)	32. WB SR-91 Lakeview Ave On-ramp ("LK-2" Sta 20+75.69 to 21+42.36)	150'	N/A	66.67'
	33. WB SR-91 Lakeview Ave On-ramp ("LK-2" Sta 21+42.36 to 22+15.69)	150'	N/A	73.33'
	34. Lakeview Ave SB SR-55 Drop Ramp ("LK-3" Sta 20+19.91 to 21+19.91)	150'	70'±	100'
	35. Lakeview Ave SB SR-55 Drop Ramp ("LK-3" Sta 21+19.91 to 22+14.58)	150'	137'±	94.67'
202.6 – Superelevation of Compound Curves	1. WB SR-91 Kraemer Blvd/Glassell St Loop On-ramp ("GL-5" Sta 43+67.38 PCC)	Follows Fig 202.6	Does Not Follow Fig 202.6	Does Not Follow Fig 202.6
	2. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 16+18.91 PCC)	Follows Fig 202.6	Does Not Follow Fig 202.6	Does Not Follow Fig 202.6
	3. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta 18+00.40 PCC)	Follows Fig 202.6	Does Not Follow Fig 202.6	Does Not Follow Fig 202.6
203.5 – Compound Curves	1. WB SR-91 to SB SR-57 Connector ("57-1" Sta 91+02.99 PCC)	Larger radius follows smaller	N/A	Smaller radius follows larger
203.6 – Reversing Curves	1. WB SR-91 Kraemer Blvd/ Glassell St Off-ramp ("GL-1" Sta 44+44.81 EC to 46+94.49 BC)	400'	N/A	249.68'
204.4 – Vertical Curve Length	1. SR-91 ("A" Sta [Crest] 479+00 PVI)	700'	500'	500'
	2. SR-91 ("A" Sta [Sag] 486+60 PVI)	700'	500'	500'
	3. EB SR-91 Tustin Ave Loop On-ramp ("TU-4" Sta [Sag] 14+35 PVI)	500'	N/A	380'
	4. SR-91 ("A" Sta [Sag] 524+32.33 PVI)	700'	600'	600'
	5. SR-91 ("D" Sta [Crest] 114+00 PVI)	700'	500'	500'
304.1 – Side Slope Standards	1. WB SR-91 Lakeview Ave On-ramp ("LK-2" 16+48 to "LK-2" 22+01)	4:1 or flatter	N/A	Between 4:1 and 2:1
	2. WB SR-91 Lakeview Ave Off-ramp ("LK-1" 23+00 to "LK-1" 30+72)	4:1 or flatter	N/A	Between 4:1 and 2:1

HDM Index	Location and Description	HDM Standard	Existing	Proposed
310.2 – Outer Separation	1. EB SR-91 (“A” Sta 395+44 to 422+28)	26’	24’	20’
	2. EB SR-91 (“A” Sta 452+54 to 466+91)	26’	18’	13’
403.3 – Angle of Intersection	1. WB SR-91 St. College Blvd Off-ramp (“ST-1” Sta 31+70.71)	Greater than 75°	73°08’42”	73°08’42”
	2. WB SR-91 Tustin Ave On-ramp	Greater than 75°	76°	74°16’48”
403.6(1) – Right-Turn-Only Lanes	1. SB Tustin Ave (“TU” Sta 47+95 to 50+47)	Optional Right-turn is not permitted	N/A	Proposed Optional Right-turn Lane
504.3(3) – Distance Between Ramps and Crossroads	1. Lakeview Ave (Realigned) Between WB SR-91 and Riverdale Ave	500’	190’	406’
504.3(1)(d) – Ramp Lane Drops	1. WB SR-91 Kraemer Blvd/Glassell St Loop On-ramp (“GL-5” Sta 42+00.06 to 44+52.43)	Between 30:1 & 50:1	15:1	15:1
	2. EB SR-91 Kraemer Blvd/Glassell St Loop On-ramp (“GL-8” Sta 40+25.53 to 44+01.56)	Between 30:1 & 50:1	15:1	23.5:1
	3. EB SR-91 Tustin Ave Loop On-ramp (“TU-4” Sta 15+75.41 to 18+00.40)	Between 30:1 & 50:1	N/A	15:1
504.3(2)(a) – Metered Freeway Entrance Ramps	1. WB SR-91 State College Blvd On-ramp (“A” Sta 318+20.38 to 321+20.38)	300’ Aux Lane	No Aux Lane Provided	No Aux Lane Provided
	2. EB SR-91 Tustin Ave Loop On-ramp (“A” Sta 501+00 to 504+00)	300’ Aux Lane	No Aux Lane Provided	No Aux Lane Provided
	3. Lakeview Ave SB SR-55 Drop Ramp (“D” Sta 91+55 to 94+55)	300’ Aux Lane	N/A	No Aux Lane Provided
	4. Lakeview Ave WB On-ramp (“C” Sta 196+06.33 to 199+06.33)	300’ Aux Lane	No Aux Lane Provided	No Aux Lane Provided
504.3(3) – Grade of Ramp Intersections on Crossroads	1. Lakeview Ave at WB SR-91 On and Off-ramps (“LK” Sta 102+31.84)	4%	5.40%	4.40%

5.A.3. Project Features

5.A.3.1. Interim Features

There are no interim features proposed in this project.

5.A.3.2. High Occupancy Vehicle (HOV) (Bus and Carpool Lanes)

The project would maintain the existing HOV lane in the EB and WB directions. These HOV lanes operate 24 hours a day and are free of charge. The HOV occupancy requirement would remain the same as existing, which requires two or more persons (2+) per vehicle to utilize the HOV lane. The existing HOV facility provides continuous access to and from the mainline lanes, consistent with the Caltrans District 12 policy. At the interchange of SR-91 with SR-57, a direct HOV median-to-median connector facility is provided for EB SR-91 to NB SR-57 and SB SR-57 to WB SR-91 traffic.

HOV preferential lanes are existing on the Kraemer Blvd loop WB on-ramp, Glassell St EB loop on-ramp, Glassell St EB direct on-ramp, and Lakeview Ave EB loop on-ramp. While provision of HOV preferential lanes was considered for the project, the Build (Preferred) Alternative proposes to eliminate HOV lanes for the three on-ramps listed above. The Kraemer Blvd-Glassell St WB and EB loop on-ramps HOV lanes are proposed to be eliminated due to proposed geometric revisions at the ramps, and the HOV lane is proposed to be eliminated from Lakeview Ave EB loop on-ramp since the ramp is being eliminated and reconfigured. These decisions were made in order to provide optimal operations, while taking right of way constraints and project costs into consideration.

5.A.3.3. Ramp Metering

All local interchange on-ramps to be modified by the project will be designed with ramp metering. Existing ramp meters and equipment will be reused, where possible. A maintenance vehicle pullout will be provided for accessing controller cabinets on all on-ramps, except Tustin Ave loop EB on-ramp and Lakeview Ave WB direct on-ramp which are constrained by right of way. Fiber optic communication to each controller cabinet will be included. Controller cabinet setup will incorporate hardware and software for communication.

5.A.3.4. California Highway Patrol (CHP) Enforcement/Observation Areas

No mainline CHP enforcement areas are existing within the project limits and none are proposed to be added under the Build (Preferred) Alternative. CHP enforcement areas will be provided on all on-ramps except Tustin Ave loop EB on-ramp and Lakeview Ave WB direct on-ramp, which are constrained by right of way.

5.A.3.5. Park-and-Ride Facilities

No existing Park and Ride Facilities are located within the Project limits, nor are any new Park and Ride Facilities proposed with this project. Outside the westerly and easterly project limits there are two Park and Ride facilities. Approximately 0.7 miles

south of the project limit is the Lincoln Ave Park and Ride (59 spaces) near the easterly project limit adjacent to SB SR-55 just south of Lincoln Ave on Tustin Ave. Approximately 5 miles west of the project limit is the Fullerton Park and Ride (nearly 800 spaces) near the SR-91/I-5 interchange at Magnolia Ave and Orangethorpe Ave (this facility also includes a bus depot, and OCTA is conducting a study for proposed truck parking in this area). In addition, construction is nearly complete for a Park and Ride facility with approximately 160 spaces on the east side of SR-55 at Lincoln Ave and Santiago Canyon Rd.

There are Park and Ride lots in Corona (in Riverside County) and elsewhere that are beyond the immediate vicinity of the project limits which may be contributing to the ridesharing effort on SR-91 into and through Orange County since SR-91 is a major inter-County commuter route.

The Caltrans District 12 Park and Ride Coordinator (Sarah Chamberlain) was consulted on July 30, 2018 regarding Park and Ride facilities. There are no planned facilities for the SR-91 corridor in the project study area, beyond the aforementioned Lincoln Ave facility on the east side of SR-55.

5.A.3.6. Utility and Other Owner Involvement

Approximately 106 utility facilities exist within the project limits, including overhead and underground electrical, natural gas, telephone and communication, cable TV, water, and sewer. The preliminary utility investigation for the project indicates that the project has the potential to impact 28 utility facilities. Detailed investigation of these utilities including survey and test holes will be undertaken during the final design phase to determine the final dispositions and required actions. Utility data has been included in the utility management matrix that is attached to the right of way data sheet (Attachment C) and existing utility plans are included in Attachment I of this document.

The utilities within the project limits which are known to have the potential to be impacted by the proposed improvements are shown in Table 32. High-priority utilities are identified in bold.

Table 32: Build (Preferred) Alternative Utility Conflicts

Utility Type	Owner	Size/Material	Utility Conflict Description	Recommended Action
Water	City of Anaheim	12" DIP	Crossing Under SR-91 along Placentia Ave	Extend encasement
Water	City of Anaheim	36" CCP	from Frontera Street Crossing the SR-91 to the North Side of the Freeway South of La Palma Avenue	Extend encasement
Water	City of Anaheim	10" DIP	North of Frontera Street Crossing the SR-91 and east of Kraemer/Glassell	Extend encasement

Utility Type	Owner	Size/Material	Utility Conflict Description	Recommended Action
Sewer	City of Anaheim	10" VCP	Placentia Avenue from La Jolla Street to 310' North of SR-91	Extend encasement
Gas	**SCG Distribution**	**6" (Material unknown)**	**Crossing SR-91, South of Addington Drive, North of Santa Ana Canyon Road**	**Extend encasement**
Electric UG	City of Anaheim	12.5kV	Crossing the SR-91 Diagonally West Side of Miraloma Avenue	Extend encasement
Electric UG	**City of Anaheim**	**69kV**	**Crossing the SR-91 Diagonally West Side of Miraloma Avenue**	**Extend encasement**
Electric UG	**City of Anaheim**	**69kV**	**Crossing the SR-91 Diagonally West Side of Miraloma Avenue**	**Extend encasement**
Electric UG	City of Anaheim	12kV	Crossing SR-91 in Tustin Ave overcrossing	Relocate into new bridge
Electric OH	City of Anaheim	12kV	Intersection of Lakeview Ave and Riverdale Ave	Relocate 2 poles on sidewalk
Fiber Optic UG	Level 3 Communications	HDPE (Size Unknown)	La Palma Ave Overcrossing	Relocate into new bridge
Fiber Optic UG	Level 3 Communications	3 Quad 4-1 1/4" HDPE	Crossing under SR-91 along La Palma Ave	Extend encasement
Fiber Optic UG	Level 3 Communications	2 Hex 6-1 1/4" HDPE	Crossing Under SR-91 along Kramer Ave	Relocate into new bridge
Fiber Optic UG	Wilshire Connection	FO in AT&T conduit -	Along south side of Santa Ana Canyon Rd, then Crossing SR-91 in Lakeview bridge	Relocate into new bridge
Fiber Optic UG	CenturyLink	2 Quad 4-1 1/4" HDPE	Crossing Under SR-91 along Kramer Ave	Relocate into new bridge
Fiber Optic UG	CenturyLink	2 Quad 4-1 1/4" HDPE	Crossing under SR-91 along La Palma Ave	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-57 along Miraloma Ave alignment	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-57 along Miraloma Ave alignment	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 along La Palma Ave	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 west of Placentia Ave bridge	Extend encasement
Telephone UG	AT&T CA	4" Conduit	Crossing under SR-91 east of Tustin Ave	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing over SR-91 in Lakeview Ave, then along south side of Santa Ana Canyon Rd	Relocate into new bridge
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 west of Kraemer Blvd bridge	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 along Riverdale Ave bridge	Extend encasement

Utility Type	Owner	Size/Material	Utility Conflict Description	Recommended Action
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 from S Peralta Hills Dr to E Addington Dr	Extend encasement
Telephone UG	AT&T CA	Conduit (Size Unknown)	Crossing under SR-91 from Cerro Vista Way to Beauty Dr	Relocate
Fiber Optic UG	AT&T Legacy	26-Conduit Conduit	Crossing under SR-91 west of Kraemer Blvd bridge	Extend encasement
Fiber Optic UG	Sunesys LLC	Unknown	Crossing SR-91 in La Palma Ave	Relocate into new bridge

Additionally, there are several existing encroachments that do not meet current Caltrans encroachment policy within the project limits that will not be impacted and are proposed to remain in place. These facilities include:

- City of Anaheim 12" CIP with 30" jacked steel casing water line, crossing SR-91 west of Miraloma Ave (STA 360+00)
- Two City of Anaheim 69kV underground electrical lines, crossing SR-91 west of Miraloma Ave (STA 359+00)
- City of Anaheim 12 kV underground electrical line, crossing SR-91 west of Miraloma Ave (STA 359+00)
- Orange County Sanitation District (OCSD) 33" VCP sewer, crossing SR-91 west of Miraloma Ave (STA 360+25)
- Following the La Palma Bridge alignment:
    - AT&T CA underground telephone line (STA 392+00)
    - Two Level 3 Communications underground fiber optic lines (STA 394+50)
    - Sunsys LLC underground fiber optic line (STA 393+00)
    - Two City of Anaheim 69kV overhead electrical lines (STA 394+50)
    - Time Warner Cable overhead cable TV line (STA 394+00)
    - City of Anaheim 12kV overhead electrical line (STA 394+00)
    - CenturyLink underground fiber optic line (STA 394+25)
    - City of Anaheim 36" CCP water line (STA 394+75)
- City of Anaheim 36" RCP water line, crossing SR-91 east of La Palma Avenue (STA 408+00)
- AT&T Legacy underground fiber optic line, crossing SR-91 west of Kraemer Blvd/Glassell St (STA 436+50)
- Orange County Water District 60" CML&C steel water line, west of Kraemer Blvd/Glassell St (STA 437+75)
- SCE 66kV overhead electrical line, crossing SR-91 west of Tustin Avenue (STA 486+50)
- City of Anaheim 12kV overhead electrical line, crossing SR-91 west of Tustin Ave (STA 486+50)
- City of Anaheim 12kV underground electrical line, located parallel to SR-91 from STA 176+00 to 180+00

- City of Anaheim 12kV overhead electrical line, located parallel to SR-91 from STA 180+00 to 184+00

It is assumed that there are existing approvals for these locations, but they will need to be reapproved. Coordination will take place with the Division of Design (DOD) in Headquarters and the District during the PS&E phase to request that the exceptions for these encroachments be granted.

The design was modified following the approved Draft Project Report to eliminate the need to relocate a City of Anaheim 15" VCP sewer line. Further coordination will be required with the City of Anaheim during the PS&E phase to ensure that the existing 15" sewer can be protected in place and that access is available for future maintenance. To accommodate this access, the easement for this sewer line is anticipated to be revised by 6 feet to maintain the existing easement width as part of the right of way acquisition process during the PS&E phase. A preliminary cost estimate to protect the sewer and facilitate maintenance has been included as part of the project.

Utility coordination and verification will continue through the development of the final design phase of the proposed project. Conflicts with the existing utilities will be test holed during design to accurately identify existing locations and to assess impacts definitively. Utility costs for this phase are anticipated to be a project obligation because prior rights and agreements for each utility are not known at this time and will be confirmed during the PS&E phase. Notice to owners will be sent to the utility companies with facilities identified for relocation and utility agreements will be executed, if needed, during the final design phase.

5.A.3.7. Railroad Involvement

An existing railroad structure (North Olive Underpass) crosses SR-91 west of Tustin Ave within the project limits but will not be modified. The landowner of this line is OCTA and it is operated by the Southern California Regional Rail Authority (SCRRA). During the PS&E phase, a GO 88-B request will be required to be submitted to the CPUC because an additional lane will be added under the N Olive UP structure, which is considered a major change. Because the railroad operator will need to provide concurrence as part of this application, a service agreement will be required during the PS&E phase so that the plans can be reviewed. No new right of way is anticipated to be required from the railroad for the project improvements at the N Olive UP structure.

5.A.3.8. Highway Planting and Irrigation

In accordance with the Caltrans Highway Planting General Policy, replacement planting will be split from the roadway construction contract and be implemented as a separate follow-up contract. The Replacement Planting contract would need to be

under construction within two years of acceptance of the highway construction contract. A three-year plant establishment period will be included as part of the replacement planting contract.

5.A.3.9. Erosion Control

The existing small slopes are stable and vegetated with native plants. Where such existing vegetated areas can be feasibly preserved, they will be; otherwise, where disturbance is unavoidable, the disturbed vegetation will be replaced with an erosion control mix. Erosion control measures shall be applied at disturbed soil areas after grading operations are completed. Specific erosion control measures will be coordinated with the Caltrans District staff during the PS&E phase of the project. During construction activities, sediments in stormwater discharges will be controlled by implementing appropriate BMPs. These measures will be detailed in the Storm Water Pollution Prevention Plan (SWPPP) which will be prepared for the construction phase of the project. Standard construction site BMPs (such as gravel bag berms, temporary fiber rolls, etc.) will be utilized during construction to minimize storm water pollution.

5.A.3.10. Noise Barriers

A Noise Study Report (NSR) was prepared for the project by ICF (July 2018) to evaluate impacts of the proposed project on noise sensitive receivers in the project vicinity and identify noise abatement measures. Subsequently, a Noise Abatement Decision Report (NADR) was prepared by ICF (September 2018) to provide a reasonableness analysis to determine whether noise abatement measures identified in the NSR would be reasonable from a cost perspective.

A soundwall survey was performed in November and December 2018 to collect input and opinions from the potential benefited receptor regarding one noise barrier recommended in the draft environmental document. Based on the results of the soundwall survey, this wall was not supported by the surveyed owner and is not proposed to be incorporated into the project.

Existing noise barriers are proposed to remain in place or replaced in kind under the projects. Existing noise barriers are at the following locations:

- EB SR-91 from Raymond Ave/East St (west of State College Blvd) to Glassell St
- WB SR-91 from Raymond Ave/East St to Baxter St (west of State College Blvd)
- WB SR-91 between Placentia Ave and Miraloma Ave
- SB SR-57 between Miraloma Ave and Orangethorpe Ave
- EB SR-91 between Riverdale Ave OC and SB SR-55 connector merge w/SB SR-55 mainline

- WB/EB SR-91 from SR-91/SR-55 system interchange to east of Lakeview Ave
- EB SR-91 between Placentia Ave and Miraloma Ave
- EB SR-91 connector to SB SR-57 between Miraloma Ave and La Palma Ave.

Noise barriers S-103 (along WB SR-91 west of Lakeview Avenue), S-403 (along EB SR-91 east of La Palma Avenue), and S-223 (along Lakeview Avenue WB off-ramp from SR-91) will be impacted by the proposed improvements and are proposed to be replaced in-kind.

Following public circulation, a portion of the existing wall on EB SR-91 between the Riverdale OC and the SB SR-55 connector was determined to be in conflict with the proposed widening and, therefore, needed to be replaced at the new widened edge of shoulder. For that reason, a Supplemental NSR (June 2019) and Supplemental NADR (June 2019) were prepared by ICF to analyze the replacement and determine if a higher wall would meet required feasible and reasonable criteria. Soundwall surveys were distributed for this wall in August, September, and October 2019 and, based on the results of this survey, this noise barrier (S-520) is proposed to be incorporated into the project.

5.A.3.11. Nonmotorized and Pedestrian Features

An existing Santa Ana River Trail/Bicycle Path (SART/Bicycle Path), a Regional Recreational Trail, runs along the south side of the Santa Ana River in the City of Anaheim. It crosses under SR-91 just east of Tustin Ave.

Other active transportation infrastructure in the Project study area are listed below.

- A Proposed Class II bike lane along La Palma Ave crossing SR-91.
- An Existing Class II bike lane along Frontera St adjacent to EB SR-91 between La Palma Ave and Kraemer Blvd/Glassell St.
- A Proposed Class II bike lane along Kraemer Blvd-Glassell St crossing SR-91.
- An Existing Class II bike lane along Riverdale Ave from west of Tustin Ave to Lakeview Ave, with intermediate access to the Santa Ana River Trail located just west of Tustin Ave and just west of Lakeview Ave via Riverdale Park.
- For the replaced Kraemer Blvd-Glassell St and La Palma Ave arterial bridges crossing SR-91, sidewalk will be included on both sides of the structure for pedestrian access.
- Enhanced access for active transportation connectivity to the Santa Ana River Trail is provided by wider than standard facilities along the reconstructed bridges at Tustin Ave and Lakeview Ave.

5.A.3.12. Needed Roadway Rehabilitation and Upgrading

Pavement rehabilitation is not part of the purpose and need of the Project.

5.A.3.13. Needed Structure Rehabilitation and Upgrading

Based on the findings of the Caltrans Maintenance Reports and/or subsequent field reviews, some rehabilitation may be required such as crack repair, barrier/Midwest Guardrail System repair, spall, or other repairs as identified. Where appropriate, routine maintenance and rehabilitation needs identified in the Caltrans Maintenance Reports may be addressed, as appropriate, as a part of the Project.

5.A.3.14. Geotechnical

A Preliminary Geotechnical Design Report (PGDR) and Preliminary Structures Foundation Report (PSFR) have been prepared to develop preliminary recommendations for the foundation requirements.

Geologic materials directly underlying the site consist of predominantly sands, gravels and cobbles associated with the thick alluvial fan and outwash deposits derived from the Santa Ana Mountains. The young fan deposits consist of unconsolidated to slightly consolidated silt, sand, gravel and boulder deposits derived from volcanic and sedimentary units of the Santa Ana Mountains. Old and very old alluvial fan deposits consist of moderately to well-consolidated gravel and cobble deposits within a dirty sand matrix. The alluvial clasts correspond closely to the sedimentary and basement-complex types found nearby in the Santa Ana Mountains, indicating local derivation. These formations are underlain by Tertiary-age marine formations of the Fernando and Puente formations. According to oil wells within the Olive oil field, the contact between the alluvium and the Pico member of the Fernando formation is at approximately 4,080 feet below existing grade. Miocene-age sedimentary rock was encountered at around 6,200 feet below existing grade. Mesozoic-age crystalline basement rocks are at depths of about 15,000 feet.

The as-built LOTB sheets for ten bridges located along the project corridor are reviewed. Based on a review of this set of boring data, subsurface conditions along the project corridor can be divided into three zones:

Zone A: Acacia Street UC to Miraloma Avenue OC
The groundline along SR-91 varies between elevations +181 and +210 feet within this zone. Subsurface soils within this zone are predominantly silty sand and sand with silt to the maximum depth explored. Consistency of the soil is increasing with depth, typically from loose at shallow depths to very dense at deeper depths.

Zone B: Miraloma Avenue OC to Santa Ana River
The groundline along SR-91 ascends from elevation +200 to +257 feet within this zone. Subsurface soils within this zone are predominantly silty sand and sand with gravel to the maximum depth explored. Consistency of the soil is increasing with depth, typically from loose at shallow depths to very dense at deeper depths.

Zone C: Santa Ana River to Lakeview Avenue OC
Within this zone, the groundline along SR-91 ascends from elevation +257 to +296 feet. Subsurface soils within this zone are predominantly sandy silt near the ground surface, which is underlain by sandy soils consisting of silty sand, sand, and gravel to the maximum depth explored. Consistency of the soil is increasing with depth, typically very stiff for sandy silt soils, and medium dense at shallow depths to very dense at deeper depths for sandy soils.

A significant geological hazard at the site is earthquake shaking and perhaps local liquefaction. There are no known active surface faults within the project area, so ground rupture is not a factor. The flat-lying nature of the area is not susceptible to landslides. The site is too far from the ocean to be affected by tsunamis, and there are no large bodies of water within the site area that could generate a seiche. There are no volcanoes in the region. The project site may be susceptible to liquefaction during a large earthquake. The California Geological Survey (1998a and 1998b) has designated along the project corridor in the area between La Palma Avenue and SR-55 as having a potential for liquefaction.

5.A.3.15. Pavement Structural Sections

A Life Cycle Cost Analysis (LCCA) report has been prepared to evaluate the pavement alternatives for the project improvements and provide a preliminary determination of the pavement structural sections for the project over an analysis period of 55 years. The LCCA is an economic analysis that compares initial reconstruction cost, future maintenance cost, and user delay cost of different pavement alternatives over an analysis period of 55 years.

Table 33: Summary of Life-Cycle Pavement Cost

Option		Pavement Section	TI	Agency Cost	User Cost	Total Life Cycle Cost
SR-91 Freeway Mainline						
1	JPCP 40-year	1.10’ JPCP, BB, 0.35’ LCB, 0.70’ AS	17	$8,396,000	$3,316,000	$11,712,000
2	CRCP 40-year	1.00’ CRCP, 0.25’ HMA-A, 0.70’ AS	17	$7,883,000	$0	$7,883,000
WB SR-91/NB SR-57 Connector						
1	JPCP 40-year	0.95’ JPCP, BB, 0.35’ LCB, 0.70’ AS	17	$3,502,000	$320,000	$3,822,000
2	CRCP 40-year	0.90’ CRCP, 0.25’ HMA-A, 0.70’ AS	17	$3,085,000	$3,000	$3,088,000

Option		Pavement Section	TI	Agency Cost	User Cost	Total Life Cycle Cost
EB Tustin Ave Off-Ramp						
1	HMA w/RHMA 20-year	0.20' RHMA-G, 0.40' HMA-A, 1.00' AB, 1.15' AS		$4,751,000	$1,054,000	$5,805,000
2	Open Graded HMA w/ RHMA 40-year	0.10' HMA-O, 0.20' RHMA-G, 1.55' HMA-A, 0.5' AB		$5,678,000	$764,000	$6,442,000
3	JPCP 40-year	0.95' JPCP, BB, 0.35' LCB, 0.70' AS		$3,084,000	$320,000	$3,404,000

TI=Traffic Index
JPCP=Jointed Plain Concrete Pavement
CRCP=Continuously Reinforced Concrete Pavement
HMA-A=Hot Mixed Asphalt Type A
HMA-O=Hot Mixed Asphalt-Open Graded
RHMA-G=Rubberized Hot Mixed Asphalt Type G
AB=Aggregate Base
AS=Aggregate Subbase
BB=Bond Breaker

The LCCA concludes that a 40-year CRCP pavement design for Segment 1, SR-91 Mainline, and Segment 2, WB SR-91/NB SR-57 Connector would have the lowest life cycle cost. For Segment 3, EB Tustin Ave Off-Ramp, a 40-year JPCP pavement design would have the lowest life cycle cost.

5.A.3.16. Cost Estimates

The project cost estimates (for the total project and for each segment) are included in this document as Attachment B. A breakdown of the current costs for the total project and by segment is shown in Table 34 and Table 35, while escalated costs are shown in Table 36 and Table 37.

Table 34: Cost Estimate (Total Project) (Current in $1,000s)

Preliminary Estimate	Total[1]
Roadway Items	142,448
Structures Items	72,829
Subtotal Construction Costs	**215,277**
Right of Way	24,433
Total Capital Costs	**239,710**
Support	60,275
Total Project Costs	**299,985**

[1] *Totals reflected are consistent with what is reflected in the combined cost estimate. There are slight variations between this total and the sum of the segment estimates due to rounding.*

Table 35: Cost Estimates by Segment (Current in $1,000s)

Preliminary Estimate	Segment 1	Segment 2	Segment 3	Highway Planting
Roadway Items	31,781	67,140	38,462	5,058
Structures Items	22,088	29,145	21,596	
Subtotal Construction Costs	**53,869**	**96,285**	**60,058**	**5,058**
Right of Way	3,613	17,772	3,046	
Total Capital Costs	**57,482**	**114,057**	**63,104**	
Support	14,985	27,274	16,786	
Total Project Costs	**72,541**	**141,331**	**79,890**	**5,058**

Table 36: Cost Estimates (Total Project) (Escalated in $1,000s)

Preliminary Estimate	Total[1]
Roadway Items	170,170
Structures Items	87,003
Subtotal Construction Costs	**257,173**
Right of Way	27,484
Total Capital Costs	**284,657**
Support	67,729
Total Project Costs	**352,386**

[1] Totals reflected are consistent with what is reflected in the combined cost estimate. There are slight variations between this total and the sum of the segment estimates due to rounding.

Table 37: Cost Estimates by Segment (Escalated in $1,000s)

Preliminary Estimate	Segment 1	Segment 2	Segment 3	Highway Planting
Roadway Items	37,966	80,206	45,948	6,042
Structures Items	26,387	34,817	25,799	
Subtotal Construction Costs	**64,353**	**115,023**	**71,747**	**6,042**
Right of Way	4,046	19,992	3,426	
Total Capital Costs	**68,417**	**135,015**	**75,173**	
Support	16,839	30,601	18,887	
Total Project Costs	**85,256**	**165,616**	**94,060**	**6,042**

The current project costs have been escalated to the mid-point of construction, which is assumed to be 2026. This is based on an opening year of 2028. This opening year is earlier than originally anticipated because 91 Express Lane excess toll revenues are available to advance the project into final design and construction ahead of the

original schedule. For this reason, the cost estimate has been escalated based on this revised schedule.

5.A.3.17. Right of Way Data

Right of Way Data Sheets (for the total project and for each segment) have been prepared for the Build (Preferred) Alternative and are included in Attachment C.

5.A.3.18. Effect of Projects Funded by Others on State Highway

The proposed project was identified in the Measure M2 Freeway Program as Project I. Measure M2 was approved by the Orange County voters in November 2006. The extension of the local half-cent sales tax used to fund transportation projects began in 2011 and will sunset in 2041. No adverse impacts to the operation of the State facility are anticipated.

5.A.3.19. Related Projects

Several projects are currently in the planning phase along the project corridor that may be funded by Caltrans and/or other local agencies. Table 38 summarizes the current Caltrans project programmed in the project area, in addition to the SR-91 Widening Project from SR-57 to SR-55.

Table 38: Current Caltrans Projects Programmed in the Project Area

EFIS ID/ EA No.	Location	Project Description	Milestone Dates
1218000080/ 12-0R310	PM 0.0 to 18.9	Multi-Asset Project with Pavement Rehabilitation	AC: 1/22/25 CCA: 8/4/26
1213000196/ 12-0N320	PM 9.8 to 18.9	CAPM Pavement Rehabilitation	AC: 2/15/20 CCA: 12/1/20
1218000064/ 12-0R190	PM 4.5 to 5.8	Install New Guide Sign Structures	AC: 1/28/2022 CCA: 8/31/2022
1217000052/ 12-0Q510	PM 9.1 to 15.6	Plant Installation and Monitoring	AC: 9/10/19 CCA: 6/2/2022

AC=Approve Contract, CCA=Construction Contract Acceptance

The projects in the above table are anticipated to be completed before the SR-91 Widening Project and are not anticipated to restrict nor adversely affect improvements to this project in the future.

Multi-Asset Project with Pavement Rehabilitation (EA12-0R310)

OCTA and Caltrans are in ongoing discussions regarding a combination of the proposed project's segments with Route 91 Multi-Asset project's (12-0R310) segments.

The Route 91 Multi-Asset project is a part of the 2020 State Highway Operation and Protection Program (SHOPP), the State Highway System's "fix-it-first" program that funds the repair and preservation, emergency repairs, safety improvements, and some highway operational improvements on the State Highway System. This project will rehabilitate existing mainline pavement, upgrade existing drainage system, replace and improve lighting, and upgrade various traffic management system (TMS) elements, such as video cameras and fiber optics, along the corridor. This project consists of five segments between postmile 0.0 and R18.9 on Route 91.

The two projects do not overlap in scope. However, three segments from each project overlap with each other in terms of physical location and scheduling, as shown in Table 39.

To avoid potential design and construction conflicts, throwaway, and construction fatigue, the overlapping segments are planned to be combined. Features of the 91 Multi-Asset project segments will be designed by Caltrans and funded for construction using SHOPP funds. Any combination of the Route 91 Multi-Asset features into the proposed project would take place during the final design activities for each proposed project segment.

A cooperative agreement for the construction phase of the combined projects will be required.

Table 39: Overlap of Proposed Project Segments and SR-91 Multi-Asset Project

SR-91 Multi-Asset Project (EA 0R310) Segments	Proposed Project (EA 0K980) Segments	Overlap	Proposed Combination
Segment 5 – TMS Elements and Drainage Improvements (12-ORA-91-PM R10.8/R18.9)		No	No
Segment 4 – TMS Elements and Drainage Improvements (12-ORA-91-PM R9.1/R10.8)	Segment 1 – SR-91/SR-55 Interchange to East Project Limits (12-ORA-91-PM R9.1/R10.8)	Yes	Yes
Segment 3 – Pavement Rehab, TMS Elements, and Drainage Improvements (12-ORA-91-PM 6.4/R9.1)	Segment 2 – Eastbound Improvements from SR-57 to SR-91/SR-55 Interchange (12-ORA-91-PM 6.4/R9.1)	Yes	Yes
Segment 2 – Pavement Rehab, TMS Elements, and Drainage Improvements (12-ORA-91-PM 4.7/6.4)	Segment 3 – Westbound Improvements from West Project Limits to La Palma Ave (12-ORA-91-PM 4.7/6.4)	Yes	Yes
Segment 1 – Pavement Rehab, TMS Elements, and Operational Improvements (12-ORA-91-PM 0.0/4.8)		No	No

5B. Rejected Alternatives

Many efforts were made to identify and refine the Build (Preferred) Alternative to make sure that it meets the purpose and need defined at the beginning of the development of the Project Report. Table 40 summarizes the various options that have been considered but eliminated during the PA/ED process.

Table 40: Options Considered But Eliminated

Alternative Name	Phase Developed	Description
Standard Build Alternative 2B	PSR-PDS	Alternative includes standard geometric dimensions for lane and shoulder widths.
Viaduct for Tustin Ave EB SR-91 Off-Ramp (Part of Build Alternative 2A/2B)	PSR-PDS	Alternative includes a viaduct for the Tustin Ave EB SR-91 off-ramp to avoid conflicts with the North Olive Railroad Bridge.
SB SR-57/WB SR-91 Connector Ramp Lane Drop at State College Blvd (Part of Build Alternative 2A/2B)	PSR-PDS	Alternative reintroduced the SB SR-57/WB SR-91 connector ramp lane drop to State College Blvd, which was recently improved by the WB SR-91 Widening Project (EA 12-0C5704).
Kraemer Blvd WB Auxiliary Lane (Part of Build Alternative 2A/2B)	PSR-PDS	Alternative extends a proposed WB SR-91 auxiliary lane from the Kraemer Boulevard WB on-ramp and drops the auxiliary lane to the SR-57 connector exit, then reconfigures the geometrics at the SR-57 diverge to extend a proposed 4th GP lane through the SR-57/SR-91 interchange and drops the proposed lane addition within the SR-91/State College Blvd interchange.
NB SR-57 Bypass (Braided Connector) (Part of Build Alternative 2A/2B)	PSR-PDS	Alternative proposed a NB SR-57 bypass (braided connector) to Orangethorpe Ave that would reduce weaving between NB SR-57 traffic exiting Orangethorpe Ave and SR-91 to NB SR-57 connector traffic.
Option 1A	Lakeview to SR-91/SR-55 Feasibility Study (PA/ED)	Alternative shifts the WB SR-91 through movement to the left, while shifting the SB SR-55 movement to the right to conform to a typical mainline/connector system interchange configuration with a standard right diverge exit.
Option 3	Lakeview to SR-91/SR-55 Feasibility Study (PA/ED)	Alternative is the same as Option 1A, but includes drop on-ramp to WB SR-91 and direct on-ramp to the SR-55 connector with a non-braided geometric configuration for the Lakeview Avenue interchange.
SR-57 to WB SR-91 Connector Ramp Metering	PA/ED	Alternative included connector metering for SR-57 to WB SR-91 connector.

More detail about these options, including the reason that each was eliminated, is included in the following sections.

5.B.1. PSR-PDS Build Alternative 2B

This alternative includes standard geometric dimensions for lane and shoulder widths. This alternative was dismissed from further review because of increased environmental impacts and right of way impacts to freeway-adjacent development, including full acquisitions of residential and commercial property. In addition, it would require widening WB SR-91 to improve the nonstandard left shoulder width while not realizing any capacity enhancements, which did not meet the project purpose and need. It should be noted that a standard geometric cross section has been incorporated into the proposed Build Alternative where it can be accommodated largely within existing right of way.

5.B.2. Features of PSR-PDS Build Alternatives 2A and 2B

The PSR-PDS Build Alternatives 2A and 2B included several features that were evaluated at the beginning of the PA/ED phase. These features were eliminated due to their potential impacts and cost implications, summarized below.

Viaduct for Tustin Ave EB SR-91 Off-Ramp

The PSR-PDS build alternatives included a viaduct for the Tustin Ave EB SR-91 off-ramp to avoid conflicts with the North Olive Railroad Bridge. This specific design element was dismissed from further review because the PA/ED design team determined that an at-grade solution was superior in that it did not require a bridge structure, reduced project costs and long-term maintenance requirements, and would not impact views within the project corridor. Because an at-grade solution was determined to be feasible, the North Olive Railroad Bridge is proposed to be maintained in place. The existing 15’-4” nonstandard vertical clearance at the North Olive Railroad UP over the WB SR-91 lanes is proposed to remain since meeting the standard vertical clearance would require replacement of the rail structure at a new higher profile. This would significantly impact the operations of the railroad, including extensive reconstruction to the Anaheim Canyon Station and the Santa Ana River Bridge. This rail reconstruction would require a shoofly and a new temporary bridge over SR-91. It would also result in parcel acquisitions from private commercial and residential property owners. Collision data reviewed at this location does not indicate that maintaining the existing bridge would lead to an increase in the frequency or severity of collisions.

SB SR-57/WB SR-91 Connector Ramp Lane Drop at State College Blvd and Kraemer Blvd WB Auxiliary Lane

The PA/ED project team also evaluated removal of the PSR-PDS proposed improvement that would have reintroduced the SB SR-57/WB SR-91 connector ramp lane drop to State College Blvd, which was recently improved by the WB SR-91 Widening Project (EA 12-0C5704). The PSR-PDS build alternatives contain a design

element that extends a proposed WB SR-91 auxiliary lane from the Kraemer Boulevard WB on-ramp and drops the auxiliary lane to the SR-57 connector exit, then reconfigures the geometrics at the SR-57 diverge to extend a proposed 4th GP lane through the SR-57/SR-91 interchange and drops the proposed lane addition within the SR-91/State College Blvd interchange. Additionally, the auxiliary lane added from SB SR-57 would be dropped at State College Blvd. However, subsequent traffic analysis shows a benefit to WB mainline operations with removal of this lane drop. This resulted in the westerly project limit being extended beyond the State College Blvd interchange, effectively bringing a fifth lane addition that ties into the WB auxiliary lane to Raymond Ave/East St. The PSR-PDS alternative also proposed an additional WB weaving lane between the closely spaced interchanges from the Kraemer Boulevard WB on-ramp and the SR-57 connector exit. Subsequent traffic analysis showed that four WB GP lanes through the SR-57/SR-91 interchange was not required to meet future traffic demand. The PSR-PDS also did not address the high traffic volumes and slow-moving truck traffic from the NB SR-57 to WB SR-91 connector (loop configuration).

NB SR-57 Bypass (Braided Connector)

Design options that included a NB SR-57 bypass (braided connector) to Orangethorpe Ave that would reduce weaving between NB SR-57 traffic exiting Orangethorpe Ave and SR-91 to NB SR-57 connector traffic. This alternative was dismissed from further review because it was assumed to alleviate traffic congestion on WB SR-91 by improving the WB SR-91 to SR-57 connector operations, however, the traffic analysis showed the Orangethorpe Ave bypass did not improve WB SR-91 LOS. Therefore, with no nexus to improving SR-91 traffic operations, the Orangethorpe Ave bypass options were eliminated.

5.B.3. Lakeview to SR-91/SR-55 Feasibility Study Alternatives

In addition, while considering stakeholders' input regarding scoping for a feasibility study for improvements to the SR-55/SR-91 system interchange and the Lakeview Avenue interchange, there were three (3) preliminary options developed and presented to the Project Development Team (PDT) during the May 20, 2015, PDT meeting. It was agreed to present these three preliminary options to Caltrans Design within the SR-91/ SR-55 System Interchange and Lakeview Interchange Feasibility Study (September 2015) following an alternative concept geometric review meeting that was held with Caltrans District 12 Design staff on June 2, 2015. Two of the three preliminary options that would be developed within the Feasibility Study (and eliminated from further discussion are presented below (the third Option 3L was selected and is included in the proposed project improvements).

Option 1A

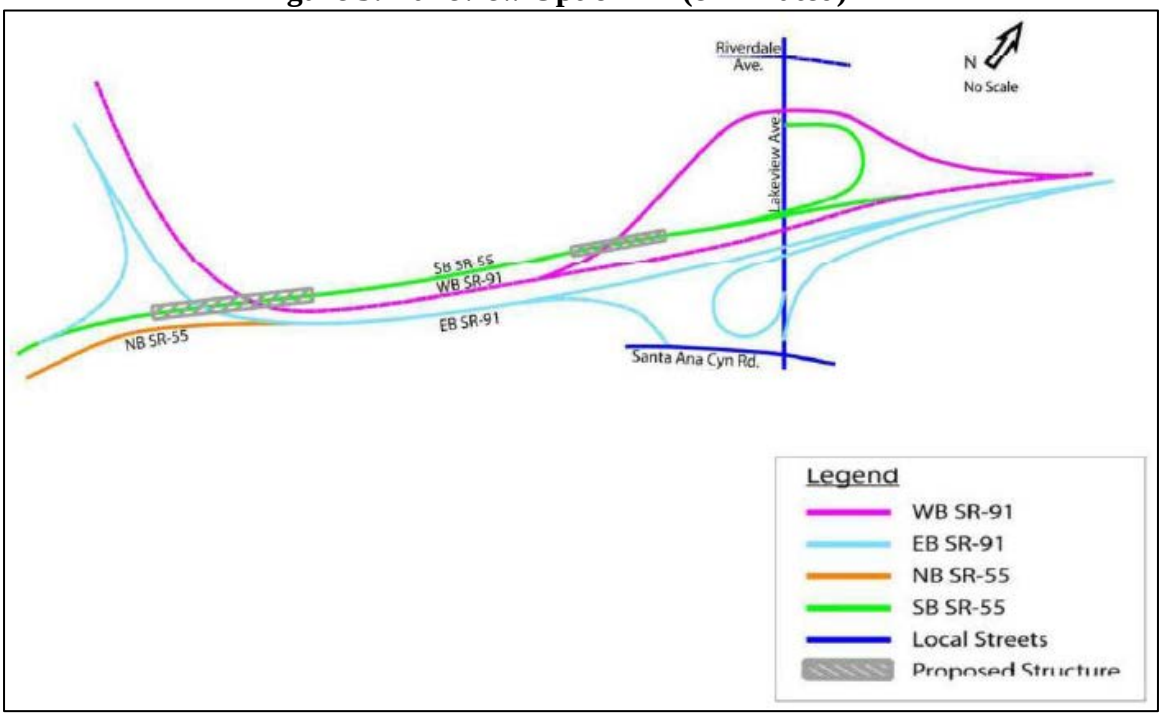
Option 1A shifts the WB SR-91 through movement to the left, while shifting the SB SR-55 movement to the right to conform to a typical mainline/connector system interchange configuration with a standard right diverge exit. This option is similar to Option 1 in the approved PSR/PDS. Option 1A includes the loop on-ramp to the SB SR-55 connector and direct on-ramp to WB SR-91 in a braided geometric configuration for the Lakeview Avenue interchange. Widening of the Lakeview Avenue bridge would be required. The proposed vertical geometry of the improvements adjacent to existing homes was reviewed and there would be vertical grade differences between the proposed profile and the existing backyard elevations. A preliminary vertical analysis indicates Option 1A would result in the following range of elevation differences in three locations, moving from west to east:

- 58 feet to 20 feet along nine properties adjacent to the WB SR-91 to SB SR-55 connector.
- 8 feet to 22 feet along eight properties adjacent to the west side of the WB SR-91 to SB SR-55 connector braid over the Lakeview WB SR-91 on-ramp.
- 12 feet to 6 feet along three properties adjacent to the Lakeview WB SR-91 on-ramp.

Soundwalls would need to be placed along the outside edge of shoulder at these locations, which will increase the elevation of the improvements adjacent to these homes by approximately 10 to 16 feet.

Option 1A was estimated to require two TCEs for construction. Additionally, there are 20 residential properties located adjacent to Caltrans right of way where the proposed improvements would have raised the profile of the freeway. For the purposes of the cost estimate and evaluating impacts, these were considered as potential full acquisitions.

Figure 3: Lakeview Option 1A (eliminated)



Option 3

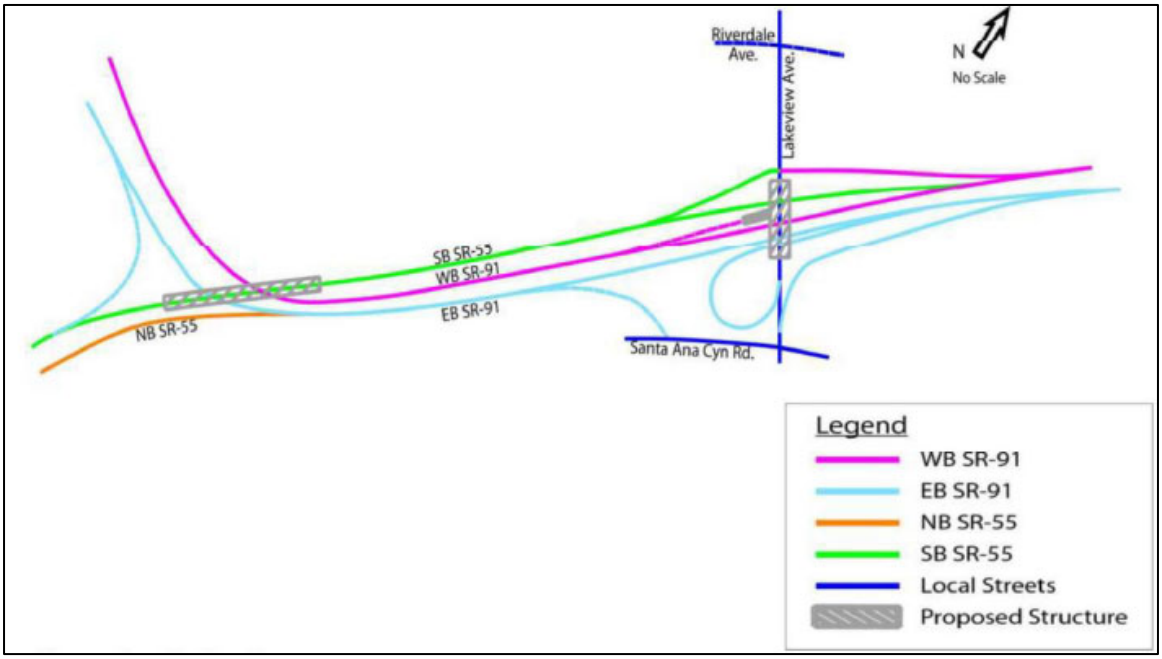
Similar to Option 1A, Option 3 shifts the WB SR-91 through movement to the left, while shifting the SB SR-55 movement to the right to conform to a typical mainline/connector system interchange configuration with a standard right diverge exit. This option includes the drop on-ramp to WB SR-91 and direct onramp to the SR-55 connector with a non-braided geometric configuration for the Lakeview Avenue interchange. The WB on- and off-ramps will be reconfigured from a partial cloverleaf configuration into a diamond layout, allowing maximization of the intersection spacing between the WB on- and off-ramps and Riverdale Avenue. The Lakeview Avenue bridge would be replaced to accommodate this option. Option 3 is similar to Option 1A except there is no braided ramp to consider. The proposed vertical geometry of the improvements adjacent to existing homes was reviewed and there would be vertical grade differences between the proposed profile and the existing backyard elevations. A preliminary vertical analysis indicated Option 3 would result in the following range of elevation differences in two locations, moving from west to east:

- 58 feet to 20 feet along nine properties adjacent to the WB SR-91 to SB SR-55 connector.
- 8 feet to 22 feet along eight properties adjacent to the west side of the WB SR-91 to SB SR-55 connector braid over the Lakeview WB SR-91 on-ramp.

Soundwalls would need to be placed along the outside edge of shoulder at these locations which will increase the elevation of the improvements adjacent to these homes by approximately 10 to 16 feet.

Option 3 was estimated to require one TCE for construction. Additionally, there are six residential properties located adjacent to Caltrans right of way where the proposed improvements would have raised the profile of the freeway. For the purposes of the cost estimate and evaluating impacts, these were considered as potential full acquisitions.

Figure 4: Lakeview Option 3 (eliminated)



After developing the preliminary layouts for the three preliminary options, the next step was to complete a series of focused technical evaluations on each option. Note that the third option, Option 3L, was selected and moved forward into the proposed build alternative due to superior AM and combined AM/PM peak period traffic delay reductions. Seven (7) different technical evaluations were conducted for each of the preliminary options:

- Traffic Analysis
- Preliminary Environmental Analysis
- Structures Analysis
- Stage Construction Analysis
- Right of Way Analysis
- Utilities Analysis

- Cost Estimate Analysis

Based on the evaluation criteria utilized, Option 3L (proposed Lakeview Avenue drop ramp to SB SR-55, which is maintained as a nonstandard left diverge exit) provides the greatest traffic benefit with the least cost and impact. Options 1A and 3 also provide improvement over the 2030 No Build conditions, but with a greater cost and impact to the surrounding community. Additionally, Option 3L would not preclude Option 3 from being constructed in the future, should a decision be made to move the SR-55 exit to the right with a flyover connector. Therefore, Lakeview Avenue Options 1A and 3 were eliminated from further consideration.

5.B.4. SR-57 to WB SR-91 Connector Ramp Metering

Multiple design options were considered that included connector metering for SR-57 to WB SR-91 connectors. This alternative was dismissed from further review because the traffic analysis showed SR-57 to SR-91 connector metering will not improve traffic on SR-91 and decreased LOS for SR-57.

6. CONSIDERATIONS REQUIRING DISCUSSION

6A. Hazardous Waste

A Phase I Initial Site Assessment (ISA) was prepared for the proposed project by Kleinfelder. In addition, a Phase II Site Investigation was completed for the Former Canal Street/Newkirk Landfill at 3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) in January 2020. The following recommendations are based on the findings, opinions, and conclusions noted during the course of the ISA and Phase II Site Investigation.

Potential Hazardous Materials Sites

A Phase II Site Investigation was completed for the Former Canal Street/Newkirk Landfill at 3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) in January 2020. Soil samples were collected from five borings within the landscaped area between the eastbound SR-91 and the DBW/SA recycling property.

Because of the historic and current uses, there is a potential risk of hazardous waste exposure during construction activities within this property. The contaminated landfill material will be excavated during the construction phase and disposed of at a Class I landfill facility. While the soil within the upper four feet of the site was not classified as hazardous, it will not be reused due to the presence of PCBs, dioxins/furans, and debris. Therefore, this non-hazardous soil will be disposed of at a Class II or III landfill.

The estimated cost to dispose of this soil at a Class I hazardous waste disposal facility is anticipated to range from $92,000 to $366,000 depending on the quantity of excavated soil. In addition, the excavation of the SR-91 roadway area is assumed to have the same level of contamination as the SA Recycling property for contingency budgeting purposes. The estimated cost to dispose of the soil for this area is anticipated to range from $536,000 to $1,829,000. For the purposes of the estimate during this phase, the total cost for remediation (excavation) of the contaminated soil was anticipated to be $1,300,000.

Further drilling and sampling in the SR-91 roadway area adjacent to 3200/3400 East Frontera Street (APNs 360-071-14, 360-071-28, and 360-071-24) should be completed during the design phase.

Aerially Deposited Lead

Soil sampling for the presence of aerially deposited lead (ADL) should be performed in the areas of the excavation within the project limits during the early stage of the design, except for the proposed project limits along SR-91 at APNs 360-071-14, 360-071-28, and 360-071-24, which were previously tested in the Phase II Site Investigation. Results of the sampling would be used to determine the disposal and/or reused methods for the excavated material.

Striping Removal

Removal of the yellow traffic striping/markings, and other colors of paint, should be performed in accordance with Caltrans' Standard Special Provision XE "84-9.03_A10-30-15_2015.

Asbestos Containing Materials

Affected bridges structures should be tested for the presence of asbestos-containing materials during the early phase of the design in accordance with United States Environmental Protection Agency National Emission Standards for Hazardous Air Pollutants and South Coast Air Quality Management District regulations.

Lead Based Paint

Painted surfaces on the La Palma Avenue overcrossing and Tustin Avenue overcrossing should be tested during the early stage of the design for the presence of lead-based paint in accordance with California Department of Public Health and California Department of Occupational Safety and Health regulations.

Other Potential Hazardous Materials

Although not anticipated in other areas of the project site, should impacted soil (as evidenced by staining and/or odors) be encountered during construction activities, the Resident Engineer overseeing construction should stop work until a hazardous waste specialist is able to assess the soil for proper handling.

6B. Value Analysis

Based on the total project cost estimate as above the $50 million threshold requirement, and per Chapter 19 of the PDPM, a Value Analysis (VA) is required for the proposed project. A project-specific VA was conducted on March 20, 2017 through March 24, 2017. A total of four VA design modifications were considered. All four VA design modifications are rejected. The following is an excerpt describing the final VA alternatives from the Final Value Analysis Study Report (August 2017):

VA Study Results

The project decision makers decided not to accept any of the proposed VA alternatives because the alternatives have features that do not meet current standards and detract from the project's purpose and need. There were potential cost and time savings associated with the proposed VA alternatives; however, the features that do not meet current standards outweighed the savings potential. The rejected alternatives, and their respective reasons for rejection, are discussed below.

1.1 Eliminate the two, separate westbound SR 91 connectors to northbound and southbound SR-57 and replace La Palma Avenue Bridge
This VA alternative is technically feasible as proposed; however, the baseline concept provides the best operational benefit. Therefore, this alternative is rejected.

1.2 Eliminate the two, separate WB SR 91 connectors to NB and SB SR 57 and do not replace La Palma Avenue Bridge
It is not technically feasible to eliminate replacing the existing bridge. It is nonstandard in vertical clearance; the needed standard vertical clearance must be achieved to meet the purpose and need of this project. Therefore, this alternative is rejected.

2.0 Reduce geometric cross sections to accommodate lane widths that do not meet current standards on eastbound SR 91 between Kraemer Boulevard and Tustin Avenue
It is not appropriate to move forward with this project using lane widths that do not meet current standards. Incident reduction is a priority with this project and lane widths that do not meet current standards could result in more incidents. Therefore, this alternative is rejected.

3.0 Reconfigure the eastbound SR 91 off-ramp alignment at Tustin Avenue to match existing

Operational efficiency is a concern that must be achieved to meet the project's purpose and need. A design exception would have to be approved to implement this alternative. There is a concern about deceleration distance being reduced as it enters the intersection, which may cause congestion. Therefore, this alternative is dismissed.

6C. Resource Conservation

The proposed improvements would maintain much of the existing pavement along the project corridor. The improvements primarily consist of freeway widening and not reconstruction of the freeway structural sections. However, there would be some pavement removal and replacement on the freeway shoulders and interchange ramps as part of the interchange modifications.

Existing asphalt pavement (freeway shoulders, interchange ramps, etc.) removed because of the proposed improvements would be recycled and reused in the construction to the extent possible. Existing concrete pavement (freeway median area, bridges, etc.) to be removed would be crushed and used as base material wherever possible.

Hardware (such as roadside signs, guardrails, drainage grates, etc.) and electrical equipment (such as controller cabinets, light standards, Closed Circuit Television poles and assemblies, Changeable Message Sign units, etc.) would be reused on the project wherever possible or stockpiled for future uses. The use of photovoltaic (solar generating) energy system is consistent with Caltrans' policy and would be used for emergency call boxes in this project.

6D. Right of Way Issues

Right of Way Requirements

Right of Way Data Sheets (for the total project and for each segment) have been prepared and included in Attachment C to document the permanent and temporary acquisitions required to accommodate construction of the improvements proposed in the Build (Preferred) Alternative. The proposed project will be constructed mostly within existing Caltrans right of way. To accommodate the proposed improvements, right of way from 16 larger parcels/ownerships would be required, which includes:

- Four (4) partial fee/Temporary Construction Easement (TCE) acquisitions
- Two (2) partial fee/permanent easement/TCE acquisitions
- Ten (10) TCE-only acquisitions

The Right of Way Data Sheet includes the ownership, acquisition areas, and type of acquisition for each parcel.

Additionally, at the intersection of the realigned WB off-ramp and Lakeview Avenue, there is existing Caltrans right of way that will become excess land after the removal of the existing WB loop on-ramp and existing WB off-ramp.

Utility relocations are required for this project and are further discussed in Section 5.A.3.6, Utility and Other Owner Involvement. There is an existing railroad facility that crosses SR-91 west of the Tustin Avenue interchange, as discussed in Section 5.A.3.7, Railroad Involvement.

Relocation Impact Studies

A Final Relocation Impact Memorandum has been prepared. The proposed project (Build [Preferred] Alternative) will not result in any residential or non-residential displacements within the cities of Anaheim, Fullerton, Orange, and Placentia.

As part of the approved Draft Project Report, acquisition was anticipated from an industrial property (SA Recycling Center) that would have required the relocation of personal property (containers located within the TCE and permanent easement areas). Following the circulation of the Draft Project Report, three options were considered and evaluated for the geometry adjacent to the property to compare the cost and long-term risk exposure associated with each one. Each option evaluated reductions to the cross-sectional width of lanes and shoulders, weighed against varying widths of required acquisition from SA Recycling under each scenario. The decision was made by the PDT to limit the acquisition to the landscaped area between the SA Recycling property fence and the Caltrans right of way fence. This area contains only vegetation and is not being used as operating right of way by SA Recycling. Not acquiring this area would require approval of unacceptable nonstandard lane and shoulder widths. Acquisition of a larger area would impact the ability of SA Recycling to perform its operations and expose OCTA and Caltrans to greater risk. Additionally, the reduced cross-section will avoid the relocation of the containers originally included in the DRIM. For that reason, there are no longer any relocations proposed as part of the project. The FRIM has been prepared to document this change to the proposed cross-section and reduced acquisition.

Airspace Lease Areas

The proposed project is not in an area of high land values having potential for future airspace leases.

6E. Environmental Compliance

Caltrans is the Lead Agency for the SR-91/0K9800 Improvement Project for the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). An Initial Study (IS) with a Mitigated Negative Declaration (MND) and Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI) was approved June 22, 2020. The draft environmental document (IS/EA) was circulated for a 30-day public review period and a Public Hearing was held December 11, 2018 at Rio Vista Elementary School in Anaheim. All public comments received were addressed in the MND/FONSI.

The NEPA environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by FHWA and Caltrans. The FONSI determined the Build Alternative (Preferred Alternative) will have no significant impact on the human environment. This FONSI is based on the EA, which has been independently evaluated by Caltrans and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. The FONSI provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. Caltrans takes full responsibility for the accuracy, scope, and content of the FONSI (and other documents as appropriate).

For CEQA, Caltrans has adopted an MND and determined the proposed project would not have a significant effect on the environment for the following reasons:

- The proposed project would have no effect on agriculture and forest resources and mineral resources.
- The proposed project would have less than significant effects to aesthetics, air quality, biological resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, transportation/traffic, tribal cultural resources, and utilities and service systems.
- With the following mitigation measures incorporated, the proposed project would have less than significant effects to cultural resources:
- PAL-1: Caltrans will ensure that a Paleontological Mitigation Plan (PMP) is prepared and adhered to during widening of the southern portion of the eastbound SR-91 to SR-55 connector, and construction of all bridge support columns or structures, and certain box culverts, retaining walls, and utilities. At a minimum the PMP will include the following instructions:
    - A qualified principal paleontologist (MS or PhD in paleontology or geology familiar with paleontological procedures and techniques) will be retained to prepare a PMP following the Department's Standard

Environmental Reference if auguring or foundation construction will penetrate 5 feet or more into undisturbed sediment.

- The paleontologist will be present to consult with construction contractors at pre-grading meetings.
- Paleontological monitoring under the direction of the qualified principal paleontologist will be performed for subsurface construction activities involving sensitive geologic formations.
- When fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas will be halted or diverted to allow recovery of fossil remains in a timely manner.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program will be cleaned, repaired, sorted, and cataloged.
- Prepared fossils, along with copies of all pertinent field notes, photos, and maps, will then be deposited in a scientific institution with paleontological collections.

A final report will be completed that outlines the results of the paleontological mitigation program.

An Environmental Commitment Record (ECR) with Measures has been approved and is appended to the MND/FONSI. All ECR Measures will be implemented during and throughout Design and Construction Phases.

6.E.1. Natural Environment

The information in this section is based on the Natural Environment Study (NES), completed in June 2018 for the proposed project, as well as the August 2019 Natural Environment Study (NES) Amendment (ICF 2019), which discusses potential fish passage effects from the proposed project. Within the biological study area (BSA), no listed species were observed; however, 11 special-status wildlife species were determined to have marginal to suitable habitat present, including the federally and/or state-listed endangered or threatened bald eagle (Haliaeetus leucocephalus), coastal California gnatcatcher, and California least tern (Sternula antillarum browni), as well as an additional eight non-listed special-status wildlife species not observed during general biological surveys in 2017. Standard avoidance and/or minimization measures shall be implemented related to natural communities, which include the areas of potential special status wildlife species habitat, including: 1) the preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) to address all construction-related activities, equipment, and materials that have the potential to affect water quality; 2) protecting areas of disturbance and constructed slopes will with temporary and/or permanent erosion controls, including fiber rolls, silt fencing, soil binders, rock slope protection, and/or revegetation with an erosion control seed mix; 3) cleaning and inspecting construction equipment of mud or other debris that may contain invasive plants and/or seeds before mobilizing to the site and before leaving the site during the course of construction to reduce the potential for spreading noxious weeds; and 4) delineation of environmentally sensitive areas prior to clearing or construction.

Results from the habitat assessment performed for the project confirmed both potential roosting habitat and direct sign of occupied bridges within the study area. Bat colonies were present at three locations within the study area: SR-91 bridge over the Santa Ana River, La Palma Avenue, and SR-91 bridge over the Carbon Canyon Diversion Channel. The SR-91 crossing over the Santa Ana River was surveyed in 2012 and was found to have a maternity colony of Yuma myotis and a small population of Mexican free-tailed bats (Tadarida brasiliensis). Avoidance and/or minimization measures shall be implemented related to bats, which include: 1) not removing bats/roosting bats before they are examined and approved for removal by the bat biologist; 2) prepare and implement a Bat Management Plan; and 3) leaving bridge hinges open and unsealed so as to continue to provide bat roosting habitat after the conclusion of construction.

The project is also anticipated to have no effect on critical habitat, as none was identified in the BSA. Two natural communities of concern were identified in the BSA: riverine habitat, located in the Santa Ana River, and coastal sage scrub habitat. If the USFWS determines that the proposed project is consistent with the approved OCTA M2 NCCP/HCP, it will issue a “streamlined” Biological Opinion pursuant to Section 7 of the Federal Endangered Species Act (FESA). This would provide

authorization for potential adverse effects to federally listed species, at which point compensatory mitigation may be required for impacts to special-status species. Due to the presence of suitable nesting bird habitat, to avoid potential effects to fully protected raptors and other nesting birds protected by the Migratory Bird Treaty Act (MBTA) and the California Fish and Game Code, a Nesting Birds Policy to conform to existing regulation and procedures for protection of nesting birds in accordance with the OCTA NCCP/HCP will be followed.

Invasive species would be removed from the project work area and controlled during construction to ensure compliance with Executive Order 13112.

A formal jurisdictional delineation survey was completed in 2017. The project would impact federal and state waters and would require a Section 404 permit from the U.S. Army Corps of Engineers (Corps) and Section 401 Water Quality Certification from the State Water Quality Control Board pursuant to the Clean Water Act. A California Department of Fish and Wildlife (CDFW) 1602 Streambed Alteration Agreement would also be required. The 404 permit would be authorized via a Letter of Permission in compliance with the Standard Individual Permit (SIP) that was issued by the Corps under OCTAs Measure M2 Freeway Program, of which this project is a part.

6.E.2. Visual/Aesthetics

To reduce operational impacts associated with revised views of adjacent rail operations to the south of the project corridor, and to ensure the visual character is not substantially degraded, an opaque wall or appropriate landscaping will be installed to sufficiently screen direct views for SR-91 motorists from industrial uses along the project corridor. In addition, in areas where sound walls are visible from adjacent residential land uses, vines would be planted, and the area would be landscaped, where feasible, to soften the project's hardscape features, glare, and radiant heat from the walls. Architectural treatments would be incorporated into walls, particularly along the Officially Designated State Scenic Highway portion of SR-91 (from the SR-55/SR-91 system interchange to east of the project limits). The project landscape and structural elements would be assessed by an Aesthetic Design Review Team to ensure compliance with the Master Plan of Freeway and Transit Corridor Enhancements: Creating a Quality Environment Along Orange County's Transportation Network. Furthermore, the existing SR-91 EB retaining wall at Lakeview Avenue would be replaced in-kind with architectural treatments similar to existing conditions in cooperation with the Caltrans District Architect.

Operation of the proposed project would introduce additional sources of light and glare to the project area from additional safety lighting sources. The project will likely require the relocation of two existing high mast stadium lights (HMSL) that were recently constructed (EA 12-0M6104) within the SR-57/SR-91 interchange

within Caltrans right of way to allow for the proposed SR-91/SR-57 interchange improvements (no impacts are anticipated to HMSL installed within the SR-55/SR-91 interchange). Motorists traveling along SR-91 and SR-57 would experience nominal lighting impacts due to high travel speeds and short duration of exposure. The relocation of the two HMSLs by approximately 10 to 20 feet to the east or west, and closer to the center of the interchange, is not anticipated to negatively affect any nearby residential uses or interchange illumination.

Nighttime lighting during construction could temporarily impact nearby residents and motorists traveling along the project site. The project area contains existing sources of light, nighttime construction would be limited to certain hours, safety and construction lighting would be directed away from land uses outside the project area, and construction plans would be reviewed by the District Landscape Architect.

6.E.3. Section 4(f)

The study area includes the area within maximum disturbance limit (MDL) and a 0.5-mile buffer around the MDL. There are no schools with publicly accessible facilities, historic properties or archaeological sites, or wildlife or waterfowl refuges. The analyzed resources are parks and one trail. Resources located within 0.5-mile of the proposed SR-91 Project improvements were evaluated to assess constructive use, and whether any project-related effects would result in proximity impacts that, after mitigation, would be so severe that the activities, features, and/or attributes that qualify those properties for protection under Section 4(f) would be substantially impaired. Substantial impairment occurs when the activities, features, and/or attributes of the property are substantially diminished resulting in the value of the resource, in terms of Section 4(f) significance, being meaningfully reduced or lost.

The project requires temporary closure of a portion of the Santa Ana River Regional Recreational Trail (Trail), a Section 4(f) resource, during construction. A detour for Trail users will be provided through the Construction Phase TMP and will be coordinated with OC Parks and City of Anaheim. There will be no permanent impacts to the Trail as a result of construction of the project. Caltrans consulted with the official with jurisdiction, who concurred with the de minimis finding for this Section 4(f) resource. For more details, refer to the approved MND/FONSI.

6.E.4. NPDES/Storm Water Compliance

The majority of the proposed project (from Kraemer Blvd/Glassell St to easterly project limit) drains to the Santa Ana River Reach 2, the Santa Ana River Groundwater Recharge Basins, and Carbon Canyon Diversion Channel. None of these waterbodies are listed on the 2014/2016 303(d) List as an impaired waterbody. No TMDLs have been established for pollutants in these waterbodies.

The portion of the project from State College Blvd to Kraemer Blvd/Glassell St drains to Carbon Canyon Creek and ultimately to Coyote Creek and the San Gabriel River. Coyote Creek, San Gabriel River Reach 1 (Estuary to Firestone), the San Gabriel River Estuary are listed on the 2014/2016 303(d) List as impaired water bodies. Coyote Creek is listed for indicator bacteria, iron, malathion, pH, and toxicity. San Gabriel River Reach 1 (Estuary to Firestone) is listed for pH and temperature, water. San Gabriel River Estuary is listed for copper, dioxin, indicator bacteria, nickel, and oxygen, dissolved. A TMDL for metals has been established for the San Gabriel River Watershed.

There is a statewide Trash TMDL, which would require the placement of Caltrans-approved Full Trash Capture (FTC) Devices at Significant Trash Generating Areas (SGTA). The following STGAs are within the project's PM limits:

- SR-91 PM 5.5 – PM 7.03
- SR-91 PM 8.03 – PM 10.8
- SR-57 PM 15.5 – PM 16.2
- SR-55 PM 17.4 – PM 17.9

FTC Devices will be placed within these SGTAs as BMPs and discussed further in the PS&E phase.

The project is located outside of and is non-contiguous to the Coastal Zone and is not anticipated to have any effects on coastal resources.

During the construction phase of the proposed project, sediment will be exposed, and construction activities will potentially impact downstream waterbodies. Therefore, temporary erosion control measures will be implemented to retain soil and sediment. Build (Preferred) Alternative Disturbed Soil Area will be 49.2 acres. Preparation of a Stormwater Pollution Prevention Plan (SWPPP) will be required, and the SWPPP will be implemented during construction of the proposed project. The SWPPP identifies the specific best management practices (BMPs) that will be implemented during construction of the proposed project. The BMPs proposed as a part of the proposed project would be implemented per the technology requirements as stipulated in the NPDES Construction General Permit (CGP) and Caltrans' NPDES Permit.

The proposed project's Build (Preferred) Alternative will increase the impervious area by 16.29 acres and remove 5.02 acres of existing impervious area within the proposed project boundary, which will result in a net increase of 11.27 acres, resulting in increases to the amount of runoff from SR-91, SR-55, and SR-57. The potential long-term impacts to water quality from implementing the proposed project will include an increase in runoff from the increase in impervious surfaces, which will result in an increase in the concentrations of general purpose pollutants. As part of Caltrans' Stormwater Program and described in their Stormwater Management Plan and Project Planning and Design Guide, structural and non-structural source control

BMPs will be incorporated into the design of the proposed project. Approved structural treatment BMPs could include but are not limited to Design Pollution Prevention (DPP) Infiltration Areas, Infiltration Devices, and Biofiltration Swales and Strips. The selection of specific BMPs is also subject to identifying suitable locations. In order to develop the proposed project, permission must be obtained from agencies that have jurisdictional authority over waterbodies that may be impacted by the proposed project, including the following:

- State Water Resources Control Board's General Construction Permit,
- Santa Ana Regional Water Quality Control Board's Section 401 Certifications,
- United States Army Corps of Engineers' Section 404 Permit.

This project must conform to all applicable water quality regulations and/or permit requirements of the State Water Resources Control Board (SWRCB) and the local Santa Ana Regional Water Quality Control Board (RWQCB), including, but not limited to, the Caltrans Statewide NPDES Permit (Order No. 2014-0077-DWQ) amending (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the Statewide General NPDES Permit for Construction Activities (Order No. 2012-0006-DWQ) amending (Order No. 2009-0009-DWQ, NPDES No. CAS000002), the Caltrans Storm Water Management Plan (December 2015 revision), and any subsequent revision and/or additional requirements at the time of construction. In the event that groundwater and any other non-stormwater dewatering activities are necessary, dewatering must comply with Santa Ana Regional Water Quality Control Board's Order R8-2015-0004, NPDES Permit No. CAG998001 for general water discharge requirements for discharges to surface waters that pose an insignificant (De Minimus) threat to water quality, or subsequent permit. A separate permit may be required if dewatering is necessary.

A Storm Water Data Report (SWDR) has been prepared for this proposed project per the guidelines in the Caltrans Project Planning and Design Guide (PPDG). The total new impervious area due to the proposed project is 16.29 acres. The proposed post construction treatment area (PCTA) is 41.44 acres. The permanent treatment BMP strategy will be determined at a later stage of design when more technical information is available; however, DPP infiltration areas, biofiltration swales and infiltration devices will be considered at this phase. The final selection of permanent BMPs will be determined during PS&E.

Temporary construction storm water pollution controls will be installed as early in the construction process as possible to provide additional protection and for utilization in addressing construction storm water impacts.

The cover page of the SWDR is included in Attachment E.

6F. Air Quality Conformity

The project comes from a conforming Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and Financially Constricted Transportation Improvement Program (FTIP), it has a design concept and scope that have not changed significantly from those in the RTP and FTIP. Analysis includes the latest planning assumptions and U.S. EPA–approved emissions models, and it complies with control measures in the SIP. Each project alternative is fully compatible with the design concept and scope described in the current regional transportation plan.

The proposed project is within a maintenance area for federal PM10 standards and nonattainment area for federal PM2.5 standards. Therefore, per 40 CFR Part 93, analyses are required for conformity purposes. However, U.S. EPA does not require hot-spot analyses (either qualitative or quantitative) for projects that are not listed in Section 93.123(b)(1) as projects of air quality concern (POAQCs). The proposed project would not be considered a POAQC. Furthermore, the proposed project was submitted to stakeholders at a Transportation Conformity Working Group (TCWG) meeting on February 28, 2017, pursuant to the interagency consultation requirement of 40 CFR 93.105 (c)(1)(i). The members of the TCWG confirmed that the proposed project would not be a POAQC.

A CO hot-spot analysis was performed per the 1997 Transportation Project-Level Carbon Monoxide Protocol (CO Protocol), which concluded that implementation of the proposed project would reduce congestion and overall travel time as a result of improvements in vehicle hours traveled (VHT). The proposed improvements would accommodate future growth but would not induce additional growth in the area. The proposed project would not cause traffic volumes to increase substantially. Additionally, the proposed project would not involve parking lots and therefore would not increase the number of vehicles operating in cold-start mode. As a result, the proposed project has adequately addressed the CO impact and demonstrated that it is not anticipated to cause or contribute to any new violations of the federal CO standard. No further quantitative or qualitative analysis is needed.

Compliance with the 2015 Caltrans Standard Specifications and the South Coast Air Quality Management District (SCAQMD) Rules and Regulations during construction will reduce construction-related air quality impacts from fugitive dust emissions and construction equipment emissions.

The proposed project would not generate new vehicular traffic trips because it would not construct new homes or businesses. However, the building scenario would add capacity to the roadway, thus resulting in increased vehicle miles traveled (VMT) in the project area. The Build (Preferred) Alternative would result in higher criteria pollutant and greenhouse gas (GHG) emissions in the project area when compared to the No Build Alternative conditions.

The proposed project is required to include an analysis of Mobile Source Air Toxics (MSAT) as part of the National Environmental Policy Act (NEPA) process for highways. It is expected that there would be similar MSAT emissions in the study area under the Build (Preferred) Alternative relative to the No Build Alternative in both 2030 and 2050 for the project area.

The project is in Orange County, which is among the counties listed as containing serpentine and ultramafic rock. However, the portion of Los Angeles County in which the project lies is not known to contain serpentine or ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none.

The project is listed in Amendment #3 to the 2016 RTP/SCS with Project ID 2M0736. Its description is as follows: "Add 1 MF lane EB from 55 to 57; add 1 MF lane WB from Glassell to State College; improve interchanges and merging from Lakeview to Raymond." The 2016 RTP was approved by the Regional Council of the Southern California Association of Governments (SCAG) on April 7, 2016, and Amendment #2 was adopted on December 17, 2018. The project is also in the 2019 Federal Transportation Improvement Program (FTIP), which was determined to conform by FHWA and FTA on December 17, 2018.

The design concept and scope of the proposed project are consistent with the project description in the 2016 RTP, 2019 FTIP, and the "open to traffic" assumptions of the SCAG regional emissions analysis. Construction and long-term operation of the project would, therefore, be considered consistent with the purpose of the SIP, and the project Build (Preferred) Alternative would conform to the requirements of the federal Clean Air Act (CAA).

On July 16, 2019, Caltrans submitted a request to FHWA for a project level conformity determination for the project. In a letter dated August 8, 2019, FHWA wrote that the SR-91 Improvement Project was found to conform with the State Implementation Plan (SIP) in accordance with 40 CFR Part 93.

6G. Title VI Considerations

Title VI of the Civil Rights Act of 1964 states:

No person in the United States shall, on the ground of race, color, or national Origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

Related federal statutes and state law further those protections to include sex, disability, religion, sexual orientation, and age.

More information about Caltrans' adherence to Title VI, including the Nondiscrimination Policy Statement, is located at the Title VI Program website.

6H. Noise Abatement Decision Report

A NADR has been prepared and is described in Section 5.A.3.10, Noise Barriers

6I. Life-Cycle Cost Analysis

A Life Cycle Cost Analysis has been prepared and is described in Section 5.A.3.15, Pavement Structural Sections.

6J. Reversible Lanes

Assembly Bill 2542 amended the California Streets and Highways code to require, effective January 1, 2017, that Caltrans or a regional transportation planning agency demonstrate that reversible lanes were considered when submitting a capacity-increasing project or a major street or highway lane realignment project to the California Transportation Commission for approval (California Streets and Highways Code, Section 100.015). Reversible lanes were considered but eliminated since there is not adequate right of way to implement a reversible lane facility; a reversible lane facility would physically conflict with the 91 Express Lanes (toll) facility and operations; would require reconstruction of the SR-57/SR-91 and SR-55/SR-91 system interchanges; the North Olive Railroad Bridge would require reconstruction with grade repercussions including reconstruction of the Anaheim Canyon Metrolink Station platform, reconstruction of the railroad crossing at La Palma Ave, reconstruction of the Santa Ana River railroad bridge, reconstruction of yard track and the railroad spur to the metals recycling center (DBW Metals Recycling and SA Recycling), and reconstruction of the railroad crossing and the East Riverdale Ave/North Orange Olive Rd intersection.

7. OTHER CONSIDERATIONS AS APPROPRIATE

7A. Public Hearing Process

Caltrans and OCTA hosted a public hearing (open house format) on December 11, 2018. The public meeting was held from 5:30 p.m. to 7:30 p.m. at Rio Vista Elementary School in Anaheim. Rio Vista Elementary School is accessible by public transit, is Americans with Disabilities Act (ADA)-compliant, and is close to the SR-91 project corridor. Outreach methods included newspaper advertisements, media advisory, direct mail, fliers and extended outreach, announcements, and electronic notices.

Newspaper Advertisements
Caltrans and OCTA advertised in the newspaper of record, the Orange County Register. The Orange County Register is Orange County's largest newspaper and premier source for local news. Three ¼-page ads advising of the public meeting were purchased and featured in this newspaper. The ads were published on Tuesday, November 27; Sunday, December 2; and Sunday, December 9, 2018. An ad was also published on Orange County Register online between November 29 and December 11, 2018.

To target members of the public within the project study area, Caltrans and OCTA purchased one ¼-page ad in the Anaheim Bulletin for Thursday, November 29, 2018 and one ¼-page ad in the North County News for Thursday, December 6, 2018. To reach Orange County's diverse communities within the study area, Caltrans and OCTA purchased two ¼-page ads in one of Orange County's leading Spanish-language newspapers, Excélsior, on Friday, November 30 and Friday, December 7, 2018. An ad also ran on Excélsior online between November 29 and December 11, 2018.

Media Advisory
Caltrans and OCTA purchased an advertisement to be posted on Facebook between November 27 and December 11, 2018, announcing the public information meeting date, time, and location, as well as noting the intended purpose to inform the public and receive comments.

Direct Mail
The target audience of the direct mail program consisted of residential and commercial property owners and tenants within the corridor area of approximately 2,500 feet of SR-91 within the project limits. As such, approximately 8,000 color, double-sided postcards were mailed on November 16, 2018, with estimated delivery on November 21, 2018, which was 20 days before the public meeting. Caltrans and OCTA also delivered approximately 6,500 color, double-sided fliers in both English and Spanish directly to residential and commercial property owners and tenants within the corridor area.

Electronic Notices

Electronic notices were sent to individuals on Caltrans' and OCTA's electronic database list. An initial invitation was sent electronically on Tuesday, November 27, 2018, inviting members of the community to attend the public meeting. Two additional notices were sent to the database leading up to the event, and two follow-up e-mails were distributed following the meeting to thank members of the public for their participation and to provide a reminder of the commenting deadline.

The same types of electronic notices were also published on social media (Facebook and Twitter) through the project and OCTA channels. An event invitation was posted on the SR 91 Improvement Project Facebook page on November 21, 2018. A reminder about the public hearing was posted on December 6 and December 11, 2018. A post was published on December 12, 2018 thanking those who joined the public hearing and providing a reminder that comments may be submitted through December 21, 2018. A final reminder about the commenting deadline was posted on December 20, 2018.

Extended Outreach

Caltrans and OCTA distributed fliers between November 21 and November 28, 2018 at various community-based sites within the corridor area, including homeowner associations, community centers, public libraries, and schools. Key stakeholders within the bicycling community, including agencies and Orange County cycling groups, were called and emailed starting November 27, 2018. Caltrans and OCTA also used geo-fenced mobile advertising to reach local community members within the corridor area. OCTA contacted elected officials, media, and PDT to increase engagement in the public participation process.

7B. Route Matters

Some modifications of ramp termini locations may warrant an amendment to the existing freeway agreement. The ramp geometry improvements proposed at Kraemer Blvd/Glassell St, Tustin Ave, and Lakeview Blvd interchanges are considered a modification to the existing freeway access. The existing freeway agreement may require revision or replacement.

7C. Permits

The proposed project is anticipated to require the permits, licenses, agreements, and certifications (PLACs) listed in Table 41 below.

Table 41: Project Permits and Approvals

Agency	Permit, Licenses, Agreements, and Certifications	Status
United States Army Corps of Engineers (USACE)	Section 404 nationwide permit or letter of permission	Caltrans and OCTA to obtain permit jointly.
	Section 408 approval process	Caltrans and OCTA to obtain permit jointly.
California Transportation Commission	California Transportation Commission vote to approve funds	Following the approval of the FED, the California Transportation Commission will be required to vote to approve funding for the project.
Federal Highway Administration (FHWA)	Air Quality Conformity Approval Letter	Obtained August 8, 2019.
State Water Resources Control Board (SWRCB)	Section 401 water quality certification	Caltrans and OCTA to obtain certification jointly prior to construction.
	Section 402 NPDES (construction activity)/Caltrans NPDES permit CAS000003 and CAS000002 (general permit)	Caltrans District 12, as the applicant for the NOI, to obtain permit prior to construction.
	Caltrans NPDES Statewide Stormwater Permit (Order No. 2012-0011-DWQ, as amended by Order WQ 2014-0006-EXEC, Order WQ 2014- 0077-DWQ, and Order WQ 2015-0036-EXEC, NPDES No. CAS000003)	Amended permit issued to Caltrans on May 20, 2014, for discharges from state right of way.
	NPDES General Permit for Stormwater Discharges of Stormwater Runoff Associated with Construction Activities (Order No. 2009-0009-DWQ, as amended by 2012-0006-DWQ)	The permit registration documents, including the NOI, will be submitted to the SWRCB and the WDID prior to any project construction.
California Department of Fish and Wildlife (CDFW)	Section 1602 Approval Process	Caltrans and OCTA to obtain permit jointly prior to construction.
Orange County Flood Control District (OCFCD)	Encroachment permit	Application for OCFCD construction encroachment permit for temporary access to the Santa Ana River would be obtained during design.

Agency	Permit, Licenses, Agreements, and Certifications	Status
OC Parks	Section 4(f) Letter of Concurrence	Caltrans obtained letter of concurrence of Section 4(f) De Minimis findings on July 22, 2019.
City of Anaheim	Construction Encroachment Permit	Application for a City of Anaheim construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Fullerton	Construction Encroachment Permit	Application for a City of Fullerton construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Orange	Construction Encroachment Permit	Application for a City of Orange construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
City of Placentia	Construction Encroachment Permit	Application for a City of Placentia construction encroachment permit for temporary access onto public rights-of-way will be submitted prior to construction.
Southern California Regional Rail Authority	Service Contract	Need for a service contract will be determined during the PS&E phase. OCTA to obtain during the project design, if needed.
California Public Utilities Commission (CPUC)	GO 88-B request	During the project design phase, a GO 88-B request will be required to be submitted to the CPUC because an additional lane will be added under the North Olive Underpass structure.

7D. Cooperative Agreements

Caltrans will own and maintain the bridge structures, roadway pavement, and other related infrastructure. This is consistent with the existing Cooperative Agreement for the PA/ED phase of the project. Separate cooperative agreements will be required for the right-of-way, PS&E, and construction phases for each segment of the proposed project.

7E. Report on Feasibility of Providing Access to Navigable Rivers

There are no traditional navigable waterways as defined by the Army Corps of Engineers found within the proposed project limits.

7F. Public Boat Ramps

There are no public boat ramps within the proposed project limits.

7G. Transportation Management Plan

The construction of this project is anticipated to take approximately 42 months. Construction-related delays are anticipated along the SR-91 freeway and possible delays may occur on the surrounding local arterials.

A Transportation Management Plan (TMP) Data Sheet has been prepared for the project by TranSystems and is included in this document as Attachment D. The TMP data sheet presents cost estimates for a variety of strategies to be employed during construction to minimize the impacts of the project construction. These estimated TMP costs have been included in the project cost estimate provided in Attachment B.

Public Information

A Public Awareness Campaign (PAC) will be established to provide the public with information relating to planned and on-going highway work. Construction activities, upcoming detours and/or lane closures, possible alternate routes, and alternate transportation modes information will be disseminated to the public via several methods including:

- Rideshare information
- Brochures and mailers
- Media releases
- Paid advertising
- Public meetings
- Broadcast fax and email services
- Telephone hotline
- Notification to targeted groups
- Commercial traffic reporters/feeds
- Project website
- Visual information
- Local cable television and news
- Internet postings

Traveler Information Strategies

The effective implementation of a traveler information system during construction is crucial for enabling motorists to make informed decisions about their travel plans and options with real-time traffic information. That real-time traffic information will include information on mainline, ramp, lane, and arterial closures and detours; travel delays; access to adjacent land uses; "businesses are open" signing; and other signing and information to assist travelers in navigating through, around, and in construction areas. Key components of the traveler information system are anticipated to include, but not be limited to:

- Fixed and portable changeable message signs
- Ground-mounted signs
- Automated work zone information systems
- Highway advisory radio
- Lane closure website
- Caltrans highway information network
- Bicycle and pedestrian information
- Commute Smart website

Incident Management

Effective incident management will ensure that incidents in and near construction areas are cleared quickly and do not result in substantial delays for the traveling public in the vicinity of work zones. Incident management includes, but is not limited to:

- Caltrans Construction Zone Enhanced Enforcement Program (COZEEP)
- Freeway Service Patrol
- Traffic surveillance stations
- Caltrans Transportation Management Center
- Traffic management team
- Towing services

Construction Strategies

The TMP will include procedures to lessen the transportation effects of project-related construction activities and will include, but not be limited to, consideration of the following:

- Conflicts with other projects, special events, and holidays
- Construction staging alternatives
- Mainline lane closures
- Local road closures

- Ramp and connector closures (no two consecutive on- or off-ramps in the same direction would be closed at the same time)
- Pedestrian and bicycle detours and facility closures
- Traffic control improvements
- Coordination with other projects
- Project phasing
- Traffic screens
- Truck traffic restrictions

Demand Management

Temporarily reducing the overall traffic volumes on the project segment of SR-91 could reduce the short-term adverse effects of construction on traffic operations. The TMP will include, but not be limited to, the following strategies that could reduce vehicular demand in the study area during project construction:

- Rideshare incentives
- Transit services
- Shuttle services
- Variable work hours and telecommuting
- Park-and-ride lots

Alternate Route Strategies

The TMP will provide strategies for notifying motorists, pedestrians, and bicyclists of planned construction activities. This notification will allow travelers to make informed decisions about their travel plans, including the consideration of possible alternate routes. The TMP will finalize the detour and alternate routes for motorists, specifically addressing the following:

- Mainline lane closures
- Ramp/connector closures
- Local road closures
- Temporary highway or shoulder use
- Local street improvements
- Temporary detours and closures of bicycle and pedestrian facilities
- Traffic signal coordination

Coordination Elements

Coordination with local jurisdictions and emergency service providers (CHP, local police, fire, paramedics, etc.) will be made during the final design to identify emergency service routes that serve hospitals, fire/police stations, emergency shelters,

emergency command centers and other facilities that provide essential services in times of emergencies within the study area. These emergency service routes would be maintained during construction or alternate routes provided. Alternate emergency service routes to be used during construction would need to be coordinated with emergency service providers. Construction contract documents would require that emergency service providers be notified in advance prior to any lane closures, interruptions on emergency service routes, or changes in traffic control.

Transit agencies will be informed about temporary lane and street closures during the final design phase. Commercial vehicle operators will be notified of all planned construction activities, implementation of detours or road closures.

7H. Stage Construction

Staging of construction would be required for all work on the proposed project. In addition to the TMP elements, all work areas will be protected by temporary safety devices, such as Temporary Railing (Type K), Temporary Crash Cushions, and other safety features in accordance, with Federal, State, and Local Agency requirements.

Construction of the proposed improvements is anticipated to have an approximate duration of 3.5 years. The proposed construction sequencing is intended to provide continuous, uninterrupted access to SR-91 and the local interchanges throughout the duration of construction. Four major construction stages are anticipated to construct the proposed project improvements. Stage Construction for the roadway improvements have been reviewed with the project team and stage construction for the bridge work is shown in the Advanced Planning Studies in Attachment H.

It should be noted that the improvements under the Build (Preferred) Alternative are proposed to be combined with a Caltrans multi-asset project that includes pavement rehabilitation within the project limits. The scope added from this project will require revision of the staging concept to accommodate the additional work. Additionally, as previously discussed, the project is proposed to be constructed in three segments that may be staged independently, but in coordination with each other.

Stage 1

Stage 1 construction involves widening to the outside along SR-91 throughout the project limits and reconstruction of a portion of the overcrossings within the project limits and the State College Boulevard Undercrossing. Within the State College Boulevard interchange area, WB SR-91 traffic will be shifted toward the median to allow for mainline freeway widening to the outside and widening the State College Undercrossing. The WB ramps will also be re-aligned.

Within the SR-91/SR-57 interchange area the SB SR-57 to WB SR-91 connector, NB SR-57 to WB SR-91 loop ramp connector EB SR-91 to NB SR-57 connector and WB

SR-91 to NB SR-57 connector will be re-aligned. A portion of a new bridge on the WB SR-91 to SB SR-57 will be constructed to allow the re-aligned WB SR-91 to NB SR-57 connector to cross under it. East of the SR-91/SR-57 interchange, EB SR-91 will be widened and the westerly portion of the existing La Palma Ave Overcrossing will be removed and reconstructed.

Within the Kramer Boulevard/Glassell St interchange area the westerly portion of the Kramer Boulevard Overcrossing will be removed and reconstructed. All three WB ramps and the EB off-ramp will be re-aligned in this stage.

Within the Tustin Ave interchange area, the east side bridge rail of the Tustin Ave Overcrossing will be removed, and a portion of the new overcrossing bridge will be built on both sides of the remaining portion of the existing bridge. Both the EB off and on-ramp will also be re-aligned. East of Tustin Ave, EB SR-91 traffic will be shifted towards the median and the bridge over the Santa Ana River will be widened and the EB SR-91 to WB SR-55 connector re-aligned.

Within the Lakeview Ave interchange area, the easterly portion of the new overcrossing structure will be built while the entire existing structure will remain. The WB off-ramp will be re-aligned and the new WB on-ramp to WB SR-91 will be constructed. During this stage, all existing GP lanes, HOV lanes and Express Lanes will be maintained in both the WB and EB directions along SR-91 and at least one lane will be maintained on the ramps and connectors.

Overnight closures will be required on the mainline and State College Boulevard for falsework erection and removal; detours will be provided. The estimated duration for Stage 1 is 14 months.

Stage 2

Stage 2 construction will continue with the re-alignment of ramps and replacement of overcrossing structures. Within the Stage College Boulevard interchange the realignment of the WB ramps will be completed.

Within the SR-91/SR-57 interchange area the re-alignment of the SB SR-57 to WB SR-91 connector, NB SR-57 to WB SR-91 loop ramp connector EB SR-91 to NB SR-57 connector and WB SR-91 to NB SR-57 connector will be completed. The remaining portion of the new bridge on the WB SR-91 to SB SR-57 will be completed allowing traffic to be shifted onto the re-aligned WB SR-91 to NB SR-57 connector that crosses under it. East of the SR-91/SR-57 interchange, traffic will be shifted to the west on the portion of the La Palma Ave Overcrossing completed in stage 1 and the easterly portion of the existing bridge will be removed and reconstructed.

Within the Kramer Boulevard/Glassell St interchange area traffic will be shifted onto the westerly portion of the Kramer Boulevard Overcrossing completed in stage 1. The easterly portion of the existing bridge will be removed and reconstructed. The remaining re-alignment work for the three WB ramps will be completed and opened to traffic. The existing EB loop off-ramp will be permanently closed and all traffic shifted to the EB off-ramp will completed in stage 1.

Within the Tustin Ave interchange area NB and SB Tustin Ave traffic will be split onto the two bridges constructed in stage 1. The remaining portion of the existing bridge will be removed and reconstructed. Shift traffic at the SR-91 EB ramp intersection with Tustin Ave to the south and place traffic on the re-aligned EB off-ramp and EB loop on-ramp from stage 1. Complete the remaining re-alignment work for the EB ramps and widen Tustin Ave on the west side, north of SR-91. East of Tustin Ave shift traffic on the EB SR-91 to WB SR-55 connector and complete the re-alignment. Traffic at the SR-91 EB ramp intersection with Tustin will be shifted south and placed on the re-aligned EB off-ramp and EB loop on-ramp from stage 1. The remaining re-alignment work for the EB ramps will be completed in this stage along with the widening of the west side of Tustin Ave, north of SR-91. East of Tustin Ave, traffic will be shifted on the EB SR-91 to WB SR-55 connector and the re-alignment will be completed.

Within the Lakeview Ave interchange area traffic will be shifted onto the easterly portion of the new overcrossing structure built in stage 1. The existing overcrossing will be removed, and the remaining westerly portion of the bridge will be constructed and the remaining construction on Lakeview Ave completed. Traffic will be shifted onto the re-aligned WB off-ramp and WB SR-91 on-ramp. During this stage, all existing GP lanes, HOV lanes and Express Lanes will be maintained in both the WB and EB directions along SR-91 and at least one lane will be maintained on the ramps and connectors. Overnight closures will be required on SR-91 for falsework erection and removal; detours will be provided. The estimated duration for Stage 2 is 14 months.

Stage 3

Stage 3 construction will continue with the re-alignment of ramps and widening of SR-91 for the SR-91/SR-57 interchange, Kramer/Glassell interchange and Lakeview Interchange. Within the SR-91/SR-57 interchange area the re-alignment of the WB SR-91 to NB SR-57 connector will continue.

Within the Kramer Boulevard/Glassell St interchange area, traffic will be shifted onto the completed Kramer Boulevard Overcrossing built in stage 2. The EB SR-91 widening and re-alignment of the EB loop on-ramp will be completed while a temporary left will be provided to the EB diagonal on-ramp completed in stage 2. Within the Lakeview Ave interchange area traffic will be shifted onto the completed overcrossing structure built in stage 2. SR-91 will be widened to make room for the

new alignment for the WB SR-91 connector to SB SR-55. During this stage, all existing GP lanes, HOV lanes and Express Lanes will be maintained in both the WB and EB directions along SR-91 and at least one lane will be maintained on the ramps and connectors. Overnight closures will be required on SR-91 for placement of overhead sign structures; detours will be provided. The estimated duration for Stage 3 is 5 months.

Stage 4

Stage 4 construction will continue with the re-alignment of ramps for the SR-91/SR-57 interchange, and Lakeview Interchange. Within the SR-91/SR-57 interchange area the re-alignment of the WB SR-91 to NB SR-57 connector will be completed. Within the Lakeview Ave interchange area traffic will be shifted onto the re-aligned WB SR-91 to SB SR-55 connector. The new drop ramp for traffic from Lakeview to SB SR-55 will be constructed with mechanically stabilized earth retaining walls on both sides of the ramp. During this stage, all existing GP lanes, HOV lanes and Express Lanes will be maintained in both the WB and EB directions along SR-91 and at least one lane will be maintained on the ramps and connectors. Overnight closures will be required on SR-91 for placement of overhead sign structures; detours will be provided. The estimated duration for Stage 4 is 9 months.

7I. Accommodation of Oversize Loads

SR-91 is not on the Department of Defense Rural and Single Interstate Routing System that would meet the most urgent national defense needs. FHWA has made a commitment to the Department of Defense to maintain 16.07 ft (4.9 m) minimum vertical clearance on the Priority Network. The SR-91 is also not the main route for vehicles coming to and from airports, harbors and testing sites. Special accommodations of oversize loads are not a requirement for the proposed project as this section of SR-91 is not included on the National Network for STAA, Lifeline Route and Scenic Highway System and is not identified as a route on the Interregional Road System and Subsystem of Highways for the movement of Extra Legal Loads (SHELL) network, with the exception of the SHELL designated segment from PM R9.19/R18.91 (SR-55 to Riverside County Line). It should be noted that there is one mainline SR-91 bridge (North Olive Railroad Bridge) within the project limits which will remain with a nonstandard vertical clearance of 15’-4”.

7J. Graffiti Control

According to the PDPM, the proposed project location is within a graffiti-prone area. Anti-graffiti design details will be evaluated as part of aesthetic treatments to project features during the PS&E phase. Vine planting will be proposed along sound wall locations wherever feasible.

8. FUNDING, PROGRAMMING AND ESTIMATE

8A. Funding

In November 2016, the Next 10 Delivery Plan was approved by the OCTA Board of Directors (Board), providing a blueprint for continued advancement of Measure M2 projects and programs through 2026. The project is included as Project I in the plan. The STBG funded part of the preliminary engineering for the project and the agency fund (Measure M2) is programmed for fiscal year 2023/24. The OCTA Board also directed staff to set aside net excess 91 Express Lanes revenue, which advances this project into final design and construction ahead of the original schedule.

8B. Programming

This proposed project is included in the approved 2019 Federal Transportation Improvement Program (FTIP) as project ID ORA150110. It is also included in the Southern California Association of Government's (SCAG) 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (2016 RTP/SCS) as project ID 2M0736.

The proposed project improvements are located within the County of Orange.

	Fiscal Year Estimate (TOTAL)								
	Prior	19/20	20/21	21/22	22/23	23/24	24/25	Future	Total
Component	In thousands of dollars ($1,000)								
PA&ED Support	7,000								7,000
PS&E Support		19,400							19,400
Right of Way Support		1,800							1,800
Construction Support						39,500			39,500
Right of Way			27,500						27,500
Construction						257,200			257,200
Total	7,000	21,200	27,500			296,700			352,400

The support cost ratio is 25.1%.

8C. Estimate

The total escalated capital cost of the Build (Preferred) Alternative is estimated to be $284.7 million. The primary capital costs of the proposed project are attributable to roadway costs. The estimated cost for roadway improvements is $170.2 million, the estimated cost for structures is $87.0 million, and the estimated cost for

right of way is $27.5 million. A detailed cost estimate has been provided in Attachment B.

9. DELIVERY SCHEDULE

Project Milestones		Segment 1 Milestone Schedule	Segment 2 Milestone Schedule	Segment 3 Milestone Schedule	Milestone Designation (Target/Actual)
PROGRAM PROJECT	M015				Actual
BEGIN ENVIRONMENTAL	M020	01/2015			Actual
CIRCULATE DPR & DED EXTERNALLY	M120	11/2018			Actual
PA & ED	M200	06/2020			Target
BEGIN PS&E	M210	03/2020	07/2020	11/2020	Target
PS&E COMPLETION	M377	09/2022	01/2023	05/2023	Target
RIGHT OF WAY CERTIFICATION	M410	03/2023	07/2023	11/2023	Target
READY TO LIST	M460	04/2023	08/2023	12/2023	Target
HEADQUARTERS ADVERTISE	M480	07/2023	11/2023	03/2024	Target
AWARD	M495	10/2023	02/2024	06/2024	Target
APPROVE CONTRACT	M500	11/2023	03/2024	07/2024	Target
CONTRACT ACCEPTANCE	M600	04/2027	08/2027	12/2027	Target
END PROJECT EXPENDITURES	M800	04/2028	07/2028	12/2028	Target
FINAL PROJECT CLOSEOUT	M900	04/2028	07/2028	12/2028	Target

10. RISKS

Caltrans Project Delivery Directive PD-09 requires that risk management be applied to all capital outlay projects and major maintenance projects delivered by Caltrans. Per the risk management protocol, a Level 3 risk level has been applied to the proposed project based upon the anticipated project cost. A risk register has been prepared and is included in Attachment J.

11. EXTERNAL AGENCY COORDINATION

The project requires coordination with the following external agencies:

USACE

- Section 404 Permit

SWRCB

- Clean Water Act Section 401

- California Statewide NPDES Storm Water Permit (Order No. 2012-0011-DWQ, NPDES No. CAS00003), as amended under Order No. 2014-0077-DWQ
- NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS00002), as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ
- General Waste Discharge Requirements (Dewatering) for Discharges to Surface Waters that Pose an Insignificant (de Minimis) Threat to Water Quality, Order No. R8-2009-0045, NPDES CAG918002 for sites within the San Diego/Newport Bay Watershed and Order No. R8-2015-004, NPDES No. CAG998001 for sites outside the San Diego/Newport Bay Watershed.

RWQCB

- Water Quality Certification
- Orange County Flood Control District
- Orange County MS4 Permit (Order No. R8-2009-0030, NPDES No. CAS618030), as amended by Order No. R8-2010-0062

Local Agencies

- Cooperative Agreements with the Cities of Anaheim, Fullerton, Orange, and Placentia
- Coordination with OC Parks regarding SART/Bicycle Path

Others

- Agreements with FSP for incident management during construction
- Agreements with CHP for enforcement during construction
- Agreements with various utility owners
- Service Agreement with SCRRA
- Coordination with CPUC on GO 88-B request
- Vote to approve funding from California Transportation Commission

12. PROJECT REVIEWS

Design Oversight _____ *Andrew Oshrin* _____ Date May 13, 2020
District Design Liaison _____ *Christopher Le* _____ Date May 13, 2020
Traffic Operations Area Engineer _____ *Steve Pham* _____ Date May 13, 2020

13. PROJECT PERSONNEL

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Right of Way – Overland, Pacific & Cutler

14. ATTACHMENTS

Attachment A	Project Location Map (1)
Attachment B	Project Cost Estimate (48)
Attachment C	Right of Way Data Sheet (69)
Attachment D	Transportation Management Plan Data Sheet (2)
Attachment E	Storm Water Data Report (Cover Sheet) (1)
Attachment F	Final Environmental Document (5)
Attachment G	Geometric Drawings – Build (Preferred) Alternative (99)
Attachment H	Advance Planning Studies (APS) (31)
Attachment I	Existing Utility Plans (34)
Attachment J	Risk Register (2)