I-15 CORRIDOR PROJECT PA/ED

EA 08-0R8000 | Project Number 0812000184

08-Riv-015-PM 49.8 / 52.3 and 08-SBd-015 PM 0.0 / 12.2

PROJECT REPORT

VOLUME I

This page intentionally left blank

PROJECT REPORT

For Project Approval

On Route **15**

Between **0.3 Miles South of Cantu-Galleano Ranch Road**

And **1.2 Miles North of Duncan Canyon Road**

I have reviewed the right-of-way information contained in this report and the right-of-way data sheet attached hereto, and find the data to be complete, current and accurate:

PM Jackie Williams

***REBECCA GUIRADO**, Deputy District Director, Right of Way*

APPROVAL RECOMMENDED:

Radhakrishnan.

***RAGHURAM RADHAKRISHNAN**, Project Manager*

for

***DAVID BRICKER**, Deputy District Director, Environmental Planning*

***CHRISTY CONNORS**, Deputy District Director, Design*

FOR

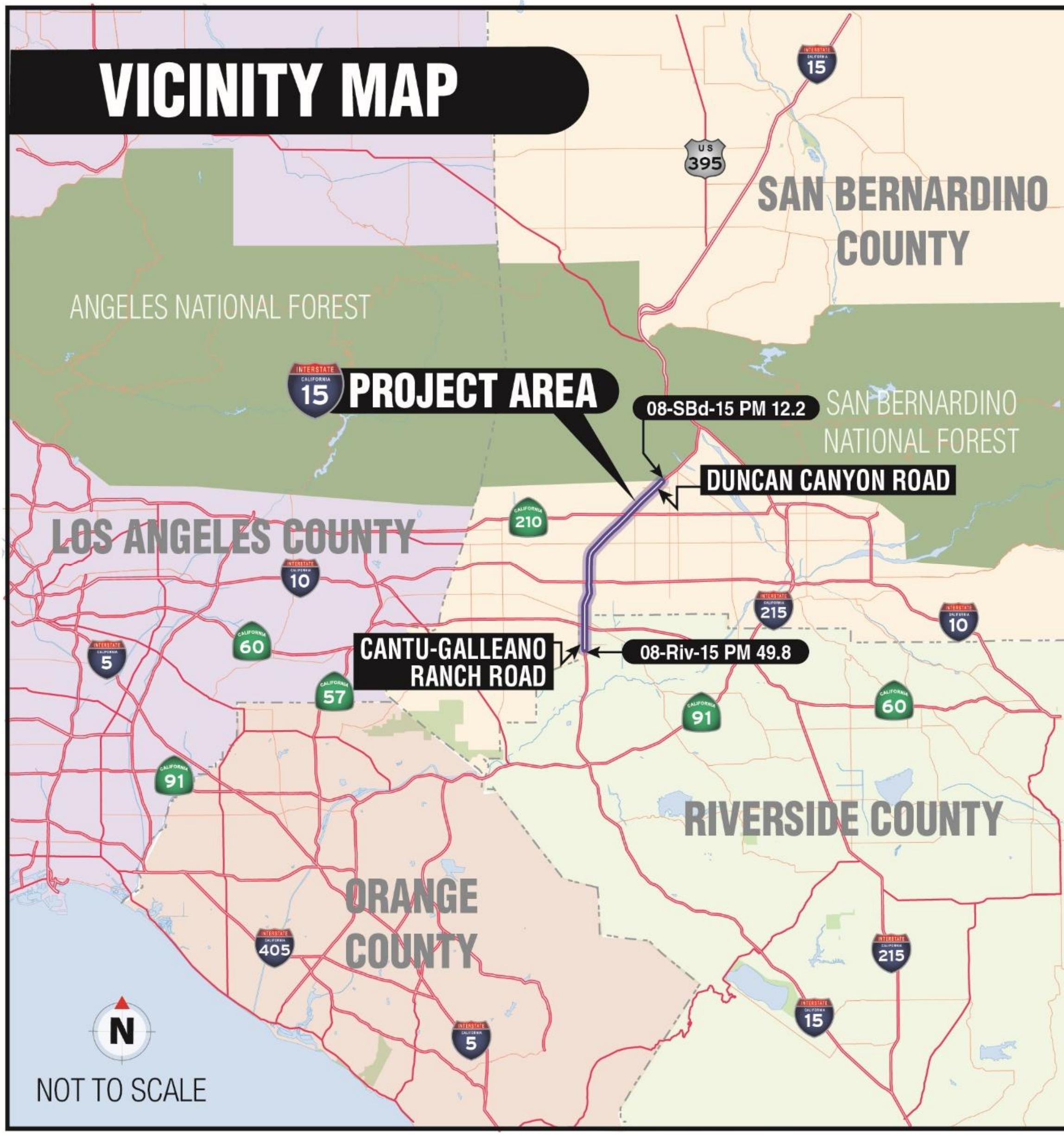
***CATALINO A. PINING III,** Deputy District Director, Traffic Operations*

APPROVED BY:

***JANICE BENTON**, Interim District Director* 12/20/2018 *Date*

This page is intentionally left blank.

Vicinity Map



In Riverside and San Bernardino Counties
On Route 15 between 0.3 Miles South of Cantu-Galleano Ranch Road and 1.2 Miles North of Duncan Canyon Road

This page intentionally left blank

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.

Vikrant S. Sanghai
Registered Civil Engineer
WSP

Date 11/14/2018

REGISTERED PROFESSIONAL ENGINEER
VIKRANT S. SANGHAI
No. C75022
Exp. 12/31/19
CIVIL
STATE OF CALIFORNIA

SUBMITTED BY:

Paula Beauchamp
Director of Project Delivery
SBCTA

Date 11/15/18

CONCURRED BY:

Jonathan den Hartog
Senior Oversight Engineer
Caltrans District 8

Date 11/19/18

This page is intentionally left blank.

TABLE OF CONTENTS

This page is left blank intentionally.

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS & ACRONYMS

AB	Aggregate Base
ABC	Accelerated Bridge Construction
AC	Asphalt Concrete
ADA	Americans with Disabilities Act
ADL	Aerially Deposited Lead
ADT	Average Daily Traffic
APN	Assessor's Parcel Number
APS	Advance Planning Study
AS	Aggregate Subbase
ATPB	Asphalt Treated Permeable Base
Ave	Avenue
Aux	Auxiliary Lane
Blvd	Boulevard
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CCTV	Closed-Circuit Television
CCWD	Cucamonga County Water District
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CMAQ	Congestion Mitigation and Air Quality
CML	Cement Mortar Lined
CMLW	Cement Mortar Lined Water
CMP	Corrugated Metal Pipe
CMS	Changeable Message Signs
CRCP	Continuously Reinforced Concrete Pavement
CTB	Concrete Treated Base
CVWD	Cucamonga Valley Water District
DED	Draft Environmental Document
DOD	U.S. Department of Defense
DPP	Design Pollution Prevention
Dr	Drive
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EB	Eastbound
ECR	Environmental Commitments Record
ED	Environmental Document
EL	Express Lane
FHWA	Federal Highway Administration
FSP	Freeway Service Patrol
FTIP	Federal Transportation Improvement Program
GP	General Purpose
HCM	Highway Capacity Model
HMA	Hot Mix Asphalt

HOV	High Occupancy Vehicle
IEUA	Inland Empire Utilities Agency
I/E	Ingress/Egress
IS	Initial Study
ISA	Initial Site Assessment
ITS	Intelligent Transportation System
JPCP	Jointed Plain Concrete Pavement
JPCP-RSC	Jointed Plain Concrete Pavement – Rapid Strength Concrete
kV	Kilovolt
LA	Los Angeles
LCB	Lean Concrete Base
LCCA	Life Cycle Cost Analysis
LOS	Level of Service
Lt	Left
MOU	Memorandum of Understanding
mph	Miles Per Hour
MWD	Metropolitan Water District of Southern California
mvm	million vehicle miles
NHS	National Highway System
OC	Overcrossing
OH	Overhead
NADR	Noise Abatement Decision Report
NB	Northbound
NEPA	National Environmental Policy Act
NH	National Highway System
NOI	Notice of Intent
NPDES	Statewide National Pollutant Discharge Elimination System
NSR	Noise Study Report
PA&ED	Project Approval and Environmental Document
PAC	Public Awareness Campaign
PCMS	Portable Changeable Message Signs
PCC	Portland Cement Concrete
PDT	Project Development Team
PE	Permanent Easement
Pkwy	Parkway
PM	Post Mile
PS&E	Plans, Specifications and Estimates
PSR-PDS	Project Study Report-Project Development Support
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
RCTC	Riverside County Transportation Commission
Rd	Road
Riv.	Riverside
RMCTB	Road Mix Cement Treated Base
Rt	Right
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SB	Southbound

SBd	San Bernardino
SBCTA	San Bernardino County Transportation Authority
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SCG	Southern California Gas
SCS	Sustainable Communities Strategy
SGVMWD	San Gabriel Valley Municipal Water District
Shld	Shoulder
SHS	State Highway System
SOV	Single Occupant Vehicle
SR	State Route
St	Street
STAA	Surface Transportation Assistance
STP	State Transportation Program
SWDR	Storm Water Data Report
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TASAS	Traffic Accident Surveillance and Analysis Systems
TCE	Temporary Construction Easement
TCR	Transportation Concept Report
TEL	Tolled Express Lanes
TMP	Transportation Management Plan
TMS	Traffic Management Systems
TMT	Traffic Management Team
TOPD	Traffic Operations Policy Directive
TPB	Treated Permeable Base
TSAR	TASAS Selective Accident Retrieval
TSM/TDM	Transportation System Management/Transportation Demand Management
TWC	Time Warner Cable
UC	Undercrossing
U.S.C.	United States Code
US EPA	U.S. Environmental Protection Agency
USDOT	United States Department of Transportation
UPRR	Union Pacific Railroad
VA	Value Analysis
VCP	Vitrified Clay Pipe
Vol	Volume
WB	Westbound

This page is left blank intentionally.

1 INTRODUCTION

San Bernardino County Transportation Authority (SBCTA) and California Department of Transportation (Caltrans) proposes to construct Express Lanes, including tolled facilities, in both directions of Interstate 15 (I-15) from approximately 0.3 miles south of Cantu-Galleano Ranch Road in the cities of Eastvale and Jurupa Valley at Post Mile (PM) 49.8 in Riverside County to approximately 1.2 miles north of Duncan Canyon Road at PM 12.2 in the City of Fontana in San Bernardino County.

Two alternatives were proposed by this project:

- Alternative 1 (No Build Alternative)
- Alternative 2 (Build Alternative)

Alternative 2, Build Alternative, extends for approximately 14.7 miles from Riverside County Post Miles (Riv PM) 49.8-52.3 to San Bernardino County Post Miles (SBd PM) 0.0-12.2. In May 2018, Alternative 2 was identified as the Preferred Alternative (PA) for the I-15 Corridor Project. The PA would add the following:

- Two (2) Express Lanes in each direction between SR-60 and SR-210
- One (1) Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60
- One (1) Express Lane in each direction between SR-210 and Duncan Canyon Road.
- One (1) Auxiliary Lane in each direction between SR-60 and I-10
- One (1) Auxiliary Lane in the northbound direction between Fourth Street and Foothill Boulevard

The proposed project extends through three (3) freeway-to-freeway system interchanges including SR-60 in the cities of Eastvale and Jurupa Valley in Riverside County, I-10 in the city of Ontario in San Bernardino County, and SR-210 in the cities of Rancho Cucamonga and Fontana in San Bernardino County. The project construction limits at the southerly end extend approximately additional 1.3 miles south of the Cantu-Galleano Ranch Road Overcrossing, at Post Mile 48.9, and at the northerly end extend an additional approximately 1.6 miles north of Duncan Canyon Road Overcrossing, at Post Mile 12.6, to allow for the placement of advance signage for Express Lanes.

Riverside County Transportation Commission (RCTC) has proposed improvements on an adjoining portion of I-15, identified as the I-15 Tolled Express Lane (TEL) project (EA 08-0J080), which would include construction of two (2) TEL in each direction from Hidden Valley Parkway in Norco, to Cantu-Galleano Ranch Road in Eastvale and Jurupa Valley, and from El Cerrito Road to the end of the SR-91 TEL in Corona, and one (1) tolled express lane in each direction from Cantu-Galleano Ranch Road to SR-60 in Eastvale and Jurupa Valley, from

Hidden Valley Parkway in Norco to the end of the SR-91 TEL in Corona, and from El Cerrito Road to Cajalco Road in Corona. The SBCTA proposed I-15 Corridor Project, which would add one Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60 at the southerly end, provides continuity of two (2) Express Lanes in each direction between RCTC's I-15 TEL Project and SBCTA's I-15 Corridor Project.

A summary of the project information is provided in **Table 1-1**.

Table 1-1: Project Summary

Project Limits	*08-Riv-15-49.8/52.3* *08-SBd-15-0.0/12.2*	
Number of Alternatives	*2 (No Build and Build)*	
	Current Cost Estimate (in 2017 Dollars):	**Escalated Cost Estimate:**
Capital Outlay Support	*$43.50M*	*$50.80M*
Capital Outlay Construction*	*$337.82M*	*$414.37M*
Capital Outlay Right-of-Way	*$3.68M*	*$4.48M*
Funding Source	*Measure I and Toll Revenue Bonds*	
Funding Year	*2014/2015 through 2023/2024*	
Type of Facility	*Freeway – Express Lanes*	
Number of Structures	*36*	
Environmental Determination or Document	*Initial Study/Environmental Assessment (IS/EA) leading to a Mitigated Negative Declaration/Finding of No Significant Impacts (MND/FONSI)*	
Legal Description	*In Riverside and San Bernardino Counties* *In and near Eastvale, Jurupa Valley, Ontario, Rancho Cucamonga and Fontana* *From 0.3 miles South of Cantu-Galleano Ranch Road Overcrossing To 1.2 miles North of Duncan Canyon Road Overcrossing*	
Project Development Category	*Category 4A*	
"" Capital Outlay Construction Cost includes Design Builder's and Toll Service Provider's Project and Construction Management Items, Design Builder's Design Services, and Establishment of Planting Costs.*		

2 RECOMMENDATION

It is recommended that the project be approved using the Preferred Alternative and that the project proceed to the next phase in the project development process. 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 I-15 Express

Lanes between Cantu-Galleano Ranch Road in Riverside County and Duncan Canyon Road in San Bernardino County.

3 BACKGROUND

Since being built in early 1970 to replace the historical US-66 (Foothill Boulevard), US-91, and former SR-31, I-15 has become a vital lifeline carrying people and freight to and from the Los Angeles metropolitan area. I-15 serves as a commuter corridor from the High Desert to jobs in the Los Angeles Basin, a freight corridor from Los Angeles to the rest of the continent, and the prime route for recreation trips to the high desert, Las Vegas, Rocky Mountain states, and the Midwest. It is also an important link from Riverside and San Diego Counties to the south. I-15 is part of the National Highway System and the Strategic Highway Corridor Network of National Defense.

3.A Project History

In 2005, the I-15 Comprehensive Corridor Study Report was completed for SBCTA, SCAG and Caltrans. The study was prepared to examine future transportation needs along I-15 in the San Bernardino and Victor Valleys, and to provide recommendations for improvements and for funding strategies. The proposed Express Lanes Build Alternative was developed from the evaluation of improvement strategies and the availability of various revenue sources given the foreseeable project costs.

SBCTA, in cooperation with Caltrans, performed a Preliminary Feasibility Study for I-15 (as well as I-10) between SR-60 and US-395 in 2009, which was updated in 2010. The study performed further evaluation of viable funding sources and funding requirements for the delivery of the I-15 Corridor Project and found that due to funding limitations, the Build Alternatives other than the Express Lanes would not be financially feasible. Upon consideration of these preliminary feasibility findings and after discussions with Caltrans, SBCTA commenced the preparation of an Advanced Toll Feasibility Study. The focus of the Advanced Toll Feasibility Study was to conduct preliminary traffic and revenue analysis. The analysis was completed and presented to the SBCTA Board in October 2013. A Project Study Report-Project Development Support (PSR-PDS) was approved for the project in September 2014, and the project development was advanced to the Project Approval and Environmental Document (PA&ED) phase. During the PA&ED phase, the Build Alternative described in PSR-PDS incorporated design refinements and is further studied for environmental compliance documentation.

SBCTA obtained legislative authority to operate a toll facility for San Bernardino County with Assembly Bill 914, which was approved in October 2015. The bill grants SBCTA the authority to toll on the I-10 and I-15 corridors.

3.B Community Interaction

As part of community participation, SBCTA established a public outreach program in 2013 which is anticipated to continue through the subsequent design and construction phases of the project. Additionally, Community Advisory Groups (CAGs) were formed to disseminate information about the project and provide feedback regarding the consideration of issues associated with the corridor.

One public information meeting was held, and is summarized below:

> As part of the public outreach for the I-15 CP, an open house-style public information meeting took place on November 12, 2015, at the Ontario Airport Hotel & Conference Center at 700 North Haven Avenue, Ontario, from 5:00 p.m. to 8:00 p.m. Approximately 20 people attended the public information meeting. Four comment cards were filled out and submitted. Comments included the following:

- Question about if noise barriers would be built in residential areas as freeway noise is already an issue on I-15 (resident lives in Rancho Cucamonga);
- Concerns of egress and ingress from toll lanes to access local businesses along the corridor;
- Impacts on local streets if people divert to avoid toll lanes;
- Questions about financing of the project and repayment — some participants were skeptical about the toll lanes as an effective financing tool and the need for toll lanes.

Other meetings and public presentations have been carried out as listed below:

- Periodic briefings to the SBCTA Board of Directors
- Periodic briefings to the San Bernardino County West Valley, East Valley, and High Desert Community Advisory Groups (CAGs)
- Coordination meetings with City staff from local municipalities along the project corridor

Also, SBCTA gave emphasis to reaching multicultural and economically disadvantaged groups including groups that may not otherwise be reached through the conventional and electronic outreach methods. In an effort to reach out to potential minority and low-income populations, a grassroots canvassing effort and distribution of project information encompassed visiting downtown districts and small business strips, retail shopping centers, and public attractions within communities such as libraries, senior centers, and community centers. In addition, pamphlets with project information were distributed to the public by CAG members directing or during community events. All distributed information was printed form in both English and Spanish, as they are the two most common languages used within the project area.

3.C Existing Facility

I-15 Freeway

The project study area of I-15 is generally an eight-lane divided freeway with access control (four-lane General Purpose (GP) Lanes in northbound and southbound directions). Between Jurupa Street interchange and the Fourth Street interchange, the facility transitions to an 11-lane facility to accommodate traffic demand between the I-15 and I-10 freeways. Beyond the Fourth Street interchange the facility transitions back to eight-lanes (four lanes in each direction). **Table 3.1** summarizes the lane configurations for Existing, No Build, and Build conditions. The existing lane width is generally 12 feet throughout the corridor. The outside shoulder has a standard width of 10 feet throughout the corridor except at a few undercrossing structure locations. The inside shoulder is typically 10 feet with a wider median that varies between 46 feet and 70 feet. There are no high-occupancy vehicle (HOV) facilities for the existing corridor within the proposed project limits along I-15 mainline. However, HOV preferential lanes exist at four on-ramp locations: at Base Line Road northbound on-ramp, two southbound on-ramps, and Duncan Canyon Road southbound on-ramp.

A portion of the existing median between Cantu-Galleano Ranch Road and Mission Boulevard Overhead (OH) is unpaved, but will be paved as part of RCTC *I-15 Tolled Express Lanes Project*, which will go into construction before this project. The existing median between the Mission Boulevard OH and Seventh Street has asphalt pavement, which will be replaced by concrete with this project. The existing median between Seventh Street and the northerly end of the project limits has concrete pavement.

As per the *I-15 Corridor Project Final Traffic Study Report* (March 2017) the existing year (2014) Level of Service (LOS) in the northbound and southbound directions for the peak hour is LOS D or better between Cantu-Galleano Ranch Road and Duncan Canyon Road except for the section between Jurupa Street and I-10 where it is LOS F.

Table 3-1: Existing and Proposed Lane Configuration

Location	Direction	Existing Condition (2014)	No- Build Alternative (2024 & 2045)	Build Alternative (2024 & 2045)
		GP+Aux	GP+Aux	EL+GP+Aux
Cantu-Galleano Ranch Road to SR-60	NB	3+2	3+2*	2+3+2
	SB	3+1	3+1*	2+3+1
SR-60 to Jurupa Street	NB	4	4	2+4+1
	SB	4	4	2+4+1
Jurupa Street to I-10	NB	4+2	4+2	2+4+2
	SB	4+1	4+1	2+4+2
I-10 to Fourth Street	NB	4+2	4+2	2+4+2
	SB	4+2	4+2	2+4+2
Fourth Street to Foothill Boulevard	NB	4	4	2+4+1
	SB	4	4	2+4

Table 3-1: Existing and Proposed Lane Configuration

Location	Direction	Existing Condition (2014)	No- Build Alternative (2024 & 2045)	Build Alternative (2024 & 2045)
		GP+Aux	GP+Aux	EL+GP+Aux
Foothill Boulevard to Base Line Road	NB	4	4	2+4
	SB	4	4	2+4
Base Line Road to SR-210	NB	4+1	4+1	†2+4+1
	SB	4+1	4+1	1+4+1
SR-210 to Summit Avenue	NB	4+1	4+1	1+4+1
	SB	4+1	4+1	1+4+1
Summit Avenue to Duncan Canyon Road	NB	4	4	1+4
	SB	4	4	1+4

"*" RCTC I-15 TEL Project (EA 08-0J080) is anticipated to be completed in 2020 and adds one (1) Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60.
"†" Two (2) Express Lanes transition to one (1) Express Lane in the NB direction between Base Line Road and SR-210

The I-15 freeway traverses a level terrain on embankment throughout the project. The northbound and southbound roadbeds are typically at the same elevations and separated by a median concrete barrier, portable concrete barrier, and double thrie-beam barrier. The pavement of each roadbed typically has a 2 percent cross slope with the crown point located at the centerline of the freeway. There is no pedestrian or bicycle access on I-15 within the project limits. The design speed for I-15 is 70 miles per hour (mph) and the posted speed is 65 mph within the project limits. The existing right-of-way width along the I-15 freeway within the project limits from I-15 centerline to Caltrans right-of-way line on the west and east sides of the freeway is approximately between 120 feet and 200 feet.

I-15 Interchanges

The project improvements pass through three system interchanges (I-15/SR-60, I-15/I-10 and I-15/SR-210). The following seven interchanges listed below are in San Bernardino County except for Cantu-Galleano Ranch Road which is located within Riverside County:

- Cantu-Galleano Ranch Road
- Jurupa Street
- Fourth Street
- Foothill Boulevard
- Base Line Road
- Summit/Beech Avenue
- Duncan Canyon Road

Arterials

Table 3-2 provides a list of local arterials that cross I-15 from south to north and west to east along with their respective roadway classification, jurisdiction, and general roadway configuration.

Table 3-2: Existing Arterials

No.	Arterial	Roadway Classification	Thru Lane	Continuous Sidewalk	Bike Class	Posted Speed (mph)	Jurisdiction
1	Cantu-Galleano Ranch Rd	Other Principal Arterial	6	EB	III	45	Jurupa Valley/ Eastvale
2	Riverside Drive	Major Collector	2	ǂ	III	50	Jurupa Valley/ Eastvale
3	Mission Blvd	Other Principal Arterial	4	ǂ	III	55	Jurupa Valley/ Eastvale
4	Philadelphia Street	Major Collector	2	ǂ	III	45	Ontario
5	Jurupa Street	Other Principal Arterial	6	EB	III	45	Ontario
6	Airport Drive	Minor Arterial	2	ǂ	III	45	Ontario
7	Ontario Mills Pkwy	Minor Arterial	4	ǂ	III	45	Ontario
8	Fourth Street	Other Principal Arterial	6	EB	III	55	Ontario
9	Sixth Street	Local	3	EB	III	45	Rancho Cucamonga
10	Arrow Route	Minor Arterial	3	EB/WB	III	50	Rancho Cucamonga
11	Foothill Blvd	Other Principal Arterial	6	EB/WB	II or III†	50	Rancho Cucamonga
12	Church St/ Miller Ave	Local	4	EB	III	40	Rancho Cucamonga
13	Etiwanda Ave	Other Principal Arterial	4	NB/SB	II	45	Rancho Cucamonga
14	East Ave	Minor Arterial	3	NB/SB	III	45	Rancho Cucamonga
15	Base Line Rd	Minor Arterial	5	EB/WB	III	45	Rancho Cucamonga
16	Victoria Street	Major Collector	2	ǂ	-	50	Fontana
17	Cherry Ave	Minor Arterial	2	ǂ	-	35	Fontana
18	Beech Ave	Major Collector	4	EB	II	45	Fontana
19	Duncan Canyon Rd	Major Collector	4	EB/WB	II	45	Fontana

"ǂ" Denotes there is no existing continuous sidewalk.
"-"Denotes there are no existing bike lanes and this street is not designated for a bicycle facility in local General Plans.
"†"Denotes Class II Designation west of I-15 freeway and Class III designation east of I-15 freeway.

Existing Non-standard Geometric Features

- **Existing Non-standard Features on I-15:**
  - 2:1 embankment slopes throughout the project corridor;
  - Less than 0.3% minimum grade along portions of I-15;
  - Inside shoulder width and horizontal clearance;

- – Spacing between various interchanges;
- – Weaving distances between interchanges;
- – Lateral clearance for elevated structures at I-10/I-15 Separation and I-15/SR-60 Separation;
- – Median width;
- – Vertical clearance at Mission Blvd Overhead, Vina Vista Overhead, and Rochester Overhead; and
- – Auxiliary lane length.

- **Existing Non-standard Features on Connectors and Ramps:**
  - 2:1 embankment slopes throughout the project corridor;
  - Less than 0.3% minimum grade along some ramps;
  - Access Control;
  - Superelevation rate in horizontal curves on interchange ramps;
  - Curvature along some horizontal curves on interchange ramps;
  - Vertical curves;
  - Structure cross slopes at W10-N15 Connector and S15-W10 Connector;
  - No HOV lanes at metered ramps;
  - Freeway entrance speed on some connectors;
  - Freeway-to-freeway single-lane connection; and
  - Preferred minimum distance between ramps intersections and local road intersections.

- **Existing Non-standard Features on Arterials:**
  - Presence of a single curb ramp on intersection corners; and
  - Corner sight distance at Etiwanda Avenue and Miller Avenue/Church Street.

Some of these existing non-standard geometric features would be eliminated or improved by the proposed project, some would remain unchanged, and some would reemerge in varying degrees in the proposed design. A discussion of proposed non-standard features is provided for the Build Alternative in Section 5.A.2.3 of this document. Fact Sheets (now referred to Design Standard Decision Documents) requesting exceptions to the mandatory and advisory design standards were approved by Caltrans on September 11, 2018.

Existing Structures

Table 3-3 provides a list of existing structures along I-15 within the project limits from south to north.

Table 3-3: Existing Structures along I-15

No.	Post Mile	Structure Name	Bridge No.
1	08-Riv-15-49.93	Cantu-Galleano Ranch Rd OC	56 0797
2	08-Riv-15-51.26	Riverside Ave UC (Lt)	56 0693L
3	08-Riv-15-51.26	Riverside Ave UC (Rt)	56 0693R

Table 3-3: Existing Structures along I-15

No.	Post Mile	Structure Name	Bridge No.
4	08-Riv-15-51.26	N15-E60 Connector OC	56 0694G
5	08-Riv-15-51.40	W60-S15 Connector OC	56 0690F
6	08-Riv-15-51.45	Route 15/60 Separation	56 0691L
7	08-Riv-15-51.45	Route 15/60 Separation	56 0691R
8	08-Riv-15-51.95	Mission BLVD OH (Lt)	56 0695L
9	08-Riv-15-51.95	Mission BLVD OH (Rt)	56 0695R
10	08-Riv-15-52.27	Philadelphia St UC (Lt)	56 0696L
11	08-Riv-15-52.27	Philadelphia St UC (Rt)	56 0696R
12	08-SBd-15-1.01	Jurupa St OC	54 0971
13	08-SBd-15-2.05	Airport Dr UC	54 0906
14	08-SBd-15-2.05	N15-E/W10 Connector	54 0906G
15	08-SBd-15-2.15	Vina Vista OH	54 0907
16	08-SBd-15-2.34	W10-S15 Connector OC	54 0914F
17	08-SBd-15-2.15	N15-W10 Connector OC	54 0907G
18	08-SBd-15-2.15	N15-E10 Connector OC	54 0928G
19	08-SBd-15-2.37	Route 15/10 Separation UC (Lt)	54 0909L
20	08-SBd-15-2.37	Route 15/10 Separation UC (Rt)	54 0909R
21	08-SBd-15-2.41	S15-E10 Connector OC	54 0910F
22	08-SBd-15-2.44	E10-N15 Connector OC	54 0931G
23	08-SBd-15-2.56	Ontario Mills PKWY UC	54 0911
24	08-SBd-15-3.05	Fourth St UC	54 0912
25	08-SBd-15-3.81	Seventh St UC	54 0918
26	08-SBd-15-3.94	MWD Pipeline UC (Lt)	54 0986L
27	08-SBd-15-3.94	MWD Pipeline UC (Rt)	54 0986R
28	08-SBd-15-4.10	Rochester OH (Lt)	53 0919L
29	08-SBd-15-4.10	Rochester OH (Rt)	54 0919R
30	08-SBd-15-4.47	Day Canyon Channel UC (Lt)	54 0920L
31	08-SBd-15-4.47	Day Canyon Channel UC (Rt)	54 0920R
32	08-SBd-15-4.61	Arrow Route UC (Lt)	54 0921L
33	08-SBd-15-4.61	Arrow Route UC (Rt)	54 0921R
34	08-SBd-15-5.28	Route 15/66 Separation (Lt)	54 0922L
35	08-SBd-15-5.28	Route 15/66 Separation (Rt)	54 0922R
36	08-SBd-15-5.97	Etiwanda Ave UC (Lt)	54 0973L
37	08-SBd-15-5.97	Etiwanda Ave UC (Rt)	54 0973R
38	08-SBd-15-6.71	Base Line Rd UC (Lt)	54 0974L
39	08-SBd-15-6.71	Base Line Rd UC (Rt)	54 0974R
40	08-SBd-15-7.08	Etiwanda OH (Abandon RR) (Lt)	54 0963L

Table 3-3: Existing Structures along I-15

No.	Post Mile	Structure Name	Bridge No.
41	08-SBd-15-7.08	Etiwanda OH (Abandon RR) (Rt)	54 0963R
42	08-SBd-15-7.44	Victoria St UC (Lt)	54 0965L
43	08-SBd-15-7.44	Victoria St UC (Rt)	54 0965R
44	08-SBd-15-7.56	East Etiwanda Creek UC (Lt)	54 0964L
45	08-SBd-15-7.56	East Etiwanda Creek UC (Rt)	54 0964R
46	08-SBd-15-8.35	SR-210/I-15 Separation	54 0961
47	08-SBd-15-8.83	Cherry Ave UC (Lt)	54 0970L
48	08-SBd-15-8.83	Cherry Ave UC (Rt)	54 0970R
49	08-SBd-15-9.60	Summit Ave OC	54 0978
50	08-SBd-15-11.03	Duncan Canyon Rd OC	54 0980

Existing Railroad Facilities

There are three railroad crossings on I-15 within the study limits as shown in **Table 3-4**.

Table 3-4: Existing Railroad Crossings

No.	Facility	Type	Track	Owner	PM	City/County
1	Mission Blvd	OH	2 Main, 1 Side	UPRR	08-Riv-15- PM 51.95	Jurupa Valley/ Riverside County
2	Vina Vista	OH	2 Main	UPRR	08-SBd-15- PM 2.15	Ontario/ San Bernardino County
3	Rochester	OH	1 Main	SBCTA/ BNSF/ Metrolink	08-SBd-15- PM 4.10	Rancho Cucamonga/ San Bernardino County

OH = overhead; BNSF = Burlington Northern – Santa Fe; UPRR = Union Pacific Railroad

Existing Utilities

There are approximately 190 utilities within the project area including electrical, gas, oil and petroleum pipelines, telephone and communication, cable TV, water, and sewer. The following agencies/companies are identified as having utilities within or adjacent to the study limits:

- Power:
  - Southern California Edison (SCE) (Transmission and Distribution)

- Telephone/Cable TV/Fiber Optic:
  - Airtouch Cellular
  - AT&T (Transmission and Distribution)
  - Charter Communications
  - Cingular

- – Frontier Communications
- – Crown Castle
- – Level 3 Communications
- – MCI (Verizon)
- – Sprint
- – Sunesys
- – T-Mobile
- – Terradex Inc.
- – TW Telecom
- – Time Warner Cable (TWC)
- – Wilcon
- – Rancho Cucamonga Municipal Utility (RCMU)
- – Zayo Abovenet

- Water/Wastewater:
  - – Chino Municipal Water District
  - – City of Norco
  - – City of Ontario
  - – City of Rancho Cucamonga
  - – City of Rialto Water Department
  - – Cucamonga Valley Water District (CVWD)
  - – Cucamonga County Water District (CCWD)
  - – Fontana Water Company (FWC)
  - – Inland Empire Utilities Agency (IEUA)
  - – Jurupa Community Services
  - – Metropolitan Water District
  - – San Bernardino County
  - – San Bernardino Valley Municipal Water District
  - – San Gabriel Valley Municipal Water District (SGVMWD)
  - – West Valley Water District

- Sewer:
  - – City of Fontana
  - – City of Norco
  - – City of Ontario
  - – City of Rancho Cucamonga
  - – Cucamonga Valley Water District (CVWD)
  - – Cucamonga County Water District (CCWD)
  - – Inland Empire Utilities Agency (IEUA)
  - – Jurupa Community Services
  - – San Bernardino County
  - – Santa Ana Watershed
  - – West Valley Water District

- Oil/Fuel/Petroleum/Gasoline:
  - Kinder Morgan Energy Partners
  - Plains All American Pipeline
  - Southern California Gas (SCG)

Existing Drainage

The existing off-site drainage generally flows from north to south. The onsite drainage system consists of catch basins and storm drain systems.

Major drainage facilities along the corridor include flood control channels and storm drain systems, as listed in **Table 3-5**.

Table 3-5: Existing Major Drainage Facilities

No.	Concentration Point (Approximate Station of Culvert and CL Intersection)	Structure Type	System Size	Jurisdiction
1	"A" 2719+60	Culvert	24" CMP	Caltrans
2	"A" 2745+36	Channel	15' Trapezoidal Channel	Caltrans
3	"A" 2759+60	Culvert	120" RCP	City of Ontario
4	"A" 61+50	Culvert	8'x8' RCB	City of Ontario
5	"A" 133+00	Culvert	87" RCP	City of Ontario
6	"A" 134+60	Culvert	24" CMP	Caltrans
7	"A" 139+80	Culvert	18" CMP	Caltrans
8	"A" 159+50	Culvert	114" RCP	City of Ontario
9	"A" 160+50	Culvert	18" CMP	Caltrans
10	"A" 189+00	Culvert	8'x6' RCB	City of Ontario
11	"A" 260+00	Channel	40’ Channel	SBCFCD
12	"A" 275+50	Culvert	18" CMP	Caltrans
13	"A" 280+00	Culvert	18" CMP	Caltrans
14	"A" 286+00	Culvert	24" RCP	Caltrans
15	"A" 293+90	Culvert	24" CMP / 24" RCP	Caltrans
16	"A" 300+25	Culvert	24" CMP	Caltrans
17	"A" 306+10	Culvert	24" CMP	Caltrans
18	"A" 313+50	Culvert	18" CMP	Caltrans
19	"A" 321+20	Culvert	18" CMP	Caltrans
20	"A" 327+50	Culvert	18" CMP	Caltrans
21	"A" 333+40	Culvert	18" CMP	Caltrans
22	"A" 343+50	Culvert	30" RCP	Caltrans
23	"A" 351+00	Culvert	36" RCP	Caltrans
24	"A" 356+50	Culvert	18" RCP	Caltrans
25	"A" 362+00	Culvert	36" RCP	Caltrans

Table 3-5: Existing Major Drainage Facilities

No.	Concentration Point (Approximate Station of Culvert and CL Intersection)	Structure Type	System Size	Jurisdiction
26	"A" 372+00	Culvert	24" RCP	Caltrans
27	"A" 375+00	Culvert	24" CMP	Caltrans
28	"A" 415+00	Culvert	24" RCP	Caltrans
29	"A" 420+00	Culvert	6'x4' RCB	City of Rancho Cucamonga
30	"A" 422+25	Channel	30’ Channel	SBCFCD
31	"A" 462+50	Culvert	24" /30" RCP	Caltrans
32	"A" 471+50	Culvert	30" RCP	Caltrans
33	"A" 489+40	Culvert	30" RCP	City of Rancho Cucamonga
34	"A" 524+75	Culvert	10'x5' RCB	SBCFCD

SBCFCD = San Bernardino County Flood Control District
CMP = corrugated metal pipe
RCB = reinforced concrete box
RCP = reinforced concrete pipe

Existing Pavement Structural Sections

Existing pavement along the I-15 freeway generally comprises concrete pavement for the traffic lanes. The median between Mission Blvd and south of I-10, and between north of Fourth Street and the MWD Pipeline UC is asphalt concrete. The outside shoulders comprise Portland Cement Concrete (PCC) pavement north of Seventh Street Undercrossing and Asphalt Concrete (AC) pavement south of Seventh Street Undercrossing. Two pavement rehabilitation projects that were completed in 2012 replaced concrete pavement slabs in the 3rd and 4th GP lanes. These pavement rehabilitation projects also overlaid AC outside shoulders south of Seventh Street and replaced PCC shoulders north of Seventh Street.

Table 3-6 summarizes the existing pavement structural sections, which are based on as-built drawings and will need to be verified during final design.

Table 3-6: Existing Pavement Structural Sections

PM/Sta/Approx. Location	Direction	Lane	Existing Structural Section					
Riv 49.80 to 49.98 2634+60 to 2644+10 South of Cantu-Galleano Ranch Rd	SB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3	0.85'	PCC	0.50'	TPB		
		4	0.95'	PCC	0.10'	AC	0.50'	LCB
		Rt Shld	0.70'	PCC	0.10'	AC	0.40'	LCB
Riv 49.80 to 49.98 2634+60 to 2644+10 South of Cantu-Galleano Ranch Rd	NB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3	0.85'	PCC	0.50'	TPB	0.71'	Class 2 AS
		Rt Shld	0.15'	AC	Var	Class 2 AB	0.71'	Class 2 AS
Riv 49.98 to 50.28 2644+10 to 2659+94 South of Cantu-Galleano Ranch Rd to north of Cantu-Galleano Ranch Rd	SB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3	0.85'	PCC	0.50'	TPB		
		Rt Shld	0.70'	PCC	0.10'	AC	0.40'	LCB
Riv 49.98 to 50.28 2644+10 to 2659+94	NB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3,4	0.85'	PCC	0.50'	TPB		

Table 3-6: Existing Pavement Structural Sections

PM/Sta/Approx. Location	Direction	Lane	Existing Structural Section					
South of Cantu-Galleano Ranch Rd to north of Cantu-Galleano Ranch Rd		Rt Shld	0.15'	AC	Var	Class 2 AB	0.71'	Class 2 AS
Riv 50.28 to 50.77; 2659+94 to 2685+82; North of Cantu-Galleano Ranch Rd to south of Riverside Ave	SB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3	0.85'	PCC	0.50'	TPB	0.71'	Class 2 AS
		4	0.95'	PCC	0.10'	AC	0.50'	LCB
		Rt Shld	0.70'	PCC	0.10'	AC	0.40'	LCB
Riv 50.77 to 51.00; 2685+82 to 2697+96; South of Riverside Ave	SB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1,2,3	0.85'	PCC	0.50'	ATPB		
		4	0.95'	PCC	0.10'	AC	0.50'	LCB
		Rt Shld	0.70'	PCC	0.10'	AC	0.40'	LCB
Riv 50.28 to 50.63; 2659+94 to 2678+42; North of Cantu-Galleano Ranch Rd	NB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1	0.85'	PCC	0.10'	AC	0.50'	LCB
		2,3,4	0.85'	PCC	0.50'	TPB	0.71'	Class 2 AS
		5	0.95'	PCC	0.10'	AC	0.50'	LCB
		Rt Shld	0.71'	PCC	0.10'	AC	0.40'	LCB
Riv 50.63 to 50.77; 2678+42 to 2685+82; North of Cantu-Galleano Ranch Rd to south of Riverside Ave	NB	Lt Shld	0.50'	AC	0.80'	Class 2 AB		
		1	0.85'	PCC	0.10'	AC	0.50'	LCB
		2,3,4	0.85'	PCC	0.50'	TPB	0.71'	Class 2 AS
		Rt Shld	0.15'	AC	Var	Class 2 AB	0.71'	Class 2 AS
Riv 50.77 to 51.50; 2685+82 to 2724+36; South of Riverside Ave to north of Route 60	NB	Lt Shld	0.20'	AC	0.40'	ATPB		
		1,2,3	0.85'	PCC	0.50'	ATPB		
		Rt Shld	0.15'	AC	Var	Class 2 AB		
Riv 51.00 to 51.95; 2697+96 to 2748+12; South of Riverside Ave to north of Mission Blvd	SB	Lt Shld	0.20'	AC	0.95'	Class 2 AB		
		1,2,3	0.75'	PCC	0.40'	LCB		
		Rt Shld	0.35'	AC	0.80'	Class 2 AB		
Riv 51.50 to 51.62; 2724+36 to 2730+70; North of Route 60	NB	Lt Shld	0.20'	AC	0.95'	Class 2 AB		
		1,2,3,4	0.75' - 0.85'	PCC	0.40'	ATPB		
		Rt Shld	0.15'-0.30'	AC	Var	Class 2 AB		
Riv 51.62 to 51.95; 2730+70 to 2748+12; North of Route 60 to North of Mission Blvd	NB	Lt Shld	0.20'	AC	0.95'	Class 2 AB		
		1,2,3,4	0.75'	PCC	0.40'	LCB		
		Rt Shld	0.30'	AC	0.85'	Class 2 AB		
Riv 52.03 to 52.28; 2752+34 to 2765.54; North of Mission Blvd to Philadelphia St	SB	Lt Shld	0.94'	PCC	0.50'	AC		
		1,2	0.75'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.40'	AC		
		Rt Shld	0.35'	AC	0.80'	Class 2 AB		
Riv 52.02 to 52.28; 2751+82 to 2765+54; North of Mission Blvd to Philadelphia St	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.75'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.85'	Class 2 AB		
SBd 0.01 to 0.07; 24+59 to 27+75; Philadelphia St	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.75'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.35'	AC	0.80'	Class 2 AB		
SBd 0.01 to 0.26; 24+59 to 37+79; Philadelphia St to south of Zinfandel Ct	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.75'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.85'	Class 2 AB		

Table 3-6: Existing Pavement Structural Sections

PM/Sta/Approx. Location	Direction	Lane	Existing Structural Section					
SBd 0.07 to 0.36 27+75 to 43+07 North of Philadelphia St to north of Zinfandel Ct	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.75'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.35'	AC	0.80'	Class 2 AB		
SBd 0.26 to 0.36 37+79 to 43+07 200' south to 300' north of Zinfandel Ct	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.70'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 0.36 to 0.74 37+79 to 63+13 200' south of Zinfandel Ct to Jurupa Ave NB Exit Ramp	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.70'	PCC	0.40'	LCB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.35'	AC	0.75'	Class 2 AB		
SBd 0.36 to 0.74 43+07 to 63+13 300' north of Zinfandel Ct to Jurupa Ave NB Exit Ramp	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.70'	PCC	0.40'	LCB		
		3	0.75'	PCC	0.40'	LCB		
		4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 0.74 to 0.98 63+13 to 75+80 Jurupa Ave NB Exit Ramp to Jurupa Ave	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 0.74 to 0.98 63+13 to 75+80 Jurupa Ave NB Exit Ramp to Jurupa Ave	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3	0.70'	PCC	0.35'	RMCTB		
		4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 0.98 to 1.23 75+80 to 89+00 Jurupa Ave to Jurupa Ave NB Entrance Ramp	SB	Lt Shld	0.50'	AC	0.70'	Class 2 AB		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 0.98 to 1.23 75+80 to 89+00 Jurupa Ave to Jurupa Ave NB Entrance Ramp	NB	Lt Shld	0.50'	AC	0.70'	Class 2 AB		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3	0.70'	PCC	0.35'	RMCTB		
		4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 1.23 to 1.53 89+00 to 104+84 North of Jurupa Ave NB Entrance Ramp	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.3’	AC	0.80’	Class 2 AB		
SBd 1.53 to 1.95 104+84 to 127+02 North of Jurupa Ave NB Entrance Ramp to south of Airport Drive	SB	Lt Shld	0.50'	AC	0.70'	Class 2 AB		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 1.53 to 1.95 104+84 to 127+02 North of Jurupa Ave NB Entrance Ramp to south of Airport Drive	NB	Lt Shld	0.50'	AC	0.70'	Class 2 AB		
		1,2	0.65'	PCC	0.40'	CTB		
		3	0.70'	PCC	0.40'	CTB		
		4	1.13'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		

Table 3-6: Existing Pavement Structural Sections

PM/Sta/Approx. Location	Direction	Lane	Existing Structural Section					
SBd 1.95 to 1.97 127+02 to 128+08 South of Airport Drive	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3	1.13'	PCC	0.50'	AC		
		4	0.70'	PCC	0.40'	CTB		
		Rt Shld	0.30’	AC	0.80’	Class 2 AB		
SBd 1.95 to 1.97 127+02 to 128+08 South of Airport Drive	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	0.67'	PCC	0.03'	Level Course	0.40'	CTB
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.01 to 2.06 130+19 to 132+83 South of Airport Drive	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3	1.13'	PCC	0.50'	AC		
		4	0.70'	PCC	0.40'	CTB		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.01 to 2.06 130+19 to 132+83 South of Airport Drive	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	0.67'	PCC	0.03'	Level Course	0.40'	CTB
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.11 to 2.28 135+47 to 144+44 South of Vina Vista Overhead	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	0.70'	PCC	0.50'	RMCTB		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.33 to 2.46 147+08 to 153+95 South of Vina Vista Overhead to North of I-10	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	0.70'	PCC	0.50'	RMCTB		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.49 to 2.73 155+53 to 168+20 North of I-10 to north of Ontario Mills UC	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		2,3	0.70'	PCC	0.50'	RMCTB		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.73 to 2.94 168+20 to 179+29 North of Ontario Mills UC to south of Fourth St NB Exit Ramp	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	1.03'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 2.98 to 3.18 181+40 to 191+96 South of Fourth Street to north of Fourth Street	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	CTB		
		3,4	1.03'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 3.18 to 3.55 191+96 to 211+50 South of Fourth Street to north of Fourth Street	NB/SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	1.03'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 3.55 to 3.67 211+50 to 217+83 North of Fourth Street to north of Seventh Street	SB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3,4	1.03'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		

Table 3-6: Existing Pavement Structural Sections

PM/Sta/Approx. Location	Direction	Lane	Existing Structural Section					
SBd 3.55 to 3.67 211+50 to 217+83 North of Fourth Street to north of Seventh Street	NB	Lt Shld	0.94'	PCC	0.40'	AC		
		1,2	0.65'	PCC	0.40'	RMCTB		
		3	0.70'	PCC	0.40'	CTB		
		4	1.03'	PCC	0.50'	AC		
		Rt Shld	0.30'	AC	0.80'	Class 2 AB		
SBd 3.67 to 12.2 217+83 to 668+22 South of Seventh Street to Project Limit (north of Duncan Canyon)	NB/SB	Lt Shld	1.15'	JPCP	0.50'	LCB		
		1,2	0.65'-0.70'	PCC	0.40'	RMCTB		
		3,4	1.30'	JPCP**	0.50'	LCB		
		Rt Shld	1.0'-1.30'	JPCP**	0.50'	LCB		

***Bond breakers between JPCP and LCB, polyethylene film or 0.1-foot HMA-A*
Lt = Left
Rt = Right
Shld = Shoulder
JPCP = Jointed Plain Concrete Pavement
JPCP-RSC = Jointed Plain Concrete Pavement – Rapid Strength Concrete
PCC = Portland Cement Concrete
AC = Asphalt Concrete
HMA = Hot Mix Asphalt
LCB = Lean Concrete Base
LCBRS = Lean Concrete Base Rapid Setting
AB = Aggregate Base
ATPB = Asphalt Treated Permeable Base
TPB = Treated Permeable Base
RMCTB = Roadmix Cement Treated Base
CTB = Cement Treated Base
Var = Varies

3.D Related Projects

There are several transportation projects in planning, recently constructed, or currently under construction along the project corridor. The following notable projects are listed in two categories:

- **Recently Completed or Ongoing Improvements**
  - I-10 Corridor Project (EA 08-0C250) Project Approval and Environmental Document completed in May 2017;
  - I-15 Feasibility Study between Duncan Canyon Road and US-395 completed in 2014;
  - Pavement rehabilitation from SR-60 in Riverside County to Seventh Street in San Bernardino County (EA 08-47221) completed in 2012;
  - Pavement rehabilitation from Seventh Street to Sierra Avenue (EA 08-47222) completed in 2012;
  - Construction of interchange improvements at Base Line Road (EA 08-49710), completed in 2017;
  - New interchange at Duncan Canyon Road (EA 08-0H130) completed in 2015; and
  - Tree Planting Projects:

- 08-RIV-15-PM 41.05/41.92 and 08-Riv-91-PM 7.32/7.79 (EA 08-0N790)
- 08-RIV-15-PM 41.92/51.02 (EA 08-0N830)
- 08-RIV-15-PM 51.02/51.92 and 08-Riv-60-PM R 0.02/R 0.98 (EA 08-0N780)
- 08-RIV-15-PM 51.92/52.28 & 08-SBd-15-PM 0.0/1.87 (EA 08-0N810)
- 08-SBd-15-PM 1.87/2.72 and 08-SBd-10-PM 9.55/10.39 (EA 08-0N800)
- 08-SBd-210-PM 10.8/12.4 and SBd-15-PM 7.75/8.75 (EA 08-0N720).

- **Planned Improvements**
  - RCTC I-15 TEL Project south of SR-60 in Riverside County (EA 08-0J080) planned for completion by Fall, 2020;
  - I-10 Corridor Project Contract 1 from Los Angeles/San Bernardino County Line to I-10/I-15 interchange (EA 08-0C251) planned for completion by Summer, 2023;
  - I-10 Corridor Project Contract 2 from I-10/I-15 interchange to Ford Street in Redlands planned for completion by Summer, 2025; and
  - New interchange at Arrow Route (EA 08-1A450) (project is currently on hold and completion date is unknown).

The lists should be updated during the final design phase. Additional information related to the I-10 Corridor Project and I-10/I-15 Express Lanes Direct Connectors Preliminary Evaluation are provided in the following paragraphs.

I-10 Corridor Project

SBCTA is currently implementing another Express Lane project along I-10 in San Bernardino County. The I-10 Corridor Project (EA 08-0C250) has completed PA&ED phase. This project is divided into two contracts:

- Contract 1, which will provide two Express Lanes in each direction for 10 miles from the Los Angeles/San Bernardino County Line to just east of I-15 in Ontario.
- Contract 2, which will provide two Express Lanes in each direction from just east of I-15 to SR-210 in Redlands and one Express Lane in each direction from SR-210 to Ford Street in Redlands.

Contract 1 and Contract 2 would open for beneficial use in summer 2022 and summer 2024, respectively.

I-10/I-15 Express Lanes Direct Connectors

As part of SBCTA's consideration of the Express Lane corridors on I-10 and I-15, a preliminary evaluation has been performed to evaluate the potential future direct connectors between the proposed I-10 and I-15 Express Lanes to provide system connectivity and further improve traffic operations near the I-10/I-15 interchange. Based on preliminary analysis, the direct connectors between the I-10 and I-15 Express Lanes in the northwest and southwest quadrants are geometrically feasible and are forecasted to attract sufficient traffic to provide mobility benefit for the corridor, though they are not economically viable at this time. The direct connectors could be implemented as a separate future project after construction of the I-10 and I-15 Express Lanes as additional system-wide improvements when additional funds are available. The conceptual design of the direct connectors has been coordinated with the I-10 and I-15 Corridor Projects to ensure that the I-10 and I-15 Express Lanes design would not preclude implementation of the direct connectors in the future. A memorandum titled *Preliminary Feasibility Study of I-10/I-15 Express Lane Direct Connector Ramps* (dated October 2015) summarizing the preliminary evaluation of the future Express Lanes direct connectors is included in **Attachment F**.

4 PURPOSE AND NEED

4.A Problem, Deficiencies, and Justification

Purpose

The purpose of the I-15 Corridor Project is to:

- Reduce congestion.
- Increase mainline capacity.
- Improve travel time within the corridor.
- Improve trip reliability and mobility options along the corridor.

Need

The I-15 corridor is experiencing considerable performance problems due to several interrelated factors. These factors include substantial truck volumes (10 to 15 percent of the total traffic), heavy traffic demand on weekdays as well as weekends, and a lack of other reliable travel options. Due to the unique geographic characteristics of the area, the I-15 corridor remains the sole mainline route connecting the Inland Empire and Southern California metropolitan regions with the High Desert, Las Vegas, and beyond. There are no parallel highways that provide comparable direct road travel capability. The traffic demands on I-15 within the project area, arising from recreational and interstate commutes, combined with the recurring regional and interstate freight and goods movement demands, often result in substantial congestion and delays. Traffic demands on the existing capacity of I-15 within the project area, coupled with the lack of any parallel regional and interregional transportation facilities, as well as the forecasted increase in demand and traffic volumes are anticipated to further reduce the operational performance and reliability of this part of the state highway system.

Insufficient capacity to meet traffic demand would result in reduced LOS. Increase in demand and lack of sufficient capacity would continue to cause degradation in LOS as shown in **Table 4-3** and **Table 4-4.**

Daily traffic demand on some sections of I-15 currently exceeds capacity due to heavy traffic demand, as well as a lack of other reliable travel options, such as other parallel highways, commuter trains, and rapid bus service for commuters, along the project limits. The current average daily traffic on I-15 varies from 214,000 at the Riverside/San Bernardino County line to 136,000 between SR-210 and I-215. Recurring congestion is observed daily during weekday peak periods and frequently on weekends. Options for increasing capacity are limited by existing freeway structures and columns, adjacent development, right-of-way constraints, and lack of traditional funding sources (motor fuel taxes, vehicle registration taxes, sales taxes, bonds, etc.).

The traffic conditions within the project corridor would continue to experience degradation in traffic conditions and travel time reliability due to the following factors:

- Limited transit facility access – I-15 corridor serves a large number of commuter trips between residential areas in the High Desert (Victor Valley and surrounding areas) and the San Bernardino Valley (as well as more distant locations in Riverside, Orange and Los Angeles Counties). Victor Valley Transit Authority (VVTA) serves Victor Valley, while Omnitrans provides public transportation in the San Bernardino Valley. VVTA operates a commuter bus service between the Victor Valley and San Bernardino Valley, using I-215 and local arterials. No commuter rail service exists between the valleys. There do not appear to be viable transit options that would benefit I-15 travelers within the project area.
- Unreliable speed and travel times – Unreliability in travel time along segments of the roadway from one day to another, and time to time is due to capacity-constraints, accidents, and various reasons that cause unanticipated congestions. The following factors can adversely affect travel time reliability within the project corridor:
  - Insufficient capacity during peak hours resulting in delays
  - High traffic volumes during weekends due to the presence of retail locations such as the Victoria Gardens and Ontario Mills
  - Special events at such venues as the California Speedway and San Manuel Amphitheater that generate high traffic volumes over time periods of several hours
  - Significant congestion experienced during holidays and for recreational trips to the High Desert, Las Vegas and beyond

4.B Regional and System Planning

4.B.1 Identify Systems

The majority of the project is located within San Bernardino County; however, a small segment from Cantu-Galleano Ranch Road to the Riverside/San Bernardino County Line is located within Riverside County. Construction of the portion in Riverside County will require coordination with Riverside County Transportation Commission (RCTC) regarding the I-15 TEL Project (EA 08-0J080). I-15 is part of the National Highway System (NHS), the Strategic Highway Corridor Network of National Defense, and the Freeway and Expressway System. The National Network for Surface Transportation Assistance Act (STAA) also identifies I-15 as a “National Network” route for STAA trucks. The I-15 corridor is included in the Federal Primary Freight Network as a key goods movement corridor. The I-15 serves as a significant goods movement corridor between the Ports of Los Angeles and Long Beach, border crossings with Mexico to destinations nationwide. The I-15 also serves as a conduit to recreation travel to Las Vegas, San Diego, and other destinations.

4.B.2 State Planning

The Caltrans Branch of System Planning and Traffic Forecasting has developed several planning level reports that may be relevant to any proposed improvement on the I-15 corridor:

- Transportation Concept Report (TCR) – The TCR provides information specific to a single route in terms of the route environment, key designations, current condition, and an ultimate lane configuration concept. The report was updated in September 2012 in conjunction with the preparation of the District System Management Plan (DSMP) (see next bullet). The TCR divides I-15 in Riverside and San Bernardino Counties into segments. The 2035 concept facility for the segments within the proposed project limits is presented in **Table 4.1**. The report provides projected minimum lane configurations to maintain LOS D in year 2035. Information contained in the TCR is subject to change as conditions and priorities change and as new information is obtained.

Table 4-1: I-15 Transportation Concept Report 2035 Concept Facility

Segment No	Segment	PM	Route Concept Lanes	
			General Purpose	Managed Lanes
9	SR-91 to SR-60	41.5/51.5	8	4
10	SR-60 to SBd/Riv County Line	51.5/52.3	10	4
11	SBd/Riv County Line to I-10	0.0/2.4	12	2
12	I-10 to SR-210	2.4/8.1	10	2
13	SR-210 to Glen Helen Parkway	8.1/15.6	8	2

- District System Management Plan (DSMP) – The District 8 DSMP was prepared in June 2017 and provides information on performance of the state highway system in Riverside and San Bernardino Counties to year 2040. It also discusses the relationship of the system to other transportation modes (rail, air, non-motorized) serving the area. The report identifies levels of transportation system improvement needed to maintain LOS D throughout the region.

- Corridor System Management Plan (CSMP) – The CSMP examines I-15 throughout Riverside and San Bernardino Counties, focusing on system performance, congestion locations, congestion causes and potential congestion management and relief measures. The plan also identifies alternative transportation modes and routes along the corridor. The plan quantifies system performance in terms of delay hours, travel time, travel time variability and safety. The plan represents a current condition of the I-15 corridor, having been updated to include 2010/2011 data. Within the project limits the CSMP notes the following bottleneck locations:

  - Riverside/San Bernardino County Line (Philadelphia Undercrossing) – due to NB lane drop north of SR-60 connectors and significant merging and weaving traffic from the connectors to the mainline during AM and PM peak periods
  - Base Line Road SB off-ramp – due to SB lane drop past the SR-210 connectors compounded by the merging and weaving between the connectors and the off-ramp during AM peak periods.
  - Jurupa Street SB off-ramp – due to significant merging and weaving in the SB direction during PM peak periods

The Long-Term Improvements Action Plan recommended by CSMP is to prepare PSRs, identify funding, prepare PA&ED, final design and construct mainline improvements by the following segments: southern (SR-60 to SR-210), central (SR-210 to US-395) and northern (US-395 to Mojave River).

This project is consistent with the ultimate configuration and Mixed-Flow Lane Equivalent as outlined within the Transportation Concept Report and the District System Management Plan.

4.B.3 Regional Planning

The Southern California Association of Governments (SCAG) is the metropolitan planning organization that represents six counties and 191 cities in southern California. The SCAG 2016–2040 RTP/SCS Amendment 1 was found to be conforming by the Federal Highway Administration (FHWA) on May 12, 2017, and SCAG 2019 FTIP Amendment 1 was approved by SCAG on October 1, 2018 and was found to be conforming by FHWA on December 17, 2018. The project description in the RTP and FTIP below cover the proposed improvements under Build Alternative (Alternative 2):

> "I-15 EXPRESS LANES: CONST 2 NEW EX LNS IN EACH DIRECTION B/W SR-60 & SR-210, CONST 1 EX LN IN EACH DIRECTION B/W CANTU-GALLEANO RANCH RD & SR-60 AND 1 EXP LN IN EACH DIRECTION B/W SR-210 AND DUNCAN CANYON RD. ADDITIONAL IMPROVEMENTS TO AUX LN WIDENING, UNDERCROSSINGS, AND RECONSTRUCTION OF RAMPS AND LANE TRANSITIONS WHERE NEEDED."

4.B.4 Local Planning

The I-15 Corridor Project is included in the SBCTA's *10-Year Delivery Plan* (dated March 2017) and is defined with one Build Alternative:

- Build Alternative (Express Lanes Alternative):
  - Add two (2) Express Lanes in each direction between SR-60 and SR-210
  - Add one (1) Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60 at the southerly end
  - Add one (1) Express Lane in each direction between SR-210 and Duncan Canyon Road at the northerly end
  - Add one (1) Auxiliary Lane in each direction between SR-60 and I-10
  - Add one (1) Auxiliary Lane along northbound between Fourth Street and Foothill Boulevard

The *10-Year Delivery Plan* is developed to define the scope, schedule, and budgets for projects to be implemented during the next 10 years, in conformance with the requirements of the Measure I 2010-2040 Strategic Plan, and is updated every 2 years.

4.B.5 Transit Operator Planning

The introduction of Express Lanes on the I-15 corridor provides opportunities to enhance and support existing transit services. However, as described in the following inventory, there is no current transit service within the project limits. This is because the corridor serves a larger proportion of longer intercity trips provided by Greyhound Lines, Inc. and other similar bus services.

Omnitrans

Omnitrans is the primary transit operator in the San Bernardino Valley, providing bus services and special services for individuals with disabilities. Routes 80, 81, and 82 run parallel to I-15 and several other bus routes cross the I-15 freeway. Omnitrans has no current or future plans to provide direct service within the project area.

Metrolink

The Southern California Regional Rail Authority (SCRRA) is the regional rail network operating the Metrolink Commuter Rail in San Bernardino County that runs perpendicular and underneath the I-15 freeway from downtown Los Angeles to downtown San Bernardino with three (3) lines in the vicinity of the I-15 corridor, which includes Rancho Cucamonga (San Bernardino Line), East Ontario (Riverside Line), and North Main Corona (91 Line and Inland Empire-Orange County Line).

Riverside Transit Agency

The Riverside Transit Agency primarily serves Riverside County and only one route utilizes the I-15 corridor. Route 204, an express route, starts at UC Riverside and ends at Montclair Transit Center, which runs briefly on I-15 between Jurupa Street OC and I-10/I-15 Interchange.

4.C Traffic

4.C.1 Current and Forecasted Traffic

The *I-15 Corridor Project Final Traffic Study Report* (March 2017) has been prepared for the project to analyze the existing (2014) and design year (2045) traffic conditions along the I-15 freeway, interchange ramps, and local arterials within the project study limits. The existing traffic analysis was based on 2014 peak-hour volumes from Caltrans data, and supplemented with actual field counts. The future traffic forecast was developed from the 2035 San Bernardino County Transportation Analysis Model (SBTAM) and extrapolated to year 2045. Traffic analyses of the I-15 mainline, interchange ramps and intersections within the project study limits are summarized in the following sections. The existing and forecasted peak-hour traffic volumes for the freeway segments and the intersections in the project study area are graphically represented in the figures shown in **Attachment B**.

I-15 Mainline

Table 4-2 provides a summary of the I-15 freeway average daily traffic (ADT) volumes within the project study area for the existing and future year conditions.

Table 4-2: Existing and Year 2045 ADT Volume

I-15 Freeway Segment	ADT		
	2014 Existing	2045 No Build Alternative	% Increase
Cantu-Galleano Ranch Rd to SR-60	162,272	279,540	72%
SR-60 to Jurupa St	201,748	288,382	43%
Jurupa St to I-10	215,218	296,327	38%
I-10 to 4th St	198,004	272,264	38%
4th St to Arrow Route	193,604	262,970	36%
Arrow Route to Foothill Blvd	193,604	253,836	31%
Foothill Blvd to Base Line Rd	171,112	238,280	39%
Base Line Rd to SR-210	164,985	236,955	44%
SR-210 to Summit/Beech Ave	124,362	216,974	74%
Summit/Beech Ave to Duncan Canyon Rd	109,169	206,666	89%

Table 4-3 and **Table 4-4** present existing and 2045 No Build Alternative peak-hour volumes with corresponding LOS for northbound and southbound GP lanes, respectively. *The I-15 Corridor Project Final Traffic Study Report* indicates that the existing LOS is acceptable in most locations but that there are bottlenecks in each direction of travel that degrade traffic operations. Analysis of existing mainline speed data indicates that the segments south of the I-10 interchange show significant dips in travel speeds in the AM and PM peak periods. Specifically, for the I-15 mainline segments through the Jurupa Street Overcrossing, AM peak hour (7 AM to 8 AM) travel speeds drop to approximately 55 mph in the northbound direction and 30 mph in the southbound direction, and PM peak hour (5 PM to 6 PM) speeds drop to 45 mph in the northbound direction and to almost 20 mph in the southbound direction. This is typical for corridors with recurring peak-period congestion. Speeds at the north end of the corridor are high throughout the day, averaging a free-flow speed of almost 70 miles per hour for every hour of the day.

For the horizon year (2045) No Build Alternative, in the AM peak hour, I-15 would not meet the LOS threshold in the southbound direction between Duncan Canyon Road and Cantu-Galleano Ranch Road, or northbound between Cantu-Galleano Ranch Road and I-10 (i.e., south portion of the corridor). In the PM peak hour the situation is reversed, with nearly the entire corridor operating unacceptably in the northbound direction and in the southbound direction problems would occur in the southern portion. The daily average speed for vehicles traveling on I-15 within the project area is forecasted to be 44 mph under the 2045 No Build Alternative conditions compared to 58 mph under existing (2014) conditions. This comparison of speeds between the 2045 Build and No Build Alternative conditions demonstrates that the speeds on I-15 would deteriorate over time if improvements are not made to I-15 corridor. The vehicle hours of delay within the project area between existing and year 2045 are expected to increase because capacity improvements are not expected to keep pace with the growth in traffic demand.

Table 4-3: Existing and Year 2045 No Build Alternative
Northbound General Purpose Lane Peak-Hour Volume & Level of Service

I-15 Segment	NB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Cantu-Galleano Ranch Rd to SR-60	4,964	21.6	C	6,135	26.0	C	7,244	36.5	E	8,194	28.0	D
SR-60 to Jurupa St	5,853	25.0	C	6,135	26.0	C	7,956	37.3	E	8,210	40.6	E
Jurupa St to I-10	5,932	>Capacity	F	6,939	>Capacity	F	7,979	>Capacity	F	8,738	>Capacity	F
I-10 to 4th St	4,972	19.2	B	6,646	23.9	C	7,726	31.3	D	7,849	29.4	D
4th St to Arrow Route	4,208	18.1	C	6,803	29.3	D	6,958	31.0	D	7,967	38.0	E
Arrow Route to Foothill Blvd							6,317	27.4	D	7,952	37.5	E
Foothill Blvd to Base Line Rd	3,483	15.1	B	6,410	27.1	D	5,504	23.5	C	8,019	38.1	E
Base Line Rd to SR-210	3,472	14.5	B	5,975	>Capacity	F	5,334	23.9	C	8,190	>Capacity	F
SR-210 to Summit Ave	2,575	10.6	B	4,328	18.9	B	4,765	22.8	C	7,193	>Capacity	F
Summit Ave to Duncan Canyon Rd	2,428	10.7	A	3,826	16.0	B	4,640	20.4	C	6,754	30.1	D
Duncan Canyon Rd to Sierra Ave	-	-	-	-	-	-	4,445	19.6	C	6,794	30.4	D

Table 4-4: Existing and Year 2045 No Build Alternative
Southbound General Purpose Lane Peak-Hour Volume & Level of Service

I-15 Segment	SB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Sierra Ave to Duncan Canyon Rd	-	-	-	-	-	-	7,538	34.8	D	4,870	21.3	C
Duncan Canyon Rd to Summit Ave	4,212	17.7	B	2,923	12.6	B	7,765	36.6	E	5,104	22.2	C
Summit Ave to SR-210	5,279	>Capacity	F	3,211	13.4	B	8,348	>Capacity	F	5,301	25.0	C
SR-210 to Base Line Rd	7,196	24.1	C	4,090	13.8	B	9,697	48.3	F	5,903	24.2	C
Base Line Rd to Foothill Blvd	7,467	34.0	D	4,159	17.6	B	9,685	61.0	F	6,103	26.6	D
Foothill Blvd to Arrow Route	8,417	41.8	E	5,022	21.0	C	10,191	71.4	F	6,859	30.8	D
Arrow Route to 4th St							9,834	64.0	F	7,711	36.8	E

Table 4-4: Existing and Year 2045 No Build Alternative
Southbound General Purpose Lane Peak-Hour Volume & Level of Service

I-15 Segment	SB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
4th St to I-10	7,788	29.2	D	5,524	21.0	C	9,622	36.8	E	8,382	34.0	D
I-10 to Jurupa ST	8,113	>Capacity	F	6,026	>Capacity	F	11,223	>Capacity	F	8,856	>Capacity	F
Jurupa St to SR-60	7,052	>Capacity	F	6,256	>Capacity	F	10,442	>Capacity	F	9,197	>Capacity	F
SR-60 to Cantu-Galleano Ranch Rd	5,406	22.8	C	5,315	21.8	C	10,221	69.7	F	9,502	58.4	F

Interchange Ramps

A ramp junction merge/diverge LOS analysis was performed for the interchange ramps along the project corridor. **Table 4-5** and **Table 4-6** presents a summary of existing (2014) and 2045 No Build Alternative volumes and merge/diverge LOS for the interchange ramps along NB and SB I-15, respectively. Ramp merge/diverge LOS is based on the density of the mainline upstream of a diverge or downstream of a merge. Weaving in **Table 4-5** and **Table 4-6** is defined as the crossing of two streams of traffic traveling in the same direction along a significant length of highway without the aid of traffic control devices.

As shown in the following tables, the existing ramps do not meet the target LOS D and in 2045 No Build Alternative capacity problems would occur on many I-15 ramps particularly in the southern portions of the corridor.

Table 4-5: Existing and Year 2045 No Build Alternative
Northbound Ramp Peak-Hour Volume & Level of Service

Freeway Ramps	NB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Off-Ramp to Cantu-Galleano Ranch Rd	170	29.4	D	113	29.8	D	489	44.1	F	431	50.7	F
On-Ramp from Cantu-Galleano Ranch Rd	639	Weaving		427	Weaving		747	Weaving		924	24.6	F
Off-Ramp to SR-60 EB	840	Weaving		832	Weaving		1,216	Weaving		1073	29.6	D
Off-Ramp to SR-60 WB	1281	18.2	B	1,160	17.6	B	1,170	25.9	C	1283	33.6	F
On-Ramp from SR-60 WB	1336	11.2	B	1,408	11.8	B	1,340	20.8	C	564	19.2	B
On-Ramp from SR-60 EB	1674	14.5	B	1,847	16.2	B	1,820	21.9	C	1515	20.3	C
Off-Ramp to Jurupa St	534	29.5	D	221	28.6	D	618	37.8	E	467	38.5	E
On-Ramp from Jurupa St	613	Weaving		1,025	Weaving		641	Weaving		994	Weaving	
Off-Ramp to I-10 EB and WB	2985	Weaving		3,152	Weaving		3,093	Weaving		3306	Weaving	
On-Ramp from I-10 WB	830	19.9	B	752	21.7	C	935	27	C	450	25.1	C
On-Ramp from I-10 EB	1195	Weaving		2,107	Weaving		1,905	Weaving		1967	Weaving	

Table 4-5: Existing and Year 2045 No Build Alternative
Northbound Ramp Peak-Hour Volume & Level of Service

Freeway Ramps	NB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Off-Ramp to 4th St	983	Weaving		690	Weaving		997	Weaving		744	Weaving	
On-Ramp from 4th St	219	16.5	B	847	25.7	C	229	22.5	C	862	27.8	C
Off-Ramp to Arrow Route	Not Yet Constructed			Not Yet Constructed			791	35.1	E	669	38.3	E
On-Ramp from Arrow Route	Not Yet Constructed			Not Yet Constructed			151	26.2	C	654	33.7	D
Off-Ramp to Foothill Blvd	1012	8.2	A	1,448	16.8	B	1,149	14.7	B	1160	20.3	C
Loop On-Ramp from Foothill Blvd	130	16.1	B	770	27.8	C	163	22.9	C	836	33.3	D
Direct On-Ramp from Foothill Blvd	157	16.5	B	285	26.3	C	173	23.3	C	391	32.4	D
Off-Ramp to Base Line Rd	472	19.6	B	929	33.0	D	707	12.6	B	1070	21.4	C
On-Ramp from Base Line Rd	461	Weaving		494	Weaving		537	Weaving		1241	Weaving	
Off-Ramp to SR-210 EB	1342	Weaving		2,636	Weaving		1,657	Weaving		2714	Weaving	
Off-Ramp to SR-210 WB	513	2.4	A	552	7.1	A	300	7.6	A	171	13.9	B
On-Ramp from SR-210 EB and WB	958	Weaving		1,541	Weaving		1,388	Weaving		1887	Weaving	
Off-Ramp to Beech/Summit Ave	354	Weaving		875	Weaving		458	Weaving		1008	Weaving	
On-Ramp from Beech/Summit Ave	207	13.1	B	373	18.2	B	333	21.5	C	570	29.3	D
Off-Ramp to Duncan Canyon Rd	In Construction			In Construction			286	< 1.0	A	531	6.5	A
On-Ramp from Duncan Canyon Rd	In Construction			In Construction			91	19.8	B	571	29.5	D

Table 4-6: Existing and Year 2045 No Build Alternative
Southbound Ramp Peak-Hour Volume & Level of Service

Freeway Ramps	SB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Off-Ramp to Duncan Canyon Rd	In Construction			In Construction			175	34.1	D	137	23.9	C
On-Ramp from Duncan Canyon Rd	In Construction			In Construction			402	26.1	C	371	17.6	B
Off-Ramp to Beech Ave/Summit Ave	195	20.7	C	200	15.8	B	585	37.2	E	345	25.9	C
On-Ramp from Beech Ave/Summit Ave	1262	Weaving		488	Weaving		1,168	Weaving		543	Weaving	
Off-Ramp to SR-210 EB and WB	1821	Weaving		1,261	Weaving		2,254	Weaving		1510	Weaving	
On-Ramp from SR-210 WB	2714	21.7	C	1,653	8.3	A	2,957	40	F	1884	24.2	C
On-Ramp from SR-210 EB	1024	22.0	C	487	12.8	B	647	Weaving		229	Weaving	
Off-Ramp to Base Line Rd	644	29.2	D	491	20.2	C	1,180	Weaving		613	Weaving	
Loop On-Ramp from Base Line Rd	Not Yet Constructed			Not Yet Constructed			857	30.2	D	594	20.9	C
Direct On-Ramp from Base Line Rd	915	32.9	D	560	20.3	C	310	39.2	F	219	21.3	C

Table 4-6: Existing and Year 2045 No Build Alternative
Southbound Ramp Peak-Hour Volume & Level of Service

	SB GP Lane Peak-Hour Volume & LOS											
	2014 Existing						2045 Alternative 1 (No Build)					
	AM			PM			AM			PM		
Freeway Ramps	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Off-Ramp to Foothill Blvd	722	28.5	D	644	14.8	B	811	38.7	F	622	23	C
Loop On-Ramp from Foothill Blvd	665	31.0	D	515	19.1	B	598	41	F	521	26.1	C
Direct On-Ramp from Foothill Blvd	1007	35.9	E	992	24.5	C	720	47	F	856	30.4	D
Off-Ramp to Arrow Route	Not Yet Constructed			Not Yet Constructed			909	40.3	E	344	27	C
On-Ramp from Arrow Route	Not Yet Constructed			Not Yet Constructed			552	31.9	D	1196	29.7	D
Off-Ramp to 4th St	1059	35.2	E	818	25.2	C	911	39.3	E	702	31.5	D
On-Ramp from 4th St	430	Weaving		1,320	Weaving		699	Weaving		1373	Weaving	
Off-Ramp to I-10 EB	976	Weaving		736	Weaving		452	Weaving		1111	Weaving	
Off-Ramp to I-10 WB	2217	21.9	C	1,292	16.7	B	2,022	34.22757	D	1589	27.3392	C
On-Ramp from I-10 EB	1660	Weaving		1,281	Weaving		1,892	Weaving		1566	Weaving	
On-Ramp from I-10 WB	1858	Weaving		1,249	Weaving		2,183	Weaving		1607	Weaving	
Off-Ramp to Jurupa St	1371	Weaving		574	Weaving		1,222	Weaving		635	Weaving	
On-Ramp from Jurupa St	310	Weaving		804	Weaving		441	Weaving		976	Weaving	
Off-Ramp to SR-60 EB and WB	3818	Weaving		2,978	Weaving		3,366	Weaving		3113	Weaving	
On-Ramp from SR-60 EB	1322	30.3	D	1,037	27.7	C	1,780	56.9	F	1897	48.9	F
On-Ramp from SR-60 WB	850	27.2	C	1,000	26.5	C	1,488	62.8	F	1420	54	F
Off-Ramp to Cantu-Galleano Ranch Rd	589	27.8	C	662	27.2	C	809	61.9	F	602	57	F
Loop On-Ramp from Cantu-Galleano Ranch Rd	50	22.0	C	165	21.4	C	86	54.6	F	222	52.8	F
Direct On-Ramp from Cantu-Galleano Ranch Rd	53	28.4	D	173	28.5	D	414	65.3	F	427	63.8	F

Intersection Analysis

The LOS analysis of study intersections was performed in accordance with Caltrans guidance and using the methodology described in the Highway Capacity Manual (HCM) 2010. The analysis periods were the AM and PM peak hours (the same peak hours used for the freeway analysis). **Table 4-7** provides a summary of existing and project delay and LOS for intersections.

All study intersections operate at acceptable LOS under Existing (2014). Under the 2045 No Build Alternative, all intersections would operate at their target LOS D or better except for Cherry Avenue/Wilson Avenue/Beech Avenue intersection. The LOS targets for each study intersections are set by jurisdiction. Caltrans threshold is LOS D or better and non-Caltrans intersection facilities within the City of Fontana have a threshold of LOS C or better.

Table 4-7: Existing and Year 2045 No Build Alternative Intersection Level of Service & Delay

I-15 Segment	Intersection LOS and Delay [1]							
	2014 Existing				2045 Alternative 1 (No Build)			
	AM		PM		AM		PM	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Cherry Ave/Wilson Ave/Beech Ave	28.0	C	27.4	C	58.0	E	44.8	D
I-15 SB Ramps/Beech Ave	43.0	D	9.8	A	48.9	D	12.4	B
I-15 NB Ramps/Beech Ave	14.6	B	22.3	C	16.1	B	51.0	D
Falcon Ridge/Summit Heights Gateway/Beech Ave	28.2	C	29.5	C	26.5	C	26.7	C
Pecan Ave/Shelby Pl/Base Line Rd	16.9	B	14.1	B	14.8	B	27.6	C
I-15 SB Ramps/Base Line Rd	28.2	C	23.6	C	25.5	C	11.0	B
East Ave/Base Line Rd	49.5	D	23.3	C	31.7	C	52.1	D
I-15 NB Ramps/Base Line Rd	23.3	C	28.4	C	30.4	C	43.8	D
American Way/Base Line Rd	27.9	C	17.6	B	19.7	B	15.0	B
Day Creek Blvd/E. Foothill Blvd	22.4	C	44.1	D	23.0	C	49.4	D
I-15 SB Ramps/E. Foothill Blvd	13.3	B	12.2	B	15.0	B	10.5	B
I-15 NB Ramps/E. Foothill Blvd	19.1	B	20.1	C	17.7	B	17.4	B
Marketplace/E. Foothill Blvd	38.4	D	45.5	D	24.2	C	41.4	D
Buffalo Ave/Franklin Ave/E. 4th St	28.4	C	43.5	D	27.4	C	42.0	D
I-15 SB Ramps/E. 4th St	52.9	D	44.0	D	30.7	C	46.9	D
I-15 NB Ramps/E. 4th St	40.2	D	43.5	D	39.6	D	49.4	D
Santa Anita/Wineville Ave/E. 4th St	29.4	C	31.0	C	35.3	D	31.6	C
S. Rockefeller Ave/Toyota Way/E. Jurupa St	29.1	C	28.2	C	27.5	C	29.1	C
I-15 SB Ramps/E. Jurupa St	28.1	C	20.3	C	28.2	C	22.3	C
I-15 NB Ramps/E. Jurupa St	17.0	B	32.0	C	18.7	B	22.7	C
Auto Center Dr/E. Jurupa St	34.1	C	42.4	D	31.6	C	33.6	C
Hamner Ave/Milliken Ave/Cantu-Galleano Ranch Rd	25.3	C	21.9	C	24.1	C	20.5	C
I-15 SB Ramps/Cantu-Galleano Ranch Rd	19.1	B	22.4	C	20.7	C	15.0	B
I-15 NB Ramps/Cantu-Galleano Ranch Rd	15.6	B	15.5	B	20.8	C	18.9	B
Wineville Ave/Cantu-Galleano Ranch Rd	18.3	B	20.4	C	34.2	C	22.3	C
I-15 SB Ramps/Duncan Canyon Rd [2]	-	-	-	-	17.3	B	20.7	C
I-15 NB Ramps/Duncan Canyon Rd [2]	-	-	-	-	13.8	B	27.5	C
I-15 SB Ramps/Arrow Route [3]	-	-	-	-	45.0	D	21.2	C
I-15 NB Ramps/Arrow Route [3]	-	-	-	-	34.5	C	28.4	C

(1) Delay is shown in seconds.
(2) Duncan Canyon Rd interchange was under construction during the traffic analysis.
(3) Future interchange at Arrow Route is assumed to be constructed by 2045 by others.

Truck Traffic

Southern California's access to both national and international markets via ports in Los Angeles, Long Beach, and San Diego is a key factor in the number of trucks using freeways in the region. Truck traffic contributes to the considerable performance problems experienced by the I-15 corridor. **Table 4-8** indicates that existing truck traffic constitutes 5–17 percent of the overall traffic, with higher rates north of Summit Avenue during the weekday AM and PM peak hours. The data presented in the table also show truck rates at the truck traffic peak hours. However, truck traffic will not be allowed to use the Express Lanes, and the proposed project will not affect the percentage of trucks in the open to traffic and horizon years.

Table 4-8: Existing Truck Traffic

	Northbound					Southbound				
Day (Date)	Passenger Vehicles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks	Total	Passenger Vehicles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks	Total
I-15 North of Beech/Summit Avenue										
Thursday (11/20/2014)										
7-8 AM	1,775	70	14	236	2,095	3,858	57	12	285	4,212
	84.7%	3.3%	0.7%	11.3%	100.0%	91.6%	1.4%	0.3%	6.8%	100.0%
5-6 PM	3,878	59	15	160	4,112	2,529	89	16	289	2,923
	94.3%	1.4%	0.4%	3.9%	100.0%	86.5%	3.0%	0.5%	9.9%	100.0%
Daily	47,243	1,341	353	5,672	54,609	47,022	1,411	365	6,427	55,225
	86.5%	2.5%	0.6%	10.4%	100.0%	85.1%	2.6%	0.7%	11.6%	100.0%
12-1 PM	2,397	64	22	340	2,823	2,268	89	37	340	2,734
	84.9%	2.3%	0.8%	12.0%	100.0%	83.0%	3.3%	1.4%	12.4%	100.0%
Friday (12/05/2014)										
7-8 AM	1,928	57	14	195	2,194	3,840	27	10	292	4,169
	87.9%	2.6%	0.6%	8.9%	100.0%	92.1%	0.6%	0.2%	7.0%	100.0%
4-5 PM	4,417	33	17	200	4,667	3,008	73	39	209	3,329
	94.6%	0.7%	0.4%	4.3%	100.0%	90.4%	2.2%	1.2%	6.3%	100.0%
Daily	58,233	879	394	5,427	64,933	51,704	866	333	5,531	58,434
	89.7%	1.4%	0.6%	8.4%	100.0%	88.5%	1.5%	0.6%	9.5%	100.0%
1-2 AM (NB) 10-11 PM(SB)	3,623	57	25	355	4,060	2,441	70	17	327	2,855
	89.2%	1.4%	0.6%	8.7%	100.0%	85.5%	2.5%	0.6%	11.5%	100.0%
Sunday (12/07/2014)										
Daily	45,238	412	156	1,899	47,705	52,912	479	197	3,042	56,630
	94.8%	0.9%	0.3%	4.0%	100.0%	93.4%	0.8%	0.3%	5.4%	100.0%
10-11 AM(NB) 1-2 PM (SB)	2,430	27	19	115	2,591	3,891	42	14	170	4,117
	93.8%	1.0%	0.7%	4.4%	100.0%	94.5%	1.0%	0.3%	4.1%	100.0%

Table 4-8: Existing Truck Traffic

Day (Date)	Northbound					Southbound				
	Passenger Vehicles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks	Total	Passenger Vehicles	2-Axle Trucks	3-Axle Trucks	4+ Axle Trucks	Total
I-15 South of Cantu-Galleano Ranch Road										
Thursday (11/20/2014)										
7-8 AM	4,232	120	25	118	4,495	4,310	183	23	242	4,758
	94.1%	2.7%	0.6%	2.6%	100.0%	90.6%	3.8%	0.5%	5.1%	100.0%
5-6 PM	4,243	143	28	144	4,558	4,593	97	5	106	4,801
	93.1%	3.1%	0.6%	3.2%	100.0%	95.7%	2.0%	0.1%	2.2%	100.0%
Daily	67,447	2,713	545	4,082	74,787	68,033	2,735	554	4,066	75,388
	90.2%	3.6%	0.7%	5.5%	100.0%	90.2%	3.6%	0.7%	5.4%	100.0%
12-1 PM (NB) 8-9 AM (SB)	3,304	206	46	306	3,862	3,814	199	57	272	4,342
	85.6%	5.3%	1.2%	7.9%	100.0%	87.8%	4.6%	1.3%	6.3%	100.0%
Friday (12/05/2014)										
7-8 AM	5,256	84	29	166	5,535	4,664	116	26	253	5,059
	95.0%	1.5%	0.5%	3.0%	100.0%	92.2%	2.3%	0.5%	5.0%	100.0%
4-5 PM	4,379	102	30	154	4,665	5,148	53	19	93	5,313
	93.9%	2.2%	0.6%	3.3%	100.0%	96.9%	1.0%	0.4%	1.8%	100.0%
Daily	75,336	1,650	545	3,676	81,207	75,967	1,691	616	3,657	81,931
	92.8%	2.0%	0.7%	4.5%	100.0%	92.7%	2.1%	0.8%	4.5%	100.0%
12-1 PM (NB) 9-10 AM (SB)	3,889	146	44	284	4,363	3,276	146	56	248	3,726
	89.1%	3.3%	1.0%	6.5%	100.0%	87.9%	3.9%	1.5%	6.7%	100.0%
Sunday (12/07/2014)										
Daily	51,285	764	103	701	52,853	52,770	604	91	844	54,309
	97.0%	1.4%	0.2%	1.3%	100.0%	97.2%	1.1%	0.2%	1.6%	100.0%
6-7 AM (NB) 9-10 PM (SB)	1,150	80	3	25	1,258	1,956	33	7	60	2,056
	91.4%	6.4%	0.2%	2.0%	100.0%	95.1%	1.6%	0.3%	2.9%	100.0%

Source: *I-15 Corridor Project Final Traffic Study Report*, March 2017.

4.C.2 Collision Analysis

Traffic accident data for the I-15 freeway and interchange ramps within the project study area 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 January 1, 2014, and December 31, 2016.

I-15 Mainline

Table 4-9 summarizes the accident data for the I-15 mainline in the northbound and southbound directions within the project limits. The data is divided into 22 segments from Limonite Avenue to Sierra Avenue (11 northbound and 11 southbound). As shown in the table, the actual total accident rates in 19 out of 22 segments are lower than the statewide average for similar facilities. In 3 out of 22 segments, the actual rates are marginally to moderately higher than the statewide average. These locations are shown in boldface in the table. **Table 4-10** summarizes the breakdown of accidents by type that occurred during the 3-year review period. **Table 4-10** indicates that the predominant types of accidents on the I-15 mainline are rear end collisions, followed by sideswipe and hit object type collisions.

Table 4-9: I-15 Accident Data (Between interchanges along mainline)

I-15 Segment and Approximate Stations	Direction	Accident Rate (a/mvm)					
		Actual Rate			Average Rate		
		F	F+I	TOT	F	F+I	TOT
PM 48.26 - 50.13 Limonite Avenue - Cantu-Galleano Ranch Rd "A" 2547+28 - 2645+98	NB	0.000	0.11	0.35	0.008	0.31	0.94
	SB	0.007	0.22	0.64	0.008	0.31	0.94
PM 50.13 - 51.47 Cantu-Galleano Ranch Rd - SR-60 "A" 2645+98 - 2716+97	NB	**0.037**	**0.38**	**0.86**	0.006	0.26	0.79
	SB	0.000	0.14	0.58	0.006	0.26	0.79
PM 51.47 - 52.27 SR-60 - Riverside/San Bernardino Co line "A" 2716+97 - 2759+58	NB	0.000	0.26	0.82	0.007	0.35	1.07
	SB	**0.021**	0.26	0.76	0.007	0.35	1.07
PM 0.00 - 01.01 Riverside/San Bernardino Co line - Jurupa St "A" 23+99 - 77+38	NB	0.000	0.11	0.46	0.004	0.34	1.07
	SB	0.000	0.22	0.83	0.004	0.34	1.07
PM 01.01 - 2.39 Jurupa St - I-10 "A" 77+38 - 150+00	NB	0.000	0.23	0.78	0.003	0.29	0.93
	SB	0.000	**0.53**	**1.68**	0.003	0.29	0.93
PM 2.39 - 3.05 I-10 - 4th St "A" 150+00 - 185+91	NB	0.000	**0.30**	0.79	0.003	0.28	0.90
	SB	0.000	**0.35**	**0.99**	0.003	0.28	0.90
PM 3.05 - 5.31 4th St - Foothill Blvd "A" 185+91 - 304+15	NB	0.000	0.19	0.67	0.003	0.29	0.94
	SB	**0.004**	0.13	0.52	0.003	0.29	0.94
PM 5.31 - 6.78 Foothill Blvd - Base Line Rd "A" 304+15 - 382+15	NB	0.000	0.07	0.38	0.003	0.28	0.90
	SB	**0.007**	**0.29**	0.84	0.003	0.28	0.90
PM 6.78 - 8.35 Base Line Rd - SR-210 "A" 382+15 - 459+00	NB	0.000	0.07	0.27	0.003	0.23	0.75
	SB	0.000	0.23	0.68	0.003	0.23	0.75
PM 8.35 - 9.61 SR-210 - Beech/Summit Ave "A" 459+00 - 531+15	NB	0.000	0.14	0.54	0.002	0.19	0.61
	SB	**0.013**	0.13	0.47	0.002	0.19	0.61
PM 9.61 - 12.84 Beech/Summit Ave - Sierra Ave "A" 531+15 - 702+80	NB	**0.005**	0.12	0.45	0.003	0.21	0.65
	SB	**0.005**	0.10	0.30	0.003	0.21	0.65

a/mvm = accidents per million vehicle miles
F = Fatality, **I** = Injury, **TOT** = Total
Boldface rate indicates that the actual accident rate is higher than the statewide average for similar facilities

Table 4-10: I-15 Accident Data (Between interchanges along mainline)
No. of accidents and percent by type

I-15 Segment and Approximate Stations	Dir	No. of Accidents and Percent by Type									
		Head-On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
PM 48.26 - 50.13 Limonite Avenue - Cantu-Galleano Ranch Rd "A" 2547+28 - 2645+98	NB	0	12	26	1	10	3	0	1	0	53
		0.0%	22.6%	49.1%	1.9%	18.9%	5.7%	0.0%	1.9%	0.0%	100%
	SB	0	11	64	0	13	5	0	3	0	96
		0.0%	11.5%	66.7%	0.0%	13.5%	5.2%	0.0%	3.1%	0.0%	100%
PM 50.13 - 51.47 Cantu-Galleano Ranch Rd - SR-60 "A" 2645+98 - 2716+97	NB	0	12	75	0	4	2	0	0	1	94
		0.0%	12.8%	79.8%	0.0%	4.3%	2.1%	0.0%	0.0%	1.1%	100%
	SB	1	9	41	0	8	3	0	1	0	63
		1.6%	14.3%	65.1%	0.0%	12.7%	4.8%	0.0%	1.6%	0.0%	100%
PM 51.47 - 52.27 SR-60 - Riverside/San Bernardino Co line "A" 2716+97 - 2759+58	NB	0	26	42	0	5	4	0	2	0	79
		0.0%	32.9%	53.2%	0.0%	6.3%	5.1%	0.0%	2.5%	0.0%	100%
	SB	0	13	47	2	11	0	0	0	0	73
		0.0%	17.8%	64.4%	2.7%	15.1%	0.0%	0.0%	0.0%	0.0%	100%
PM 0.00 - 01.01 Riverside/San Bernardino Co line - Jurupa St "A" 23+99 - 77+38	NB	0	21	30	1	4	0	0	0	0	56
		0.0%	37.5%	53.6%	1.8%	7.1%	0.0%	0.0%	0.0%	0.0%	100%
	SB	1	21	60	0	10	7	0	1	0	100
		1.0%	21.0%	60.0%	0.0%	10.0%	7.0%	0.0%	1.0%	0.0%	100%
PM 01.01 - 2.39 Jurupa St - I-10 "A" 77+38 - 150+00	NB	0	31	77	3	13	2	0	0	1	127
		0.0%	24.4%	60.6%	2.4%	10.2%	1.6%	0.0%	0.0%	0.8%	100%
	SB	0	49	192	3	25	4	0	2	1	276
		0.0%	17.8%	69.6%	1.1%	9.1%	1.4%	0.0%	0.7%	0.4%	100%
PM 2.39 - 3.05 I-10 - 4th St "A" 150+00 - 185+91	NB	0	24	26	0	5	2	0	1	0	58
		0.0%	41.4%	44.8%	0.0%	8.6%	3.4%	0.0%	1.7%	0.0%	100%
	SB	0	25	36	0	7	5	0	0	0	73
		0.0%	34.2%	49.3%	0.0%	9.6%	6.8%	0.0%	0.0%	0.0%	100%
PM 3.05 - 5.31 4th St - Foothill Blvd "A" 185+91 - 304+15	NB	0	36	95	3	23	1	0	1	0	159
		0.0%	22.6%	59.7%	1.9%	14.5%	0.6%	0.0%	0.6%	0.0%	100%
	SB	1	35	41	6	35	4	1	0	0	123
		0.8%	28.5%	33.3%	4.9%	28.5%	3.3%	0.8%	0.0%	0.0%	100%
PM 5.31 - 6.78 Foothill Blvd - Base Line Rd "A" 304+15 - 382+15	NB	1	15	22	1	11	1	0	1	0	52
		1.9%	28.8%	42.3%	1.9%	21.2%	1.9%	0.0%	1.9%	0.0%	100%
	SB	0	24	63	2	22	3	1	0	0	115
		0.0%	20.9%	54.8%	1.7%	19.1%	2.6%	0.9%	0.0%	0.0%	100%

Table 4-10: I-15 Accident Data (Between interchanges along mainline)
No. of accidents and percent by type

I-15 Segment and Approximate Stations	Dir	No. of Accidents and Percent by Type									
		Head-On	Side-swipe	Rear End	Broad-side	Hit Object	Over-turn	Auto-Ped	Other	Not Stated	Total
PM 6.78 - 8.35 Base Line Rd - SR-210 "A" 382+15 - 459+00	NB	0	8	14	1	10	1	0	1	0	35
		0.0%	22.9%	40.0%	2.9%	28.6%	2.9%	0.0%	2.9%	0.0%	100%
	SB	0	22	44	1	19	1	0	0	0	87
		0.0%	25.3%	50.6%	1.1%	21.8%	1.1%	0.0%	0.0%	0.0%	100%
PM 8.35 - 9.61 SR-210 - Beech/Summit Ave "A" 459+00 - 531+15	NB	0	9	27	1	2	2	1	0	0	42
		0.0%	21.4%	64.3%	2.4%	4.8%	4.8%	2.4%	0.0%	0.0%	100%
	SB	0	14	18	0	13	2	0	1	0	48
		0.0%	29.2%	37.5%	0.0%	27.1%	4.2%	0.0%	2.1%	0.0%	100%
PM 9.61 - 12.84 Beech/Summit Ave - Sierra Ave "A" 531+15 - 702+80	NB	0	23	62	1	8	3	1	2	0	100
		0.0%	23.0%	62.0%	1.0%	8.0%	3.0%	1.0%	2.0%	0.0%	100%
	SB	0	18	21	2	20	3	0	2	0	66
		0.0%	27.3%	31.8%	3.0%	30.3%	4.5%	0.0%	3.0%	0.0%	100%

The accident data reveals that the prevalent type of accidents along northbound and southbound directions within the project limits are rear end, sideswipe, and hit object collisions. Rear end and sideswipe collisions are typically congestion related. The sideswipe accidents could generally be related to weaving conditions.

Freeway Ramps

Table 4-11 and **Table 4-12** summarize the 3-year accident history between January 1, 2014, and December 31, 2016 for the interchange ramps along the I-15 corridor within the study limits. The accident history reveals that 13 out of 24 ramps along NB I-15 have actual total accident rates that are higher than the statewide average accident rates for similar facilities. In the SB direction, 19 out of 25 ramps were reported to have actual total accident rates that are higher than the statewide average for similar facilities. The locations are shown in boldface in the tables.

A majority of the interchange ramps along the project corridor listed in the tables above would be partially reconstructed to tie in to the proposed freeway widening or reconstructed in entirety, where needed. Ramp improvements would have slightly different alignments, but generally retain the current configurations.

Table 4-11: I-15 Freeway Ramp Accident Data (Northbound)

PM	Location	Accident Rate (a/mvm)					
		Actual Rate			Average Rate		
		F	**F+I**	**TOT**	**F**	**F+I**	**TOT**
49.909	I-15 NB Off-Ramp To Cantu-Galleano Ranch Rd.	0.00	0.00	0.49	0.004	0.32	0.92
50.155	I-15 NB On-Ramp From Cantu-Galleano Ranch Rd.	0.00	0.19	**0.97**	0.003	0.23	0.71
51.023	I-15 NB Off-Ramp To EB SR 60	0.00	0.00	0.13	0.003	0.12	0.37
51.431	I-15 NB Off-Ramp To WB SR 60	0.00	0.13	0.33	0.004	0.21	0.70
51.628	I-15 NB On-Ramp From WB SR 60	0.00	**0.21**	**0.48**	0.002	0.11	0.32
51.833	I-15 NB On-Ramp From EB SR 60	0.00	0.1	0.34	0.002	0.13	0.39
0.816	I-15 NB Off-Ramp To Jurupa St.	0.00	0.28	**1.02**	0.004	0.32	0.92
1.229	I-15 NB On-Ramp From Jurupa St.	0.00	0.07	0.50	0.002	0.21	0.60
1.873	I-15 NB Off-Ramp To I-10 (EB & WB)	0.00	0.07	0.22	0.002	0.08	0.25
2.553	I-15 NB On-Ramp From WB I-10	0.00	0.06	0.12	0.002	0.11	0.32
2.713	I-15 NB On-Ramp From EB I-10	0.00	0.03	0.20	0.003	0.15	0.45
3.096	I-15 NB Off-Ramp To Fourth St *	0.00	0.30	0.86	0.002	0.31	0.92
3.314	I-15 NB On-Ramp From Fourth St	0.00	**0.25**	**0.75**	0.002	0.21	0.60
5.089	I-15 NB Off-Ramp To Foothill Blvd. (Route 66)	0.00	0.09	**0.83**	0.002	0.21	0.60
5.294	I-15 NB On-Ramp From EB Foothill Blvd. (Route 66)	0.000	**1.82**	**5.47**	0.003	0.23	0.71
5.520	I-15 NB On-Ramp From Foothill Blvd. (Route 66)	0.000	0.00	0.00	0.002	0.21	0.60
6.566	I-15 NB Off-Ramp To Base Line Rd.	0.000	0.31	**1.60**	0.004	0.32	0.92
7.034	I-15 NB On-Ramp From Base Line Rd.	0.000	**0.38**	**1.90**	0.002	0.21	0.60
7.977	I-15 NB Off-Ramp To EB SR 210	0.000	**5.47**	**18.23**	0.003	0.12	0.37
8.353	I-15 NB Off-Ramp To WB SR 210	0.000	**0.91**	**2.74**	0.003	0.12	0.37
8.730	I-15 NB On-Ramp From SR 210 (EB)	**0.912**	**6.38**	**10.03**	0.002	0.11	0.32
8.745	I-15 NB On-Ramp From SR 210 (WB)	0.000	0.00	0.00	0.002	0.11	0.32
9.651	I-15 NB Off-Ramp To Summit Ave.	0.000	0.28	**1.11**	0.002	0.31	0.92
9.857	I-15 NB On-Ramp From Summit Ave.	0.000	**0.24**	**0.96**	0.002	0.21	0.60

a/mvm = accidents per million vehicle miles
F = Fatality, **I** = Injury, **TOT** = Total
Boldface rate indicates that the actual accident rate is higher than the statewide average.
* No accidents per Caltrans data.

Table 4-12: I-15 Freeway Ramp Accident Data (Southbound)

PM	Location	Accident Rate (a/mvm)					
		Actual Rate			Average Rate		
		F	F+I	TOT	F	F+I	TOT
49.877	I-15 SB On-Ramp From Cantu-Galleano Ranch Rd.	0.00	0.00	0.00	0.002	0.21	0.6
50.101	I-15 SB On-Ramp From Cantu-Galleano Ranch Rd.	0.00	**1.41**	**2.12**	0.003	0.23	0.71
50.318	I-15 SB Off-Ramp To Cantu-Galleano Ranch Rd.	0.00	**0.55**	**1.46**	0.004	0.32	0.92
51.101	I-15 SB On-Ramp From WB SR 60	0.00	0.00	**0.51**	0.002	0.13	0.39
51.318	I-15 SB On-Ramp From EB SR 60	0.00	0.07	0.14	0.002	0.11	0.32
51.924	I-15 SB Off-Ramp To SR 60 (EB & WB)	0.00	0.02	0.14	0.002	0.08	0.25
0.765	I-15 SB On-Ramp From Jurupa St.	0.00	0.19	**1.21**	0.002	0.21	0.60
1.251	I-15 SB Off-Ramp To Jurupa St.	0.00	0.24	**1.28**	0.004	0.32	0.92
2.038	I-15 SB On-Ramp From WB I-10	0.00	0.09	**0.79**	0.002	0.13	0.39
2.249	I-15 SB On-Ramp From EB I-10	0.00	0.08	**0.41**	0.003	0.12	0.37
2.551	I-15 SB Off-Ramp To WB I-10	0.00	0.12	**0.48**	0.003	0.12	0.37
2.729	I-15 SB Off To EB I-10	0.00	0.21	**0.97**	0.003	0.15	0.45
3.141	I-15 SB On-Ramp From Fourth St	0.00	0.12	0.43	0.001	0.23	0.67
3.320	I-15 SB Off-Ramp To Fourth St	0.00	**0.38**	**1.52**	0.004	0.32	0.92
5.092	I-15 SB On-Ramp From Foothill Blvd. (Route 66)	0.000	0.00	**0.87**	0.003	0.19	0.56
5.323	I-15 SB On-Ramp From WB Foothill Blvd. (Route 66)	0.000	0.00	**0.75**	0.003	0.23	0.71
5.517	I-15 SB Off-Ramp To Foothill Blvd. (Route 66)	0.000	**0.75**	**3.54**	0.004	0.32	0.92
6.526	I-15 SB On-Ramp From Base Line Rd.	0.000	0.07	0.39	0.002	0.21	0.60
6.966	I-15 SB Off-Ramp To Base Line Rd.	0.000	**1.94**	**4.42**	0.004	0.32	0.92
7.693	I-15 SB On-Ramp From EB SR 210*	0.000	**3.65**	**10.03**	0.002	0.11	0.32
7.757	I-15 SB On-Ramp From WB SR 210	**0.912**	**7.29**	**17.32**	0.002	0.11	0.32
8.675	I-15 SB Off-Ramp To SR 210 (WB)	0.000	**0.91**	**8.20**	0.003	0.12	0.37
8.750	I-15 SB Off-Ramp To SR 210 (EB)	0.000	**1.82**	**2.74**	0.002	0.11	0.32
9.665	I-15 SB On-Ramp From Summit Ave.	0.000	**0.31**	0.47	0.001	0.23	0.67
9.892	I-15 SB Off-Ramp To Summit Ave.	0.000	**0.41**	**2.49**	0.004	0.32	0.92

a/mvm = accidents per million vehicle miles
F = Fatality, **I** = Injury, **TOT** = Total
Boldface rate indicates that the actual accident rate is higher than the statewide average.
* No accidents per Caltrans data.

4.C.3 Comparison of Alternatives

Traffic Data

Existing year 2014 traffic counts and projected year (opening year) 2024 forecasts in this section are consistent with the peak-hour volumes developed and documented in the *I-15 Corridor Project Final Traffic Study Report* (March 2017).

A mainline vehicle occupancy survey was performed at two locations, one for each direction, on I-15. The weighted average of these two locations was calculated and applied for GP lanes. There are no existing HOV lanes on I-15 within the project limits. The GP lane occupancy rates for AM peak hour was 1.12 while it was 1.20 for PM peak hour. Projected occupancy rates for Express Lanes in the *Investment Grade Traffic and Revenue Simulation Model* output were in the range of 1.5 +/- 0.3 for the express lanes during peak-hour periods. Based on the *Investment Grade Traffic and Revenue Simulation Model* outputs an average occupancy rate of 1.5 for Express Lanes in both the AM and PM peak hour is assumed for this project.

Methodologies and Assumptions

The number of GP lanes and Express Lanes varies along I-15 study corridor as presented earlier in this report. Based on the number of Express Lanes, the project has been divided into the following four sections to estimate the peak-hour persons moved:

- Section 1: I-15 Between Cantu-Galleano Ranch Road and SR-60
- Section 2: I-15 Between SR-60 and I-10
- Section 3: I-15 Between I-10 and SR-210
- Section 4: I-15 Between SR-210 and Duncan Canyon Road

Each section was represented by the segment with the highest two-way total volume. Persons moved was calculated by multiplying traffic volumes and corresponding vehicle occupancy rate for each facility type.

Results

Table 4-13 through **Table 4-16** summarize the vehicles and persons moved during AM and PM peak hours for Existing, 2024 No Build, and 2024 Build Alternative.

Table 4-13: Vehicles and Persons Moved: I-15 Section 1 between Cantu-Galleano Ranch Road and SR-60

Alternative	Direction	Type	Number of Lanes	Peak Hour Vehicles				Peak Hour Persons Moved			
				Existing (2014)		Projected (2024)		Existing (2014)		Projected (2024)	
				AM	PM	AM	PM	AM	PM	AM	PM
No Build (GP)	NB	GP + Aux	3 + 2	4,964	4,872	4,904	6,730	5,560	5,846	5,492	8,076
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB	GP + Aux	3 + 1	5,406	5,315	8,308	7,803	6,055	6,378	9,305	9,364
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Build (GP+ EL)	NB	GP + Aux	3 + 2			4,410	5,215			4,939	6,258
		Express Lanes	2			554	2,200			831	3,300
	SB	GP + Aux	3 + 1			5,972	6,232			6,689	7,478
		Express Lanes	2			2,625	2,002			3,938	3,003

Table 4-14: Vehicles and Persons Moved: I-15 Section 2 between SR-60 and I-10

Alternative	Direction	Type	Number of Lanes	Peak Hour Vehicles				Peak Hour Persons Moved			
				Existing (2014)		Projected (2024)		Existing (2014)		Projected (2024)	
				AM	PM	AM	PM	AM	PM	AM	PM
No Build (GP)	NB	GP + Aux	4 + 2	5,932	6,939	6,399	7,975	6,644	8,327	7,167	9,570
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB	GP + Aux	4 + 1	8,113	6,026	9,977	7,731	9,087	7,231	11,174	9,277
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Build (GP+ EL)	NB	GP + Aux	4 + 2			5,952	7,271			6,666	8,725
		Express Lanes	2			554	2,200			831	3,300
	SB	GP + Aux	4 + 1			8,058	6,511			9,025	7,813
		Express Lanes	2			2,625	2,002			3,938	3,003

Table 4-15: Vehicles and Persons Moved: I-15 Section 3 between I-10 and SR-210

Alternative	Direction	Type	Number of Lanes	Peak Hour Vehicles				Peak Hour Persons Moved			
				Existing (2014)		Projected (2024)		Existing (2014)		Projected (2024)	
				AM	PM	AM	PM	AM	PM	AM	PM
No Build (GP)	NB	GP + Aux	4 + 2	4,972	6,646	5,685	7,289	5,569	7,975	6,367	8,747
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB	GP + Aux	4 + 2	7,788	5,524	9,029	7,033	8,723	6,629	10,112	8,440
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Build (GP+ EL)	NB	GP + Aux	4 + 2			5,389	7,158			6,036	8,590
		Express Lanes	2			409	1,865			614	2,798
	SB	GP + Aux	4 + 2			7,249	5,953			8,119	7,144
		Express Lanes	2			2,835	1,727			4,253	2,591

Table 4-16: Vehicles and Persons Moved: I-15 Section 4 between SR-210 and Duncan Canyon Road

Alternative	Direction	Type	Number of Lanes	Peak Hour Vehicles				Peak Hour Persons Moved			
				Existing (2014)		Projected (2024)		Existing (2014)		Projected (2024)	
				AM	PM	AM	PM	AM	PM	AM	PM
No Build (GP)	NB	GP + Aux	4 + 1	2,575	4,328	3,275	5,723	2,884	5,194	3,668	6,868
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SB	GP + Aux	4 + 1	5,279	3,211	6,391	4,121	5,912	3,853	7,158	4,945
		Express Lanes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Build (GP+ EL)	NB	GP + Aux	4 + 1			2,907	5,099			3,256	6,119
		Express Lanes	1			409	1,247			614	1,871
	SB	GP + Aux	4 + 1			5,249	3,264			5,879	3,917
		Express Lanes	1			1,327	950			1,991	1,425

5 ALTERNATIVES

5.A Viable Alternatives

Preferred Alternative

Alternative 1, No Build Alternative, and Alternative 2, Build Alternative, were considered and a Draft Environmental Document (DED) was publicly circulated. After review and consideration of all the comments received and weighing and comparing the benefits and impacts of all the alternatives in conjunction with satisfying the purpose and need for the project, the Project Development Team (PDT) identified Alternative 2, Build Alternative, as the Preferred Alternative during the PDT meeting held on May 24, 2018. In comparison to the No Build Alternative, and as discussed in the Environmental Document, the Build Alternative (PA) would meet the purpose of the project.

5.A.1 Alternative 1: No Build

Alternative 1, No Build Alternative, was not identified as the PA because it does not meet the project's purpose and objectives to improve mobility along the I-15 within the project limits. Upon identification of Alternative 2, Build Alternative, as the PA, no further analysis was performed for Alternative 1; and therefore, Alternative 1 description provided below has not changed from Draft Project Report (DPR).

Alternative 1, the No Build Alternative, consists of the existing lane configuration for I-15. No other capital expenditures would be made to implement mainline improvements within the project limits. Existing and projected traffic congestion would continue to deteriorate.

5.A.2 Alternative 2: Build

Alternative 2, Build Alternative, has been identified as the PA in May 2018 because it meets all of the project's purpose and objectives, and provides the most mobility benefits for the I-15 within the project limits.

Alternative 2, the Build Alternative, would include the following improvements to the identified portion of the I-15 Corridor:

- Two (2) Express Lanes in each direction between SR-60 and SR-210;
- One (1) Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60 at the southerly end;
- One (1) Express Lane in each direction between SR-210 and Duncan Canyon Road at the northerly end;
- One (1) Auxiliary Lane in each direction between SR-60 and I-10; and
- One (1) Auxiliary Lane in the northbound direction between Fourth Street and Foothill Boulevard.

The Express Lanes will be separated from the GP lanes with a 2-foot-wide buffer with surface mounted channelizers. The RCTC I-15 TEL Project ends just south of the SR-60 interchange. A 2-foot buffer width is proposed on the RCTC I-15 TEL Project. Due to the physical overlap in project limits with the RCTC I-15 TEL Project between Cantu-Galleano Ranch Road and SR-60 a 2-foot buffer width is proposed on the I-15 Corridor Project for consistency. In addition, the presence of existing connector columns in the median and on the outside at the I-10/I-15 separation structure limits both outside and median widening and hence requires a reduced buffer width of 2 feet as well. To maintain consistency, a buffer width of 2 feet is proposed throughout the project limits.

Build Alternative traverses 5 cities (Eastvale, Jurupa Valley, Ontario, Rancho Cucamonga, and Fontana). The proposed improvements under Build Alternative would involve construction work within the following routes and post miles. The improvements required in Riverside County involve minor outside widening on Cantu-Galleano Ranch Road NB entrance ramp and along the mainline between Cantu-Galleano Ranch Road NB entrance ramp and exit ramp to EB SR-60 for approximately 2,200 feet, and Riverside Avenue Undercrossing bridge median widening. The improvements also include signing and striping to maintain the continuity of the proposed Express Lanes into RCTC I-15 TEL Project.

- 08-Riv-15-PM 49.8/52.3
- 08-SBd-15-PM 0.0/12.2

In addition to the mainline widening, the project includes reconstruction and/or modification of interchange ramps, local arterials, and structures that are necessary to accommodate the proposed freeway widening, including new or reconstruction of retaining walls and soundwalls where appropriate. Existing concrete barriers, temporary railings, metal beam guardrails, and thrie-beam barriers in the median of I-15 would be replaced with concrete barrier Type 60MG where appropriate. Median lighting would be provided at access locations to and from the Express Lanes, at California Highway Patrol (CHP) observation areas, and at selected locations to improve headlight sight distance in sag vertical curves. Existing auxiliary lanes would be re-established in kind and additional ones added where warranted. CHP enforcement/observation areas would be provided in the I-15 median at selected locations. The conceptual layout plans of Build Alternative are included in **Attachment D**.

The base condition for Build Alternative assumes the completion of transportation improvements along the project corridor by SBCTA, Caltrans, and local agencies that are currently in planning or being implemented as described in Section 3D, Related Projects, of this document. Proposed engineering features in Build Alternative are summarized in the following sections.

5.A.2.1 Build Alternative (Alternative 2) Proposed Engineering Features

Proposed engineering features in Build Alternative are summarized as follows:

Mainline Improvements

- Add one Express Lane in each direction from Cantu-Galleano Ranch Road to SR-60 to operate jointly with existing RCTC I-15 TEL Project as two Express Lanes in each direction
- Add two Express Lanes in each direction from SR-60 to SR-210
- Add one Express Lane in each direction from SR-210 to Duncan Canyon Road
- Provide five Ingress/Egress (I/E) at-grade access locations in each direction. Four intermediate I/E access locations in each direction are combined I/E and one access location with Egress only (in the northbound direction) and Ingress only (in the southbound direction) is proposed at the north end of the project
- Provide CHP enforcement/observation areas in the median at selected locations along the corridor
- Reestablish existing auxiliary lanes along the corridor
- Construct one Auxiliary Lane in each direction between SR-60 and I-10
- Construct one Auxiliary Lane in northbound direction between Fourth Street and Foothill Boulevard

Interchange Improvements

Build Alternative improvements extend through three freeway-to-freeway system interchanges (I-15/SR-60 Interchange, I-15/I-10 Interchange, and I-15/SR-210 Interchange) and seven local street interchanges, including one interchange (Cantu-Galleano Ranch Road) in Riverside County. Build Alternative would require reconstruction of several freeway-to-freeway connectors and interchange ramps to accommodate the I-15 widening. **Table 5-1** summarizes ramp improvements proposed under Build Alternative.

Table 5-1: Build Alternative Ramp Improvements

Interchange	No.	Ramps	Build Alternative Ramp Improvement			
			None	Gore	Partial	Full*
Cantu-Galleano Ranch Rd	1	NB Entrance Ramp			✓	
	2	NB Exit Ramp	✓			
	3	SB Entrance Ramp	✓			
	4	SB Entrance Loop Ramp	✓			
	5	SB Exit Ramp	✓			

Table 5-1: Build Alternative Ramp Improvements

Interchange	No.	Ramps	Build Alternative Ramp Improvement			
			None	Gore	Partial	Full*
SR-60	6	N15-W60	✓			
	7	N15-E60	✓			
	8	S15-W60	✓			
	9	S15-E60	✓			
	10	W60-N15	✓			
	11	W60-S15	✓			
	12	E60-N15	✓			
	13	E60-S15	✓			
Jurupa St	14	NB Entrance Ramp		✓	✓	
	15	NB Exit Ramp		✓	✓	
	16	SB Entrance Ramp		✓		✓
	17	SB Exit Ramp		✓	✓	
I-10	18	N15-W10		✓	✓	
	19	N15-E10		✓	✓	
	20	S15-W10		✓		✓
	21	S15-E10		✓	✓	
	22	W10-N15		✓	✓	
	23	W10-S15		✓	✓	
	24	E10-N15		✓	✓	
	25	E10-S15		✓		✓
4th St	26	NB Entrance Ramp		✓	✓	
	27	NB Exit Ramp	✓			
	28	SB Entrance Ramp		✓		✓
	29	SB Exit Ramp		✓		✓
Foothill Blvd	30	NB Entrance Ramp		✓		✓
	31	NB Entrance Loop Ramp		✓		✓
	32	NB Exit Ramp		✓		✓
	33	SB Entrance Loop Ramp		✓		✓
	34	SB Entrance Ramp		✓		✓
	35	SB Exit Ramp		✓		✓
Base Line Rd	36	NB Entrance Ramp	✓			
	37	NB Exit Ramp	✓			
	38	SB Entrance Ramp	✓			
	39	SB Entrance Loop Ramp	✓			
	40	SB Exit Ramp	✓			

Table 5-1: Build Alternative Ramp Improvements

Interchange	No.	Ramps	Build Alternative Ramp Improvement			
			None	Gore	Partial	Full*
SR-210	41	N15-W210	✓			
	42	N15-E210	✓			
	43	S15-W210	✓			
	44	S15-E210	✓			
	45	W210-N15	✓			
	46	W210-S15	✓			
	47	E210-N15	✓			
	48	E210-S15	✓			
Summit Ave	49	NB Entrance Ramp	✓			
	50	NB Exit Ramp	✓			
	51	SB Entrance Ramp	✓			
	52	SB Exit Ramp			✓	
Duncan Canyon Rd	53	NB Entrance Ramp	✓			
	54	NB Exit Ramp	✓			
	55	SB Entrance Ramp	✓			
	56	SB Exit Ramp	✓			

"" Considered as "Full" when the ramp termini are proposed to be reconstructed.*

Local Street Improvements

No modifications/improvements are proposed by this project except for modifying curb returns and upgrading ADA curb ramps at Jurupa Street SB on-ramp terminal, Fourth Street SB ramp termini, and Foothill Boulevard NB and SB ramp termini locations to accommodate proposed ramp features. These locations are within Caltrans right-of-way.

Foothill Boulevard would have additional improvements to accommodate freeway ramp modifications. These improvements include replacing existing sidewalk, curb and gutter, ADA curb ramps at curb returns, traffic signal poles and associated Intelligent Transportation System (ITS) elements, and restriping where needed.

Railroad Improvements

Relocation of one side track at Mission Boulevard OH and bridge widening of three railroad crossings under I-15 would be required to accommodate the proposed freeway widening, as listed below:

- UPRR Mission Blvd OH (median widening and side track relocation)

- UPRR Vina Vista OH (outside widening)
- Metrolink Rochester OH (outside and median widening)

Structure Improvements

Build Alternative would require modifications to 36 structures. **Table 5-2** summarizes the proposed structure improvements under Build Alternative.

Table 5-2: Build Alternative Structure Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
1	08-Riv-15-49.93	Cantu-Galleano Ranch Rd OC	56 0797	No work
2	08-Riv-15-51.26	Riverside Ave UC (Lt)	56 0693L	Median widening
3	08-Riv-15-51.26	Riverside Ave UC (Rt)	56 0693R	Median widening
4	08-Riv-15-51.26	N15-E60 Connector OC	56 0694G	No work
5	08-Riv-15-51.40	W60-S15 Connector OC	56 0690F	No work
6	08-Riv-15-51.45	Route 15/60 Separation	56 0691L	Median widening
7	08-Riv-15-51.45	Route 15/60 Separation	56 0691R	Median widening
8	08-Riv-15-51.95	Mission Blvd OH (Lt)	56 0695L	Median widening
9	08-Riv-15-51.95	Mission Blvd OH (Rt)	560695R	Median widening
10	08-Riv-15-52.27	Philadelphia St UC (Lt)	56 0696L	No work
11	08-Riv-15-52.27	Philadelphia St UC (Rt)	56 0696R	No work
12	08-SBd-15-1.01	Jurupa St OC	54 0971	Two (2) Tie-back walls
13	08-SBd-15-2.05	Airport Dr UC	54 0906	Outside widening
14	08-SBd-15-2.05	N15-E/W10 Connector	54 0906G	No work
15	08-SBd-15-2.15	Vina Vista OH	54 0907	Outside widening
16	08-SBd-15-2.34	W10-S15 Connector OC	54 0914F	No work
17	08-SBd-15-2.15	N15-W10 Connector OC	54 0907G	No work
18	08-SBd-15-2.15	N15-E10 Connector OC	54 0928G	No work
19	08-SBd-15-2.37	Route 15/10 Separation UC (Lt)	54 0909L	Outside & median widening
20	08-SBd-15-2.37	Route 15/10 Separation UC (Rt)	54 0909R	Outside & median widening
21	08-SBd-15-2.41	S15-E10 Connector OC	54 0910F	No work
22	08-SBd-15-2.44	E10-N15 Connector OC	54 0931G	No work
23	08-SBd-15-2.56	Ontario Mills Pkwy UC	54 0911	Outside widening
24	08-SBd-15-3.05	Fourth St UC	54 0912	Outside widening
25	08-SBd-15-3.81	Seventh St UC	54 0918	Outside widening
26	08-SBd-15-3.94	MWD Pipeline UC (Lt)	54 0986L	Outside & median widening
27	08-SBd-15-3.94	MWD Pipeline UC (Rt)	54 0986R	Outside & median widening
28	08-SBd-15-4.10	Rochester OH (Lt)	53 0919L	Outside & median widening
29	08-SBd-15-4.10	Rochester OH (Rt)	54 0919R	Outside & median widening
30	08-SBd-15-4.47	Day Canyon Channel UC (Lt)	54 0920L	Outside & median widening
31	08-SBd-15-4.47	Day Canyon Channel UC (Rt)	54 0920R	Outside & median widening

Table 5-2: Build Alternative Structure Improvements

No.	Post Mile	Structure Name	Bridge No.	Proposed Work
32	08-SBd-15-4.61	Arrow Route UC (Lt)	54 0921L	Outside & median widening
33	08-SBd-15-4.61	Arrow Route UC (Rt)	54 0921R	Outside & median widening
34	08-SBd-15-5.28	Route 15/66 Separation (Lt)*	54 0922L	Outside & median widening
35	08-SBd-15-5.28	Route 15/66 Separation (Rt)*	54 0922R	Outside & median widening
36	08-SBd-15-5.97	Etiwanda Ave UC (Lt)	54 0973L	Median widening
37	08-SBd-15-5.97	Etiwanda Ave UC (Rt)	54 0973R	Median widening
38	08-SBd-15-6.71	Base Line Rd UC (Lt)	54 0974L	Median widening
39	08-SBd-15-6.71	Base Line Rd UC (Rt)	54 0974R	Median widening
40	08-SBd-15-7.08	Etiwanda OH (Abandon RR) (Lt)	54 0963L	Median widening
41	08-SBd-15-7.08	Etiwanda OH (Abandon RR) (Rt)	54 0963R	Median widening
42	08-SBd-15-7.44	Victoria St UC (Lt)	54 0965L	Median widening
43	08-SBd-15-7.44	Victoria St UC (Rt)	54 0965R	Median widening
44	08-SBd-15-7.56	East Etiwanda Creek UC (Lt)	54 0964L	Median widening
45	08-SBd-15-7.56	East Etiwanda Creek UC (Rt)	54 0964R	Median widening
46	08-SBd-15-8.35	SR-210/I-15 Separation	54 0961	No work
47	08-SBd-15-8.83	Cherry Ave UC (Lt)	54 0970L	Median widening
48	08-SBd-15-8.83	Cherry Ave UC (Rt)	54 0970R	Median widening
49	08-SBd-15-9.60	Summit Ave OC	54 0978	No work
50	08-SBd-15-11.03	Duncan Canyon Rd OC	54 0980	No work

"" Route 15/66 Separation Structure is Foothill Blvd UC Structure.*

Advance Planning Studies (APS) have been prepared between 2015 and 2018 for new structures and major structure modifications proposed under Build Alternative to define the scope and cost of structure work in the project. The APSs also discuss conceptual stage construction and falsework requirements and include the *Structure Preliminary Geotechnical Reports*, which provide preliminary geotechnical, seismic, and foundation recommendations for the structure improvements. The APS general plans are included in **Attachment E** of this document.

Drainage Improvements

Several major drainage structures along the project corridor would be improved as part of the proposed project as summarized in **Table 5-3**.

Table 5-3: Build Alternative Major Drainage Improvements

No.	Approximate Station	Structure Type	System Size	Jurisdiction	Proposed Work
1	"A" 2719+60	Culvert	24" CMP	Caltrans	No Work
2	"A" 2745+36	Channel	15' Trap Channel	Caltrans	Widen I-15 bridge. No work in channel
3	"A" 2759+60	Culvert	120" RCP	City of Ontario	No Work
4	"A" 63+30	Culvert	8'x8' RCB	City of Ontario	No Work
5	"A" 133+00	Culvert	87" RCP	City of Ontario	No Work
6	"A" 134+60	Culvert	24" CMP	Caltrans	No Work
7	"A" 139+50	Culvert	18" CMP	Caltrans	No Work
8	"A" 159+50	Culvert	114" RCP	City of Ontario	No Work
9	"A" 160+50	Culvert	18" CMP	Caltrans	No Work
10	"A" 189+00	Culvert	8'x6' RCB	City of Ontario	No Work
11	"A" 260+00	Channel	40’ Channel	SBCFC	Widen I-15 bridges. No work in channel
12	"A" 275+00	Culvert	18" CMP	Caltrans	No Work
13	"A" 280+00	Culvert	18" CMP	Caltrans	Reconstruct lateral at edge of shoulder
14	"A" 286+00	Culvert	24" RCP	Caltrans	Reconstruct lateral at edge of shoulder
15	"A" 293+90	Culvert	24" CMP / 24" RCP	Caltrans	Reconstruct lateral at edge of shoulder
16	"A" 300+25	Culvert	24" CMP	Caltrans	Extend Mainline
17	"A" 306+10	Culvert	24" CMP	Caltrans	Extend Mainline
18	"A" 313+50	Culvert	18" CMP	Caltrans	Reconstruct lateral at edge of shoulder
19	"A" 321+20	Culvert	18" CMP	Caltrans	Reconstruct lateral at edge of shoulder
20	"A" 327+50	Culvert	18" CMP	Caltrans	Reconstruct lateral at edge of shoulder
21	"A" 333+00	Culvert	18" CMP	Caltrans	No Work
22	"A" 343+50	Culvert	30" RCP	Caltrans	No Work
23	"A" 351+00	Culvert	36" RCP	Caltrans	No Work
24	"A" 356+50	Culvert	18" RCP	Caltrans	No Work
25	"A" 362+00	Culvert	36" RCP	Caltrans	No Work
26	"A" 372+00	Culvert	24" RCP	Caltrans	No Work
27	"A" 375+40	Culvert	24" CMP	Caltrans	No Work
28	"A" 415+38	Culvert	24" RCP	Caltrans	No Work
29	"A" 421+00	Culvert	6'x4' RCB	City of Rancho Cucamonga	No Work
30	"A" 424+00	Channel	30’ Channel	SBCFC	Widen I-15 bridges. No work in channel
31	"A" 462+50	Culvert	24" /30" RCP	Caltrans	No Work
32	"A" 471+50	Culvert	30" RCP	Caltrans	No Work
33	"A" 491+10	Culvert	18" CMP	City of Rancho Cucamonga	No Work
34	"A" 532+25	Culvert	10'x5' RCB	SBCFC	No Work

TSM/TDM Improvements

Transportation Demand Management (TDM) focuses on means of reducing the number of vehicle trips and vehicle miles traveled, and increasing vehicle occupancy. Typical activities would be to promote ride sharing programs. SBCTA operates and maintains a countywide vanpool program as an alternative mode of transportation for residents commuting within San Bernardino County. SBCTA and the VVTA partnered to develop and administer the San Bernardino Regional Vanpool Program-Victor Valley Phase beginning September 2012. SBCTA is currently working in partnership with Omnitrans and RCTC to expand the program countywide and extend it into Riverside County. Daily commuter ridesharing information can be accessed by motorists using the newly created IE511 website (www.IE511.org). SBCTA also supports ridesharing by establishing a park-and-ride facilities lease program, which reimburses businesses for the use of their parking spaces as park-and-ride lots. There are several park-and-ride facilities along the I-15 corridor, one of which is within the project limits, located at 13850 Victoria Street in the city of Fontana.

Transportation System Management (TSM) strategies implement actions that improve the capacity of a facility without increasing the number of through lanes. Examples of these strategies are ramp metering and auxiliary lanes, and providing options for mass transit and ridesharing.

Express Lane Begin/End Transitions

A smooth transition between RCTC I-15 TEL Project and the proposed Express Lanes in San Bernardino County would be provided. One additional Express Lane in each direction is proposed to be added between Cantu-Galleano Ranch Road and SR-60. In the northbound and southbound direction, Express Lane signage similar to the RCTC I-15 TEL Project signage would be provided to inform users of the toll requirement and the toll rates. In the southbound direction, the proposed two ELs would seamlessly integrate with RCTC I-15 TEL Project at Cantu-Galleano Ranch Road. This connection to the RCTC I-15 TEL Project will provide operational continuity of two ELs in each direction into San Bernardino County.

At the northern end of the project, transition areas between the proposed Express Lanes and the existing cross sections would be provided near Duncan Canyon Road. From immediately south of SR-210 to Duncan Canyon Road the dual Express Lanes facility transitions to one Express Lane in each direction. North of Duncan Canyon Road the one Express Lane transitions to match existing conditions. In the southbound direction, advance Express Lane signage would be provided to inform motorists of the toll requirement and toll rates in advance of traffic entering the Express Lane, which is opened as an additional lane on the left side.

Express Lane Buffer

The proposed Express Lanes would be in the median of the I-15 freeway. The Express Lanes are expected to be buffer-separated from GP lanes by striping in combination with surface-mounted channelizers placed within the buffer space throughout the corridor.

Caltrans' Traffic Operations Policy Directive (TOPD) 11-02, dated March 2011, states that the recommended buffer width separating Express Lanes from adjacent GP lanes is 4 feet. However, buffer width may be reduced as outlined in the priority listing in Section 3.10 of the 2018 High Occupancy Vehicle (HOV) Guidelines. The HOV Guidelines identify reduction of buffer width as one of the first cross sectional elements to be reduced, prior to reducing lane width. The HOV Guidelines state that buffer width may be reduced to 2 feet.

SBCTA has completed a study of buffer widths for the I-15 Express Lane and found that in most locations a 2-foot buffer would be necessary due to right-of-way and physical constraints. The buffer design incorporates a 2-foot-wide buffer with two solid white lane markings. Pylons or channelizers will be placed within the 2-foot buffer area. The buffer width was discussed in several workshops and meetings with Caltrans. **Attachment L** shows Caltrans concurrence on the 2-foot buffer for the I-15 Corridor Project. In addition, this will provide continuity with RCTC I-15 TEL Project, which will include a 2-foot wide buffer with channelizers.

Express Lane Intermediate Access Locations

Four at-grade ingress/egress (I/E) access locations are proposed in each direction along the project corridor, typically spaced at 2- to 3-mile intervals, to provide access to and from the Express Lanes for all freeway-to-freeway and local street interchanges along the corridor. The locations of these access locations were selected to serve heavy traffic interchanges along the corridor and major destinations such as Ontario Mills Mall, while meeting the geometric, safety, and operational requirements and considering geometric and physical constraints. The locations of proposed access locations are listed below (see also a diagram depicting these locations in **Attachment H**):

- Cantu-Galleano Ranch Road
- Jurupa Street
- Arrow Route
- Base Line Road

Except for Cantu-Galleano Ranch Road and Base Line Road I/E, two access locations are proposed with an additional weave or speed change lane provided between the No. 1 GP lane and the No. 2 Express Lane.

The Cantu-Galleano Ranch Road I/E is within Riverside County. To provide continuity with RCTC I-15 TEL Project, which will not provide a weave lane at access locations, and to avoid freeway widening, a weave zone without a weave lane is proposed in both directions at this location.

The Base Line Road I/E is proposed as a weave zone, without a weave lane, in both directions. Since this is the last I/E access point in the NB direction and is immediately south of I-15 and SR-210 freeway-to-freeway interchange, relatively higher traffic volume is expected to exit the Express Lane facility to access SR-210 and Summit Avenue interchanges compared to the traffic entering the facility. Similarly, in the SB direction this is the first I/E access point and relatively higher traffic volume is expected to enter into the Express Lane facility from SR-210 and Summit Avenue interchanges compared to the traffic exiting from the facility to Foothill Boulevard.

TOPD 11-02 specifies a minimum of 2,000 feet for access opening and a minimum of 800 feet per each lane change between the access opening and the nearest freeway on-ramp or off-ramp. Typical layouts of a combined access point are shown below. **Figure 5-1** shows the layout with a weave lane, and **Figure 5-2** shows the layout without a weave lane.

Figure 5-1: Typical Ingress/Egress with Weave Lane

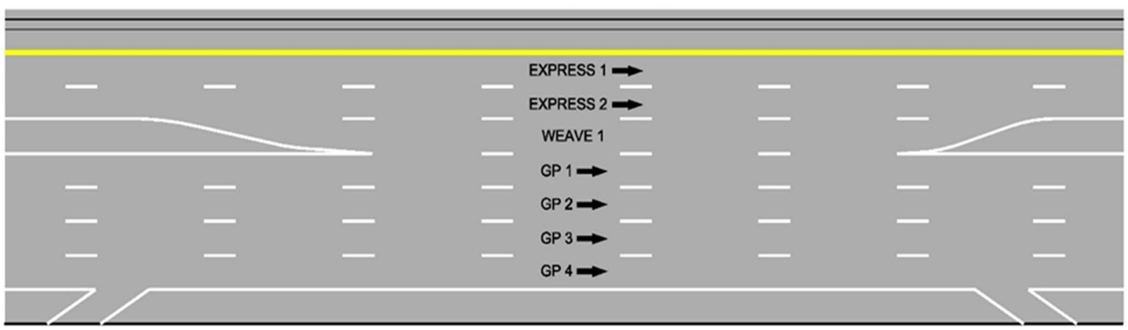
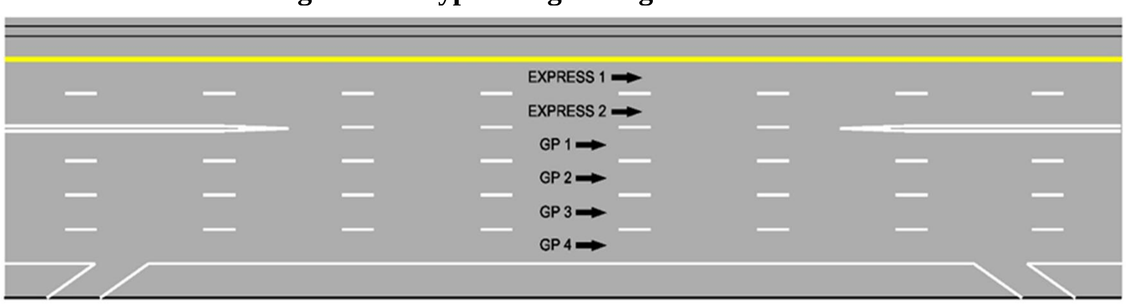


Figure 5-2: Typical Ingress/Egress without Weave Lane



The I/E access locations will be designed in conformance with the TOPD 11-02 except for slight variations in the ingress weaving distance between Fourth Street on-ramp and access opening at Arrow Route in the NB direction. This design variation has been discussed with Caltrans and will be documented in a memo, included in **Attachment R**.

CHP Observation and Enforcement Areas

CHP will enforce occupancy violations on the Express Lanes by undertaking visual inspections either from stationary locations in the shoulder or designated observation areas or from moving patrol vehicles. To assist CHP officers with visual inspections, observation areas will be strategically located in the median shoulder in close proximity and downstream of toll collection points. The decision to locate the observation areas downstream of the toll gantries has been made in close consultation with CHP (September 24, 2015, meeting with CHP). Additionally, where feasible, enforcement areas have been identified in the median shoulder downstream of observation areas.

When undertaking stationary visual inspection, CHP officers will park on the shoulder or in designated observation areas where they will be able to observe an enforcement beacon on the toll gantry and have a clear view of the vehicles as they pass by to determine occupancy eligibility. Enforcement and observation areas for CHP will be designed consistent with HOV guidelines by redistributing components of median width. The proposed CHP observation areas will be used primarily for carpool occupancy compliance, while enforcement stops are anticipated to be performed at the enforcement areas or on the right shoulder of the freeway. **Attachment H** shows preliminary locations for CHP enforcement and observation areas along I-15.

Stationary enforcement is currently the most practical way for officers to enforce adherence to occupancy eligibility requirements. However, with the advancements in technology, other occupancy detection systems could be employed in the future, which could eliminate the need for CHP observation areas. Hence, additional details will be developed during final design to evaluate the need and constructability of the CHP observation areas.

Tolling Infrastructure

The Express Lane facility would incorporate various toll infrastructure including toll gantries with transponder readers and high-speed digital cameras, directional and informational signage approaching Express Lane entry and exit points, dynamic message signs to communicate real-time toll rates to drivers, complete closed-circuit television coverage of the entire Express Lanes corridor, and fiber optics linking the infrastructure to a centralized toll operations office. Toll equipment would meet Title 21 specification and national protocols, as well as interoperability with other toll facilities in California.

Tolling Policies

The *I-10 and I-15 Express Lanes Concept of Operations Report* (May 4, 2017) is approved for I-10 Corridor Project and conceptually approved for this project and addresses various tolling policies under which the Express Lanes would be operated. This report provides preliminary information regarding the following:

- Type of tolling
- Toll exemption or rate reduction for HOVs
- Maximum target volume to maintain speed and minimize congestion in the Express Lanes
- Method for determining toll amount
- Methods for toll collection and toll enforcement
- Penalty rates for toll violations
- Provision of supplemental service patrol

The following items represent key policies that have been developed for the I-15 Express Lanes; however, they are subject to change pending further studies:

- The Express Lanes are anticipated to operate 24 hours a day, 365 days a year with a minimum toll rate.
- It is anticipated that HOVs with three or more occupants (HOV 3+) would be allowed to use the Express Lanes for a discounted rate, and SOVs and HOVs not meeting the occupancy requirement will be allowed to use the Express Lanes for a toll.
- Motorcycles, marked para-transit vehicles, emergency response vehicles, and other exempted vehicles are permitted in the Express Lanes by statute.
- Clean Air Vehicles including hybrids, electric vehicles, and vehicles using other sources of alternative fuel would not qualify for toll-free or discounted access to the Express Lanes.
- Vehicles are anticipated to use switchable transponders or License Plate Recognition (LPR) for toll collection except that HOV 3+ must have a valid switchable transponder (declaring HOV 3+) to be eligible for the free or discounted travel.
- Tolling will be set dynamically based on real time traffic levels in the Express Lanes to ensure peak period speed of no less than 45 mph.

Additional studies will be performed to establish the operating policies and business rules and determine pricing structures and toll violation rates.

<u>Toll Operations and Maintenance</u>

The institutional arrangements for operation and maintenance of the Express Lanes have not been determined and would be subject to a future agreement between Caltrans and SBCTA. Pending future agreements, it is anticipated that a toll authority would be established with responsibility for operations and maintenance of the Express Lanes, including incident management and maintenance of the tolling system.

Express Lanes Incident Responses

At this time, it is anticipated that Freeway Service Patrol (FSP) will be contracted to provide incident response for the Express Lanes similar to the current arrangement on the GP lanes. However, because the Express Lanes will be dynamically managed to maintain performance above a pre-defined threshold, higher priority or additional FSP services dedicated to the Express Lanes may be necessary to provide quick and effective incident management and clearance. Pending further study as part of the development of the *I-10 and I-15 Express Lanes Concept of Operations Report*, it may be determined necessary to have dedicated roving FSP patrolling the Express Lanes during hours of peak congestion to respond to incidents that might affect the Express Lanes, including clearing of debris, towing disabled vehicles, and minor auto repairs.

5.A.2.2 Traffic Analysis

The traffic information discussed in this section is a summary of the traffic analysis performed for the project and presented in the *I-15 Corridor Project Final Traffic Study Report*. Graphical representation of the forecasted year 2045 peak-hour traffic volumes on I-15 as well as on freeway ramps are provided in **Attachment B** of this document.

Table 5-4 presents a summary of the I-15 freeway ADT volumes under the No Build and Build Alternative conditions. As shown, Build Alternative is projected to carry approximately 12 to 28 percent more traffic than the No Build Alternative condition due to the additional capacity being provided by the proposed improvements.

Table 5-4: Year 2045 Alternatives 1 and 2 Average Daily Traffic Volume

	Year 2045 ADT Volume		
I-15 Freeway Segment	Alternative 1 (No Build)	Alternative 2 (Build)	% Increase
Cantu-Galleano Ranch Rd to SR-60	279,540	315,531	13%
SR-60 to Jurupa St	288,382	356,793	24%
Jurupa St to I-10	296,327	363,227	23%
I-10 to 4th St	272,264	344,958	27%
4th St to Arrow Route	262,970	337,132	28%
Arrow Route to Foothill Blvd	253,836	321,897	27%
Foothill Blvd to Base Line Rd	238,280	295,705	24%
Base Line Rd to SR-210	236,955	282,055	19%
SR-210 to Beech/Summit Ave	216,974	243,258	12%
Beech/Summit Ave to Duncan Canyon Rd	206,666	231,288	12%

Table 5-5 and **Table 5-6** present Year 2045 peak-hour traffic volumes, density, and LOS for NB and SB I-15 GP lanes under No Build and Build Alternative conditions. The comparison shows

that although the project would improve conditions in the GP lanes in most segments of the study corridor, it would slightly worsen traffic density for the following segments:[1]

- In the NB direction during afternoon peak hour between Cantu-Galleano Ranch Road and SR-60 and between I-10 and Fourth Street.
- In the SB direction during afternoon peak hour between Fourth Street and I-10 and during morning peak hour between Arrow Route and Fourth Street and between Fourth Street and I-10.

In the above cases, the LOS in the No Build Alternative condition is worse than the target LOS D and the project would slightly increase traffic density. The project draws additional car traffic to I-15 because the overall traffic conditions are better with the Express Lanes than without them, notwithstanding the fact that density is slightly worse in a few places. This occurs because conditions are improved.

As shown in **Table 5-5**, four segments are projected to operate at the same LOS as the No Build Alternative and seven segments are projected to perform at a better LOS than the No Build Alternative during the morning peak hour. During afternoon peak hour, five segments are projected to operate at the same LOS as the No Build Alternative and six segments are projected to perform at better LOS than the No Build Alternative.

Table 5-5: Year 2045 Alternatives 1 and 2 Northbound General-Purpose Lane Peak-Hour Volume & Level of Service

	Year 2045 No Build and Build NB GP Lane Peak-Hour Volume & LOS											
	Alternative 1 (No Build)						Alternative 2 (Build)					
	AM			PM			AM			PM		
I-15 Segment	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Cantu-Galleano Ranch Rd to SR-60	7,244	36.5	E	8,194	28.0	D	6,675	32.8	D	7,170	34.7	D
SR-60 to Jurupa St	7,956	37.3	E	8,210	40.6	E	7,863	26.8	D	8,429	29.7	D
Jurupa St to I-10	7,979	>Capacity	F	8,738	>Capacity	F	7,399	>Capacity	F	8,271	>Capacity	F
I-10 to 4th St	7,726	31.3	D	7,849	29.4	D	7,190	29.4	D	8,020	30.7	D
4th St to Arrow Route	6,958	31.0	D	7,967	38.0	E	6,387	21.7	C	8,216	28.5	D
Arrow Route to Foothill Blvd	6,317	27.4	D	7,952	37.5	E	5,693	22.7	C	7,843	33.7	D
Foothill Blvd to Base Line Rd	5,504	23.5	C	8,019	38.1	E	4,804	20.7	C	7,539	34.8	D
Base Line Rd to SR-210	5,334	23.9	C	8,190	>Capacity	F	4,637	20.8	C	7,268	>Capacity	F
SR-210 to Summit Ave	4,765	22.8	C	7,193	>Capacity	F	3,811	17.9	B	5,924	>Capacity	F
Summit Ave to Duncan Canyon Rd	4,640	20.4	C	6,754	30.1	D	3,659	16.6	B	5,544	24.2	C
Duncan Canyon Rd to Sierra Ave	4,445	19.6	C	6,794	30.4	D	3,487	15.9	B	5,370	23.3	C

Similarly, as shown in **Table 5-6**, seven segments are projected to operate at the same LOS as the No Build Alternative and four segments are projected to perform at better LOS than the No Build Alternative during the morning peak hour. During afternoon peak hour, four segments are

[1] The Build Alternative traffic volume is lower than the No Build Alternative volume, but the computed density is higher because there is more weaving traffic.

projected to operate at the same LOS as the No Build Alternative and seven segments are projected to perform at better LOS than the No Build Alternative.

Table 5-7 and **Table 5-8** shows the same information for NB and SB I-15 Express Lanes under the Build Alternative condition. As shown, all Express Lane segments are LOS D or better. During both the AM and the PM Peak Hours, only 4 segments have LOS D and the other 22 segments have LOS C or better.

Overall, the traffic analysis indicates that the mainline operation in Build Alternative is better than the No Build Alternative for the GP lanes. In addition, the Express Lanes proposed under Build Alternative are predicted to operate mostly at LOS C or better, providing users (HOVs and SOVs) with higher speed and faster travel time through the corridor as well as offer enhanced trip reliability, which are improvements over the No Build Alternative.

The daily average speed for vehicles travelling on I-15 in the study corridor is forecasted as 51.7 mph under 2045 Build Alternative, compared to 44.3 mph under 2045 No Build Alternative. This shows the effectiveness of the project at improving speeds and travel time within the project study area of I-15.

Table 5-9 presents the peak-hour traffic volumes, density, and merge/diverge LOS for the interchange ramps along NB I-15 under the future No Build and Build Alternative conditions. As shown, most of the interchange ramps in Build Alternative are projected to operate at the same or better LOS than the No Build Alternative. During the morning peak hour, 22 segments are projected to operate at the same LOS as the No Build Alternative and 5 segments are projected to perform at better LOS than the No Build Alternative. During the afternoon peak hour, 19 segments are projected to operate at the same LOS as the No Build Alternative, 6 segments are projected to perform at better LOS than the No Build Alternative, and 2 segments are projected to be worse because of a slight increase in traffic density on the ramp compared to No Build Alternative but the target LOS of D is still satisfied.

Table 5-10 presents similar information along SB I-15 under the future No Build and Build Alternative conditions. As shown, most of the interchange ramps in Build Alternative are projected to operate at the same or better LOS than the No Build Alternative. During the morning and afternoon peak hours, 25 segments are projected to operate at the same LOS as the No Build Alternative and 4 segments are projected to perform at better LOS than the No Build Alternative.

Table 5-11 presents the intersection delays and LOS for No Build and Build Alternatives.

Table 5-6: Year 2045 Alternatives 1 and 2 Southbound General-Purpose Lane Peak-Hour Volume & Level of Service

I-15 Segment	Year 2045 No Build and Build SB GP Lane Peak-Hour Volume & LOS											
	Alternative 1 (No Build)						Alternative 2 (Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Sierra Ave to Duncan Canyon Rd	7,538	34.8	D	4,870	21.3	C	5,091	22.2	C	3,141	14.3	B
Duncan Canyon Rd to Summit Ave	7,765	36.6	E	5,104	22.2	C	5,422	23.6	C	3,362	15.2	B
Summit Ave to SR-210	8,348	>Capacity	F	5,301	25.0	C	6,167	>Capacity	F	3,646	16.5	B
SR-210 to Base Line Rd	9,697	48.3	F	5,903	24.2	C	8,423	42.2	E	4,891	20.4	C
Base Line Rd to Foothill Blvd	9,685	61.0	F	6,103	26.6	D	8,719	47.6	F	5,054	21.9	C
Foothill Blvd to Arrow Route	10,191	71.4	F	6,859	30.8	D	9,626	61.6	F	6,350	27.9	D
Arrow Route to 4th St	9,834	64.0	F	7,711	36.8	E	9,919	68.2	F	7,338	34.1	D
4th St to I-10	9,622	36.8	E	8,382	34.0	D	9,560	39.9	E	8,009	34.3	D
I-10 to Jurupa St	11,223	>Capacity	F	8,856	>Capacity	F	10,621	>Capacity	F	8,703	>Capacity	F
Jurupa St to SR-60	10,442	>Capacity	F	9,197	>Capacity	F	9,844	>Capacity	F	8,851	>Capacity	F
SR-60 to Cantu-Galleano Ranch Rd	10,221	69.7	F	9,502	58.4	F	8,351	41.2	E	8,254	41.0	E

Table 5-7: Year 2045 Alternatives 1 and 2 Northbound Express Lanes Peak-Hour Volume & Level of Service

I-15 Segment	NB Express Lane Peak-Hour Volume & LOS											
	2045 Alternative 1 (No Build)						2045 Alternative 2 (Build)					
	AM			PM			AM			PM		
	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Cantu-Galleano Ranch Rd to SR-60	-	-	-	-	-	-	1,010	8.2	A	2,167	17.6	B
SR-60 to Jurupa St	-	-	-	-	-	-	1,010	8.2	A	2,167	17.6	B
Jurupa St to I-10	-	-	-	-	-	-	1,466	11.9	B	2,893	23.5	C
I-10 to 4th St	-	-	-	-	-	-	1,358	11.0	A	2,465	20.0	C
4th St to Arrow Route	-	-	-	-	-	-	1,358	11.0	A	2,465	20.0	C
Arrow Route to Foothill Blvd	-	-	-	-	-	-	1,358	11.0	A	2,839	23.0	C
Foothill Blvd to Base Line Rd	-	-	-	-	-	-	1,358	11.0	A	2,839	23.0	C
Base Line Rd to SR-210	-	-	-	-	-	-	1,223	9.9	A	2,640	21.4	C
SR-210 to Summit Ave	-	-	-	-	-	-	1,223	9.9	A	2,640	21.4	C
Summit Ave to Duncan Canyon Rd	-	-	-	-	-	-	1,223	9.9	A	2,640	21.4	C
Duncan Canyon Rd to Sierra Ave	-	-	-	-	-	-	1,223	9.9	A	2,640	21.4	C

Table 5-8: Year 2045 Alternatives 1 and 2 Southbound Express Lanes Peak-Hour Volume & Level of Service

	SB Express Lane Peak-Hour Volume & LOS											
	2045 Alternative 1 (No Build)						2045 Alternative 2 (Build)					
	AM			PM			AM			PM		
I-15 Segment	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS	Vol	Density	LOS
Sierra Ave to Duncan Canyon Rd	-	-	-	-	-	-	3,066	25.1	C	2,560	20.7	C
Duncan Canyon Rd to Summit Ave	-	-	-	-	-	-	3,066	25.1	C	2,560	20.7	C
Summit Ave to SR-210	-	-	-	-	-	-	3,066	25.1	C	2,560	20.7	C
SR-210 to Base Line Rd	-	-	-	-	-	-	3,066	25.1	C	2,560	20.7	C
Base Line Rd to Foothill Blvd	-	-	-	-	-	-	3,300	27.4	D	2,872	23.3	C
Foothill Blvd to Arrow Route	-	-	-	-	-	-	3,300	27.4	D	2,872	23.3	C
Arrow Route to 4th St	-	-	-	-	-	-	3,068	25.1	C	3,072	25.1	C
4th St to I-10	-	-	-	-	-	-	3,068	25.1	C	3,072	25.1	C
I-10 to Jurupa St	-	-	-	-	-	-	2,826	22.9	C	2,983	24.3	C
Jurupa St to SR-60	-	-	-	-	-	-	2,895	23.5	C	3,300	27.4	D
SR-60 to Cantu-Galleano Ranch Rd	-	-	-	-	-	-	2,895	23.5	C	3,300	27.4	D

Table 5-9: Year 2045 Alternatives 1 and 2 Northbound Ramp Peak-Hour Volume & Level of Service

	NB Ramp Peak-Hour Volume & LOS											
	2045 Alternative 1 (No Build)						2045 Alternative 2 (Build)					
	AM			PM			AM			PM		
Freeway Ramps	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**
Off-Ramp to Cantu-Galleano Ranch Rd	489	44.1	F	431	50.7	F	485	38.4	E	517	40.2	F
On-Ramp from Cantu-Galleano Ranch Rd	747	Weaving		924	24.6	F	787	Weaving		1145	Weaving	
Off-Ramp to SR-60 EB	1216	Weaving		1073	29.6	D	1180	Weaving		1032	Weaving	
Off-Ramp to SR-60 WB	1170	25.9	C	1283	33.6	F	1172	23.8	C	1298	26.8	C
On-Ramp from SR-60 WB	1340	20.8	C	564	19.2	B	1530	19.7	B	1297	20.2	C
On-Ramp from SR-60 EB	1820	21.9	C	1515	20.3	C	1975	22	C	1936	22.8	C
Off-Ramp to Jurupa St	618	37.8	E	467	38.5	E	624	31.4	D	511	32.9	D
On-Ramp from Jurupa St	641	Weaving		994	Weaving		615	Weaving		1080	Weaving	
Off-Ramp to I-10 EB and WB	3093	Weaving		3306	Weaving		3094	Weaving		3306	Weaving	
On-Ramp from I-10 WB	935	27	C	450	25.1	C	968	25.5	C	720	25.7	C
On-Ramp from I-10 EB	1905	Weaving		1967	Weaving		1917	Weaving		2334	Weaving	
Off-Ramp to 4th St	997	Weaving		744	Weaving		1036	Weaving		810	Weaving	
On-Ramp from 4th St	229	22.5	C	862	27.8	C	234	21.3	C	1006	29.2	D
Off-Ramp to Arrow Route	791	35.1	E	669	38.3	E	817	27.9	C	654	32.7	D
On-Ramp from Arrow Route	151	26.2	C	654	33.7	D	123	Weaving		655	Weaving	
Off-Ramp to Foothill Blvd	1149	14.7	B	1160	20.3	C	1209	Weaving		1446	Weaving	
Loop On-Ramp from Foothill Blvd	163	22.9	C	836	33.3	D	160	20.7	C	843	32.2	D
Direct On-Ramp from Foothill Blvd	173	23.3	C	391	32.4	D	160	21	C	299	30.6	D
Off-Ramp to Base Line Rd	707	12.6	B	1070	21.4	C	831	10.2	B	1536	20.4	C
On-Ramp from Base Line Rd	537	Weaving		1241	Weaving		529	Weaving		1066	Weaving	
Off-Ramp to SR-210 EB	1657	Weaving		2714	Weaving		1746	Weaving		2945	Weaving	
Off-Ramp to SR-210 WB	300	7.6	A	171	13.9	B	421	5.2	A	222	9.7	A
On-Ramp from SR-210 EB and WB	1388	Weaving		1887	Weaving		1341	Weaving		1823	Weaving	
Off-Ramp to Beech Ave/Summit Ave	458	Weaving		1008	Weaving		482	Weaving		950	Weaving	
On-Ramp from Beech Ave/Summit Ave	333	21.5	C	570	29.3	D	331	18.4	B	570	25.5	C
Off-Ramp to Duncan Canyon Rd	286	< 1.0	A	531	6.5	A	271	< 1.0	A	417	2.3	A
On-Ramp from Duncan Canyon Rd	91	19.8	B	571	29.5	D	99	16.8	B	243	23.5	C

Table 5-10: Year 2045 Alternatives 1 and 2 Southbound Ramp Peak-Hour Volume & Level of Service

	SB Ramp Peak-Hour Volume & LOS											
	2045 Alternative 1 (No Build)						2045 Alternative 2 (Build)					
	AM			PM			AM			PM		
Freeway Ramps	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**	**Vol**	**Density**	**LOS**
Off-Ramp to Duncan Canyon Rd	175	34.1	D	137	23.9	C	126	24.7	C	171	17.3	B
On-Ramp from Duncan Canyon Rd	402	26.1	C	371	17.6	B	457	19	B	392	12	B
Off-Ramp to Beech Ave/Summit Ave	585	37.2	E	345	25.9	C	507	28	C	339	19.1	B
On-Ramp from Beech Ave/Summit Ave	1168	Weaving		543	Weaving		1253	Weaving		623	Weaving	
Off-Ramp to SR-210 EB and WB	2254	Weaving		1510	Weaving		2119	Weaving		1416	Weaving	
On-Ramp from SR-210 WB	2957	40	F	1884	24.2	C	3299	36.2	E	2175	21.3	C
On-Ramp from SR-210 EB	647	Weaving		229	Weaving		1075	Weaving		485	Weaving	
Off-Ramp to Base Line Rd	1180	Weaving		613	Weaving		918	Weaving		564	Weaving	
Loop On-Ramp from Base Line Rd	857	30.2	D	594	20.9	C	1059	29.2	D	750	20	C
Direct On-Ramp from Base Line Rd	310	39.2	F	219	21.3	C	389	34.3	F	290	19.3	B
Off-Ramp to Foothill Blvd	811	38.7	F	622	23	C	873	35	F	579	18.7	B
Loop On-Ramp from Foothill Blvd	598	41	F	521	26.1	C	838	36.6	F	739	24.5	C
Direct On-Ramp from Foothill Blvd	720	47	F	856	30.4	D	943	43	F	1137	30.1	D
Off-Ramp to Arrow Route	909	40.3	E	344	27	C	872	38.7	E	258	25	C
On-Ramp from Arrow Route	552	31.9	D	1196	29.7	D	933	33.5	D	1446	30.6	D
Off-Ramp to 4th St	911	39.3	E	702	31.5	D	1060	40.6	E	781	30.8	D
On-Ramp from 4th St	699	Weaving		1373	Weaving		702	Weaving		1452	Weaving	
Off-Ramp to I-10 EB	452	Weaving		1111	Weaving		941	Weaving		1152	Weaving	
Off-Ramp to I-10 WB	2022	34.22757	D	1589	27.3392	C	1921	32.53761	D	1324	26.75027	C
On-Ramp from I-10 EB	1892	Weaving		1566	Weaving		1679	Weaving		1447	Weaving	
On-Ramp from I-10 WB	2183	Weaving		1607	Weaving		2244	Weaving		1724	Weaving	
Off-Ramp to Jurupa St	1222	Weaving		635	Weaving		1313	Weaving		585	Weaving	
On-Ramp from Jurupa St	441	Weaving		976	Weaving		604	Weaving		1050	Weaving	
Off-Ramp to SR-60 EB and WB	3366	Weaving		3113	Weaving		4186	Weaving		3713	Weaving	
On-Ramp from SR-60 EB	1780	56.9	F	1897	48.9	F	1667	45.3	F	1626	41.9	F
On-Ramp from SR-60 WB	1488	62.8	F	1420	54	F	1397	49.8	F	1554	45	F
Off-Ramp to Cantu-Galleano Ranch Rd	809	61.9	F	602	57	F	973	45	F	748	44.9	F
Loop On-Ramp from Cantu-Galleano Ranch Rd	86	54.6	F	222	52.8	F	83	37.8	F	239	40.7	F
Direct On-Ramp from Cantu-Galleano Ranch Rd	414	65.3	F	427	63.8	F	381	48.3	F	474	52	F

Table 5-11: Year 2045 Alternatives 1 and 2 Intersection Level of Service and Delay

I-15 Segment	Intersection LOS and Delay							
	2045 Alternative 1 (No Build)				2045 Alternative 2 (Build)			
	AM		PM		AM		PM	
	Delay (veh/s)	LOS	Delay (veh/s)	LOS	Delay (veh/s)	LOS	Delay (veh/s)	LOS
Cherry Ave/Wilson Ave/Beech Ave	58.0	E	44.8	D	44.5	D	33.4	C
I-15 SB Ramps/Beech Ave	48.9	D	12.4	B	40.6	D	11.9	B
I-15 NB Ramps/Beech Ave	16.1	B	51.0	D	17.0	B	42.1	D
Falcon Ridge/Summit Heights Gateway/Beech Ave	26.5	C	26.7	C	27.1	C	27.9	C
Pecan Ave/Shelby Pl/Base Line Rd	14.8	B	27.6	C	16.5	B	23.8	C
I-15 SB Ramps/Base Line Rd	25.5	C	11.0	B	21.4	C	9.9	A
East Ave/Base Line Rd	31.7	C	52.1	D	31.2	C	42.3	D
I-15 NB Ramps/Base Line Rd	30.4	C	43.8	D	31.8	C	42.3	D
American Way/Base Line Rd	19.7	B	15.0	B	19.6	B	14.7	B
Day Creek Blvd/E. Foothill Blvd	23.0	C	49.4	D	23.7	C	51.4	D
I-15 SB Ramps/E. Foothill Blvd	15.0	B	10.5	B	16.6	B	9.9	A
I-15 NB Ramps/E. Foothill Blvd	17.7	B	17.4	B	17.2	B	21.8	C
Marketplace/E. Foothill Blvd	24.2	C	41.4	D	27.9	C	40.5	D
Buffalo Ave/Franklin Ave/E. 4th St	27.4	C	42.0	D	27.3	C	42.3	D
I-15 SB Ramps/E. 4th St	30.7	C	46.9	D	53.1	D	49.5	D
I-15 NB Ramps/E. 4th St	39.6	D	49.4	D	39.6	D	50.7	D
Santa Anita/Wineville Ave/E. 4th St	35.3	D	31.6	C	34.5	C	32.1	C
S. Rockefeller Ave/Toyota Way/E. Jurupa St	27.5	C	29.1	C	27.9	C	26.9	C
I-15 SB Ramps/E. Jurupa St	28.2	C	22.3	C	28.9	C	24.9	C
I-15 NB Ramps/E. Jurupa St	18.7	B	22.7	C	18.4	B	24.0	C
Auto Center Dr/E. Jurupa St	31.6	C	33.6	C	33.7	C	36.3	D
Hamner Ave/Milliken Ave/Cantu-Galleano Ranch Rd	24.1	C	20.5	C	26.1	C	33.8	C
I-15 SB Ramps/Cantu-Galleano Ranch Rd	20.7	C	15.0	B	23.3	C	17.7	B
I-15 NB Ramps/Cantu-Galleano Ranch Rd	20.8	C	18.9	B	20.8	C	22.9	C
Wineville Ave/Cantu-Galleano Ranch Rd	34.2	C	22.3	C	47.1	D	23.1	C
I-15 SB Ramps/Duncan Canyon Rd	17.3	B	20.7	C	18.8	B	21.2	C
I-15 NB Ramps/Duncan Canyon Rd	13.8	B	27.5	C	14.1	B	15.0	B
I-15 SB Ramps/Arrow Route	45.0	D	21.2	C	50.4	D	30.4	C
I-15 NB Ramps/Arrow Route	34.5	C	28.4	C	32.7	C	29.3	D

The analysis provided in the approved *I-15 Corridor Project Final Traffic Study Report* shows that the travel demand in the I-15 corridor will outgrow the available capacity in the foreseeable future. By 2024 parts of the corridor will experience travel speeds below 20 mph in the peak hour and by 2045 low speeds will occur for large portions of the corridor. In contrast, if the project is built then low speeds would occur in only a few places; most of the corridor would operate above 50 mph in the GP lanes. Additionally, drivers would have the option to drive more than 60 mph in the Express Lanes. Thus, while the project would not solve all of the capacity problems in the corridor, it would be a major improvement over the No Build Alternative.

5.A.2.3 Non-standard Mandatory (now referred to as Boldface) and Advisory (now referred to as Underlined) Design Features

Fact Sheets (now referred to Design Standard Decision Documents) requesting exceptions to the mandatory and advisory design standards were approved by Caltrans on September 11, 2018. **Table 5-12** and **Table 5-13** summarize the non-standard mandatory and advisory design features that have been identified to date for the project under Build Alternative. Additional design exceptions may be discovered and would be submitted for approval during the final design.

Table 5-12: Build Alternative Mandatory (now referred to as Boldface) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
202.2(1) Superelevation Rate	1. Jurupa NB Off-Ramp 74+49 – 76+70 (R=500' Rt)	9.6%	5%	5%
	2. Foothill NB On-Ramp 306+43 – 308+54 (R=300' Rt)	10.6%	-	0%-2%
	3. Foothill SB On-Ramp 298+74 – 301+56 (R=400' Lt)	9.2%	-	2%
	4. Jurupa NB On Ramp 87+42 – 88+50 (R=1750' Rt)	7.6%	-	2%-7.6%
	5. Mainline 68+36 – 87+88 (R=5000' Rt)	4.4%	-	2%
	6. Mainline 109+80 – 129+00 (R=5000' Rt)	4.4%	2%	2%
	7. Mainline 221+06.19 – 283+38.18 (R=8000' Rt)	2.8%	2%	2%
	8. Mainline 624+88.81 – 643+67.42 (R=10000' Rt)	2.2%		2%
203.2, Table 203.2 Standards of Curvature	1. Jurupa NB Off-Ramp 74+49 – 76+70	1200'	-	500'
	2. Mainline 68+36 – 87+88	11000'	-	5000'
	3. Mainline 109+80 – 129+00	11000'	-	5000'
	4. Foothill NB Off-Ramp 303+87 – 306+88	2725'	-	250'
208.1(1)(b) Bridge Lane & Shoulder Width	1. I-10/I-15 Separation, NB Inside Shoulder 148+94 – 151+28	4'	10'	2'
	2. I-10/I-15 Separation, SB Inside Shoulder 148+94 – 151+28		10'	2'
	3. I-10/I-15 Separation, SB Outside Shoulder 148+94 – 151+28		10'	3'
301.1 Lane Width	1. NB ELs and 2 Inside GPs 143+47 – 156+75	12'	__	11'
	2. SB ELs and 2 Inside GPs 143+47 – 156+75		__	11'
	3. NB ELs 232+50 – 257+50		N/A	11'-12'
	4. NB 2 Inside GPs 223+08 – 278+50		12'	11'-12'

Table 5-12: Build Alternative Mandatory (now referred to as Boldface) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
302.1, 309.1(3)(a), 309.1(2) Shoulder Width Horizontal Clearance	1. NB Inside Shoulder 2631+00 – 2632+40; 2644+17 – 2647+19; 2653+00 –2686+75; 2734+75 –51+10	10'	10'	4.1'-10'
	2. SB Inside Shoulder 2631+00 – 2638+40; 2644+17 – 2647+19; 2658+40 –2682+61; 2737+00 –35+06	10'	10'	4.1'-10'
	3. NB Inside Shoulder 76+00 – 78+32	10'	10'	6.88'-10'
	4. SB Inside Shoulder 76+00 – 78+32	10'	10'	9.16'-10'
	5. NB Inside Shoulder 143+47 – 156+75	10'	10'	2'-10'
	6. SB Inside Shoulder 143+47 – 156+75	10'	10'	2'-10'
	7. SB Outside Shoulder 147+95 – 156+75	10'	10'	3'-10'
	8. NB Inside Shoulder 223+08 – 278+50	10'	8'-35'	4'-10'
	9. NB Inside Shoulder 329+70 – 425+40	10'	7'-35'	7.25'-10'
	10. SB Inside Shoulder 329+70 – 400+80	10'	7'-35'	7.25'-10'
	11. Summit Avenue SB Entrance Ramp Inside Shoulder 527+71 – 530+72	4’	10’	2’
	12. Summit Avenue SB Exit Ramp Inside Shoulder 527+71 – 530+72	4’	10’	2’
305.1(3)(a) Median Standards	1. I-15 Median 2631+00 – 2686+75	22'	70'-82'	18'-22'
	2. I-15 Median 2734+75 – 51+10		46'-82'	18'-22'
	3. I-15 Median 148+94 – 151+28		50'	21'
	4. I-15 Median 223+08 – 278+50		46'	16.2'-22'
	5. I-15 Median 329+70 – 403+10		70'	16.5'-22'
309.2(1)(a) Vertical Clearances	1. Mainline NB (at Duncan Canyon Road OC) 606+20 – 607+70	16'-6”	17'-1”	16'-3”
309.4 Lateral Clearance	1. I-10/I-15 Separation 148+94 – 151+28	15'	Right bridge: 12.75' Left bridge: 12.75'	Right bridge: 3' and 9.5' Left bridge: 3' and 4'
	2. I-15/SR-60 Separation 2715+58 – 2718+39		Right bridge: 22.7' Left bridge: 37.2'	Right bridge: 4.2' Left bridge: 5.7'
405.1(2)(b) Corner Sight Distance	1. Miller Ave & Etiwanda Ave Intersection, Etiwanda Ave NB Rt Turn	Miller = 300' Etiwanda = 360'	<SSD	36’
	2. Miller Ave & Etiwanda Ave Intersection, Etiwanda Ave SB Rt Turn			46’
	3. Miller Ave & Etiwanda Ave Intersection, Etiwanda Ave WB Rt Turn			19’
	4. Miller Ave & Etiwanda Ave Intersection, Etiwanda Ave WB Lt Turn			29’
	5. Miller Ave & Etiwanda Ave Intersection, Church St EB Rt Turn			27’
	6. Miller Ave & Etiwanda Ave Intersection, Church St EB Lt Turn			29’

Table 5-12: Build Alternative Mandatory (now referred to as Boldface) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
501.3 Spacing	1. Between I-10 IC to Fourth St IC 150+00 – 185+90 2. Between Cantu-Galleano Ranch Rd IC and SR-60 IC 2646+00 – 2717+00 3. Between SR-60 IC and Jurupa St IC 2717+00 – 77+50 4. Between Jurupa St IC to I-10 IC 77+50 – 150+00 5. Between Base Line Rd IC to SR-210 IC 382+15 – 459+00 6. Between 210 IC to Summit Ave IC 459+00 – 531+15	Two miles	3590' 7100' 9610' 7250' 7685' 7215'	3590' 7100' 9610' 7250' 7685' 7215'
504.7 Weaving Section	1. I-15 between SB Fourth St to S15-E10 Connector 173+34 – 187+92 2. I-15 between NB E10-N15 Connector to Fourth St NB Off-Ramp 170+40 – 184+24 3. I-15 between Cantu-Galleano Ranch Rd NB Entrance Ramp to N15-E60 2650+17 – 2687+75 4. I-15 between W60-S15 to Cantu-Galleano Ranch Rd SB Exit Ramp 2658+59 – 2692+42 5. I-15 between E60-S15 to Cantu-Galleano Ranch Rd SB Exit Ramp 2658+59 – 2692+42 6. I-15 between Jurupa St NB Entrance Ramp to N15-W/E10 91+46 – 119+00 7. I-15 between E10-S15 to Jurupa St SB Exit Ramp 92+64 – 139+31 8. I-15 between W10-S15 to Jurupa St SB Exit Ramp 92+64 – 130+68 9. I-15 between Base Line NB Entrance Ramp and N15-E210 Connector 398+00 – 441+15 10. I-15 between E210-S15 Connector to Base Line SB Exit Ramp 395+20 – 431+00 11. I-15 between W210-N15 Connector to Summit Ave NB Exit Ramp 488+50 – 530+85 12. I-15 between S15-E210 Connector to Summit Ave SB Entrance Ramp 490+00 – 532+23	5000’	1457' 1384' 3758' 3383' 4733' 2754' 4667' 3804' 4315' 3580' 4235' 4223'	1457' 1384' 3758' 3383' 4733' 2754' 4667' 3804' 4315' 3580' 4235' 4223'
504.8 Access Control	1. Fourth St SB On-Ramp and Off-Ramp	Opposite Side of Local Road	No Access Control	No Access Control
504.2(2) & Fig. 504.2B	1. Fourth St NB Off-Ramp 184+25 – 189+68	570’	570’	545’

Table 5-13: Build Alternative Advisory (now referred to as Underlined) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
202.5 Superelevation Transition & Runoff	1. Foothill Blvd NB Off-Ramp 299+88 – 303+37 2. Foothill Blvd NB Off-Ramp 305+70 – 307+50 3. Foothill Blvd NB Loop On-Ramp 296+38 – 298+65 4. Foothill Blvd NB Loop On-Ramp 302+41 – 304+41 5. Foothill Blvd NB On-Ramp 307+07 – 307+42 6. Foothill Blvd SB Loop On-Ramp 304+34 – 306+81 7. Foothill Blvd SB Loop On-Ramp 309+72 – 311+91 8. Foothill Blvd SB Off-Ramp 300+76 – 302+46 9. Foothill Blvd SB On-Ramp 300+70 – 301+04	(240'+ 240')=480' 240’ 1/3(240')=80’ 2/3(240’)=160’ 1/3(300')=100’ 2/3(300)=200’ 1/3(150’)=50'; 2/3(150’)=100' 1/3(240’)=80'; 2/3(240’)=160' 1/3(240’=80’ 2/3(240’)=160' 1/3(240’)=80'; 2/3(240’)=160' 1/3(150’)=50'; 2/3(150’)=100'	- - - - - - - - -	350’ 180’ 80’, 149' 137’; 63’ 35'; 0' 200'; 40' 100’, 146' 170'; 0' 35'; 0'
202.6 Superelevation for Compound Curves	1. S15-W10 Connector 146+71 – 148+14 2. W10-N15 Connector 157+60 – 161+15 3. E10-S15 Connector 139+32 – 142+91 4. Fourth St SB Loop On-Ramp 178+17 – 182+92 5. Foothill NB Loop On-Ramp 297+85 – 306+19	Case 1 Case 1 Case 1 Case 1 Case 1	- - - - -	@0.065PCC/ Transition @0.04PCC/ Transition @0.05PCC/ Transition 0.073@PCC/ Transition Designed as one curve
203.5 Compound Curve	1. E10-S15 Connector 141+38 – 153+57 2. W10-N15 Connector 149+05 – 159+46 3. S15-W10 Connector 146+71 – 159+29 4. Fourth St SB Loop On-Ramp 174+44 – 181+92 5. Fourth St NB On-Ramp 195+76 – 202+29 6. Foothill Blvd NB Loop On-Ramp 297+85 – 306+19	Shorter radius ≥ 2/3 longer and larger radius should follow smaller radius	850'/3000' 750'/3000' 875'/3000' 150'/3000' 1000'/3200' 150'/3000'	850'/3000' 750'/3000' 875'/3000' 150'/3000' 860'/3000' 155'/3000'
204.3 Standards for Grade	1. S15-W10 Connector 141+89 – 146+72 2. E10-S15 Connector 154+45 – 157+81 3. I-15 2753+34 – 36+00 4. I-15 186+50 – 203+00 5. I-15 401+50 – 429+00	0.30% Minimum	0.03% -0.14% -0.12% 0.22% -0.29%	0.03% -0.14% -0.12% 0.22% -0.29%
203.6 Tangent Length Between Reversing Curves	1. Foothill Blvd NB Off Ramp 301+30 to 303+52	340’	222’	222’
204.4 Vertical Curve Length	1. W10-S15 Connector 134+46 – 138+46	500'	400'	400'
208.3 Bridge Median	1. I-10/I-15 Separation 148+94 – 151+28	Decked Over	50'	Not Decked Over

Table 5-13: Build Alternative Advisory (now referred to as Underlined) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
304.1(a) Side Slope	1. Mainline NB: 62+90 to 64+00, 109+50 to 119+00, 182+85 to 184+25, 212+00 to 225+20, 248+69 to 257+50, 332+00 to 332+50 2. Mainline SB: 28+00 to 33+80, 113+90 to 125+95, 167+00 to 184+92, 202+30 to 206+50, 206+50 to 218+66, 293+38 to 297+57 Ramp/Connectors: 3. W10-S15: 125+95 to 134+60 4. Jurupa NBOFF: 68+15 to 75+05 5. Jurupa NBON: 80+55 to 81+20, 93+50 to 94+50 6. Jurupa SBOFF: 77+15 to 82+50 7. Jurupa SBON: 60+00 to 67+00, 74+60 to 76+00 8. N15-W/E10: 119+00 to 132+00 9. 4th St SB OFF: right shoulder 189+61 to 191+89, 199+90 to 204+10 10. 4th ST NB ON: right shoulder 187+82 to 189+00, 194+00 to 194+15 11. Foothill Blvd NB Loop Entrance Ramp left shoulder: 300+54 to 301+09 12. Foothill Blvd NB Entrance Ramp right shoulder: 309+90 to 312+00, 314+82 to 315+21, and 318+78 to 321+19 13. Foothill Blvd SB Exit Ramp right shoulder: 302+81 to 312+25	4:1 or flatter	2:1 and 4:1	2:1
305.1(1)(a) Median Width	1. I-15 2630+38 - 2705+85; 2723+65 to 206+50 2. I-15 206+50 – 430+00	36'	36' 46'-70'	18'-36' 16'-36'
309.5(1) Vertical Clearance	1. Mission Blvd OH (NB) 2. Mission Blvd OH (SB) 3. Vina Vista OH (SB) 4. Vina Vista OH (NB) 5. Rochester OH (NB)	23'-4"	22'-2" 22'-7" 22'-8" 22'-11" 22'-9"	22'-2" 22'-7" 22'-10" 23'-0" 23'-1"
504.2(2) Figure 504.3E	1. Jurupa St NB On-Ramp 81+60 to 94+50	3000'	3000'	No 3000' Curve
504.2(4)(b) Freeway Entrance	1. W10-N15 Connector Sta 159+46	50 mph	34 mph	34 mph
504.3(9) Distance Between Successive On-ramps	W10-N15 On-ramp and E10-N15 On-ramp	About 1000'	925'	925'
504.4(2) Connector Design Speed	1. W10-N15 Connector 149+05 – 159+46	50 mph	34 mph	34 mph
504.4(5) Connector Lanes	1. W10-N15 Connector 149+05 – 161+15 2. E10-S15 Connector 139+32 – 153+57	2 lanes if L>1000'	1 lane 1 lane	1 lane 1 lane

Table 5-13: Build Alternative Advisory (now referred to as Underlined) Design Exceptions

HDM	Location and Description	HDM Standard	Existing	Proposed
504.4(6) Branch Connection	1. 4th St SB On Ramp to S15-E10 Connector 2. 4th St SB On-Ramp to S15-W10 Connector E10-S15 Connector 139+32 – 153+57	2500' Aux 2500' Aux 2 lanes	1457' Aux 2157' Aux 1 lane	1457' Aux 2157' Aux 1 lane
204.3 Standards for Grade	1. S15-W10 Connector 141+89 – 146+72 2. E10-S15 Connector 154+45 – 157+81 3. I-15 2753+34 – 36+00 4. I-15 186+50 – 203+00 5. I-15 401+50 – 429+00	0.30% Minimum	0.03% -0.14% -0.12% 0.22% -0.29%	0.03% -0.14% -0.12% 0.22% -0.29%

Several overhead signs would be placed along the I-15 median, resulting in a reduction of the median shoulder widths at spot locations. Similarly, crash cushions and various safety devices may be placed along the freeway corridor, which may reduce the shoulder width to less than the standard width. Specific locations will be identified during the final design, and thus, a request for design exceptions for these features would be deferred until the final design phase.

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 (Bus and Carpool Lanes)

Mainline

The proposed Express Lanes will be managed as tolled Express Lanes 24 hours a day, 365 days a year, and would be available as a travel choice by both SOVs and HOVs. Under the preliminary operating policy presented in the *I-10 and I-15 Express Lanes Concept of Operations Report*, the Express Lanes are anticipated to provide free or discounted travel for HOV 3+. As an additional future management strategy, SBCTA retains the flexibility to charge discounted tolls to HOV3+ vehicles during super-peak periods to avoid congestion in the ELs. It should be noted that Clean Air Vehicles including hybrids, electric vehicles, and vehicles using other sources of alternative fuel would not qualify for toll-free or discounted access to the Express Lanes. Motorcycles, marked para-transit vehicles, emergency response vehicles, and other exempted vehicles are permitted in the Express Lanes by statute.

The Express Lanes would be buffer-separated from the GP lanes by striping in combination with channelizers for most the corridor and would have 4 intermediate ingress/egress access locations. Transition areas would also be provided at the northerly end of the I-15 Corridor Project to accommodate the Express Lane transition into and out of the existing GP lane north of Duncan Canyon Road.

Ramps

Table 5-14 provides a summary of the existing and proposed locations of the HOV preferential lane at on-ramps along the project corridor. New HOV preferential lanes are also proposed at some ramp locations where geometrically feasible and right-of-way is available.

The Caltrans ramp metering policy per Deputy Directive 35-R1 requires that an HOV preferential lane be provided at every ramp meter location. Deviation from the ramp metering policy is documented in a Ramp Metering Fact Sheet and has been approved by Caltrans on September 21, 2018.

Table 5-14: Existing and Proposed High-Occupancy Vehicle Preferential Lane at On-Ramps

No.	Interchange Ramps	HOV Preferential Lane	
		Existing & No Build	Build Alternative
Northbound Ramps			
1	Cantu-Galleano Ranch Rd On-Ramp		
2	Jurupa St On-Ramp		X
3	Fourth St On-Ramp		X
4	Foothill Blvd Loop On-Ramp		

Table 5-14: Existing and Proposed High-Occupancy Vehicle Preferential Lane at On-Ramps

No.	Interchange Ramps	HOV Preferential Lane	
		Existing & No Build	Build Alternative
5	Foothill Blvd On-Ramp		X
6	Base Line Rd On-Ramp	X	X*
7	Summit/Beech Ave On-Ramp		
8	Duncan Canyon Rd On-Ramp		
Southbound Ramps			
1	Cantu-Galleano Ranch Rd On-Ramp		
2	Cantu-Galleano Ranch Rd Loop On-Ramp		
3	Jurupa St On-Ramp		X
4	Fourth St Loop On-Ramp		
5	Foothill Blvd On-Ramp		X
6	Foothill Blvd Loop On-Ramp		
7	Base Line Rd On-Ramp	X	X*
8	Base Line Rd Loop On-Ramp	X	X*
9	Summit/Beech Ave Loop On-Ramp		
10	Duncan Canyon Rd On-Ramp	X	X*

**This ramp is outside the limits of Build Alternative improvements. The existing HOV preferential lane will be retained.*

5.A.3.3 Ramp Metering

The Caltrans ramp metering policy per Deputy Directive 35-R1 requires that provisions for ramp metering be included in any project that proposes additional capacity, modification of an existing interchange, or construction of a new interchange, within the freeway corridors identified in the Ramp Meter Development Plan, regardless of funding source. In addition, Caltrans District 8 has additional criteria to consider ramp metering on all on-ramps for capacity improvement projects, including freeway-to-freeway connectors and on-ramps on or leading to collector-distributor roads.

The majority of interchange on-ramps along the I-15 corridor are currently metered. In Build Alternative, existing ramp meters impacted by the proposed project improvements will be replaced. Existing ramp meters and equipment will be reused, where possible. A new ramp meter will be added at Foothill Boulevard NB loop and direct entrance ramps as they are currently unmetered.

In addition, new ramp meters and advance warning devices such as Extinguishable Message Signs (EMSs) will be added at I-15/I-10 freeway-to-freeway connectors by this project in coordination with the I-10 Corridor Project (EA 08-0C250). Below is the list of I-15/I-10 freeway-to-freeway connectors with I-15 and I-10 Corridor Projects' responsibilities:

- EB10-NB15: This project will add ramp meter signal heads and I-10 Corridor Project will add the EMSs.
- EB10-SB15: This project will add ramp meter signal heads and I-10 Corridor Project will add the EMSs.

- NB15-E/W10: This project will add EMSs and I-10 Corridor Project will add ramp meter signal heads.
- WB10-SB15: This project will add ramp meter signal heads and I-10 Corridor Project Contract 2 will add the EMSs.
- WB10-NB15: This project will add ramp meter signal heads and I-10 Corridor Project Contract 2 will add the EMSs.
- SB15-WB10: This project will add EMSs and I-10 Corridor Project will add ramp meter signal heads.
- SB15-EB10: This project will add EMSs and I-10 Corridor Project Contract 2 will add ramp meter signal heads.

No improvements are proposed to add ramp meters at the following locations:

- Beech/Summit Avenue NB entrance ramp; and
- Freeway-to-freeway connectors (I-15/SR-60 and I-15/SR-210) that merge onto I-15.

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

Mainline

Under Build Alternative, potentially five (5) median CHP enforcement areas and eight (8) directional CHP observation areas have been identified. These CHP areas are typically located between two Express Lane access zones along tangent sections where adequate sight distance is provided. The proposed CHP locations were identified jointly by Caltrans and the CHP, Inland Division, and are shown in **Attachment H**. The proposed CHP locations are:

Proposed Median CHP Enforcement Areas

- Northbound Locations:
  - Between Fourth Street and 7th Street
  - Between Miller Avenue and Base Line Road
  - Between Summit/Beech Avenue and Duncan Canyon Road

- Southbound Locations:
  - Between Cantu-Galleano Ranch Road and SR-60
  - Between Summit/Beech Avenue and Duncan Canyon Road

Proposed Median Directional CHP Observation Areas

- Northbound Locations:
  - Between Philadelphia Avenue and Jurupa Street
  - Between Ontario Mills Parkway and Fourth Street
  - Between Arrow Highway and Foothill Boulevard

  – Between SR-210 and Cherry Avenue

- Southbound Locations:
  – Between Philadelphia Avenue and Jurupa Street
  – Between Fourth Street and 6th Street
  – Between Foothill Boulevard and Etiwanda Avenue
  – Between SR-210 and Cherry Avenue

Ramps

There are existing CHP enforcement areas on approximately one-third of the existing interchange on-ramps along the project corridor. Within the limits of the proposed I-15 improvements, a CHP enforcement area is proposed at entrance ramps where there is available room within the existing or proposed right-of-way to accommodate the enforcement area pavement.

Table 5-15 presents a summary of existing and proposed CHP enforcement areas on interchange on-ramps along the project corridor under both No Build and Build alternatives.

Table 5-15: Existing and Proposed CHP Enforcement Areas at On-Ramps

No.	Interchange Ramps	CHP Enforcement Area	
		Existing & No Build	Build Alternative
Northbound Ramps			
1	Cantu-Galleano Ranch Rd On-Ramp	X	X*
2	Jurupa St On-Ramp	X	X*
3	Fourth St On-Ramp		X
4	Foothill Blvd Loop On-Ramp		X
5	Foothill Blvd On-Ramp		X
6	Base Line Rd On-Ramp	X	X*
7	Summit/Beech Ave On-Ramp		
8	Duncan Canyon Rd On-Ramp	X	X*
Southbound Ramps			
1	Cantu-Galleano Ranch Rd On-Ramp	X	X*
2	Cantu-Galleano Ranch Rd Loop On-Ramp	X	X*
3	Jurupa St On-Ramp	X	X
4	Fourth St Loop On-Ramp		X
5	Foothill Blvd On-Ramp	X	X
6	Foothill Blvd Loop On-Ramp		X
7	Base Line Rd On-Ramp	X	X*
8	Base Line Rd Loop On-Ramp	X	X*
9	Summit/Beech Ave Loop On-Ramp	X	X*
10	Duncan Canyon Rd On-Ramp	X	X*

**This ramp is outside the limits of Build Alternative improvements. The existing CHP enforcement area will be retained.*

5.A.3.5 Park-and-Ride Facilities

No additional park-and-ride facilities are proposed as part of this project. Caltrans District 8 Park & Ride Coordinator and SBCTA have been consulted regarding park-and-ride facilities. At this time, there are no plans to add additional park-and-ride facilities along the I-15 corridor. There is one existing park-and-ride lot in vicinity of the I-15 corridor between the Riv/SBd County Line and Duncan Canyon Road as listed below:

- Victoria Street, 13850 Victoria Street in Fontana

This park-and-ride lot is part of SBCTA's mobility program that promotes public transit and carpooling/van pooling throughout San Bernardino County. Caltrans and SBCTA will continue to work together to identify the need for park-and-ride lots for the future. No improvements to the existing parking lot is proposed as part of this project.

5.A.3.6 Utility and Other Owner Involvement

Approximately 190 utilities exist within the project area including overhead and underground electrical, oil and gas pipelines, telephone and communication, cable TV, water, and sewer.

Approximately 80 utilities have the potential to be impacted by the proposed improvements under Build Alternative, including 2 cable TV, 5 fiber optic, 7 gas, 23 power/electrical, 7 sewer, 17 telephone, 17 water, and 2 recycled water. Two of these potentially impacted utilities would require minor to moderate work, such as constructing a structure or encasement around the utility, while another 2 are anticipated to require relocation due to conflict with the proposed project improvements.

Notable utility involvement includes proposed relocation of an electrical overhead line encroaching on I-15 and a proposed relocation of a steel water line. Also proposed is to protect a sewer and water line in place. The facilities are discussed in more detail in the following paragraphs.

Detailed analysis of these utilities including survey and potholing of high-risk utilities will be undertaken during the final design phase to determine the final dispositions and required actions. The estimated cost for relocation and modification of the affected utilities by the proposed improvements is $1.91 million. The Utility Information Sheets and cost estimates are attached to the Right-of-Way Data Sheet, included in this document as **Attachment J.**

Southern California Edison (SCE) Pole Relocation

Two transmission lines, owned by SCE, currently cross I-15 along Arrow Route. For the Build Alternative, steel poles will be required to relocate the Edison overhead transmission line to a proposed location to avoid conflict with the proposed structure. The relocation includes the placement of two new corner steel poles and three new in-line steel poles. The approximate relocation length is 768 feet, the relocations are as discussed below:

Easterly Line (along I-15)

The overhead 66kV transmission line with three conductors runs parallel along the east of the northbound I-15, connected by two steel poles. The support structures in the vicinity of I-15 consist of steel poles; the steel pole to the north encroaches into the proposed widened bridge section and therefore needs to be relocated. The southerly steel pole is 168 feet east of the I-15 alignment (approximately 4 feet outside the state right-of-way), the northerly pole is within the state right-of-way 126 feet east of the I-15 alignment, and supports a 66kV longitudinal overhead electrical line which crosses I-15.

The proposed project would replace the southerly steel pole in place and would replace and relocate the northerly pole along the same line 62 feet east from the existing location (175 feet from the I-15 alignment) in order to accommodate for the widened structure. These proposed changes would push the 66kV overhead line to cross outside of the state right-of-way.

Longitudinal Line (on Arrow Route)

An overhead transmission line crosses I-15 at an angle of 56 degrees, running parallel to Arrow Route centerline at approximately 38 feet south. This facility is a 66kV transmission line. Up to three in-line poles will potentially be replaced or relocated, which would slightly move the overhead line. The wooden pole (4168486E) on the east side of I-15 is proposed to be replaced with a steel pole in the same location. To the west of I-15, another wooden pole (4222552E) will be replaced with a steel pole. Also to the west of I-15 southbound direction, a steel pole (1888397E) will be relocated and replaced with a 2-foot-diameter steel pole to approximately 17 feet west of its current location and approximately 32 feet to the face of the structure. The relocation of the steel pole in the parking lot, south of Arrow Route, is assumed based on a conservative approach and the need for replacement of relocation of this pole should be determined during final design.

Construction

The relocation south of Arrow Route east of I-15 is on private property and therefore will require a Permanent Easement and Temporary Construction Easement (TCE). Details regarding these easements are presented in Right-of-Way Data Sheet under **Attachment J** and **Attachment O**. A lead time of 18 to 24 months from the date of the SCE's approved relocation design is typically required for fabrication of tubular steel poles.

Cucamonga Valley Water District (CVWD) Water Line Relocation

An 8-inch steel CMLW CVWD water line runs parallel to the south of the Metrolink railroad tracks under Rochester Bridge. There is currently a conflict with the proposed bridge columns and the current location of the water line. The proposed relocation would move the water line to a clear distance from the proposed footing to avoid any conflict. Only 270 feet of the pipe would be moved approximately 4 feet north of the existing location just in the area where the bridge columns are placed. The relocation limits are approximately 120 feet west of the I-15 alignment to 140 feet east of the I-15 alignment.

Utilities to be Protected in Place

CVWD 15-inch VCP Sewer (at Day Creek Channel)

A 15-inch vitrified clay pipe (VCP) sewer line owned by CVWD is located under Day Creek Bridge. The proposed bridge footing columns are located adjacent to the sewer line 5 feet to the west; therefore, it would be best to protect the 15-inch sewer line in place with a 36-inch concrete encasement of about 200 feet in length.

IEUA 36-inch Mortar Lined and Coated Steel Pipe (on East Avenue)

An Inland Empire Utilities Agency (IEUA) recycled water line with a 36-inch mortar lined and coated steel pipe concrete encasement runs parallel to the proposed footing columns on East Avenue Bridge. The line currently is located 2 feet east of the footing. Due to the near proximity to the footing columns, it is best to protect the line in place with a 48-inch concrete encasement of nearly 200 feet in length.

Longitudinal Encroachments

The preliminary utility investigation performed for Build Alternative indicates that there are approximately 70 longitudinal encroachments on the state right-of-way. The majority cross the freeway while there are a few that run parallel to the freeway. Approval from Caltrans Headquarters for exceptions to the Caltrans' longitudinal encroachment policy would be necessary for any utilities that are proposed to remain in their existing locations. Such approval would be obtained during the final design phase. Further discussion and coordination will be needed with the utility companies during the final design phase of the project to determine options for protecting in place or relocating these existing utilities. If necessary, approval for exceptions to the Caltrans' longitudinal encroachment policy will be sought later in the project development process. **Table 5-16** provides a list of potential longitudinal encroachment facilities with a description/location of the line and the angle to the freeway's alignment. These utilities are not anticipated to adversely affect the safety, design, construction, maintenance, or stability of the highway.

Table 5-16: Longitudinal Encroachments

No	Location	Description	Angle
1	Along east side of EB SR-60 connector to NB I-15	One 12kV SCE underground electrical distribution line along I-15 (Sta 2726+00 to 2741+20).	NA
2	North of Mission Blvd (Sta 2747+50)	Two 220kV SCE overhead electrical transmission lines.	59
3	South of Jurupa St (Sta 65+80)	Three 500kV SCE overhead electrical transmission lines.	51
4	South of Seventh St, along southbound I-15 (Sta 224+20 to 225+35)	Two 4" Frontier telephone conduits.	NA
5	West of Day Creek Channel (Sta 255+90)	Two 500kV SCE overhead electrical transmission lines	25
6	Along Day Creek Channel (Sta 262+65)	A 15" VCP CVWD sewer line crosses under I-15.	31
7	South of Arrow Route (Sta 264+40 and 264+95)	Two 220kV SCE overhead electrical transmission lines.	31
8	South of Arrow Route along northbound I-15 (Sta 266+50 to 268+60)	A 66kV SCE overhead electrical transmission line.	NA
9	(Sta 267+75)	A 66kV SCE overhead electrical transmission line.	56
10	(Sta 268+00)	A 16" CCWD water line.	54
11	(Sta 268+00)	A 12kV SCE underground electrical distribution line.	56

Table 5-16: Longitudinal Encroachments

No	Location	Description	Angle
12	(Sta 268+10)	Four 4” Frontier telephone conduits.	56
13	(Sta 268+10)	An ATT fiber optic transmission line.	
14	(Sta 268+23)	A 12kV SCE underground electrical distribution line.	56
15	(Sta 268+30)	A 30” VCP CVWD sewer line	58
16	(Sta 268+600)	An 8” SCG transmission gas line.	56
17	(Sta 268+70)	A 36” SCG transmission gas line.	56
18	(Sta 268+75)	A telephone line.	56
19	(Sta 303+55)	A 10” CMLW steel CVWD water line.	45
20	(Sta 304+70)	A 12” CML CVWD water line with 24” steel casing.	45
21	(Sta 305+15)	Four 4” Frontier telephone conduits.	45
22	(Sta 340+20)	A Sunesys fiber optic line in a Frontier duct.	46
23	(Sta 340+50)	A 30” CMLC CVWD water line.	45
24	(Sta 340+80)	Four 4” Frontier telephone conduits.	45
25	(Sta 340+95)	A 15” VCP CVWD sewer line	45
26	(Sta 340+95)	Six 4” Frontier telephone conduits.	45
27	(Sta 341+10)	A 6” SCG distribution gas line.	45
28	(Sta 341+30)	A 12” CVWD water line.	45
29	(Sta 340+40)	A 30” CMLC CVWD water line.	45
30	(Sta 340+50)	A 12kV SCE underground electrical distribution line.	45
31	(Sta 340+70)	A 6” SCG distribution gas line.	45
32	(Sta 340+90)	A 30” CMLC CVWD water line.	45
33	(Sta 341+00)	A 12kV SCE underground electrical distribution line.	45
34	(Sta 341+20)	A 12kV SCE underground electrical distribution line.	45
35	(Sta 379+10)	A 15” VCP CVWD sewer line.	45
36	(Sta 379+20)	A 36” IEUA recycled water line with concrete encasement.	45
37	(Sta 379+60)	A 24” CMLC Steel CVWD water line.	45
38	(Sta 379+70)	A 12kV SCE underground electrical distribution line.	45
39	(Sta 379+75)	A 12” CMLW CVWD water line.	45
40	(Sta 379+85)	Four 4” Frontier telephone conduits.	45
41	(Sta 381+48)	A closed-circuit television cable.	45
42	(Sta 381+95)	A 41” SGVMWD water line.	45
43	(Sta 382+55)	A 24” IEUA recycled water line with concrete encasement.	45
44	(Sta 382+80)	A 12” CMLW CVWD water line.	45
45	(Sta 382+85)	A 12kV SCE underground electrical distribution line.	45
46	(Sta 382+90)	Two 4” Frontier telephone conduits.	45
47	(Sta 382+95)	Four 4” Frontier telephone conduits.	45
48	Along abandoned railroad/bike path (Sta 398+30)	Six 2” Sprint fiber optic cables in steel casing.	45
49	North of abandoned railroad/bike path (Sta. 405+00)	12” CMLW CVWD waterline	NA
50	(Sta 417+35)	A 12” CMLC CVWD water line.	45
51	(Sta 417+50)	A 10” SCG distribution gas line.	40
52	(Sta 417+46)	A 15” VCP CVWD sewer line	45
53	(Sta 417+55)	Four 4” Frontier ducts.	45
54	(Sta 417+70)	A 12kV SCE underground electrical distribution line.	45
55	(Sta 490+65)	A 21” VCP City of Fontana sewer line.	45
56	(Sta 491+55)	Four 4” Frontier telephone conduits.	45
57	(Sta 491+60)	A TWC television cable.	45
58	(Sta 491+75)	A 12kV SCE underground electrical distribution line.	45
59	(Sta 517+00)	Nine 4” Frontier telephone conduits.	49
60	(Sta 517+60)	Six 4” Frontier telephone conduits.	49
61	(Sta 529+20)	A 30” CLC FWC water line in 54” casing with 34” wall.	48
62	(Sta 530+50)	An 8” SCG distribution gas line with encasement.	49
63	(Sta 531+50)	A 12kV SCE underground electrical distribution line.	49
64	North of Beech Avenue along southbound I-15, over southbound ramps (Sta 530+00 to 543+00)	A 12kV SCE underground electrical distribution line.	NA
65	(Sta 570+15)	A 96” prestressed concrete MWD water line with 97.5” steel casing.	45
66	(Sta 577+10)	A 12kV SCE overhead electrical distribution line.	26
67	(Sta 583+85)	Four 4” Frontier telephone conduits.	45
68	(Sta 605+35)	A 12kV SCE overhead electrical distribution line.	46
69	North of Duncan Canyon (Sta 638+50)	A 12kV SCE overhead electrical distribution line.	36

Table 5-16: Longitudinal Encroachments

No	Location	Description	Angle
70	(Sta 2596+00 to Sta 661+00)	There is the potential for a dedicated fiber-optic system for the Express Lanes communications system which would run for the length of the project within Caltrans right-of-way. The conduit location would be determined during final design and would require a longitudinal encroachment exception.	NA

Toll System Communication Network

This project will install new fiber-optic conduits to support Express Lane operations. The design and location of this fiber-optic communication network will be determined during final design and hence additional longitudinal encroachment approval will be required during final design phase.

5.A.3.7 Railroad Involvement

There are three railroad crossings within the project limits, all of which would be impacted in Build Alternative. A summary of the required improvements for the railroad bridges is presented in **Table 5-17**.

Table 5-17: Railroad Improvements

No.	Facility	Type	Track	Owner	Location	Disposition
1	Mission Blvd	OH	Double	UPRR	Along Mission Blvd	Median Widen
2	Vina Vista	OH	Triple	UPRR	South of I-10	Outside Widen
3	Rochester	OH	Single	Metrolink	South of Arrow Route	Median & Outside Widen

The Los Angeles Sub Division crosses under I-15 via an OH structure along Mission Blvd, north of SR-60 in the cities of Eastvale and Jurupa Valley. This facility is owned and maintained by UPRR with two tracks between the 3rd and 4th bridge bents. A sidetrack is also present between the 2nd and 3rd bridge piers for this facility. In Build Alternative, both Mission OH structures (left and right) would be widened into the median. The existing crash walls at the west and east ends would be extended by a proposed crash wall. Due to the insufficient horizontal clearance between the existing side track and the proposed crash wall, approximate 900-foot relocation of the side track is proposed. One TCE may potentially be required from two (2) UPRR parcels for the side track relocation. A coordination meeting was held with UPRR on September 18, 2015. The proposed improvements described above were discussed in the meeting. A copy of the meeting minutes was distributed to all attendees.

The Yuma Sub Division crosses under I-15 via the Vina Vista OH structure north of Airport Drive and south of I-10 in the City of Ontario. This facility is owned and maintained by UPRR with double tracks between the 2nd and 3rd bridge bents. In Build Alternative, the Vina Vista OH structure would be widened on both sides. The vertical clearance under the proposed widening is 22 feet 10 inches, which is less than the standard vertical clearance of 23 feet 4 inches, but greater than the existing minimum vertical clearance of 22 feet 8 inches. A coordination meeting was held with UPRR on September 18, 2015. The proposed improvements described above were discussed at the meeting and a copy of the meeting minutes was distributed to all attendees.

The San Gabriel Sub Division crosses under I-15 via the Rochester OH structure north of 6th Street and south of Arrow Route in the City of Rancho Cucamonga. The facility is owned by SBCTA and maintained and operated by BNSF with single track between the 2nd and 3rd bridge bents. Metrolink has a shared use agreement with BNSF, so Metrolink was able to represent BNSF for this project. In Build Alternative, median and outside widening would be required for both Rochester OH structures (left and right). The vertical clearance under the proposed widening is 23 feet 1 inches, which is lesser than the standard vertical clearance of 23 feet 4 inches, but greater than the existing minimum vertical clearance of 22 feet 9 inches. The existing horizontal clearances would be maintained under the proposed condition. The above improvements have been discussed with Metrolink on October 10, 2015. A copy of the meeting minutes was distributed to all attendees.

Separate Construction and Maintenance Agreements with the UPRR and Metrolink will be needed for construction of the structure modifications and replacements. Service Agreements for flagging and plan review will also be required with UPRR and Metrolink. The flagging cost has been included in the project cost estimate.

5.A.3.8 Highway Planting

According to the PDPM Chapter 29, Highway Planting for this project is warranted. Existing planting and irrigation systems removed during construction of the proposed improvements will be replaced wherever space is available and in accordance with the Environmental Commitments Record (ECR). Generally, existing vegetation in and around the interchange areas would be replanted. Planting and irrigation design will be provided during the final project design and will consider safety, maintainability, drainage where earthwork is involved, and aesthetic compatibility with adjacent urban communities. Quantity, size, and location for replacement planting will be determined by the District Landscape Architect. Irrigation controller cabinets will be connected to the fiber-optic communication system.

The landscape design will incorporate aesthetic and landscape elements recommended in the *I-15 Project Aesthetics and Landscape Masterplan (PALM)* document and will take into consideration that segments of the I-15 freeway are identified as Classified Landscaped Freeways per the criteria of the 2014 Edition of the State Outdoor Advertising Act and Regulations, Sections 2500-2513. The freeway segments within the following project limits have been landscaped within the state right-of-way; therefore, landscaping would be replaced if removed by the project. Quantity of replacement planting will be calculated to meet the requirements for continuous planting. The irrigation system for the replacement planting shall comply with the Model Water Efficient Landscape Ordinance.

- PM 5.27/5.99 (Foothill Boulevard to south of Etiwanda Avenue)
- PM 7.56/10.11 (south of SR-210/I-15 interchange to north of Summit Avenue)

It is anticipated that vegetation removal will occur between PM 5.27 and PM 5.99 segment only. A Tree removal and Replacement Plan will be prepared, identifying locations and types of trees to be removed and trees to be protected in place. Final review and approval of the plan will be made by the District Landscape Architect prior to any tree removal. No outside widening is proposed between PM 7.56 and PM 10.11. It is anticipated that replacement planting, including a plant establishment period, will be included in the highway construction contract. An exception has been approved by Caltrans for deviation from the Caltrans Highway Planting General Policy, which requires replacement planting over $300,000 be split from the roadway construction contract and implemented as a separate follow-up contract. It is anticipated that replacement planting, including a 1-year plant establishment period will be included in the highway construction contract. It is also anticipated that a separate contract will be procured for the 2-year Establish Existing Planting (EEP) period.

5.A.3.9 Erosion Control

Erosion control is considered to assure storm water quality compliance and minimize maintenance requirements.

Erosion control measures will be implemented during construction as well as after the project completion in accordance with the requirements of the Santa Ana Regional Water Quality Control Board and the current Statewide National Pollutant Discharge Elimination System (NPDES) Construction General Permit, issued July 1, 2010 and Order No. 2012-0006-DWQ (effective July 17, 2012). A Stormwater Data Report (SWDR) documents storm water-related decisions like, temporary and permanent Best Management Practices (BMPs) for temporary and long-term measures. Permanent BMPs recommended for consideration in the SWDR include Design Pollution Prevention (DPP) infiltration areas. During construction, potential construction site BMPs, such as temporary fiber rolls, temporary mulch, drainage inlet protection, concrete washout facilities, street sweeping, and hydroseeding, will be used to minimize erosion. All finished slopes will receive replacement planting or vegetative erosion control application for final slope stabilization. In areas where hydroseed is used as an erosion control method, temporary irrigation will be required to initiate seed germination and to establish planting. Upon establishment, as determined by the District Landscape Architect, irrigation will be discontinued. The effectiveness of the proposed erosion control practices will be verified during the design phase by using one of the procedures outlined in Section II.D1 of the Construction General Permit.

The amount of disturbed soil area associated with the project improvements is estimated at approximately 157 acres for Build Alternative. The project has been categorized as Risk Level 2 for the Santa Ana River Watersheds based on the estimated amount of construction sediment yield and proximity to sensitive receiving waters.

The cost for erosion control, NPDES regulatory requirements and construction site BMPs have been included in the project cost estimate. Specific erosion control measures and construction site BMP design will be developed during the final project design. Preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) will be required prior to construction.

5.A.3.10 Noise Barriers

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

Based on comments received during the comment period for the project DED and the results of noise barrier surveys which were sent out on March 21, 2018 which referenced a public meeting on April 5, 2018, four of the five noise barriers received a sufficient level of support (from the benefitted receptors that voted) to continue planning those walls to be constructed. The wall planned to be constructed in front of the Scandia Amusement Park, barrier S-95, was the only barrier that did not receive sufficient level of support. Based on comments and results of noise barrier surveys, additional noise modeling was performed and it was determined that barrier S-344 needed to be extended approximately 1,130 feet, and S-353 and S-396 needed to be shortened by 300 and 200 feet, respectively. These revisions are captured in NSR and NADR addendums.

The Build Alternative recommends four noise barriers. The recommended noise barriers are new soundwalls and are summarized in **Table 5-18**.

The results of the reasonableness analysis and preliminary recommendation for noise barriers are fully discussed in Chapter 2 Section 2.2.7 of the Environmental Document prepared for the I-15 Corridor Project. The recommended noise barriers range from 12 to 14 feet in height and would be typically located along the freeway/ramp edge of shoulder.

Table 5-18: Noise Barriers

No.	Noise Barrier No.	Side of Freeway		Location	Height (feet)	Length (feet)
		NB	SB			
1	S-344 Mainline	X		Along the outside edge of shoulder of the NB Foothill Blvd on-ramp, transitioning to NB mainline, and terminating on the NB Base Line Road off-ramp	14	6480
	S-344 Ramp	X		Along the outside edge of shoulder of the NB Foothill Blvd Loop on-ramp from north of Foothill Blvd undercrossing to the gore point of the NB Foothill Blvd on-ramp.	14	630
2	S-353		X	Along the outside edge of shoulder of the Base Line Road on-ramp, transitioning to SB mainline, and terminating south of Etiwanda Ave undercrossing	14	3702
3	S-396 Mainline	X		Along the outside edge of shoulder of the NB mainline north of the Base Line Road overcrossing, and terminating at the gore point of the NB Base Line Road on-ramp	12	635
	S-396 Ramp	X		Along the outside edge of shoulder of the NB Base Line Road on-ramp, transitioning to NB mainline, and terminating north of the Pacific Electric Trail overhead	12	899
4	S-411		X	Along the outside edge of shoulder of the SB mainline over the Victoria Street Undercrossing	14	1498

The Design Builder will complete construction of all noise barriers (S-344, S-353, S-396, and S-411) prior to commencement of heavy civil and structural work on the freeway between Foothill Boulevard Undercrossing and Victoria Street Undercrossing to reduce construction and operational noise impacts to developments adjacent to the corresponding portions of the project area that include sensitive receptors.

5.A.3.11 Non-Motorized and Pedestrian Features, etc.

Existing bike lanes and trails within the project limits will be maintained. Under the Build Alternative, the project proposes reconstruction of Foothill Boulevard Interchange ramps, which has bike lanes along the WB and EB directions. The project would restripe the existing bike lane in kind.

Existing sidewalks within the project limits will be maintained. Under the Build Alternative, the project includes reconstruction of Foothill Boulevard Interchange ramps which would require modifications to sidewalks along the south and north sides of Foothill Boulevard. The project would replace the existing sidewalk on this street in kind. Existing curb ramps at ramp termini and other locations on arterials within the project area being improved would meet current Americans with Disabilities Act (ADA) standards.

Existing pedestrian and bicycle/trail facilities within the project limits are anticipated to be maintained during construction, except where the arterial roadways are closed to traffic during construction. A Transportation Management Plan (TMP) will be prepared prior to construction, in accordance with *Temporary Pedestrian Access Route*, *July 2017* requirements, to identify methods to minimize impacts to pedestrian and bicycle traffic.

An existing multi-purpose trail, also known as the Pacific Electric Trail, was converted from an abandoned railroad track at Etiwanda OH. The trail is located north of Base Line Road and south of Victoria St in the City of Rancho Cucamonga and City of Fontana. The trail runs between the 2nd and 3rd bents of the OH structure. In Build Alternative, both Etiwanda OH structures (left and right) would be widened into the median. The existing minimum vertical clearance of 23 feet 6 inches would be maintained. In the area of the Etiwanda OH, the construction contractor will erect all falsework during nighttime hours. The falsework required to construct the Etiwanda OH will not be located within the Pacific Electric Trail paved area. At a minimum, access for Pacific Electric Trail users must be maintained daily between 5:00 AM and 9:00 PM during construction. A full closure of the Pacific Electric Trail and the Class I bicycle facility would be necessary for two to three weeks from 9 PM To 5 AM during both installation and two to three weeks from 9 PM To 5 AM during removal of falsework below the Etiwanda OH bridge median widening. The City of Rancho Cucamonga and City of Fontana would receive closure information a minimum of 90 days in advance of the closure so that the City can coordinate with the SBCTA to 1). inform the Trails Advisory Committee of the proposed work, and 2). determine the appropriate alternate reroute/detour information and applicable signs. SBCTA shall provide notice of the closure to all property owners and residents within 660 feet of the limits of the area of work a minimum of 30 days in advance of the closure.

5.A.3.12 Needed Roadway Rehabilitation and Upgrading

The existing I-15 freeway mainline is composed of Portland Cement Concrete (PCC) pavement. Freeway outside shoulders are composed of PCC pavement north of Seventh Street Undercrossing and Asphalt Concrete (AC) pavement south of Seventh Street Undercrossing. Freeway median is composed of PCC pavement north of Seventh Street Undercrossing and combination of PCC and AC south of Seventh Street Undercrossing. Freeway interchange ramps, and local streets typically consist of AC pavement. The 1st and 2nd GP lanes pavement is generally in good condition. The pavement rehabilitation project (EA 08-47221) continuously replaced concrete pavement slabs in the 3rd and 4th GP lanes, replaced median pavement with a combination of AC and PCC, and overlaid the AC outside shoulders in both directions between SR-60 and Seventh Street. The other pavement rehabilitation project (EA 08-47222) continuously replaced concrete pavement in the 3rd and 4th GP lanes, median, and outside shoulders in both directions between Seventh Street and Etiwanda Overhead. This rehabilitation project also added AC overlay for the outside shoulders in both directions between Etiwanda Overhead (Pacific Electric Trail) and Sierra Avenue.

Capital Preventive Maintenance (CAPM), Concrete Pavement Rehabilitation B (CPR B) which involves pavement grinding, spall repair, and joint and seal repair of existing concrete pavement will be performed where necessary. The exact locations and limits of CPR B activities would be determined during final design. The I-15 Corridor Project primarily consists of freeway widening, interchange ramp reconstruction, and structure widening. The project does not specifically include roadway rehabilitation and upgrading. Damage to the existing pavement because of project construction activities would be repaired by the project.

5.A.3.13 Needed Structure Rehabilitation and Upgrading

Build Alternative would require modification of existing structures. As part of the APSs performed for the project, each of the structures to be modified has been reviewed qualitatively with respect to the general seismicity and the structure system of the final configuration for potential seismic vulnerabilities. Rehabilitation or seismic upgrading is anticipated for some of the structures as summarized in **Table 5-19**. The cost for seismic retrofits has been included in the project cost estimate. Further investigation and analysis will be required during the final design to confirm the need for retrofit for all structures being modified by the project.

Table 5-19: Structure Rehabilitation and Upgrading Needs

No.	PM	Structure Name	Bridge No.	Proposed Retrofit
1	51.45	I-15/SR-60 Separation	56 0691 L/R	Construct infill walls between columns
2	51.95	Mission Blvd OH	56 0695 L/R	Retrofit existing bent cap
3	2.15	Vina Vista OH	54 0907 L/R	Construct infill walls
4	2.37	I-15/I-10 Separation	54 0909 L/R	Construct infill walls
5	4.1	Rochester OH	53 0919 L/R	Retrofit existing bent cap
6	5.28	US 66/Foothill Blvd UC	54 0922 L/R	Construct infill walls between columns
7	7.08	Etiwanda OH (Abandon RR)	54 0963 L/R	Add steel column casing, footing enlargements, and add piles at the bents
8	8.83	Cherry Ave UC	54 0970 L/R	Add steel column casing and footing enlargements at the bents

5.A.3.14 Cost Estimate

The cost estimate for the Build Alternative is provided in **Table 8.2** and **Table 8.3**. **Attachment I** provides a detailed breakdown of the project construction cost elements for the Build Alternative.

5.A.3.15 Right-of-Way Data

The right-of-way costs, including utility work for Build Alternative are presented in **Table 5-20**. The Right-of-Way Data Sheet, which provides detailed information and right-of-way costs for Build Alternative are included in **Attachment J**.

Table 5-20: Build Alternative Right-of-Way Cost

Estimated Cost	**Build Alternative**	
	Current (in 2017 Dollar	**Escalated**
Right-of-Way Acquisitions	$1,384,055	$1,683,915
Utility Work	$2,292,000	$2,800,000
Total Right-of-Way & Utility Cost	**$3,676,055**	**$4,483,915**

5.A.3.16 Effect of Projects Funded by Others on State Highway

The I-15 Corridor Project would favorably affect the capacity and operating characteristics of the freeways and interchanges within the improvement limits. The Express Lanes proposed in Alternative 2, Build Alternative, would provide additional capacity as well as long-term congestion management to better handle the future traffic demand and provide sustainable trip reliability for the corridor as in comparison to Alternative 1, No Build Alternative.

It is worth noting that if selected for implementation, the I-10 and I-15 Express Lanes will be built and operated independently of one another. In the future, Express Lane direct connectors may be constructed as a separate project, connecting certain movements between the I-10 and I-15 Express Lanes to complete the Express Lane network between two of the county's major freeways.

5.B Rejected Alternatives

The No Build Alternative (Alternative 1) and Build Alternative (Alternative 2) are carried over from PSR-PDS phase to PA&ED phase.

Over the past several years, SBCTA and Caltrans have analyzed alternatives to increase mainline capacity along the I-15 corridor. Additionally, SBCTA has conducted feasibility studies to explore potential funding options for the corridor improvements. The conclusion of this effort identified funding and revenue limitations for this corridor that would preclude funding the project through traditional funding sources. Due to these funding constraints, the SBCTA Board of Directors concluded the only financially viable alternative for the I-15 corridor is the implementation of Express Lanes. The I-15 Corridor Project would be financed primarily through Measure I, TIFIA loans, and toll revenue bonds. No other alternatives would be financially viable and hence, were not considered in the PA&ED phase. Consequently, the PA&ED documents have exclusively focused on the analysis and evaluation of this single Build Alternative (Alternative 2).

Reversible Lanes

Consideration was given to the reversible lanes configuration and it was determined that it is not feasible. It therefore was rejected as a build alternative for the project and was not considered in the environmental review. The following is a discussion of the reasons for rejecting this alternative:

Geometric Feasibility of Reversible Lanes

Within the project limits, I-15 is generally an eight-lane divided, controlled-access freeway with four GP lanes in each direction and auxiliary lanes along portions of the freeway. The existing median width varies from 46 feet to 70 feet.

Freeway reversible lanes facilities must be separated by concrete barriers on both sides in a high-speed roadway setting. They are typically constructed in the median of freeway facilities and may be one, two or more lanes wide. Shoulders are required on both sides of the reversible lane(s) to accommodate travel in both directions. To provide continuous reversible lanes, the reversible lane facility would need to be constructed either along the northbound or southbound direction to avoid conflicts with overcrossing and connector columns in the median. The presence of existing overcrossing bridge columns in the median at the I-10/I-15 interchange restrict the additional inside and outside widening required to provide shoulders on both sides of reversible lanes as well as additional inside shoulders for existing GP lanes in each direction. Similar constrains exist at the SR-60/I-15 interchange. At Jurupa Street overcrossing, additional widening is restricted by existing bridge abutments, requiring complete structure replacement.

The existing grade differential up to 1 foot between the NB and SB roadbeds through most of the I-15 corridor within the project limits does not permit a sideways lane change to access in and out of the reversible lanes at proposed access locations. Instead, a ramp would need to be constructed at access locations to provide a smooth transition between the two uneven roadbeds. Additional outside widening may be required to provide room for the crossover ramp. The existing grade differential may also limit the number of access locations for traffic to either enter or exit the reversible lane facility.

Traffic Demand and Analysis of Reversible Lanes on I-15

Reversible lanes add capacity to the peak direction by borrowing capacity from the off-peak direction. Traffic characteristics for successful implementation of reversible lanes consists of facilities that experience large directional traffic imbalances and congestion during peak periods and are forecast to do so in perpetuity. To warrant reversible lanes, peak-period traffic volumes should forecast substantial directional imbalance. A directional split of 70/30 percent is commonly used as a threshold for the level of traffic imbalance needed to warrant a reversible facility. The majority of I-15 within the project limits has a directional split of approximately 50/50 percent.

Reversible lanes would not fulfill the purpose and need of the proposed project in that it would only provide congestion relief in one direction of travel while congestion occurs simultaneously in both directions through much of the project limits. Exhibits 23 and 24 (see **Attachment Q**) in the *I-15 Corridor Project Final Traffic Study Report* show that existing peak-hour traffic volumes in the southern portion of the project limits are similar in both directions of travel making the reversible lanes alterative not suitable for the corridor. Exhibits 84 and 85 (see **Attachment Q**) in the *I-15 Corridor Project Final Traffic Study Report* show that substantial delays are expected in both directions of travel in both the AM and PM peak period for the foreseeable future.

Typically, reversible lanes are operated by remotely opening and closing gates at access points twice every 24 hours during low-volume periods between the directional peaks. This corridor has low volumes only at night; it does not have a low-volume midday period when operations could be conveniently reversed (see Exhibits 23 and 24 in **Attachment Q**). This means that the process of closing gates must occur during periods of relatively high traffic volumes, causing operational issues.

Conclusion

As a result of geometric and traffic operations constraints, and potential safety issues described herein, reversible lanes would not be a feasible alternative and would not meet the purpose and need of the project. Hence, this alternative has been eliminated from further consideration.

Proposing reversible lane within the corridor would also be inconsistent with RCTC’s I-15 Tolled Express Lanes Project (EA 08-0J080), which is currently under construction between El Cerrito Road and SR-60. Implementing reversible lanes would also be inconsistent with SCAG’s RTP.

6 CONSIDERATIONS REQUIRING DISCUSSION

6.A Hazardous Waste

An Initial Site Assessment (ISA) Report was completed for the project (June 2016). Based on the ISA, there are no recognized environmental conditions (RECs), including historic RECs and controlled RECs, within and adjacent to the project area. However, the ISA identified the following concerns:

- Residual organochlorine pesticides (OCPs) and arsenical herbicides that may exist in the subsurface soil based on the historical agricultural land use in the project area.
- Hazardous material and heavy metals including arsenic in areas where the project area crosses railroad rights-of-way at the Mission Boulevard railroad overhead, the Vina Vista railroad overhead, the Rochester railroad overhead, and the Etiwanda railroad overhead.
- Aerially Deposited Lead (ADL) since the project corridor is a historical and existing transportation corridor with the potential for the presence of ADL.
- Asbestos and lead-based paint in structures (bridges) that are proposed to be demolished and/or modified as a result of this project.
- Hazardous material in soils from the Etiwanda Disposal Site that pre-dates the I-15 with a portion of the facility located within the project corridor. There is the potential for impacted soils to have been incorporated into fill surrounding the Victoria Street Bridge during the construction of the corridor.

Based on the ISA recommendations, Hazardous Materials Survey Report (April 2017) was completed for the investigation of asbestos and lead-based paint. A Site Investigation and Aerially Deposited Lead Survey Report (May 2017) was completed for ADL and other soil investigation.

Asbestos

Detectable concentrations of asbestos greater than 0.1 percent are present in some of the finishes tested at the Victoria Street Undercrossing, the Etiwanda Overhead, the Base Line Road Undercrossing, the Rochester Overhead, and the I-10/I-15 Separation. Work that involves these structures and impacts asbestos-containing materials, as defined by 8 CCR 1529, would be considered asbestos-related work. State License Board-licensed contractor holding a California Department of Occupational Safety and Health registration would be required to handle the asbestos-related abatement work. Work performed during activities (i.e., drilling, cutting, sanding, scraping) that disturb the asbestos-containing materials would be done in compliance with the most recent editions of applicable federal, state, and local regulations, standards, and codes for governing abatement, transport, and disposal of asbestos-containing materials. Materials encountered on the bridge structures that are not part of the completed investigation would be required to properly be sampled for the content of asbestos or assumed to be asbestos-containing prior to disturbance.

Lead-Based Paint

There were no surface coatings that contained lead, defining them as lead-based paints (LBPs), in accordance with 17 CCR 35001 et. seq., and 8 CCR 1532.1. However, Occupational Safety and Health Administration (OSHA) considers any detectable LBP concentration as potentially hazardous to workers who would be exposed to the airborne contaminate. Therefore, all painted or coated surfaces would be treated as potentially containing lead. Chromium-containing coatings were identified in center striping paint on the Etiwanda Overhead Bridge, the Base Line Road Undercrossing Bridge, the I-15/SR-66 Separation Bridge, and the I-15/SR-60 Separation Bridge at concentrations ranging from 4.6 to 39 milligrams per kilogram, within the yellow safety paint striping used to demarcate the median on the bridges. Yellow striping paint that must be removed at these locations would be handled and managed in accordance with 8 CCR 1532.2.

ADL

Based on the site investigation, including ADL survey data and statistical analysis, the soil is classified as non-hazardous and below residential health risk levels with no restrictions to use according to the soil management agreement between the Department of Toxic Substances Control (DTSC) and Caltrans.

Railroad Site Related Hazardous Material

Two samples in the vicinity of the Etiwanda Overhead bridge abutment contained concentrations of arsenic greater than the US EPA regional screening levels and the DTSC recognized southern California background arsenic concentration of 12.0 mg/kg.

Based on the results of the Railroad Abutment Investigation, a soil management plan according to DTSC guidance would be required to address the arsenic impacts identified beneath the Etiwanda Overhead. The soil management plan would consist of segregation and stockpiling of soils excavated between 1.0 and 5.0 feet below ground level in the vicinity of the Etiwanda Overhead, waste profile sampling of segregated soils, and, if necessary disposal of arsenic impacted soil at an approved disposal facility

Agriculture and Disposal Site Hazardous Material

Based on the results of the soil samples collected along the I-15 alignment and in the vicinity of the Former Etiwanda Disposal Site, the alignment is not shown to be affected by the former agricultural activities or the former Etiwanda Disposal Site.

6.B Value Analysis

A Value Analysis (VA) study was conducted over the period of May 23 to May 25, 2017, for the Build Alternative (Alternative 2) to evaluate the performance of the proposed project design and reduce project cost estimates. Through a three-day study, the VA team developed nine VA options. The proposed nine VA options were discussed in the PDT meeting held on June 22, 2017, and decided to accept one option, conditionally accept three options, and reject five options. The summary of proposed VA options are listed in **Table 6-1**.

Table 6-1: Value Analysis Study Options

VA Options	Description	Status (A/C/R*)	Performance Change	Cost Savings
1.0	Use Accelerated Bridge Construction (ABC) methods for bridge construction, including pre-constructed composite components for bridge widening where feasible.	C	+1%	$6,110,000
2.0	Use precast bridge substructure components on multiple-span bridge structures.	C	+2%	$2,847,000
3.0	Widen on one side in lieu of both sides in outside widening locations.	R	+2%	$5,290,000
4.0	Use maximum inside shoulder width of 4 feet to reduce the outside widening in a 5-mile segment from Jurupa St to Foothill Blvd.	R	+1%	$19,150,000
5.1	Use continuous access to the Express Lanes in lieu of a buffer facility with delineators.	R	+5%	$460,000
5.2	Eliminate four ingress/egress weaving lanes within the project limits.	R	+3%	0
6.0	Use regular lean concrete base in lieu of rapid strength concrete.	A	+2%	$7,772,000
7.0	Restripe the #1 and #2 GP lanes to 11 feet and construct the #2 Express Lane to 11 feet.	R	No change	$8,500,000
8.0	Eliminate the railroad shoofly at Mission Blvd.	C	No Change	$1,204,000

* A – Accept, C – Conditionally Accept, R – Reject

<u>VA Option 1.0 – Use Accelerated Bridge Construction Method for Bridge Construction</u>

<u>Description:</u> This option proposes to use Accelerated Bridge Construction (ABC) methods for bridge construction, including using pre-constructed composite components for widening where feasible. The main benefit of this alternative is to reduce construction costs and time. Candidates for this concept would be those with narrow bridge widening with short spans. This option uses precast girders and cast-in-place deck constructed off site and transported to the construction site. It may be feasible to use precast deck panels in lieu of cast-in-place deck, also including the railing as part of the composite production. Aesthetics may be a potential constraint. To achieve the proposed cost savings, extensive use of precast girders is necessary. In addition, to achieve the proposed cost savings, it would be necessary to extensively use precast columns and abutments.

<u>PDT Review:</u> This option could be available for further assessment during the Design-Build (DB) phase. SBCTA can leave this option open in the DB Procurement documents. This VA option relates to means and methods of construction and does not affect the development of the environmental compliance document. Ultimately unless precluded by the DB technical provisions, this option can be utilized by the Design-Builder.

<u>Conclusion:</u> Conditionally accept. Could be considered during DB phase.

VA Option 2.0 – Use Precast Bridge Substructure

Description: This option proposes to use precast bridge substructure components on multiple-span bridge structures on 19 bridges (total of 66 abutments and 52 columns). The main benefit of this option is faster bridge work construction because precast bridge elements do not require falsework and cure time. There will be fewer delays for motorists and less construction activity impacts to residents and businesses because of less construction time.

PDT Review: This option could be available for further assessment during the DB phase. SBCTA can leave this option open in the DB procurement documents, pending further structural analysis and seismic requirements. This VA option relates to means and methods of construction and does not affect the development of the environmental compliance document. Ultimately unless precluded by the DB technical provisions, this option can be utilized by the design-builder.

Conclusion: Conditionally accept. Could be considered during DB build phase.

VA Option 3.0 – Widen on One Side

Description: This option proposes to widen on one side in lieu of both sides in outside widening locations. The main benefit of this alternative is reducing construction time and cost. With less construction time, there will be fewer delays for motorists and less construction activity impacts to residents and businesses. This option improves construction impacts because traffic will be shifted to only one side. Less overhead work will reduce impacts to local streets during construction.

PDT Review: This option could result in conflicts with the existing saw tooth (vertical-grade differential between NB and SB lanes) pavement sections along large horizontal curves, vertical clearances, median connector columns, additional retaining walls, and additional widening due to additional shoulders that would need to be added between Express Lanes and GP Lanes if the centerline is not shifted. If the centerline is shifted, then the existing median pavement would need to be replaced due to the existing saw tooth section at several large horizontal curve locations. This could also impact the current environmental footprint being studied and could delay the overall project schedule.

Conclusion: Reject.

VA Option 4.0 – Use Maximum 4 feet Inside Shoulder

Description: This option proposes to construct a maximum inside shoulder width of 4 feet on a 5.5-mile segment where outside widening is proposed, from Jurupa Avenue to Foothill Boulevard. The main benefit of this concept would be to save pavement because the project footprint is reduced. The proposed segment is 5.5 miles long less one 3,000-foot ingress/egress lane. It provides flexibility to adjust the location of the project footprint. This would be done on most of the roadway except for selected locations where existing bridge columns and sign posts exist and spacing is too tight. Note: This would require the elimination of the proposed weaving lanes.

PDT Review: This option was proposed in the preliminary geometric plans and was discussed with the PDT. This concept was dismissed as there was insufficient justification to obtain approval for a reduced non-standard shoulder width in this section.

Conclusion: Reject.

VA Option 5.1 – Use Continuous Access

Description: This option proposes to provide continuous access into and out of the express lanes in lieu of a 24-inch buffer facility with delineators. This would include an 8-inch broken stripe on the pavement. The main benefit of this option improving access to and from Express Lanes that maximizes the opportunity for using the Express Lanes. This will provide continuous access to and from the Express Lanes which provides optimal use of the Express Lanes and improves traffic operations. Driver expectations are better accommodated because there will be enough weave length to allow for decision making and lane changes.

PDT Review: This option does not provide the level of confidence for issuing TIFIA loans as continuous access increases revenue leakage. This option is not consistent with SBCTA's tolling policies and the approved *I-10 and I-15 Express Lanes Concept of Operations*.

Conclusion: Reject.

VA Option 5.2 – Eliminate Ingress/Egress Weave Lane

Description: The Baseline concept constructs a 12-foot ingress/egress weaving lane between the Express Lanes and GP lanes at eight locations within the project limits. This option proposes to eliminate the ingress/egress weaving lane. The main benefit of this option is that it provides the ability to maintain a standard inside shoulder width and will provide for standard and consistent 12-foot lane widths at ingress/egress locations. It will also help to reduce the extent of design exceptions. Driver expectations are improved because of consistency with the I-15 corridor Express Lanes concept.

PDT Review: There are four (4) ingress/egress locations with weave lane and is consistent with the I-10 Corridor Project. Where proposed, the weave lane provides operational benefits for the movement of traffic in and out of Express Lanes.

Conclusion: Reject.

VA Option 6.0 – Use Regular Lean Concrete Base

Description: The Baseline concept uses rapid strength lean concrete base (LCB) for flexible underlayment of the pavement. This option proposes to use regular lean concrete base. The main benefit of this option is that it will reduce construction costs. Maintainability is improved because rapid strength concrete has less life than regular concrete, approximately 10 years vs. 40 years.

PDT Review: The pavement structural section will be updated to use regular LCB instead of LCB rapid setting concrete.

Conclusion: Accept.

VA Option 7.0 – Restripe #1 and #2 GP Lanes

Description: The Baseline concept constructs varying express lane widths: 12 and 11 feet. The Base Line concept includes GP lane widths from 12 to 11 feet in some locations. This option proposes to restripe the #1 and #2 GP lanes to 11 feet and construct the #2 express lane to 11 feet the entire project length. The benefit of this VA option is that it provides a consistent driver experience because of lane width consistency throughout the project limits.

PDT Review: This option was studied in the feasibility phase and was discussed with the PDT. This option was dismissed as there was insufficient justification to obtain approval for a reduced non-standard lane width in this section where additional right-of-way is available.

Conclusion: Reject.

VA Option 8.0 – Eliminate the Railroad Shoofly at Mission Blvd

Description: The Baseline concept constructs a shoofly at Mission Boulevard to provide room for needed space to widen the bridge while retaining railroad operations. This option proposes to eliminate the proposed railroad shoofly at Mission Boulevard. The main benefit of this option is the construction cost reduction. There will be easier coordination with the railroad because construction of a shoofly will be eliminated.

PDT Review: This option is being discussed with UPRR and various options are being proposed for this location. The shoofly is the option with the largest environmental footprint and hence was considered for the environmental compliance document. The design-builder may propose solutions that do not require modifications to the existing shoofly.

Conclusion: Conditionally accept.

6.C Resource Conservation

The proposed improvements would maintain the majority of existing pavement along the project corridor. The improvements primarily consist of freeway widening and not reconstruction of the pavement structural sections. However, there would be some pavement removal and replacement on the freeway (inside and outside AC shoulders), interchange ramps, and small portions of local streets to accommodate the Build Alternative.

Existing asphalt pavement removed as a result of the proposed improvements would be recycled and reused in the construction to the extent possible. Similarly, clean concrete rubble may be crushed and combined with new materials for reuse in embankments, base, or minor concrete as appropriate.

Hardware (such as roadside signs, sign panels, sign posts, guardrails, etc.) and electrical equipment (such as controller cabinets, light standards, CCTV poles and assemblies, CMS units, etc.) would be salvaged and reused, if in serviceable condition, wherever possible or stockpiled for future uses.

The proposed improvements in the Build Alternative would promote ridesharing and fuel conservation by discounting the toll for three or more occupants in the vehicle.

Where applicable low energy devices will be installed such as LED lighting.

6.D Right-of-Way Issues

6.D.1 Right-of-Way Required

Build Alternative (PA) improvements would have right-of-way impacts on three parcels along the corridor which includes three temporary construction easements (TCEs) and one permanent easement (PE). Impacted parcels are shown in **Attachment O** and Right-of-Way Data Sheet is included in **Attachment J**.

<u>Mission Blvd UPRR Right-of-Way</u>

Due to insufficient horizontal clearance between the side track and the proposed crash wall, relocation of the side track would be required. One TCE may potentially be required from the two parcels owned by UPRR, APN 156-020-050 and 156-020-051.

<u>Rochester OH Right-of-Way</u>

One TCE may potentially be required for construction staging area uses within the parcel APN 0229-121-01, owned by SBCTA. As this parcel is owned by SBCTA, no right-of-way costs will be incurred for this TCE.

<u>Arrow Route Right-of-Way</u>

One TCE and one PE may potentially be required to relocate SCE 66KV overhead electrical lines within the parcel APN 0229-121-15, owned by CRPT Land Holding.

6.D.2 Relocation Impact Study

There are no proposed relocations for this project.

6.D.3 Airspace Lease Areas

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

6.E Environmental Compliance

Caltrans is the California Environmental Quality Act (CEQA) Lead Agency for all improvement projects on the State Highway System (SHS). Caltrans is also the National Environmental Policy Act (NEPA) Lead Agency for this project. 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.

In compliance with CEQA documentation requirements, Caltrans determined preparation of an Initial Study (IS), anticipated to result in the preparation of a Mitigated Negative Declaration (MND), to be the appropriate type of environmental document. In compliance with NEPA documentation requirements, an Environmental Assessment (EA) was determined to be the appropriate type of environmental document. Consistent with Caltrans requirements, the IS with Proposed MND and EA prepared for this project, were prepared as a combined Environmental Document (*IS with Proposed MND/EA*). The combined DED was circulated for public review and comments between February 15, 2018 and March 16, 2018. After review and consideration of all public comments received, and review of the project alternatives benefits and impacts, the PDT selected the Build Alternative as the Preferred Alternative. The Preferred Alternative was selected at the PDT meeting held in May 24, 2018. In conjunction with completion of all remaining Technical Studies and associated analysis, as well as in consideration of comments received on the circulated DED, Caltrans made a final determination of the project’s effect on the environment. Under CEQA, a Mitigated Negative Declaration (MND) determination has been prepared and signature approved by Caltrans. The MND has been prepared in accordance with Caltrans’ environmental procedures, as well as State and federal environmental regulations. The attached MND is the appropriate document for the project. Also, Caltrans, as assigned by the Federal Highway Administration (FHWA), has determined that the action does not significantly impact the environment, and has prepared a signature approved Finding of No Significant Impact (FONSI) in accordance with NEPA.

The approved *MND* and *FONSI* are included in the *Final Environmental Document (FED)* prepared for this project. The *FED* has been prepared in accordance with Caltrans’ environmental procedures, as well as State and federal environmental regulations, and has been approved by Caltrans. A copy of the Cover Page, signed Title Sheet, signed *MND*, and signed *FONSI* from the approved *FED* are included in **Attachment K** of this Project Report. The entire *FED* is stipulated to be included, by this reference, as an attachment to this Project Report.

If the scope of work (including utility relocation requirements—if any) or limits for this project change during the Design-Build process, a determination must be made by the District’s Division of Environmental Planning, as to whether the project will require an Environmental Re-

Evaluation to be completed. In conjunction with performing an Environmental Re-Evaluation, additional technical studies may be determined to be required, and/or existing technical studies may be determined to be revised, and the type of documentation for CEQA compliance and NEPA compliance required for the project may be changed as a result.

It is required that the Environmental Commitments Record (ECR) prepared in conjunction with completion of the PA&ED phase (included as an appendix in the Caltrans approved Environmental Document for this project), be referenced and completed timely throughout the Design-Build process for the project, and updated as necessary based on direct coordination with the Caltrans Senior Environmental Planner assigned to the project. The Caltrans Senior Environmental Planner assigned to the project is responsible for approving changes to the ECR.

A *Certificate of Environmental Compliance at Construction Contract Acceptance* will be required following completion of construction of the project.

6.F Air Quality Conformity

The project is included in Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (RTP), which was adopted by SCAG on April 7, 2016, and FHWA and FTA made a regional conformity determination finding on June 1, 2016. The project is listed under RTP ID 4122006. The project is also included in SCAG's approved 2019 Federal Transportation Improvement Program (FTIP) with Amendment 1, under FTIP ID 20159901. The proposed project's build alternative is fully compatible with the design concept and scope described in the current regional transportation plan.

An *Air Quality Report* was prepared for the project. The project was presented to SCAG's Transportation Conformity Working Group during their scheduled May 24, 2016 meeting. TCWG determined that the I-15 Corridor project was Not a Project of Air Quality Concern (Not a POAQC), and that hot spot analysis was not required. US EPA, Caltrans, and FHWA concurrence was received via email after TCWG's July 26, 2016 meeting.

Following circulation of the *IS with Proposed MND/EA*, the *Air Quality Conformity Analysis* (AQCA) for the proposed project was submitted to FHWA by Caltrans on July 2, 2018 and FHWA provided the required Conformity Analysis Determination Letter on August 7, 2018. FHWA approval of the AQCA prepared for the project prior to completion of PA&ED, confirms with the requirements of EPA's Transportation Air Conformity Regulation Section 40 CFR §93.116 and Section 40 CFR§93.123 and also that the project conforms to the State Implementation Plan in accordance with 40 CFR Part 93.

6.G Title VI Considerations

Existing transportation facilities for transit, pedestrian, and low mobility groups will be maintained. Implementation of additional transportation facilities under Build Alternative, as discussed in Section 5.A.3.11 of this document, will comply with the Title VI of the Civil Rights

Act of 1964 with provisions for low mobility and minority groups, where applicable. Pedestrian facilities within the improvement limits will meet current ADA standards.

7 OTHER CONSIDERATIONS AS APPROPRIATE

7.A Public Hearing Process

The Draft Environmental Document prepared for the project was circulated for the public review and comments between February 15, 2018 and March 16, 2018. In conjunction with the public circulation and review process, a public hearing was held for the project on Thursday, March 1, 2018 from 5:30 p.m. to 7:30 p.m. at Etiwanda Intermediate School located at 6925 Etiwanda Avenue in the City of Rancho Cucamonga. Spanish language translators were available to provide assistance as needed. Question and discussion at the public hearing included topics related to the location of noise barriers; construction impacts on noise, greenhouse gases, and local traffic; toll fees; and the use of taxes to fund the project. As a result of comments received during the public hearing and public circulation, noise barriers location and length were revised. Information on the noise abatement updates are included under Section 5.A.3.10 *Noise Barriers*.

7.B Route Matters

Freeway Agreements

Superseding Freeway Agreements will be required between Caltrans and the SBCTA to outline operational and maintenance responsibilities.

New Connections

No new public road connections are proposed in the Build Alternative.

Modified Access

No access modifications are proposed in the Build Alternative.

7.C Permits

Permits, reviews, and approvals required for the proposed project improvements are listed in **Table 7-1:**

Table 7-1: Permits and Approvals

Agency	Permit/Approval	Status
United States Army Corps of Engineers (USACE)	Clean Water Act Section 404 Nationwide Permit.	Application to be submitted after Project Report and Final Environmental Document approval.
California Department of Fish and Wildlife (CDFW)	1602 Streambed Alteration Agreement	Application to be submitted after Project Report and Final Environmental Document approval

Table 7-1: Permits and Approvals

Agency	Permit/Approval	Status
Santa Ana Regional Water Quality Control Board	Clean Water Act Section 401 Certification	Application to be submitted after Project Report and Final Environmental Document approval
Local Jurisdictions: County of San Bernardino, County of Riverside, City of Rancho Cucamonga, City of Ontario, City of Fontana, City of Eastvale, and City of Jurupa Valley	Freeway Agreement	Agreements with each jurisdiction for work completed within its area to be executed prior to construction.
California Public Utilities Commission (CPUC)	General Order 88-B Authorization	CPUC approval will be obtained prior to any construction work at any of the railroad overheads.

7.D Cooperative Agreements

SBCTA is the sponsoring agency for funding and administering the project development effort. A Cooperative Agreement (08-1588), which sets forth the terms and conditions between Caltrans and SBCTA, and outlines respective responsibilities for the PA&ED phase, has been in place. Separate Cooperative Agreements will be implemented for future phases as needed.

7.E Other Agreements

Several transportation agencies will be involved in the project development and coordination, including Caltrans District 8, SBCTA, the Riverside County Transportation Commission, and various Cities along the project corridor. Interagency agreements or memoranda of understanding (MOU) will be entered between transportation agencies during future phases as needed.

Other agreements will be developed as required over the course of the project development between SBCTA, Caltrans, and other entities along the project corridor including but not limited to numerous resource agencies, various city departments, railroads, and utilities.

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

There are no navigable waterways within the project area.

7.G Public Boat Ramps

There are no public boat ramps within the project limits.

7.H Transportation Management Plan

The construction duration of Build Alternative is approximately 36 months (3 years). Nighttime full closures on I-15 ramps and lane/partial closures on I-15 freeway mainline would be necessary to accommodate various roadway and structure construction activities; full freeway closures at nighttime on I-15 would be anticipated for installation of overhead sign structures that span over the entire freeway mainline; full freeway closures at nighttime on SR-60, I-10 and local streets that cross under I-15 would be anticipated for falsework erection and removal. These above-mentioned closures are all temporary closures in accordance to Caltrans standards.

TMP Data Sheet has been developed for Build Alternative and is included in this document in **Attachment M**. The estimated TMP costs have been included in the project cost estimate.

For the I-15 Corridor Project, the following TMP strategies are anticipated based on the type of work planned, the geographic and demographic area, and the anticipated traffic impacts:

Public Information/Public Awareness Campaign (PAC)

The primary goal of a PAC is to educate motorists, merchants, residents, elected officials and governmental agencies about construction activities and associated impacts. With an effective PAC, public acceptance, tolerance and cooperation will be enhanced. In addition, the PAC is expected to help reduce the traffic demand in the construction zone by encouraging motorists to take alternate routes or to travel outside of closure hours. Travel information related to construction activities, upcoming detours and/or lane closures, possible alternate routes, and alternate transportation modes would be disseminated to the public via various methods which could potentially include:

- Public meetings to provide information to the interested stakeholders and the public
- Brochures and mailers to inform the public about the project and anticipated closures and impacts
- Press releases/media alerts throughout the length of project when needed
- Project website to display information related to construction activities and travel information
- Telephone helpline or email for commuters to ask any questions pertaining to the project
- Community task force, representing the impacted stakeholders, to provide feedback to the construction team on a regular basis
- Construction team workshop, held monthly or more often as needed, to coordinate construction timelines, road detours, and closure information
- Communication with selected stakeholders on a regular basis through periodic meetings, e-mails, fax notices and social media

Motorist Information

The effective implementation of a Motorist Information System during construction is crucial to enable motorists to make informed decisions about their travel plans and options with real-time traffic information. The following tools would be used to provide motorist with travel information during construction:

- Permanent Changeable Message Signs (CMS)
- Portable Changeable Message Signs (PCMS)
- Ground Mounted Signs
- Caltrans Highway Information Network
- 511 Traveler Information System
- Lane Closure Website
- Automated Work Zone Information System

Incident Management

The following strategies have been developed to manage the effects of traffic incidents or vehicular breakdown in or near work zones:

- Construction Zone Enhanced Enforcement Program
- Freeway Service Patrol (FSP) to assist motorists with car trouble during morning and afternoon commute hours
- Traffic Management Team (TMT)
- Intelligent Transportation Systems (ITS)

Construction Strategies

Construction strategies would be implemented through staging construction and would be incorporated into the construction contract documents (traffic handling plans, construction area sign plans, contract special provisions, etc.). The key elements designed to alleviate impacts imposed by construction activities include the following:

- Two-stage construction: outside widening of freeway mainline and some inside widening of bridge structures; and inside widening of freeway, the rest of inside widening of bridge structures, and ramp improvements
- Detour routes proposed in Traffic Handling Plans
- Full freeway closures on I-15, I-10 and SR-60 only at nighttime
- Lane and shoulder modification to maintain existing number of lanes during construction to the greatest extent. Details of the limitations for the use of shoulders will be specified in the contract documents prepared in the next phase.
- Off-peak partial mainline lane closures

- Temporary ramps and ramps with reduced lanes for traffic access during ramp improvement construction
- Regular coordination with other projects to avoid overlapping closures and traffic impacts due to concurrent construction in the project vicinity
- Incorporating "delay clause" into the contract documents with the contractor

Demand Management

To reduce the typical peak-hour traffic volumes within areas affected by construction, the following plans would be considered for demand management:

- Maintaining and/or modifying transit services to reduce traffic and thus to lessen the impact from construction activities
- Ridesharing/Carpooling incentives to encourage commuters to use alternative forms of transportation
- Using ramp metering to manage on-ramp traffic directly upstream of work areas

Alternate Routes and Detours

During freeway nighttime closures, detour routes for freeway, ramp, and local roadway closures are planned to route traffic off the freeway and utilize local streets. The detour routes would need to be identified, coordinated, and approved by Caltrans and the affected agencies prior to the closure. Emergency providers, police departments, etc. will be notified in advance about the detour routes and the planned closures.

It is also recommended that a set of potential alternate routes be identified along the corridor in case of emergency or in the event of major incident on the freeway. Through coordination with the TMT and the use of incident management strategies, information can be provided to motorists about these alternate routes in the event of incident or emergency.

Other Strategies: Contingency Plans

A contingency plan should be submitted by the contractor and reviewed by the SBCTA Engineer in coordination with Caltrans. This plan is developed to identify operations, equipment, processes, and materials that may fail and cause delayed opening of lane closures. The plan will identify key operational decision points with a timeline listing the expected completion time of each critical path activity. Well defined trigger points will be identified with each critical path activity to establish when the contingency plan will be activated. The plan will list and describe all standby equipment and secondary material suppliers, to be available to complete the operations in the event of equipment failure, unexpected loss of material, or unexpected uselessness of material.

A decision tree with clearly defined lines of communication and authority will be provided in the contingency plan. The names, telephone numbers and cell phone numbers of the contractor's project manager, the Engineer, Caltrans Construction Inspector, CHP Area Commander, and other applicable personnel will be provided.

This plan should be submitted for applicability and practicality well in advance of the construction start. SBCTA will also verify the availability of standby resources included in the contingency plans and resolve any questionable issues.

7.I Stage Construction

For Build Alternative, the I-15 Corridor Project would implement construction staging strategies to help minimize delays and congestion associated with construction activities. A draft of the construction staging concept plans have been prepared for the project. Construction of interchange improvements (consisting of freeway ramp reconstruction, local arterial improvements, and undercrossing structure widening) is envisioned to be staggered throughout the corridor to minimize impacting two consecutive interchanges or closing two consecutive on- or off-ramps at the same time. If feasible, arterials and undercrossing structure improvements that add capacity over the existing condition would be constructed in the earlier stages in efforts to ease traffic congestion during subsequent construction stages. Details of the limitations for the use of shoulders will be specified in the contract documents prepared in the next phase. The summary of the construction staging concept is provided below.

<u>Stage 1</u>

The work to be completed includes outside widening of the freeway mainline and widening of bridge structures on the inside. The travel lanes would be shifted to allow room for construction work and the number of travel lanes on the freeway would be maintained during construction. The minimum lane width is expected to be maintained at 11 feet except for lanes with high truck usage the minimum lane width will be 12 feet.

<u>Stage 2</u>

The work to be completed includes inside widening of the freeway mainline, bridge structures, and improvements of ramps and ramp-to-freeway tie-in. The travel lanes would be shifted to allow room for construction work and the number of travel lanes on the freeway would be maintained during construction.

Closures and Lane Restrictions

Full closures are anticipated for setting up and taking down falsework for structures on I-15, I-10, SR-60, and local streets. Full freeway closures on I-15, I-10 or SR-60 would occur only at night to minimize impacts to motorists. Three local streets will have non-standard vertical clearance due to falsework for the bridge, and trucks will be detoured for the duration of construction. The required closures for the bridge work will be short-term single nighttime closures. Local streets will remain open to all other traffic. Closures of these facilities are anticipated for the work listed below and may be overnight, short-term, or during weekends:

- Installation, moving and removal of k-rails
- Striping and removal operations
- Falsework erection and removal
- Bridge demolition
- Widening of undercrossing structures and foundations
- Installation and removal of overhead signs and toll gantries
- Installation and removal of loop detectors
- Structure approach slab construction
- Asphalt concrete pavement construction and overlay operations
- Utility work

Lane reductions and restrictions are also anticipated on mainline, connector, ramp and arterial roadway facilities to accommodate construction activities. These restrictions may include the following:

- Narrower lane and shoulder widths
- Reduction in number of lanes (construction)
- Lane closures to provide worker safety
- Lane shift to shoulder or median to maintain number of lanes
- Speed reduction due to sharper lane transition/taper

Arterial Closures

The existing number of lanes operating on I-15 will be maintained during the course of construction. Partial mainline lane closures will be needed at nighttime or off-peak periods intermittently due to various construction activities including K-rail operations, concrete pouring, installation of new overhead sign structures and panels, modification to existing overhead sign panels, installation of tolling system, installation of vehicle detection systems, and installation of pavement striping.

Full freeway closures at night on I-15 are anticipated during the installation of overhead sign structures that span over the entire freeway mainline. Full freeway closures at night on SR 60, I-10, and local streets that cross I-15 are also anticipated for falsework installation and take down. To minimize the impact to traffic flow, these closures would be limited to night only when the traffic volumes were the lowest. The closure hours would be depicted on Lane Requirements Charts that will be prepared in coordination with Caltrans and the project team during the final design phase. During the night full freeway closures, traffic will be detoured to the nearby roadways. Traffic Handling Plans will be developed during the design phase of the project.

The following three local streets will have non-standard vertical clearance due to falsework for the bridge, and trucks will be detoured for the duration of construction:

- Ontario Mills Parkway
- Victoria Street
- Arrow Route

Reasonable access should be provided to law enforcement and emergency services as required. Advance planning, detour strategies, and notifications to the public should be provided for full facility closures.

During arterial closures, vehicular, bicycle, and pedestrian traffic would be re-directed to alternate routes. Closure of streets that are located in close proximity of one another will not coincide, such that there will be convenient nearby alternate routes available for pedestrians. Further evaluation and studies will be conducted during the final design to evaluate the locations and feasibility of the closures and determine required mitigation measures.

Ramp Closures

To allow room for ramp improvements or widening, partial or full closure of some freeway ramps are proposed. Where necessary and space is available, temporary pavement may be constructed to maintain traffic. Periodic ramp closures are anticipated for various construction activities including K-rail operations, concrete pouring, installation of vehicle detection systems, and installation of pavement striping at night, during a weekend (55-hour closure), or in accordance with Caltrans standards. During the nighttime ramp closures, traffic would be detoured to the adjacent ramps. Periodic short-term ramp closure is not expected to cause excessive inconvenience to the traveling public since the interchanges along I-15 are spaced approximately 1 mile apart, such that there are nearby alternate accesses to and from the freeway. No two consecutive off-ramps or two consecutive on-ramps in the same direction will be closed concurrently. The following freeway ramps would remain open while the number of the lanes at the ramp may be reduced due to construction:

- Cantu-Galleano NB on-ramp
- Jurupa Street/I-15 NB on- and off-ramps
- Jurupa Street/I-15 SB on- and off-ramps
- I-15 NB to SR 60 connector
- WB I-10 to NB I-15 connector
- EB I-10 to NB I-15 connector
- EB I-10 to SB I-15 connector
- I-15 SB to WB I-10 connector
- Fourth Street/I-15 NB on-ramp
- Fourth Street/I-15 SB on- and off-ramps
- Foothill Boulevard/I-15 NB on- and off-ramps

- Foothill Boulevard/I-15 SB on- and off-ramps

The following ramps comprise two lanes exiting from freeway, which will be reduced to one lane:

- Jurupa Street/I-15 SB off-ramps
- Foothill Boulevard/I-15 SB off-ramps

For full ramp closures, temporary ramp will be constructed to maintain traffic access during construction for the following ramps:

- SB I-15 to WB I-10 (Stage 1)
- Fourth Street loop on-ramp (Stage 1)
- Foothill Boulevard NB loop on-ramp (Stage 1)
- WB I-10 to SB I-15 (Stage 1)
- EB I-10 to SB I-15 (Stage 1)

Other Closures

The widening of the freeway structures would impact UPRR and BNSF railroad operations. Coordination with the railroad would be required for erecting and taking down of falsework, potentially other construction activities, and finalize the railroad closure hours that would minimize the impacts to railroad operations.

Construction Staging Areas

There are adequate areas within the state right-of-way to be used as construction staging areas for the project. Before completion of the project, construction staging areas will be restored to the condition prior to construction. Photos will be taken prior to staging of construction for reference. If landscape improvements are planned in the staging area, the staging area will be restored to a condition acceptable for proposed improvements.

Maintenance of Existing Traffic Management System (TMS) Elements

There are several existing TMS elements along the project corridor including existing CMS, CCTV, wireless vehicle detector system, ramp metering system, and traffic monitoring stations. Fiber-optic infrastructure also exists along the corridor. Existing TMS elements will be maintained and operated during construction and will be used as part of the TMP where appropriate. SBCTA should coordinate with local transit providers to establish a plan to maintain and/or modify the existing transit services and resources to lessen the impact of the construction project on person-throughput throughout the corridor. Where appropriate, transit service improvements may include the modification of transit schedules or routes, increase frequency, or the establishment of transit service in or near the project corridor. The public should be provided information about the transit plan and transit elements that are available. This could lead to a short-term reduction of traffic during construction and might lead to long-term benefits of increased ridership after the project is finished.

Coordination Meetings with Cities

Per Caltrans direction TMP, Stage Construction Plans and Traffic Handling Plans were distributed to Cities of Ontario, Rancho Cucamonga, and Fontana for their review and concurrence. The City of Ontario did not have any comments but the City of Rancho Cucamonga and City of Fontana provided their comments and concerns on Traffic Handling Plans. To discuss these comments, coordination meetings were held with City of Fontana and City of Rancho Cucamonga on March 30 and April 6, 2017, respectively, at their offices. Based on these coordination meetings and provided comments, the project team made necessary updates to Traffic Handling Plans for re-submittal and received their concurrence. The City of Rancho Cucamonga mentioned at the meeting that they do not want closures and detours set up during Friday night football games at Etiwanda High School, and any temporary closures of Victoria Street will be preferred over the summer. Meeting minutes from these coordination meetings have been attached as **Attachment P**.

7.J Accommodation of Oversize Loads

The I-15 freeway segment within the project limits is on the United States Department of Defense (DOD) Priority Network of selected Interstate System routes on which a 16-foot minimum vertical clearance is required. All of the I-15 overcrossing structures within the project limits meet the 16-foot minimum vertical clearance requirement set by the DOD.

The Caltrans mandatory design standard for minimum vertical clearance over state highways is 16 feet 6 inches. A minimum vertical clearance of 16 feet 6 inches will be provided at all I-15 overcrossing structures within the project limits during or post construction, except at Duncan Canyon Road OC where the proposed minimum vertical is 16 feet 3 inches). The minimum vertical clearance at Duncan Canyon Road OC is an existing condition and will be perpetuated as part of the proposed improvements.

Existing overcrossing structures that limit load heights on the I-15 are summarized in **Table 7-2**. Interchanges where ramps can provide direct bypasses to the overcrossing structures are noted in the table. For other locations, no direct bypass is available and if any bypass exists, it involves the local street system that may impose other vertical clearance constraints. Overhead sign structures that restrict vertical clearance are not identified in the table.

Table 7-2: Existing Vertical Clearance Restrictions

Post Mile	Structure Name	Vertical Clearance (ft) [1]	Direct Bypass
08-RIV-15-50.13	Cantu-Galleano Ranch Road OC	20.23	No
08-RIV-15-51.40	W60-S15 Connector OC	17.91	No
08-RIV-15-51.45	S15-E60 Connector OC	17.71	No
08-RIV-15-51.45	E60-N15 Connector OC	16.99	No
08-SBd-15-01.01	Jurupa Street OC	17.65	Yes
08-SBd-15-02.37	N15-W10 Connector OC	17.22	No
08-SBd-15-02.34	W10-S15 Connector OC	16.99	No
08-SBd-15-02.41	S15-E10 Connector OC	17.48	No
08-SBd-15-02.44	E10-N15 Connector OC	16.99	No
08-SBd-15-08.09	E210-N15 Connector OC	18.00	No
08-SBd-15-08.35	SR-210/I-15 Sep	18.93	No
08-SBd-15-08.30	S15-E210 Connector OC	18.07	No
08-SBd-15-08.46	W210-S15 Connector OC	18.99	No
08-SBd-15-09.60	Summit Avenue OC	18.93	No
08-SBd-15-11.03	Duncan Canyon Road OC	16.25	Yes

1. Source: Structure Maintenance & Investigations Log of Bridges on State Highways.

7.K Graffiti Control

Segments of the project are located in the urban area of San Bernardino County, which is an identified graffiti-prone area in the Caltrans PDPM, Appendix K. Graffiti deterrent techniques will be used as part of the proposed design to limit accessibility to bridges and overhead sign structures. These may include the use of curved tubular sign structures and/or placement of collars and barbed wire around overhead signs. For wall surfaces, graffiti resistant/deterrent paint and/or protective coating, vines, wall texturing, and/or aesthetic surface treatments will be used. The cost for the protective coating is included in the project cost estimate. Details of graffiti deterrent techniques will be provided during the final design.

7.L Storm Water Compliance

The San Bernardino County Transportation Authority's (SBCTA) I-15 Corridor Project will conform to the following permits and requirements including any subsequent revisions and/or additional requirements at the time of construction:

- California Department of Transportation Statewide NPDES Storm Water Permit (Order No. 2014-0077-DWQ amending 2012-011-DWQ, NPDES No. CAS000003)
- NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ, NPDES No. CAS000002)
- Cities of Ontario, Rancho Cucamonga, and Fontana (County of San Bernardino MS4, R8-2010-0036); The city of Jurupa Valley is a co-permittee with the County of Riverside Flood Control District for NPDES Permit Number CAS618033 from PM 49.8 to 52.3
- City of Jurupa Valley (County of Riverside MS4, R8-2010-0033)
- Caltrans Storm Water Management Plan (SWMP)

This project will require notification to the State Water Resources Control Board (SWRCB) via the Stormwater Multi-Application Report Tracking System (SMARTS). Permit Registration Documents (PRD) including Notice of Intent (NOI), Risk Assessment, Site Map, Storm Water Pollution Prevention Plan (SWPPP), Annual Fee and a Signed Certification Statement would also be filed and a Waste Discharge Identification (WDID) number would then be assigned. Once a WDID is obtained, then construction activities may commence. SBCTA will be listed as the legally responsible entity on the NOI for construction storm water permit.

A Storm Water Data Report (SWDR) has been prepared for the project to assess the water quality issues and recommend appropriate treatment measures to address water quality impacts from this project. This project proposes two alternatives, a No Build Alternative (Alternative 1) and a Build Alternative (Alternative 2). As part of Alternative 2, the project area requiring treatment is approximately 66.5 acres. This project results in an increase in impervious acres of more than one acre; therefore, treatment BMPs are required to be implemented within the project site. A total of 21 DPP Infiltration Areas are proposed and a retrofit of approximately 20 existing structural treatment devices is recommended to achieve post-construction treatment requirement for this project. The treated impervious area from the proposed DPP Infiltration Area BMPs is approximately 60.9 acres. The area treated by retrofit of existing BMPs is approximately 5.7 acres. Therefore, through the implementation of the proposed treatment measures, this project treats approximately 66.6 acres.

With implementation of the proposed Treatment BMPs, the design of the proposed project is estimated to treat approximately 100 percent of the total post-construction treatment area for Build Alternative. The treatment is achieved from existing and proposed paved surfaces within the state's right-of-way. The project would not discharge directly into unlined channels and no bridge runoff would be directly discharged into the downstream waterways. The costs for temporary construction site BMPs have been included in the project cost estimate within the SWDR. The SWDR signature page is attached to this document as **Attachment S**.

7.M Life Cycle Cost Analysis

A *Life Cycle Cost Analysis* (LCCA) report was prepared in June 2017 to evaluate the pavement structural sections for the project. The LCCA is an economic analysis that compares initial construction cost, future maintenance cost, and user delay cost of different pavement alternatives over an analysis period of 55 years. The LCCA forms are included in this document as **Attachment G,** and **Table 7-3** provides a summary of the LCCA with different pavement structural section alternatives. The LCCA report has been prepared in accordance with the Caltrans LCCA procedure manual.

Table 7-3: Life Cycle Pavement Cost

Location	Alternative No.	Pavement Structural Section (Feet)	Agency Cost	User Cost	Total Life Cycle Cost
North GP Lanes (7th St. to Duncan Canyon Rd.)	**Alternative 1***	1.15 JPCP, 0.35 LCB	$8,473,000	$3,450,000	$11,923,000
	Alternative 2	1.15 JPCP, 0.25 HMA-A	$9,200,000	$3,450,000	$12,650,000
	Alternative 3	1.0 CRCP, 0.25 HMA-A	$8,953,000	$0	$8,953,000
South GP Lanes (Cantu-Galleano Ranch Rd. to 7th St.)	**Alternative 1***	1.15 JPCP, 0.35 LCB, 0.7 AS	$22,692,000	$2,769,000	$25,461,000
	Alternative 2	1.15 JPCP, 0.25 HMA-A, 0.7 AS	$24,446,000	$2,769,000	$27,215,000
	Alternative 3	1.0 CRCP, 0.25 HMA-A, 0.7 AS	$23,822,000	$0	$23,822,000
Express Lanes (New)	**Alternative 1***	1.0 JPCP, 0.35 LCB, 0.7 AS	$16,342,000	$83,000	$16,425,000
	Alternative 2	1.0 JPCP, 0.25 HMA-A, 0.7 AS	$17,714,000	$83,000	$17,797,000
Express Lanes (Existing Median Pavement)	**Alternative 1**	1.15 JPCP, 0.1 HMA, 0.5 LCB	Not Applicable		
Ramps	**Alternative 1***	1.0 JPCP, 0.35 LCB, 0.7 AS	$13,370,000	$1,131,000	$14,501,000
	Alternative 2	1.0 JPCP, 0.25 HMA-A, 0.7 AS	$14,493,000	$745,000	$15,238,000
	Alternative 3	0.2 RHMA-G, 1.75 HMA, 0.50 AB	$31,935,000	$3,025,000	$34,960,000
Connector	**Alternative 1***	1.05 JPCP, 0.35 LCB, 0.7 AS	$6,262,000	$526,000	$6,788,000
	Alternative 2	1.05 JPCP, 0.25 HMA-A, 0.7 AS	$6,749,000	$526,000	$7,275,000
	Alternative 3	0.95 CRCP, 0.25 HMA-A, 0.7 AS	$6,939,000	$0	$6,939,000

Note:
1. “*” Pavement alternative is recommended based on the lowest Agency Cost
2. 0.15’ of JPCP needs to be added for outside lanes without lateral support. Express lanes are designed with lateral support.
3. Above pavement structural sections were considered in the LCCA.
4. Base Bond Breaker needs to be placed between JPCP and LCB.

JPCP = Jointed Plain Concrete Pavement
CRCP = Continuously Reinforced Concrete Pavement
HMA = Hot Mix Asphalt
RHMA = Rubberized Hot Mix Asphalt
AB = Aggregate Base
AS = Aggregate Subbase
LCB = Lean Concrete Base

Based on the LCCA performed, a preferred pavement design alternative with least value of agency costs was identified and recommended. The report concludes that a 40-year JPCP design would have the lowest agency cost for all locations listed in **Table 7.3**.

For North GP Lanes, South GP Lanes, and Connectors, three options (40-year JPCP over LCB, 40-year JPCP over HMA-A, and 40-year CRCP) were analyzed. The 40-year CRCP was found to have lower life cycle cost. However, the 40-year JPCP is recommended because of lower agency cost and ride quality with the adjoining existing pavement.

For Express Lanes (New) between SR-60 Interchange and Seventh Street, two pavement options (40-year JPCP over LCB and 40-year JPCP over HMA-A) were analyzed. The JPCP over LCB option was found to have lowest life cycle cost and is recommended.

For interchange ramps, three pavement options were analyzed. The 40-year JPCP was found to have the lowest life cycle cost and is recommended.

8 FUNDING, PROGRAMMING AND ESTIMATE

8.A Funding

It has been determined that this project is eligible for federal-aid funding. It is anticipated that the funding of the proposed I-15 Corridor Project will require several sources of funds as shown in the funding tables in Section 8B. SBCTA, as the project sponsor, is currently seeking additional funding sources to support the project implementation.

8.B Programming

The I-15 Corridor Project is currently programmed in the SBCTA's Freeway Program of Measure I 2010-2040 for the San Bernardino Valley Subarea.

Build Alternative is included in the 2016-2040 RTP/SCS Amendment 1 and programmed for federal and State funds in the SCAG 2017 FTIP Amendment 3. **Table 8-1** presents the escalated estimate for each fiscal funding year for Build Alternative.

Table 8-1: Build Alternative Escalated Capital Outlay Support and Programmed Funds

Fund Source	Support *	Right-of-Way	Cons	Total	Fiscal year Estimate in Thousands of Dollars (1,000)										
					Prior	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	Total
Measure I	50,796	4,484	91,161	**146,441**	1,500	3,400	3,000	3,100	8,000	11,295	30,972	30,972	30,972	23,229	**146,441**
Toll Revenue Bonds			323,209	**323,209**							26,934	107,736	107,736	80,802	**323,209**
Total	**50,796**	**4,484**	**414,370**	**469,650**	**1,500**	**3,400**	**3,000**	**3,100**	**8,000**	**11,295**	**57,906**	**138,709**	**138,709**	**104,031**	**469,650**

"*" Includes PR/ED Support, Right-of-Way Support, PMC Contract, Toll Support, and Legal/Procurement Support Costs.

8.C Estimate

The project cost estimates are included in this document in **Attachment I**. A breakdown of the current and escalated Build Alternative estimated costs is summarized in **Table 8-2** for Roadway and **Table 8-3** for Tolling. The Total Project Cost is shown in

Table 8-4.

Table 8-2: Build Alternative Roadway Cost Estimate

Preliminary Estimate for Roadway	Build Alternative	
	Current (In 2017 Dollars)	Escalated
Roadway Items	$201,603,000	$247,639,000
Structure Items	$69,755,000	$85,684,000
Subtotal Construction	**$271,358,000**	**$333,323,000**
Right-of-Way & Utilities	$3,676,055	$4,483,915
Design Build Project & Construction Management	$33,992,000	$41,755,000
Design Build Design Services	$19,656,000	$24,137,000
Total Capital Outlay	**$328,682,000**	**$403,699,000**
Support Cost*	$41,975,000	$49,045,000
Establish Existing Planting (EEP)	$1,800,000	$2,212,000
Total Roadway Cost	**$373,000,000**	**$455,000,000**
"*" Includes PR/ED Support, Right-of-Way Support, PMC Contract, Legal/Procurement Support Costs.		

Table 8-3: Build Alternative Tolling Cost Estimate

Preliminary Estimate for Tolling	Build Alternative	
	Current (in 2017 Dollars)	Escalated
Toll Items	$9,242,400	$11,354,000
Subtotal Construction	**$9,242,400**	**$11,354,000**
Toll Service Provider's Project Management Items	$1,221,610	$1,500,566
Total Capital Outlay	**$10,465,000**	**$12,855,000**
Support Cost	$1,521,000	$1,755,000
Total Tolling Cost	**$12,000,000**	**$14,650,000**

Table 8-4: Total Project Cost

Preliminary Estimate for Total Project	Build Alternative	
	Current (in 2017 Dollars)	Escalated
Total Project Cost	**$385,000,000**	**$469,650,000**

9 DELIVERY SCHEDULE

The project under Build Alternative is anticipated to be implemented using the design-build delivery process and be constructed over a period of 36 months (3 years). **Table 9-1** presents a summary of the tentative milestones for Build Alternative.

Table 9-1: Project Milestones - Build Alternative

Project Milestones		Target Dates
PSR/PDS Approval	M010	September 2014
Begin Environmental	M020	October 2014
Circulate DED Externally	M120	February 2018
PA&ED Approval	M200	December 2018
Issue Design-Build Request for Proposal	M500	July 2019
Award Design-Build Contract		March 2020
Design-Build Notice to Proceed		June 2020
Begin Construction		March 2021
Construction Completion	M800	March 2024

10 RISKS

Since the estimated project cost is more than $100 million, a Level 3 risk register and risk assessment is prepared. Key risk categories identified in the project risk register include Environmental, Engineering Services, Design, Construction, Organizational, Utilities, Right-of-Way, and external Risks. A project risk register is developed for the project in accordance with the Caltrans' Project Risk Management Handbook. The project risk register is included as **Attachment N** to this report.

Risk register includes the following high-risk item:

- Proximity of proposed bridge abutments near railroad right-of-way/tracks which would require extensive geotechnical investigation of how to design a temporary shoring system adjacent to the railroad tracks and maintain standard clearance from railway tracks.

11 FHWA COORDINATION

Per the current Joint Stewardship and Oversight Agreement (Agreement) between Caltrans and FHWA, dated May 28, 2015, FHWA has been consulted and this project is expected to be considered as a Project of Division Interest (PODI). This project is anticipated to use the Design Build procurement method. Also, as the total project cost estimate is approaching $500 Million, it has been determined that a Cost Estimate Review (CER) is required during the procurement phase of the project. Caltrans will closely coordinate these efforts with SBCTA and FHWA during the procurement phase.

FHWA has been apprised of the proposed improvements and the following meetings were held at Caltrans District 8 to review the proposed alternative with FHWA:

- July 7, 2015, to review I-15 Corridor Project
- July 23, 2015, to review I-10 and I-15 Concept of Operations
- October 20, 2016, to review I-10 and I-15 Concept of Operations

There are no access modifications proposed in the project. As such, a Modified Access Report is not required. Fact Sheets (now referred to Design Standard Decision Documents) requesting exceptions to the mandatory design standards were approved by Caltrans on September 11, 2018.

12 PROJECT REVIEWS

The project has been reviewed by the following Caltrans Headquarters (HQ) and District 8 staff:

- Luis Betancourt, HQ Project Delivery Coordinator, February 2018
- Anthony Ng, Design/FHWA Liaison, December 2017
- Jonathan den Hartog, Project Director, February 2018
- Theresa Sasis, Traffic Operations, February 2018
- District 8 Safety Review Committee, February 2018:
  - Jason Collado, Safety – Design
  - Jian (James) Lan, Safety – Maintenance Engineering
  - Hassan Juybari, Safety – Construction
  - Oscar Alejandre, Safety – Traffic Design
  - Kevin Chen, Safety – Operation

13 PROJECT PERSONNEL

Name	Organization	Title	Telephone
Raghuram Radhakrishnan	Caltrans	Project Manager	909-383-6288
Jonathan den Hartog	Caltrans	Project Director	909-383-5998
Theresa Sasis	Caltrans	Office Chief, Traffic Operations	909-383-5997
Rena Tang	Caltrans	Branch Chief: System Planning, Traffic Forecasting & Mass Transit	909-383-7017
Oscar Alejandre	Caltrans	Office Chief, Traffic Design	909-383-6810
Paul C. Mim Mack	Caltrans	Associate Right-of-Way Agent	909-806-3998
James Shankel	Caltrans	Senior Environmental Planner	909-383-6379
Norbert Gee	Caltrans	Senior Bridge Engineer	916-227-8348
Parwaz Khasraw	Caltrans	District Materials Engineer	909-806-3963
Paula Beauchamp	SBCTA	Director of Project Delivery	909-884-8276
John Meier	SBCTA	Project Director, I-10 & I-15 Corridor Projects	909-884-8276
Dennis Saylor	SBCTA	Project Manager	909-884-8276
Julie Beeman	SBCTA	Environmental Manager	949-289-3624
Vikrant Sanghai	WSP	Project Manager	909-383-2814
Don Hubbard	WSP	Traffic Lead	916-567-2555
Srikanth Koneru	WSP	Engineering Lead	909-383-2819
Maisoon Afaneh	WSP	Environmental Lead	619-321-4185
Michael Amling	ICF	Environmental Lead	213-312-1760

14 ATTACHMENTS (NUMBER OF PAGES)

A. Project Vicinity and Location Maps (2)

B. Traffic Volume Diagrams (10)

C. Project Category Determination (1)

D. Conceptual Layouts, Profiles, and Cross Sections (Separately Bound)

E. Structure Advance Planning Studies (Separately Bound)

F. Preliminary Feasibility Study of I-10/I-15 Express Lane Direct Connector Ramps (11)

G. Life Cycle Cost Analysis Forms (6)

H. Express Lane Access Locations and CHP Locations Diagram (2)

I. Project Cost Estimates (22)

J. Right-of-Way Data Sheet (10)

K. Cover Page and signed Title Sheet, MND, and FONSI from approved *Initial Study with Mitigated Negative Declaration /Environmental Assessment with Finding of No Significant Impact* (2)

L. Caltrans concurrence on the 2-foot Buffer (6)

M. Transportation Management Plan Data Sheet (6)

N. Level 3 Risk Register (3)

O. Right-of-Way Impacted Parcels Exhibit (2)

P. Coordination Meeting Minutes with Cities (4)

Q. Exhibits 23, 24, 84, and 85 from the *I-15 Corridor Project Final Traffic Study Report* (4)

R. Traffic Operation Policy Directive Memo (22)

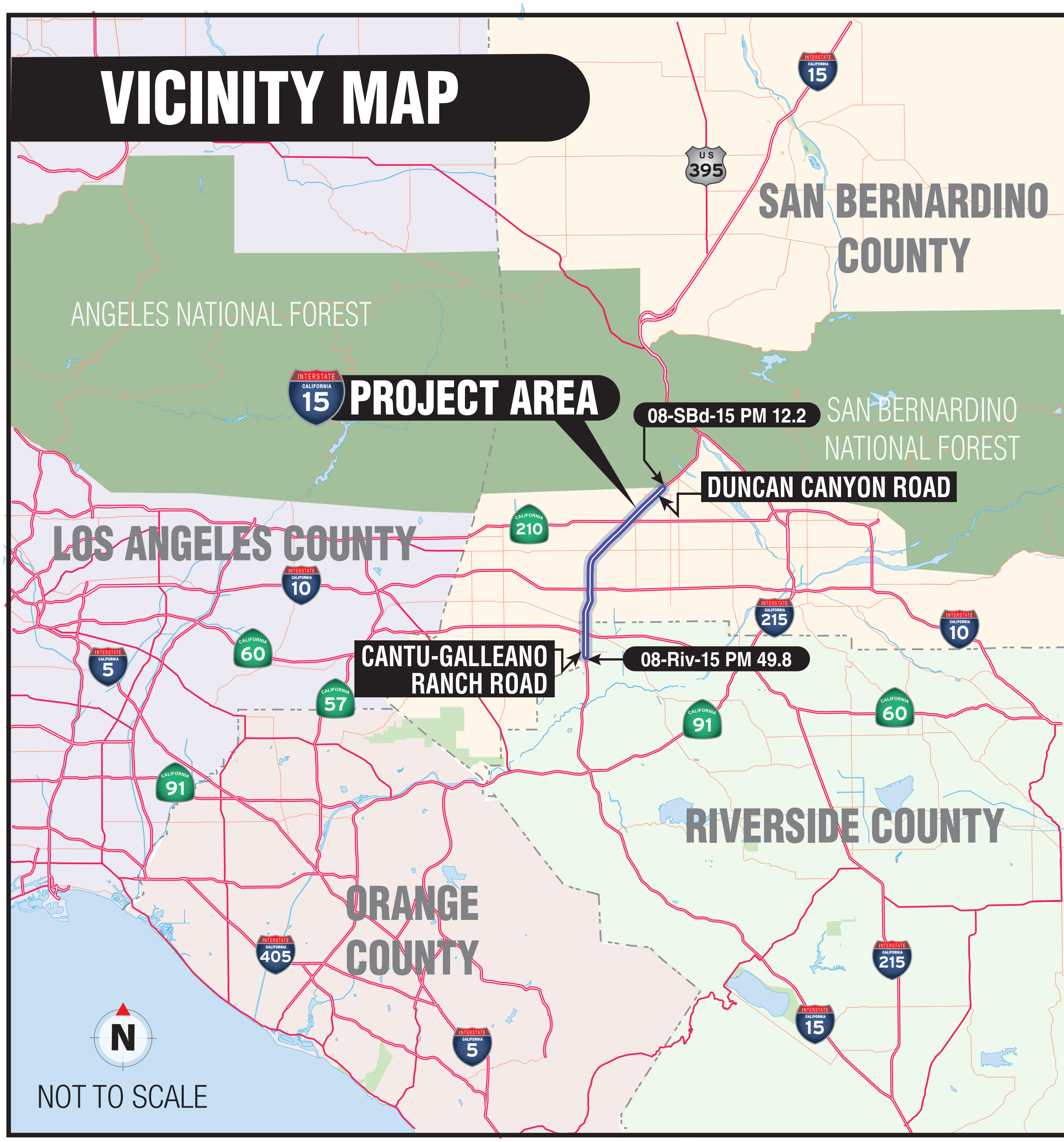
S. Stormwater Data Report signature page (1)

This page intentionally left blank

ATTACHMENT A

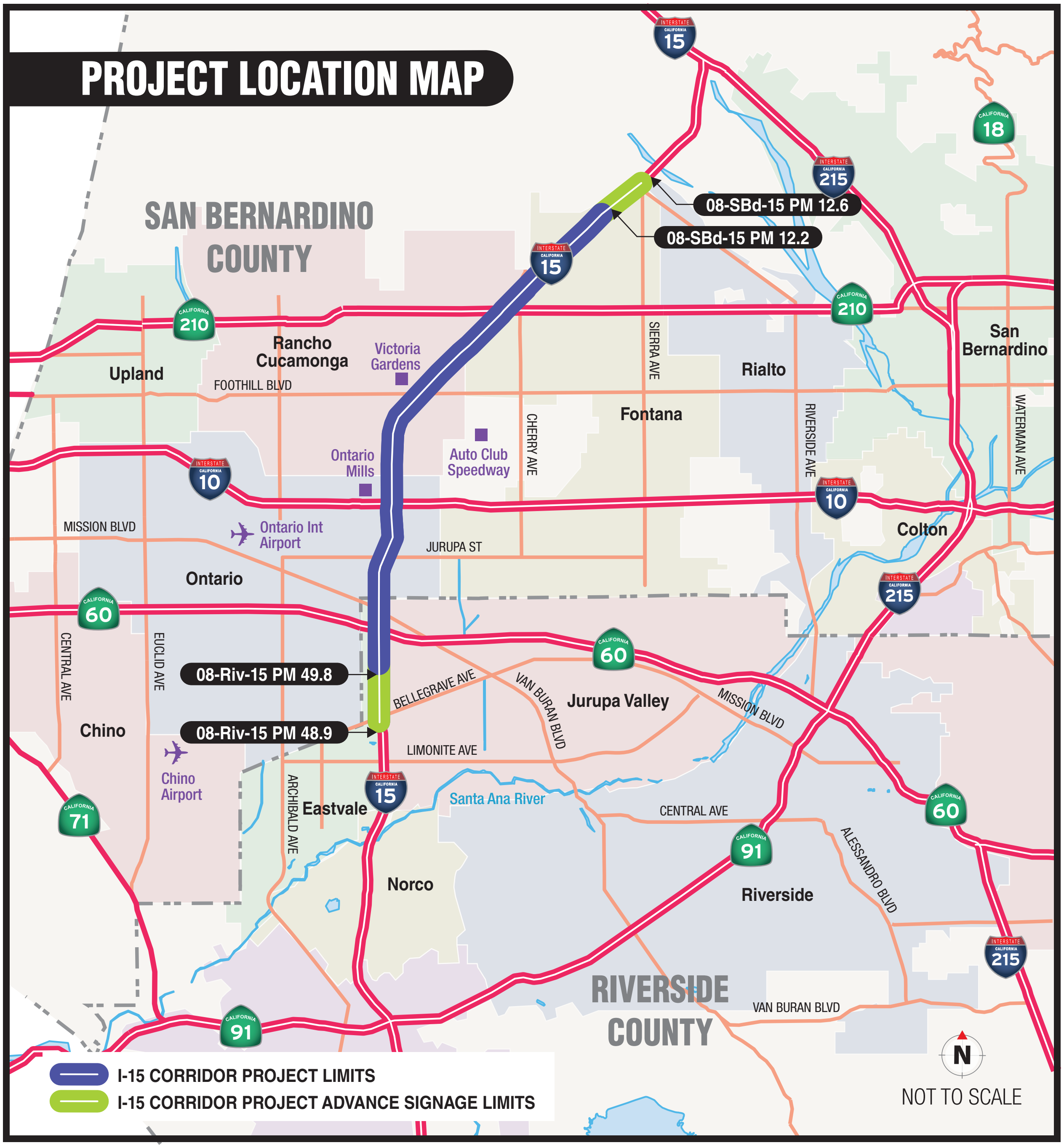
Project Vicinity and Location Maps

This page intentionally left blank



VICINITY MAP
PROJECT AREA
08-SBd-15 PM 12.2
DUNCAN CANYON ROAD
CANTU-GALLEANO
RANCH ROAD
08-Riv-15 PM 49.8
ANGELES NATIONAL FOREST
SAN BERNARDINO
NATIONAL FOREST
SAN BERNARDINO
COUNTY
LOS ANGELES COUNTY
RIVERSIDE COUNTY
ORANGE
COUNTY
NOT TO SCALE
N

This page intentionally left blank



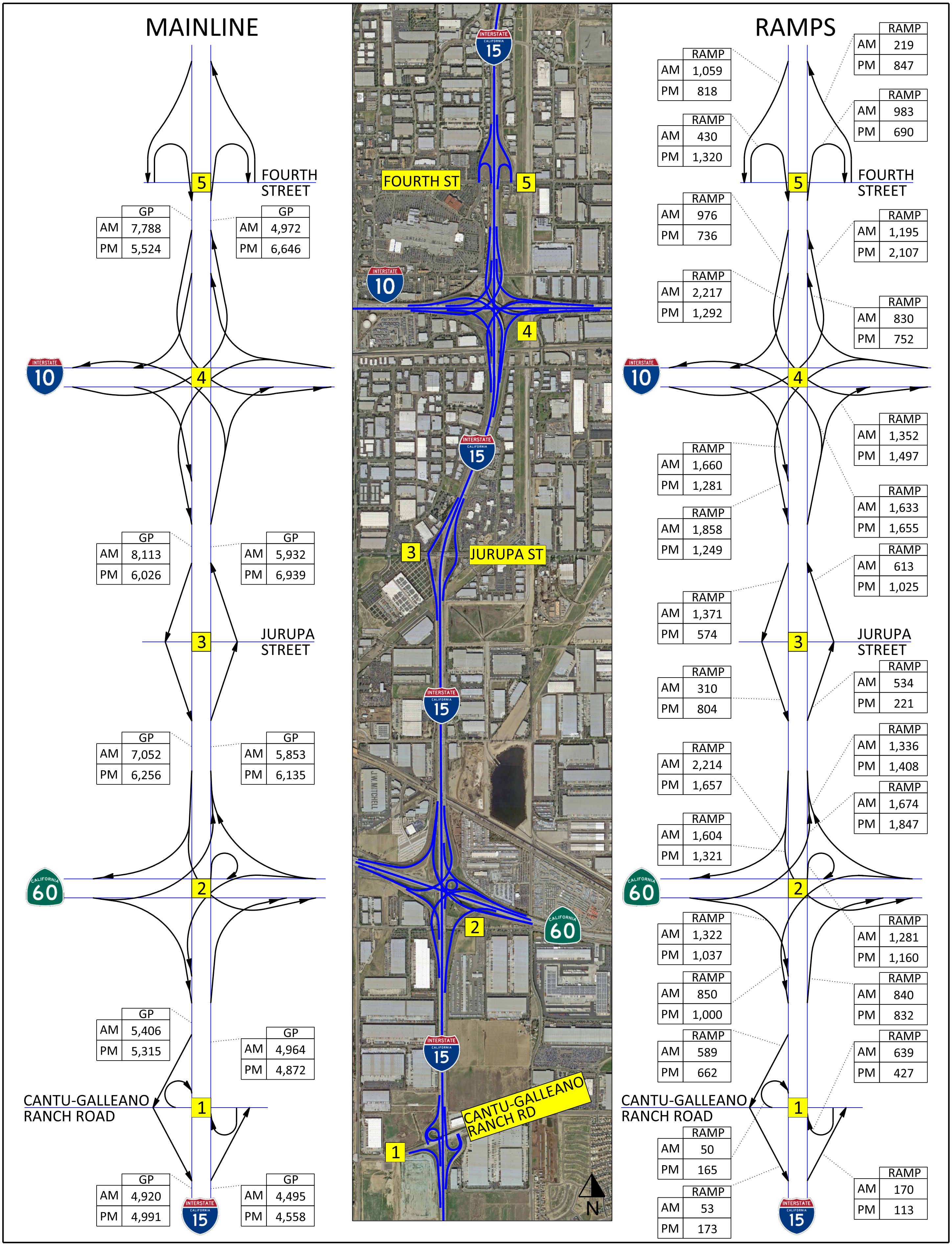
PROJECT LOCATION MAP
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
08-SBd-15 PM 12.6
08-SBd-15 PM 12.2
08-Riv-15 PM 49.8
08-Riv-15 PM 48.9
Rancho Cucamonga
Victoria Gardens
Upland
FOOTHILL BLVD
Ontario Mills
Auto Club Speedway
Fontana
Rialto
San Bernardino
Colton
MISSION BLVD
Ontario Int Airport
JURUPA ST
Ontario
Chino
Chino Airport
Eastvale
Norco
Jurupa Valley
Riverside
BELLEGRAVE AVE
VAN BURAN BLVD
LIMONITE AVE
Santa Ana River
CENTRAL AVE
ALESSANDRO BLVD
VAN BURAN BLVD
CENTRAL AVE
EUCLID AVE
ARCHIBALD AVE
CHERRY AVE
SIERRA AVE
RIVERSIDE AVE
WATERMAN AVE
I-15 CORRIDOR PROJECT LIMITS
I-15 CORRIDOR PROJECT ADVANCE SIGNAGE LIMITS
N
NOT TO SCALE

This page intentionally left blank

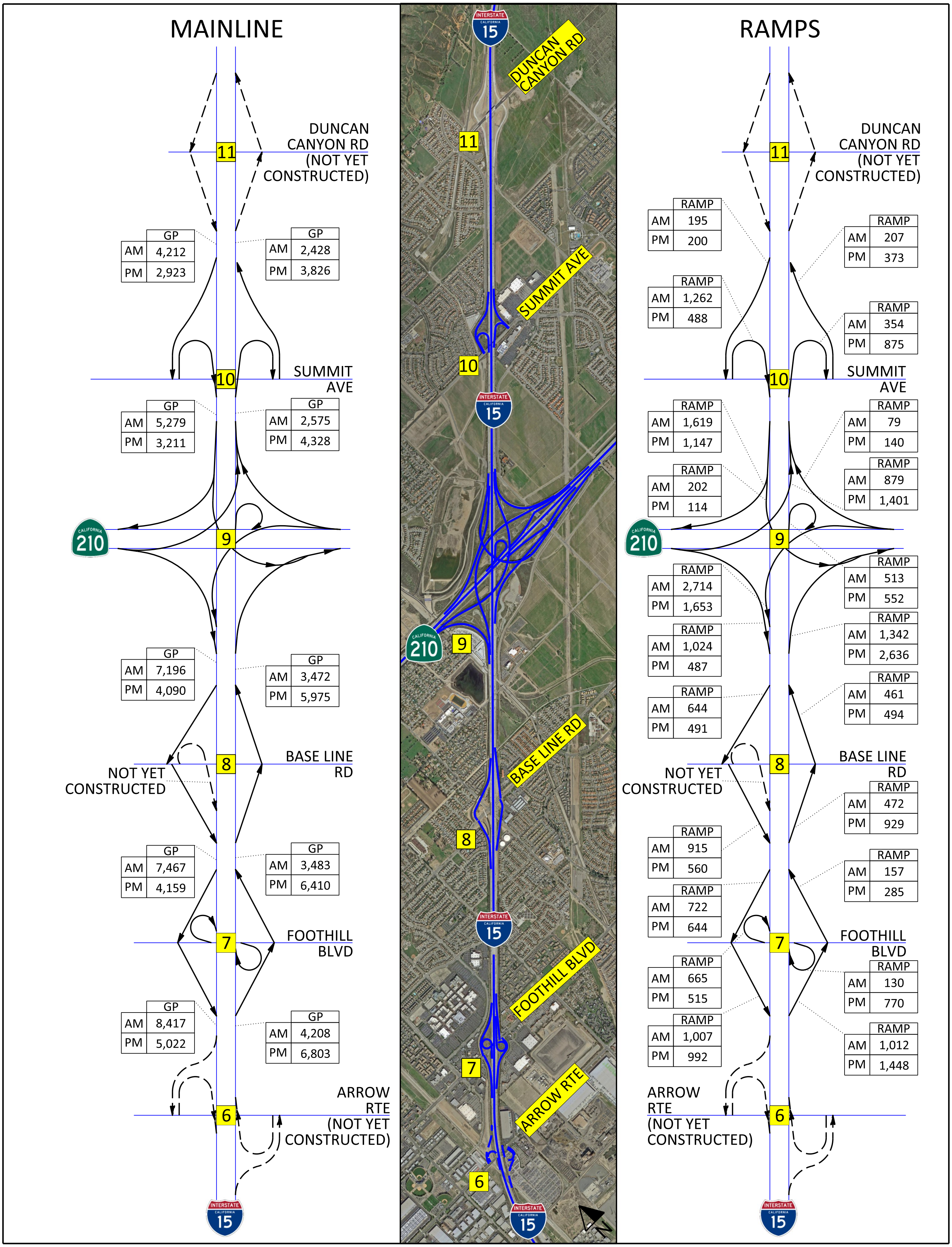
ATTACHMENT B

Traffic Volume Diagrams

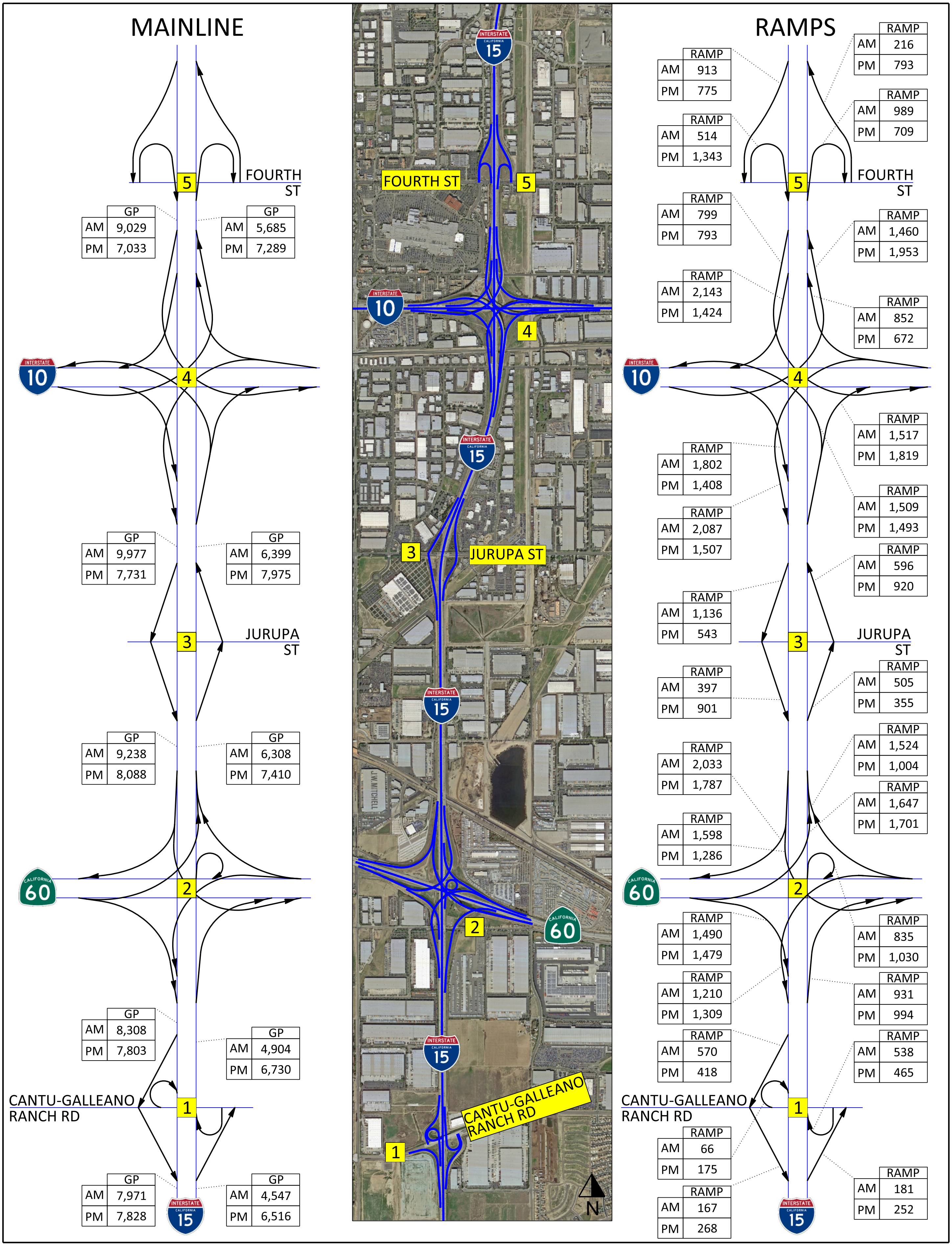
This page intentionally left blank



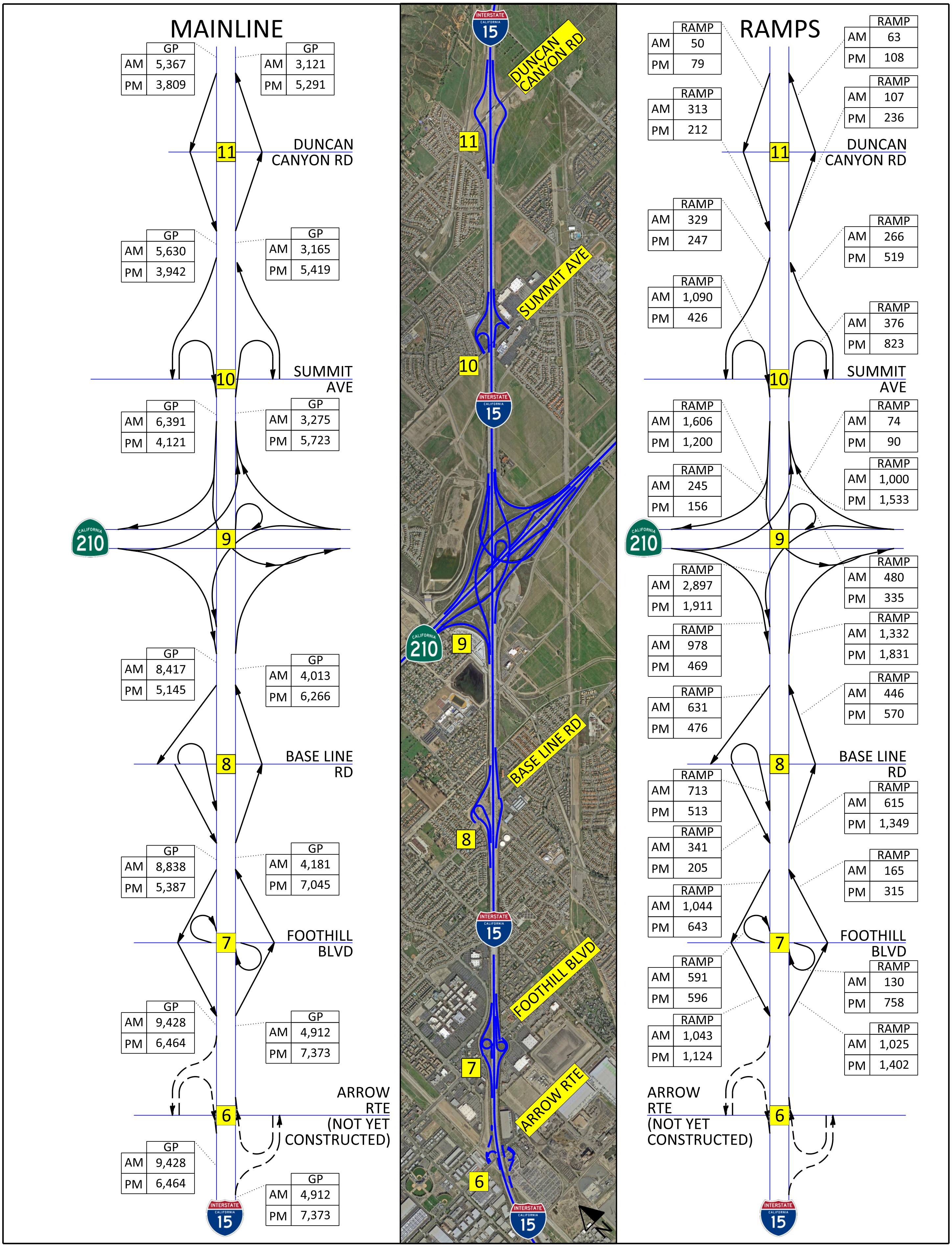
Existing (2014) Traffic Volumes
Sheet 1 of 2



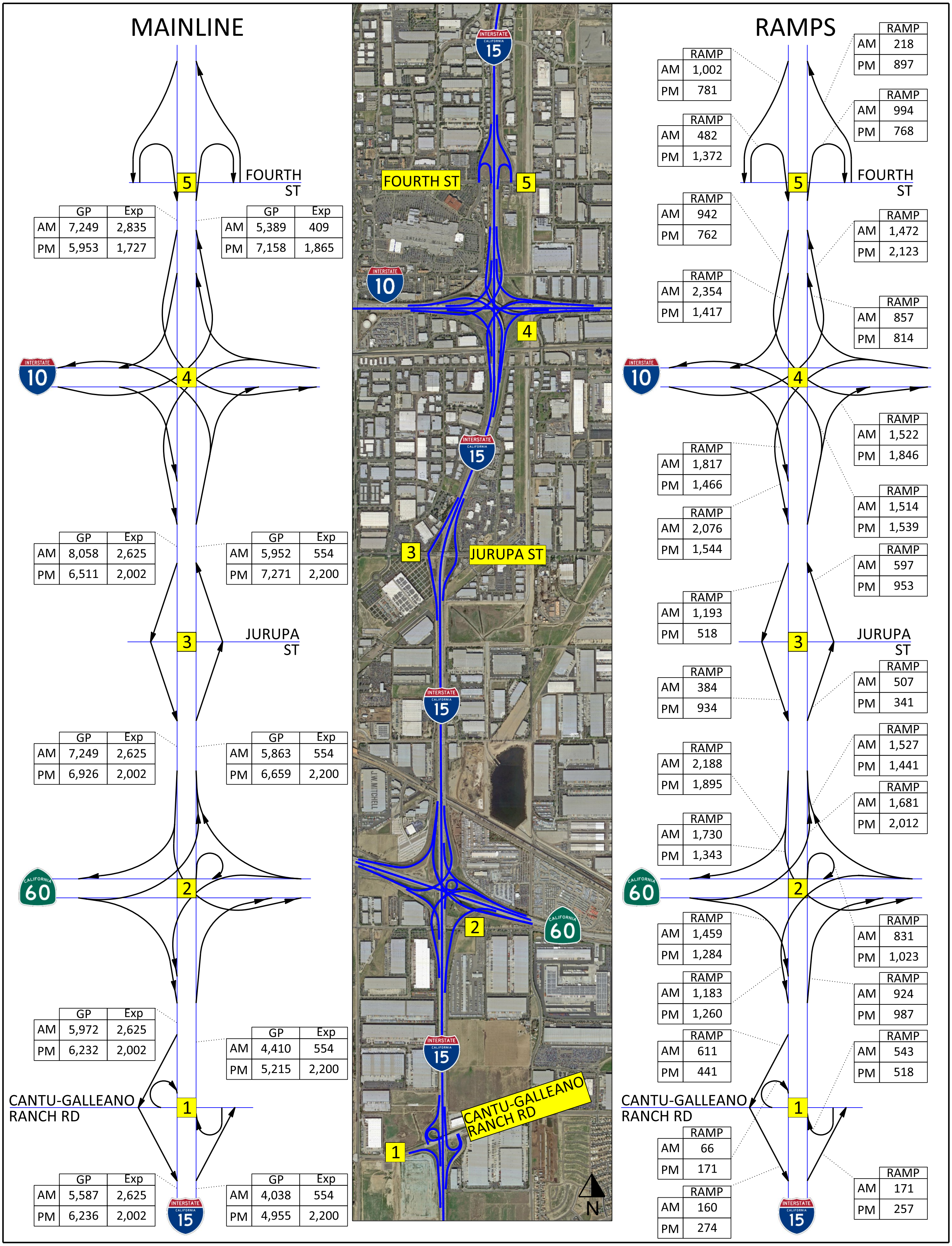
Existing (2014) Traffic Volumes
Sheet 2 of 2



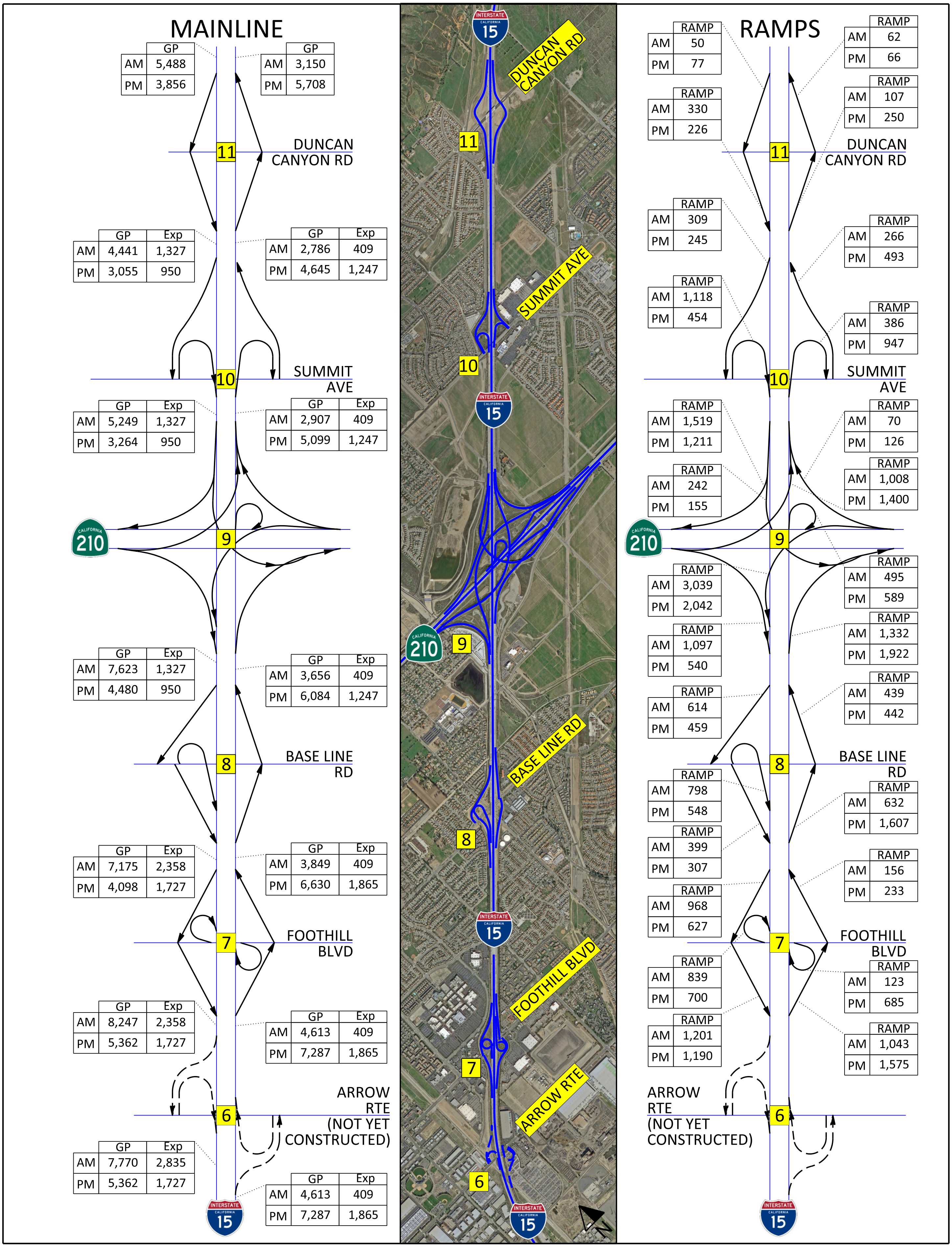
2024 No Build Alternative Traffic Volumes
Sheet 1 of 2



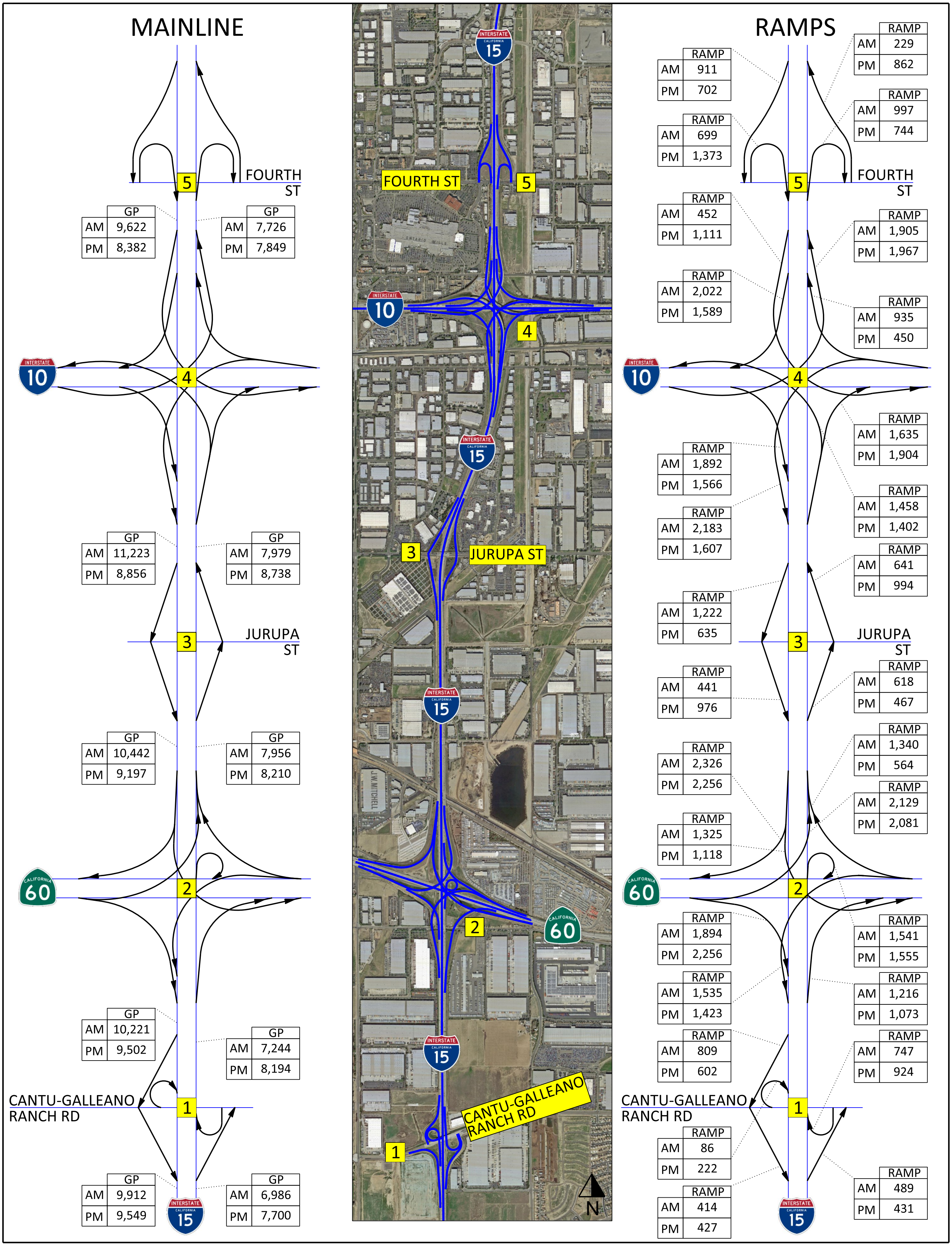
2024 No Build Alternative Traffic Volumes
Sheet 2 of 2



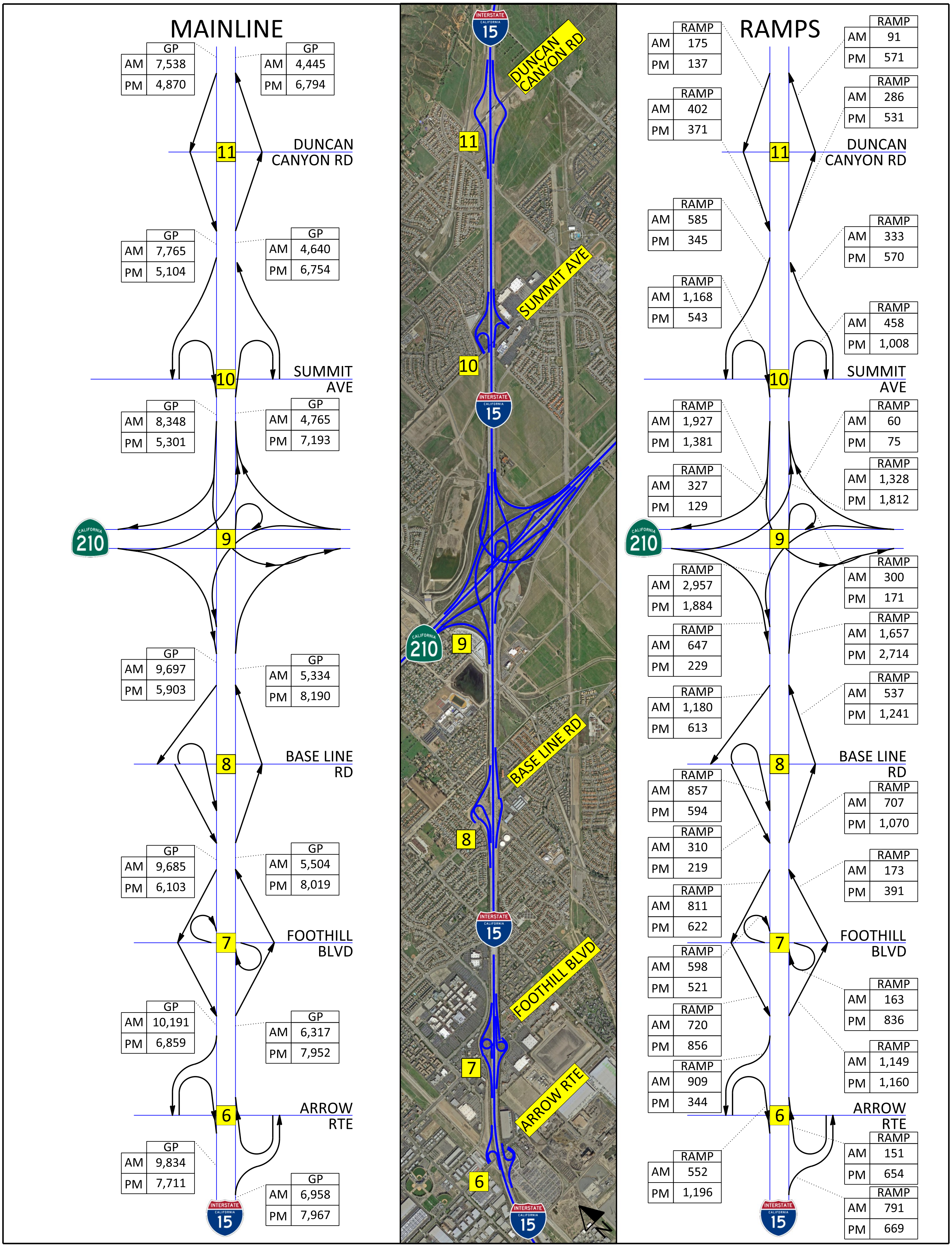
2024 Build Alternative Traffic Volumes
Sheet 1 of 2



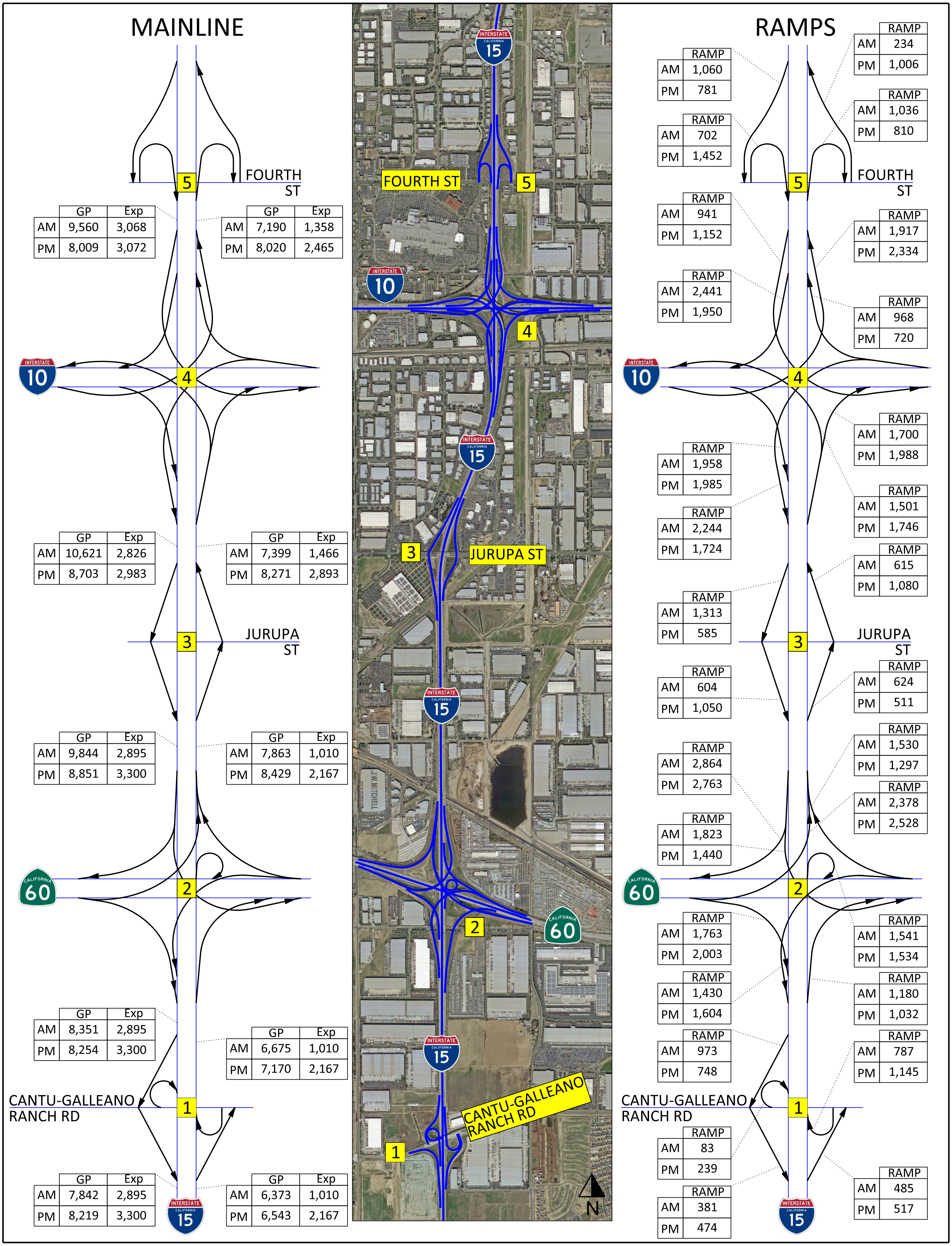
2024 Build Alternative Traffic Volumes
Sheet 2 of 2



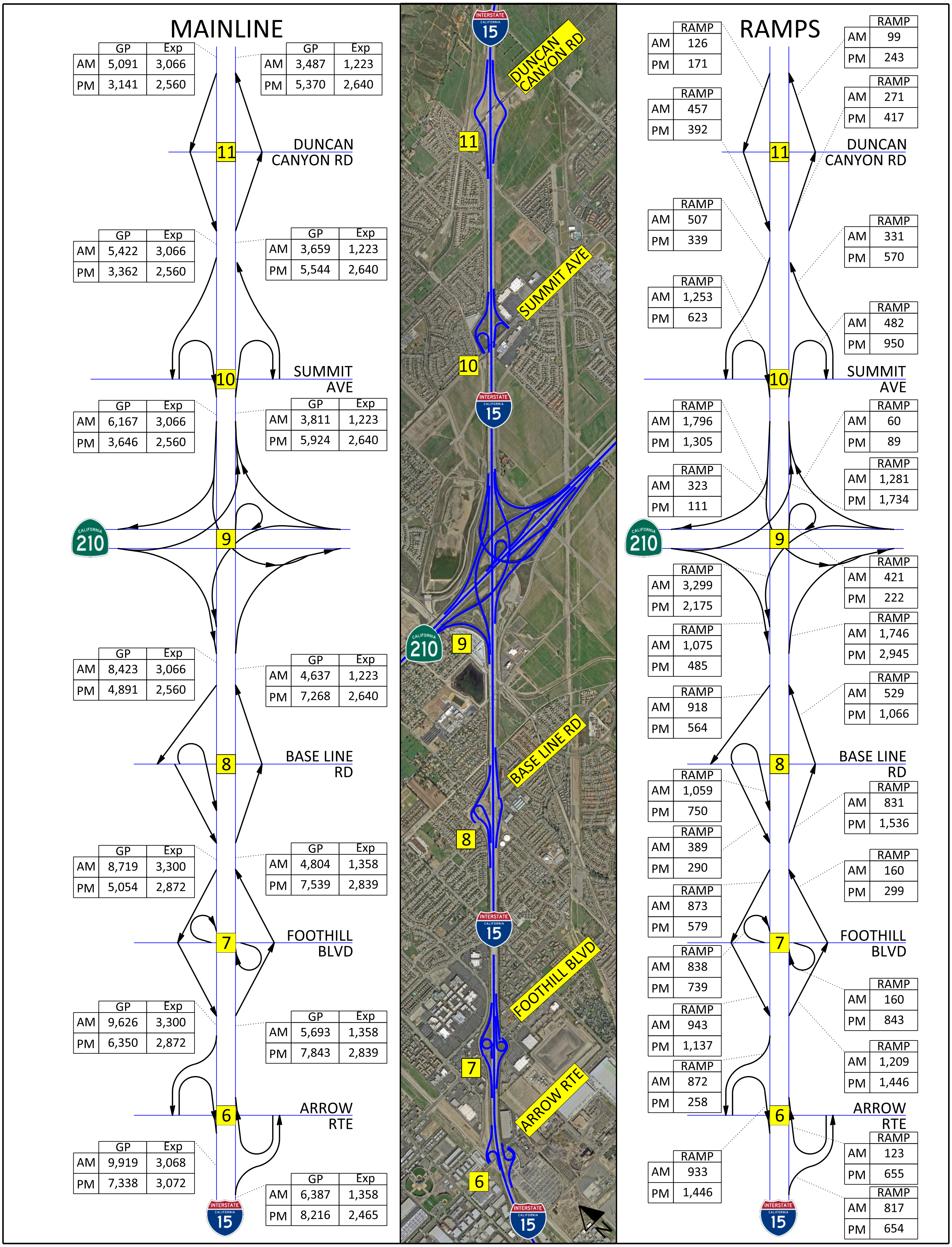
2045 No Build Alternative Traffic Volumes
Sheet 1 of 2



2045 No Build Alternative Traffic Volumes
Sheet 2 of 2



2045 Build Alternative Traffic Volumes
Sheet 1 of 2



2045 Build Alternative Traffic Volumes
Sheet 2 of 2

ATTACHMENT C

Project Category Determination

This page intentionally left blank

Governments
SANBAG
Working Together

San Bernardino Associated Governments
1170 W. 3rd Street, 2nd Fl, San Bernardino, CA 92410
Phone: (909) 884-8276 Fax: (909) 885-4407
Web: www.sanbag.ca.gov

TRANSPORTATION
MEASURE I

•San Bernardino County Transportation Commission •San Bernardino County Transportation Authority
•San Bernardino County Congestion Management Agency •Service Authority for Freeway Emergencies

May 8, 2014

Raghuram Radhakrishnan (R.K.)
Project Management
Department of Transportation, District 8
464 West 4th Street
San Bernardino, CA 92401-1400

Subject: I-15 Corridor (Caltrans EA: 0R800K)
Project Category Determination Request

Dear Mr. Radhakrishnan:

SANBAG, as lead agency for subject project, requests approval of the Project Category Determination for the I-15 Corridor Project. According to Caltrans Project Development Procedures Manual, Chapter 8 Section 5, Project Development Category factors listed, we understand the I-15 Corridor project to be **Category 4A** based on the following:

1. I-15 Corridor Project is an existing access controlled facility, and
2. A revised Freeway Agreement is not anticipated, and
3. No new right of way is anticipated, and
4. The project increases traffic capacity.

Should you need any further information, please contact me at 909.884.8276 or via email at ccostello@sanbag.ca.gov. Thanks for your assistance.

Categorical Determination Approval

Submitted by: ______________________
Chad Costello
Project Manager

Concurred by: ______________________
Christy Connors
Deputy District Director, Design
Caltrans District 8

File:
John Meier
Dennis Saylor

This page intentionally left blank

ATTACHMENT D

Conceptual Layouts

(Separately Bound in Volume II)

This page intentionally left blank

ATTACHMENT E

Structure Advance Planning Studies

(Separately Bound in Volume II)

This page intentionally left blank

ATTACHMENT F

Preliminary Feasibility Study of I-10/I-15 Express Lane Direct Connector Ramps

This page intentionally left blank

PARSONS

2201 Dupont Drive, Suite 200, Irvine, CA 92612 TEL: (949) 333-4500 FAX: (949) 263-1225 www.parsons.com

MEMORANDUM

Date: October 6, 2015

To: Chad Costello, SANBAG

From: David Speirs/Patti Tiberi, Parsons

Re: **I-10 Corridor Project, EA 0C2500**

Subject: **Preliminary Feasibility Study of Interstate 10 (I-10) and Interstate 15 (I-15) Express Lane Direct Connector Ramps**

---

1. INTRODUCTION

The San Bernardino Associated Governments (SANBAG), in partnership with the California Department of Transportation (Caltrans), completed a Preliminary Feasibility Study considering the potential implementation of tolled Express Lane direct connector ramps at the Interstate 10 (I-10) and Interstate 15 (I-15) system interchange in San Bernardino County. The proposed I-10 and I-15 Express Lane direct connectors, accommodated by adding new connector ramp facilities linking proposed Express Lanes along both mainlines, would provide additional mobility options for motorists traveling through the system interchange. The Express Lanes and the direct connectors would require single occupant vehicles (SOV) to pay a toll to use the facility while High Occupancy Vehicles (HOV) meeting the occupancy requirement would use the facility free of charge. As part of this preliminary study, Express Lane direct connectors between the proposed I-10 and I-15 Express Lanes were evaluated for feasibility considering the anticipated traffic demands, costs, benefits and financial viability. The I-10/I-15 Express Lane direct connectors, if implemented, would provide Express Lane system continuity between two of the County's major freeways and would enhance traffic operations on both I-10 and I-15 freeways at this system interchange.

The purpose of this memorandum is to summarize the preliminary study and evaluation of the I-10/I-15 Express Lane direct connectors which includes the following steps:

- Examine traffic demands in each direction and traffic forecasts for Express Lane volumes and corresponding revenues
- Develop a conceptual layout plan to analyze physical constraints and verify geometric feasibility of implementing Express Lane direct connector ramps
- Estimate the construction costs
- Determine the financial viability
- Evaluate the I-10 and I-15 freeway operations without the direct connectors
- Provide summary of related conclusions/ recommendations

The preliminary analysis is based on information developed for the I-10 and I-15 Corridor Projects which are currently in the environmental phase, including the I-10 Traffic Forecasts (Iteris, January 2014), the I-10 Traffic Study Report (Parsons, August 2014), I-15 Corridor Project Study Report-Project Development Support (Parsons Brinckerhoff, September 2014), and Level Two Traffic and Revenue Study Report (CDM Smith, September 2014).

2. PROJECT BACKGROUND

I-10 Corridor Project

The I-10 Corridor Project (EA 08-0C2500) proposes to add freeway lanes along the 33-mile segment of I-10 from the Los Angles/San Bernardino (LA/SB) County Line to Ford Street in Redlands. The project is currently in the Project Approval/Environmental Document (PA/ED) phase with three alternatives being evaluated. Alternative 1 is a No Build alternative. Alternative 2, which is carried from the Project Study Report/Project Development Support (PSR/PDS) completed in 2006, would extend the existing HOV lane (one lane each direction) from its current terminus at Haven Avenue to Ford Street, a distance of 25 miles. Alternative 3, which was conceptualized in 2011 following SANBAG's preliminary toll feasibility studies, provides two tolled Express Lanes in each direction from the LA/SB County Line to California Street and one Express Lane in each direction from California Street to Ford Street, a distance of 33 miles.

The I-10 Express Lanes would be buffer-separated from the general purpose lanes via striping, and would provide 10 at-grade ingress/egress (I/E) access points in each direction. The access points are typically spaced at 3 to 4 mile intervals and have been located to provide access to both the system and local interchanges, while meeting the required weaving distances to the downstream/upstream ramps, in accordance with the Caltrans Traffic Operations Policy Direction (TOPD) 11-02. A TOPD typical access point geometric plan is depicted in Figure 1 below. In the vicinity of the I-10/I-15 system interchange, the proposed EB/WB Haven Avenue access points are located approximately 1.8 miles west of I-15 and the proposed EB/WB Etiwanda Avenue access points are located approximately 2.2 miles east of I-15. These access points are designed as combined I/E access points with a weave lane to facilitate the weaving between the No. 2 Express Lane and the No. 1 general purpose lane traffic. (For reference, the proposed access points at Haven Avenue are graphically shown on the attached conceptual design plan for the Express Lane direct connectors, Exhibit A).

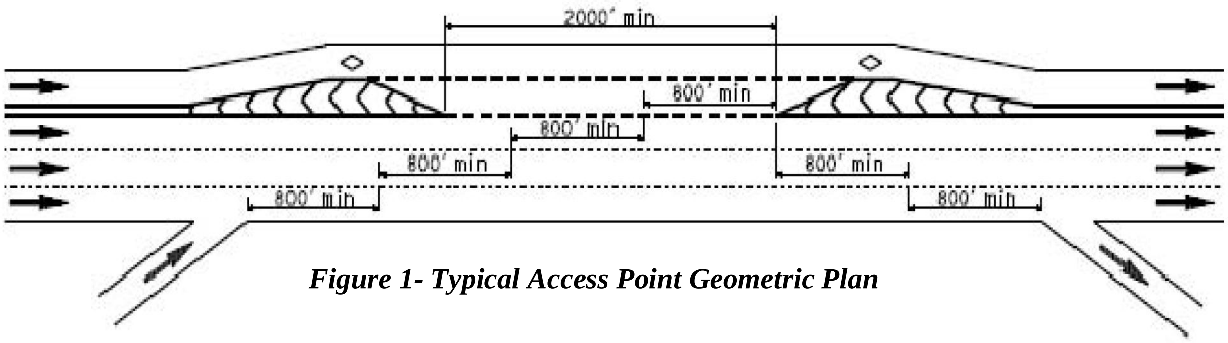


Figure 1- Typical Access Point Geometric Plan

Source: TOPD 11-02, dated March 23, 2011
Note: For I-10 Corridor Project, the 2,000' access opening is provided at all access points. Due to geometric constraints at several locations, the proposed ingress or egress weaving distance is slightly lower than 800' per lane. These locations have been discussed in detail with Caltrans and documented in the project's Decision Document A-2.

I-15 Corridor Project

The I-15 Corridor Project (EA 08-0R800) proposes to add Express Lanes in each direction along I-15 from Cantu Galleano Ranch Road to State Route 210, approximately 13 miles. The project is currently in the PA/ED phase which began in 2014 and is evaluating a No Build Alternative (Alternative 1) and one build alternative. Build Alternative 2 proposes to add two Express Lanes in each direction from Cantu Galleano Ranch Road to SR-210 and one Express Lane in each direction from SR-210 to Duncan Canyon Road. A future phase will extend the two Express Lanes northerly in each direction to the US-395.

Similar to the I-10, the I-15 Express Lanes are buffer-separated from the general purpose lanes via striping, with five at-grade I/E access points provided in each direction typically spaced at 3 to 4 mile intervals. In the vicinity of the I-10/I-15 system interchange, the proposed NB/SB Jurupa Street access points are located approximately 1.4 miles south of I-10 and the NB/SB Arrow Highway access points are located approximately 2.2 miles north of I-10. These access points are designed as combined I/E access points with a weave lane, generally in accordance with the TOPD 11-02 requirements as depicted in Figure 1.

3. TRAFFIC DEMAND AND POTENTIAL REVENUE GENERATION BY THE EXPRESS LANE DIRECT CONNECTORS

There are potentially four Express Lane direct connectors to serve the Express Lane demand through the I-10/I-15 system interchange (a connector in each of the 4 quadrants). As listed below, each of the potential Express Lane direct connector would serve two reciprocal movements with one lane in each direction as follows:

- E10-N15 and S15-W10 movements (Northwest Quadrant)
- E10-S15 and N15-W10 movements (Southwest Quadrant)
- W10-N15 and S15-E10 movements (Northeast Quadrant)
- W10-S15 and N15-E10 movements (Southeast Quadrant)

To determine the feasibility of each of the potential Express Lane direct connectors, the projected traffic demand and the potential for toll revenue generation were considered, as discussed in the following sections.

Traffic Demands and Potential Revenue Generation for the Express Lane Direct Connectors

The traffic volumes for the existing general purpose connector ramps at the I-10/I-15 system interchange were analyzed to consider the overall utilization and potential capacity requirements for each directional movement. Table 1 presents year 2045 traffic volume projections on the existing I-10/I-15 freeway-to-freeway connectors which were forecasted by Iteris in January 2014 in support of the I-10 Corridor Project Traffic Study Report (Parsons, August 2014). As shown in the table, the traffic volumes forecasted for the four movements in the NW and SW quadrants are projected to approach or exceed the capacity of the connectors. Because of high volumes on these existing connectors, it is estimated that some of the traffic currently using the general purpose lane connectors may favor utilizing the potential NW and SW Express Lane direct connectors if provided. In the NE and SE quadrants, the traffic demands for the four movements are projected to be below the existing capacity and therefore, are not projected to provide a significant utilization or benefit of the Express Lane direct connectors in these quadrants.

Table 1: I-10/I-15 Connector Volumes

Quadrant	Existing Connectors	No. of Lanes	Capacity (vph)	Alternative 3 (Express Lanes) 2045 Peak Hour Volume	
				a.m.	p.m.
NW	E10-N15 Conn	2	3,000	1,610	**2,790**
	S15-W10 Conn	2*	3,000*	**3,200**	2,550
SW	E10-S15 Conn	1	1,500	**2,390**	**2,060**
	N15-W10 Conn	2*	3,000*	**2,960**	2,340
NE	W10-N15 Conn	1	1,500	920	1,120
	S15-E10 Conn	2*	3,000*	1,270	1,120
SE	W10-S15 Conn	2*	3,000*	1,270	1,120
	N15-E10 Conn	2*	3,000*	2,620	2,640

**2-lane connector transitions to 1 lane near the freeway entry, reducing the capacity from 3,000 to 1,500 vphpl*
Boldface represents traffic demand reaching or exceeding the capacity.

Based upon the existing and forecast connector ramp volumes, the design team concluded that Express Lane direct connectors in the NW and SW quadrants may attract sufficient traffic volumes to warrant further investigation.

Accordingly, a separate Traffic and Revenue (T&R) Study was performed by CDM Smith (September 2014) for the I-10/I-15 Corridors. The study developed Express Lane traffic volume forecasts for both mainlines and the potential direct connector ramps using a complex traffic model that considered numerous regional factors including the typical commuter ‘value of time’, a detailed review of socio-economic growth forecasts, future development potential, and a review of future congestion patterns along both corridors. The model was used to estimate the anticipated toll rates necessary to regulate traffic volumes and maintain free flow speeds in the Express Lanes. The model also provided data regarding traffic demand and level of congestion within the adjacent general purpose lanes. Finally, the model was used to estimate the potential increase in projected annual revenues that would result with the inclusion of the Express Lane Direct Connectors.

The T&R study results indicate that the Express Lane direct connectors in the NW and SW quadrants are estimated to increase the toll revenues on I-10 and I-15 by approximately 11 percent in year 2030 and 8 percent in year 2046. Applying these percentages to the projected Express Lane revenues for the I-10 and I-15 Corridor would yield approximately $3.1 million (annual revenue) in 2030 and $9.1 million (annual revenue) in 2046.

4. GEOMETRIC FEASIBILITY OF THE EXPRESS LANE DIRECT CONNECTORS

In addition to development of traffic demand and the revenue forecasts, conceptual layout plans were developed to assess the geometric feasibility of Express Lane direct connector ramps in the NW and SW quadrants.

The existing I-10/I-15 interchange is a 4-level system interchange with connections in all directions via 4 connector ramps at-grade and 4 connector ramps on fly-over structures. Existing connector ramps have 5-foot left and 5 to 8-foot right shoulders and have curve radii ranging between 750 and 1,050 feet. Four connector ramps on structures have stopping sight distance (SSD) ranging between 35 and 40 mph.

In the vicinity of the I-10/I-15 system interchange, I-10 is an eight-lane divided freeway with four general purpose lanes in each direction. The existing I-10 cross section in this area is generally standard with 12-foot lanes and 10-foot left and right shoulders. There is a buffer-separated HOV facility on I-10 with one 11-foot HOV lane in each direction from the LA/SB County that terminates at Haven Avenue, approximately 1.8 miles west of I-15. The I-15 is an eight-lane divided freeway in the vicinity of the system interchange, consisting of four general purpose lanes in each direction with a 46-foot wide median which can accommodate two additional lanes in each direction. The existing I-15 cross section is generally standard with 12-foot lanes and 10-foot left and right shoulders. For the I-10 and I-15 Corridor Projects, minor reductions in the lane and shoulder widths are anticipated at the I-10/I-15 interchange, being previously reviewed and discussed in Caltrans geometric workshop meetings to confirm feasibility, in order to retain the existing I-10/I-15 grade separated structure.

The conceptual design of the Express Lane direct connectors has been coordinated with both the I-10 and I-15 Corridor Projects. Exhibit A attached to this memorandum provides a graphical presentation of the proposed Express Lane direct connectors in the NW and SW quadrants of the I-10/I-15 system interchange which are designed to join two Express Lanes in each direction on I-10 and I-15. The Express Lane direct connectors are proposed on elevated structures and connect to, or depart from, the I-10 and I-15 Express Lanes within the median as a third lane as shown in Exhibit A. The Express Lane direct connectors are planned to include curved horizontal alignments, with a curve radius of approximately 960 feet and 1200 feet for the NW and SW Express Lane direct connector respectively, meeting the Caltrans minimum curve radius standard of 850 feet for the 50 mph connector design speed.

Each of the Express Lane direct connectors are proposed to include one 12-foot lane with left and right shoulders in each direction separated by a median barrier. The standard shoulder widths on connector ramps are 5 feet left and 10 feet right. However, due to the curved alignment, increasing the left shoulder width to 8 or 10 feet and reducing the right shoulder width to 8 feet is necessary in certain directions to provide the maximum stopping sight distance to the median barrier and outside bridge railing, while maintaining the maximum structure width limit of approximately 58 to 62 feet for a single-column bridge. Two-column structures were not proposed and do not appear to be feasible due to the limited space for column placement and the additional widening required on I-10 and I-15 to accommodate the wider two-column bents.

The basic configuration of the Express Lane direct connector ramps including the general alignment, lane and shoulder widths, stopping sight distance, and structure elements has been discussed with Caltrans at several I-10 and I-15 geometric workshops in 2013 and 2014, as well as with FHWA staff in January and July 2014. Preliminary review of the Express Lane direct connector structures has been performed to verify geometric feasibility, column placement and constructability of the proposed Express Lane direct connector alignments. Pursuant to discussions with FHWA during these meetings, there was general consensus that Express Lane direct connectors in the NW and SW quadrants are geometrically feasible, not precluded by the I-10 and I-15 Projects for future implementation, and warrant further consideration.

5. COST ESTIMATE AND FUNDING FOR THE EXPRESS LANE DIRECT CONNECTORS

After analyzing the preliminary concept plans for the potential Express Lane direct connectors in the NW and SW quadrants, the preliminary cost was estimated and is attached here as Exhibit B. The rough order of magnitude cost estimate is $517 million (this includes $50 million in right of way costs).

As depicted in the conceptual layout plan and reflected in the preliminary cost estimate, the Express Lane direct connectors in the NW and SW quadrants would require substantial construction impacts and have significant right of way impacts. Currently, there is no funding available for implementing these Express Lane direct connectors as part of the I-10 or the I-15 Corridor Projects. Although the Express Lane direct connectors in the NW and SW quadrants are projected to generate some additional toll revenues that may be used to help secure project funding, the projected revenue stream is not sufficient to fund the additional cost of $517 million. As a result, the direct connectors are currently not financially viable.

As such, it was suggested that the Express Lane direct connectors should be considered as a separate stand-alone project in the future. Implementation of the Express Lane direct connectors as a future project would depend upon project funding and programming by Caltrans and SANBAG. The financial analysis has identified funding to allow the Express Lane direct connectors to be constructed and opened in approximately 2034.

6. FREEWAY OPERATIONS WITHOUT DIRECT CONNECTORS

Due to the lack of funding at this time, the I-10/I-15 Express Lane direct connectors are not anticipated to be implemented in the near term. However, since both the I-10 and I-15 Express Lane projects are anticipated to be implemented without the express lane direct connectors, traffic modeling and analysis was completed to assess traffic operating conditions for both freeways without the Express Lane direct connectors.

I-10 and I-15 Freeway Operation Results

The project team developed traffic models to forecast future traffic conditions on both the I-10 and I-15 corridors (future conditions for two Alternatives each: "no build" and "Express Lanes - without express lane direct connectors"). The traffic modeling results for both corridors include the following:

I-10 Freeway:

- Average Peak Hour Speeds – General Purpose (GP) lanes: See Table 2
- Average Travel Time Savings – General Purpose lanes: See Table 3
- Reduction in Peak hour traffic demand – General Purpose lanes: See Table 4

I-15 Freeway:

- Average Peak Hour Speeds – General Purpose lanes: See Table 5
- Average Travel Time Savings – General Purpose lanes: See Table 6
- Reduction in Peak hour traffic demand – General Purpose lanes: See Table 7

As shown in Table 2, for year 2024, the average peak hour speeds for the I-10 GP lanes in each direction in the vicinity of the I-10/I-15 system interchange increase by 15 – 21 miles per hour if the Express Lanes are implemented.

Table 2 – I-10 Freeway – Year 2024 Alternative 1 and Alternative 3
Average Peak Hour Speed

I-10 Between Haven Avenue and Cherry Avenue		2024 Average Peak Hour Speed (mph)		
		Alternative 1 (No Build)	Alternative 3 (Express Lanes)	
		GP	GP	Express
Eastbound	a.m.	***43***	***58***	65
	p.m.	***18***	***37***	65
Westbound	a.m.	***24***	***40***	65
	p.m.	***27***	***48***	65

Source: Results from Traffic and Revenue Study, CDM-Smith

As shown in Table 3, for year 2024, the average travel times for the I-10 GP lanes for the 5 mile segment from Haven Avenue to Cherry Avenue in the vicinity of the I-10/I-15 system interchange are reduced by up to 7 minutes if the Express Lanes are implemented.

Table 3 – I-10 Freeway – Year 2024 Alternative 1 and Alternative 3
Average Peak Hour Travel Time

I-10 Between Haven Avenue and Cherry Avenue		2024 Average Peak Hour Travel Time (minutes)		
		Alternative 1 (No Build)	Alternative 3 (Express Lanes)	
		GP	GP	Express
Eastbound	a.m.	***5.9***	***4.4***	3.9
	p.m.	***13.9***	***6.9***	3.9
Westbound	a.m.	***9.4***	***5.7***	3.5
	p.m.	***8.3***	***4.7***	3.5

Source: Results from Traffic and Revenue Study, CDM-Smith

Table 4 shown below, illustrates the reduction in traffic volume in the general purpose lanes along the I-10 freeway for the Express Lanes Alternative, in the vicinity of the system interchange, as compared to the forecast demand for the "No Build" Alternative at 2045 levels. As shown in the table, there is significant benefit and reduction in volumes for the general purpose lanes when the Express lanes are implemented.

Table 4 – I-10 Freeway – Horizon Year 2045 -- No Build and Alternative 3
Reduction in Mainline (General Purpose Lanes) Volumes

I-10 Segment	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	2045 No Build	2045 Alternative 3 (Express Lanes)	Reduction in GP lane Volume (Alt 3 versus "No Build")	2045 No Build	2045 Alternative 3 (Express Lanes)	Reduction in GP lane Volume (Alt 3 versus "No Build")
	Volume	Volume	Volume	Volume	Volume	Volume
EB Mainline						
Milliken – I-15	10,560	9,010	***1,550***	11,490	10,890	***600***
I-15 – Etiwanda	10,530	8,900	***1,630***	10,350	9,800	***550***
WB Mainline						
Milliken – I-15	13,280	11,710	***1,570***	12,710	11,400	***1,310***
I-15 – Etiwanda	10,140	8,770	***1,370***	10,780	9,420	***1,360***

Source: Traffic Study Report for I-10 Corridor Project, Parsons, August 2014

- no HOV lane in this segment under 2045 No Build condition.

Table 5 shows, for year 2030, the average peak hour speeds for the I-15 GP lanes in each direction in the vicinity of the system interchange increase by 10 – 21 miles per hour if the Express Lanes are implemented.

Table 5 – I-15 Freeway – Year 2030 Alternative 1 and Alternative 2 Average Peak Hour Speed

I-15 Between Cantu-Galleano Ranch Road and Arrow Highway		2030 Average Peak Hour Speed (mph)		
		Alternative 1 (No Build)	Alternative 2 (Express Lanes)	
		GP	GP	Express
Northbound	a.m.	***16***	***37***	65
	p.m.	***11***	***22***	65
Southbound	a.m.	***18***	***28***	65
	p.m.	***19***	***31***	65

Source: Results from Traffic and Revenue Study, CDM-Smith

As shown in Table 6, for year 2030, the average peak hour travel times for the I-15 GP lanes for the segment from Cantu Galleano Ranch Road to Arrow Highway in the vicinity of the I-10/I-15 system interchange are reduced by up to approximately 20 minutes if the Express Lanes are implemented.

Table 6 – I-15 Freeway – Year 2030 Alternative 1 and Alternative 2 Average Peak Hour Travel Time

I-15 Between Cantu-Galleano Ranch Road and Arrow Highway		2030 Average Peak Hour Travel Time (minutes)		
		Alternative 1 (No Build)	Alternative 2 (Express Lanes)	
		GP	GP	Express
Northbound	a.m.	***24.2***	***10.8***	6.1
	p.m.	***37.2***	***17.8***	6.1
Southbound	a.m.	***22.1***	***13.8***	6.0
	p.m.	***20.1***	***12.6***	6.0

Source: Results from Traffic and Revenue Study, CDM-Smith

Table 7 shown below, illustrates the reduction in traffic volume in the general purpose lanes along the I-15 freeway for the Express Lanes Alternative as compared to the forecast demand for the "No Build" Alternative at 2045 levels. Similar to the I-10 Corridor and as shown in the table, there is significant benefit to the general purpose lanes and a reduction in GP volumes when the Express lanes are provided.

Table 7 – I-15 Freeway – Year 2045 - No Build and Build Express Reduction in Mainline (General Purpose Lanes) Volumes

I-15 Segment	A.M. Peak Hour Volumes			P.M. Peak Hour Volumes		
	2045 No Build	2045 Build Express Lanes	Reduction in GP lane Volume (Build versus No Build)	2045 No Build	2045 Build Express Lanes	Reduction in GP lane Volume (Build versus No Build)
	Volume	Volume	Volume	Volume	Volume	Volume
NB Mainline						
E. 4th – I-10	10,880	9,800	***1,080***	9,960	9,940	***20***
I-10 – Jurupa	10,610	9,640	***970***	10,080	9,400	***680***
SB Mainline						
E. 4th – I-10	11,730	11,390	***340***	11,890	11,120	***770***
I-10 – Jurupa	11,590	10,640	***950***	9,650	8,950	***700***

Source: I-15 Corridor Project, Project Study Report-Project Development Support, PB, August 2014
- no additional capacity in this segment under 2045 No Build condition.

I-10 Corridor Traffic Simulation Modeling Results:

Since the I-10 Corridor Project is further advanced through the PA/ED phase, additional traffic simulation modeling was conducted for the I-10 freeway Express Lanes alternative using a VISSIM Microsimulation program to assess the traffic operations at the proposed ingress/egress locations along I-10. The results of this analysis are summarized the VISSIM Report by CDM Smith (May, 2015).

The VISSIM modeling focused on analyzing operations of the Express Lanes, especially at project transition areas at the end of the project and the intermediate access areas where traffic enters or exits the local interchanges. In the vicinity of the I-10/I-15 system interchange, the highest traffic volumes are located just west of the I-15 including the local interchange traffic from Haven Avenue and Milliken Avenue. Of particular interest are the forecast traffic conditions at the eastbound (EB) Ingress/Egress weaving zone within this area for traffic leaving I-10 to access I-15.

Selected results from the VISSIM simulation model regarding this location are included below:

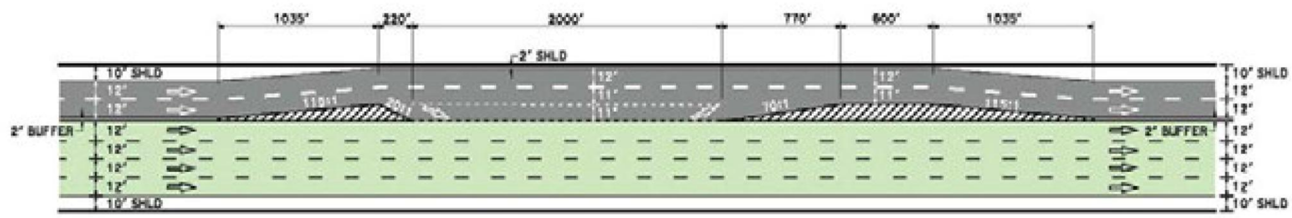
- Weaving activities on EB I-10 (general purpose lanes) between the Haven Avenue and I-15 are anticipated to operate similarly under the Express Lane and No Build alternatives.
- For the Express Lane Alternative on I-10, the proposed Haven Avenue Express Lane EB access opening would begin 1,200 feet west of Haven Avenue overcrossing structure. The proposed

express lane access point would provide 1,700 feet of *additional* weaving distance – as compared to the existing Ingress/Egress location for the existing HOV lane.

- The VISSIM Microsimulation model shows that in the open year (2024) evening peak hour, there would be congestion in the eastbound general purpose lanes between Milliken Avenue and I-15 caused by a high demand of traffic exiting I-10 to access I-15 and by the need for traffic entering I-10 from Milliken Avenue to weave across this traffic. The congestion in the GP lanes is not a result of the merge and diverge maneuvers into and out of the Express Lanes. Exhibit 9 in the VISSIM report shows that the "head" of the congestion is at the I-15 interchange; the congestion extends back through the Haven Avenue intermediate access area as far upstream as the Archibald and Vineyard interchanges.

- Consideration was given to provide a longer intermediate access area (EB I/E at Haven Avenue), however the results indicate that this would not reduce congestion in the GP lanes near the Haven Avenue access area. The cause of that congestion is a downstream condition that will not be affected by a longer access area. Within the access area, traffic speeds in the GP lanes are roughly the same as speeds in the GP lanes both upstream and downstream of the access area, indicating that the intermediate access area is not the cause of the congestion.

- The model findings also show that in almost all cases, the weaving lane is operating at 45 mph or better. Where the speeds in the weaving lane is below 45 mph, they are between the free flow speeds in the Express Lanes and the much slower speeds in the GP lanes. This indicates that the weaving lane in the intermediate access areas are sufficiently long to enable traffic entering and exiting the Express Lanes to use the weaving lane to change speeds and diverge from and merge into the different streams without overcrowding the weaving lane. Since the weaving lane is not overcrowded, it is sufficiently long to function as intended. If the weaving lane were insufficiently long, speeds would be similar to speeds in the GP lanes because traffic would be queued waiting to exit the weave lane into the GP lanes. See the figure below that depicts a typical ingress/egress access area including the weave lane:



TYPICAL COMBINED INGRESS/EGRESS WEAVE LANE

- The model findings also indicate that, in the eastbound direction, the weave lane at the access area at Haven Avenue showed slower-than-free flow speeds due to the need for traffic to match the speeds in the general purpose lanes. The eastbound congestion in the general purpose lanes is caused by extremely high demand to exit the freeway at I-15, and the weaving movement caused by traffic entering I-10 at Milliken Avenue. There is congestion existing today in this area, and the growth in demand will result in additional delay by 2025. However, the model results indicate that the Express Lanes do not degrade or exacerbate the current mainline weaving condition beyond what would be anticipated under the No Build condition but instead helps reduce GP lane volumes and therefore is expected to improve operations in the vicinity of the system interchange.

7. CONCLUSIONS AND RECOMMENDATIONS

Based upon the information summarized above, the following conclusions and recommendations were derived:

- Due to the lack of available funds, the I-10/I-15 Express Lane direct connectors are not considered feasible for implementation at this time.
- The I-10/I-15 Express Lane direct connectors in the NW and SW quadrants are geometrically feasible.
- If implemented, the Express Lane direct connectors in the NW and SW quadrants of the I-10/I-15 system interchange are projected to attract sufficient traffic to provide a mobility benefit for the Express Lane corridors in the future.
- Implementation of the Express Lane direct connectors is estimated to cost $517 million including $50 million in right of way costs.
- The conceptual design of the Express Lane direct connectors has been coordinated with the I-10 and I-15 Corridor Projects to ensure that the I-10 and I-15 Express Lanes design would not preclude future implementation of the Express Lane direct connectors.
- The traffic modeling results indicate that the Express Lanes do not degrade or exacerbate the current mainline weaving condition beyond what would be anticipated under the No Build condition but instead helps reduce GP lane volumes and thereby is expected to improve operations in the vicinity of the system interchange.
- Also, as noted in the VISSIM results, the congestion in the adjacent general purpose lanes is not caused by the access points.
- Based upon the traffic demand and modeling results, Express Lane access points will provide access to/from the express lanes effectively without degrading the free flow speeds in the express lanes.
- The Express Lane direct connectors are suggested to be considered as a separate future project after construction of the I-10 and I-15 Express Lanes as additional system-wide improvements when additional funds become available. The financial analysis has identified funding to allow the Express Lane direct connectors to be constructed and opened in approximately 2034.

8. ATTACHMENTS

- Exhibit A –Express Lane Direct Connectors Conceptual Layout, June 2013
- Exhibit B – Express Lane Direct Connector Preliminary Cost Estimate, June 2013

ATTACHMENT G

Life Cycle Cost Analysis Forms

This page intentionally left blank

LCCA Forms

Table 1 General Purpose Lane (North Location) LCCA Form *

Alternative 1: 40-year JPCP (Alternative Selected based on the Lowest Agency Cost)				
1.15 JPCP, 0.35 LCB				
	Pavement Design Life:	40 Years	PV Agency Cost	PV User Cost
	Initial Construction Costs:		$ 7,366,000	
	Future Maintenance & Rehabilitation Costs:		$ 1,107,000	
	Total Agency Costs:		$ 8,473,000	
	Total User Costs:			$ 3,450,000
Alternative 2: 40-year JPCP				
1.15 JPCP, 0.25 HMA-A				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 8,092,000	
	Future Maintenance & Rehabilitation Costs:		$ 1,108,000	
	Total Agency Costs:		$ 9,200,000	
	User Costs:			$ 3,450,000
Alternative 3: 40-year CRCP				
1.0 CRCP, 0.25 HMA-A				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 8,707,000	
	Future Maintenance & Rehabilitation Costs:		$ 246,000	
	Total Agency Costs:		$ 8,953,000	
	User Costs:			$ 0.00

* LCCA was performed based on 55 year analysis period.

Table 2 General Purpose Lane (South Location) LCCA Form *

Alternative 1: 40-year JPCP (Alternative Selected based on the Lowest Agency Cost)				
1.15 JPCP, 0.35 LCB, 0.7 AS				
	Pavement Design Life:	40 Years	PV Agency Cost	PV Agency and User Cost
	Initial Construction Costs:		$ 19,997,000	
	Future Maintenance & Rehabilitation Costs:		$ 2,695,000	
	Total Agency Costs:		$ 22,692000	
	User Costs:			$ 2,769,000
Alternative 2: 40-year JPCP				
1.15 JPCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 21,752,000	
	Future Maintenance & Rehabilitation Costs:		$ 2,694,000	
	Total Agency Costs:		$ 24,446,000	
	User Costs:			$ 2,769,000
Alternative 3: 40-year CRCP				
1.0 CRCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 23,224,000	
	Future Maintenance & Rehabilitation Costs:		$ 598,000	
	Total Agency Costs:		$ 23,822,000	
	User Costs:			$0.00

* LCCA was performed based on 55 year analysis period.

Table 3 Express Lanes (New) LCCA Form *

Alternative 1: 40-year JPCP (Alternative Selected based on the Lowest Agency Cost)				
1.0 JPCP, 0.35 LCB, 0.7 AS				
	Pavement Design Life:	40 Years	PV Agency Cost	PV Agency and User Cost
	Initial Construction Costs:		$ 15,390,000	
	Future Maintenance & Rehabilitation Costs:		$ 952,000	
	Total Agency Costs:		$ 16,342,000	
	User Costs:			$ 83,000
Alternative 2: 40-year JPCP				
1.0 JPCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 16,760,000	
	Future Maintenance & Rehabilitation Costs:		$ 954,000	
	Total Agency Costs:		$ 17,714,000	
	User Costs:			$ 83,000

* LCCA was performed based on 55 year analysis period.

Table 4 Ramps LCCA Form *

Alternative 1: 40-year JPCP (Alternative Selected based on the Lowest Agency Cost)				
1.0 JPCP, 0.35 LCB, 0.7 AS				
	Pavement Design Life:	40 Years	PV Agency Cost	PV Agency and User Cost
	Initial Construction Costs:		$ 12,431,000	
	Future Maintenance & Rehabilitation Costs:		$ 939,000	
	Total Agency Costs:		$ 13,370,000	
	User Costs:			$ 1,131,000
Alternative 2: 40-year JPCP				
1.0 JPCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 13,555,000	
	Future Maintenance & Rehabilitation Costs:		$ 938,000	
	Total Agency Costs:		$ 14,493,000	
	User Costs:			$ 745,000
Alternative 3: 40-year RHMA-G design				
0.2 RHMA-G, 1.75 HMA, 0.5 Class 2 AB				
	Pavement Design Life:	40 Years		
	Initial Construction Costs:		$ 24,456,000	
	Future Maintenance & Rehabilitation Costs:		$ 7,479,000	
	Total Agency Costs:		$ 31,935,000	
	User Costs:			$ 3,025,000

* LCCA was performed based on 55 year analysis period.

Table 5 Connector LCCA Form *

Alternative 1: 40-year JPCP (Alternative Selected based on the Lowest Agency Cost)				
1.05 JPCP, 0.35 LCB, 0.7 AS				
	Pavement Design Life:	40 Years	PV Agency Cost	PV Agency and User Cost
		Initial Construction Costs:	$ 5,834,000	
		Future Maintenance & Rehabilitation Costs:	$ 428,000	
		Total Agency Costs:	$ 6,262,000	
		User Costs:		$ 526,000
Alternative 2: 40-year JPCP				
1.05 JPCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
		Initial Construction Costs:	$ 6,322,000	
		Future Maintenance & Rehabilitation Costs:	$ 427,000	
		Total Agency Costs:	$ 6,749,000	
		User Costs:		$ 526,000
Alternative 3: 40-year CRCP				
0.95 CRCP, 0.25 HMA-A, 0.7 AS				
	Pavement Design Life:	40 Years		
		Initial Construction Costs:	$ 6,851,000	
		Future Maintenance & Rehabilitation Costs:	$ 88,000	
		Total Agency Costs:	$ 6,939,000	
		User Costs:		$0.00

* LCCA was performed based on 55 year analysis period.

This page intentionally left blank

Summary of Pavement Design Alternatives LCCA {Current (Present) Cost}

Location	Alternative No.**	Pavement Design	Initial Construction Cost (I)	Agency Cost (A)	Future Maintenance & Rehabilitation (A-I)	User Cost (U)	Grand Total Cost (A+U)	Salvage (Residual) Agency Cost	Salvage (Residual) User Cost	Ranking By Lowest Initial Construction Cost	Ranking By Lowest Future M & R Cost	Ranking By Lowest Agency Cost	Ranking By Lowest User Cost	Ranking By Lowest Grand Total Cost
General Purpose LN (North) SR 210 to Beech Ave.	**Alternative 1**	**1.15 JPCP, 0.35 LCB**	$ 7,366,000	**$ 8,473,000**	$ 1,107,000	$ 3,450,000	$ 11,923,000	**$ 138,000**	**$ 19,820,000**	**1**	**2**	**1**	**2**	**2**
	Alternative 2	1.15 JPCP, 0.25 HMA-A	$ 8,092,000	$ 9,200,000	$ 1,108,000	$ 3,450,000	$ 12,650,000	**$ 136,000**	**$ 19,820,000**	**2**	**3**	**3**	**2**	**3**
	Alternative 3	1.0 CRCP, 0.25HMA-A	$ 8,707,000	$ 8,953,000	$ 246,000	$ -	$ 8,953,000			**3**	**1**	**2**	**1**	**1**
General Purpose LN (South) Cantu to 7th	**Alternative 1**	**1.15 JPCP, 0.35 LCB, 0.7 AS**	$ 19,997,000	**$ 22,692,000**	$ 2,695,000	$ 2,769,000	$ 25,461,000	**$ 382,000**	**$ 8,860,000**	**1**	**3**	**1**	**2**	**2**
	Alternative 2	1.15 JPCP, 0.25 HMA-A, 0.7 AS	$ 21,752,000	$ 24,446,000	$ 2,694,000	$ 2,769,000	$ 27,215,000	**$ 375,000**	**$ 8,860,000**	**2**	**2**	**3**	**2**	**3**
	Alternative 3	1.0 CRCP, 0.25 HMA-A, 0.7 AS	$ 23,224,000	$ 23,822,000	$ 598,000	$ -	$ 23,822,000			**3**	**1**	**2**	**1**	**1**
Express LN (New)	**Alternative 1**	**1.0 JPCP, 0.35 LCB, 0.7 AS**	$ 15,390,000	**$ 16,342,000**	$ 952,000	$ 83,000	$ 16,425,000	**$ 401,000**	**$ 309,000**	**1**	**1**	**1**	**1**	**1**
	Alternative 2	1.0 JPCP, 0.25 HMA-A, 0.7 AS	$ 16,760,000	$ 17,714,000	$ 954,000	$ 83,000	$ 17,797,000	**$ 394,000**	**$ 309,000**	**2**	**2**	**2**	**1**	**2**
Express LN (Existing)*	**Alternative 1**	**1.15 JPCP, 0.1 HMA, 0.5 LCB**	$ -				$ -							
Ramps	**Alternative 1**	**1.0 JPCP, 0.35 LCB, 0.7 AS**	$ 12,431,000	**$ 13,370,000**	$ 939,000	$ 1,131,000	$ 14,501,000	**$ 351,000**	**$ 3,619,000**	**1**	**2**	**1**	**2**	**1**
	Alternative 2	1.0 JPCP, 0.25 HMA-A, 0.7 AS	$ 13,555,000	$ 14,493,000	$ 938,000	$ 745,000	$ 15,238,000	**$ 345,000**	**$ 1,292,000**	**2**	**1**	**2**	**1**	**2**
	Alternative 3	0.2' RHMA-G, 1.75' HMA, 0.5' Class 2 AB	$ 24,456,000	$ 31,935,000	$ 7,479,000	$ 3,025,000	$ 34,960,000	**$ 9,212,000**	**$ 14,180,000**	**3**	**3**	**3**	**3**	**3**
Connector	**Alternative 1**	**1.05 JPCP, 0.35 LCB, 0.7 AS**	$ 5,834,000	**$ 6,262,000**	$ 428,000	$ 526,000	$ 6,788,000	**$ 161,000**	**$ 1,560,000**	**1**	**3**	**1**	**2**	**1**
	Alternative 2	1.05 JPCP, 0.25 HMA-A, 0.7 AS	$ 6,322,000	$ 6,749,000	$ 427,000	$ 526,000	$ 7,275,000	**$ 158,000**	**$ 1,560,000**	**2**	**2**	**2**	**2**	**2**
	Alternative 3	0.95 CRCP, 0.25 HMA-A, 0.7 AS	$ 6,851,000	$ 6,939,000	$ 88,000	$ -	$ 6,939,000			**3**	**1**	**3**	**1**	**3**

Notes:

* LCCA was not performed on the Existing pavement which will be used for proposed Express Lanes

** LCCA was performed for 55-year design life. Pavement Design was performed to achieve 40-year design life.

0.15-foot of JPCP needs to be added for outside lanes (without lateral support condition).

Base Bond Breaker needs to be placed between JPCP and LCB.

Red Bold Pavement Alternative is Recommended Based on The Lowest Agency Cost

Abbreviations:

CL-2 AB:	Class 2 Aggregate Base
CRCP:	Continuously Reinforced Concrete Pavement
HMA-A:	Hot Mix Asphalt (Type A)
JPCP:	Jointed Plain Concrete Paving
LCB:	Lean Concrete Base
RHMA-G:	Rubberized Hot Mix Asphalt, Gap-Graded
AS	Class 4 Aggregate Subbase

ATTACHMENT H

Express Lane Access Points and CHP Location Diagram

This page intentionally left blank

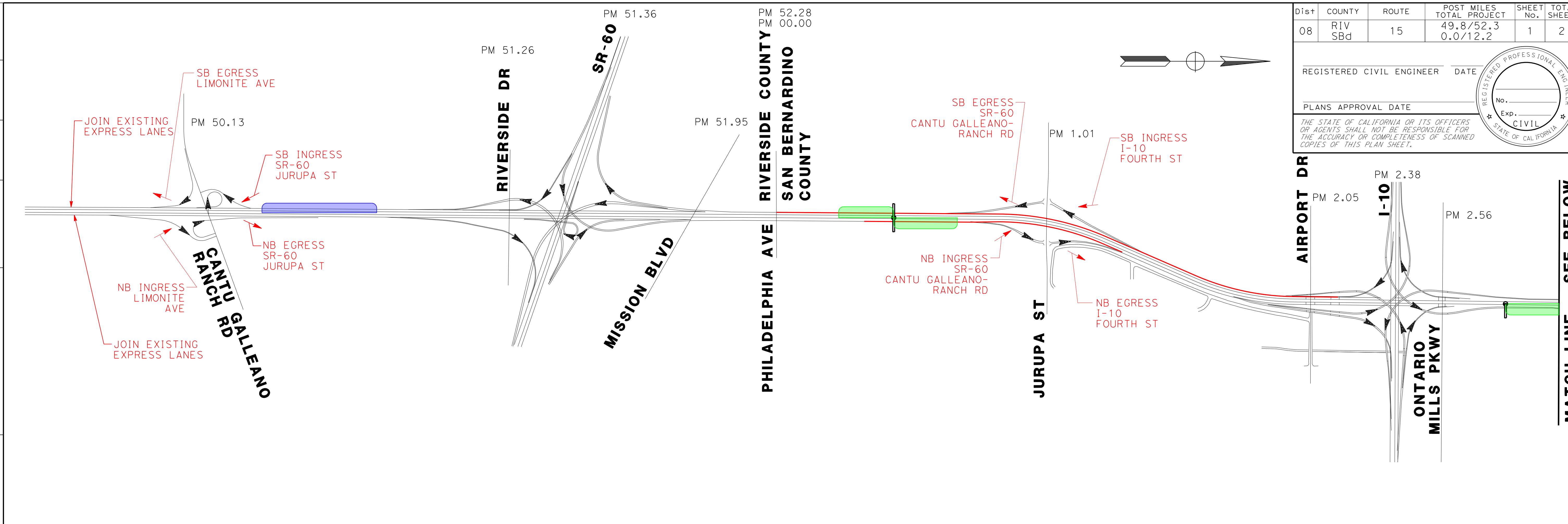
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	RIV SBd	15	49.8/52.3 0.0/12.2	1	2

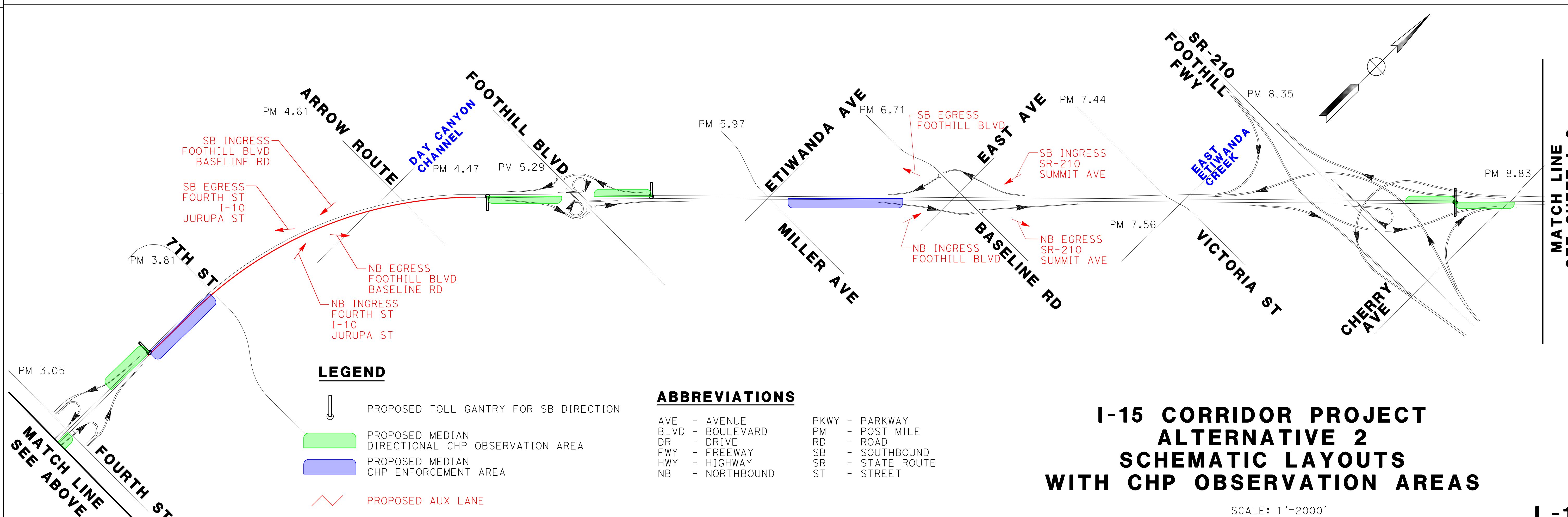
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.





LEGEND

PROPOSED TOLL GANTRY FOR SB DIRECTION

PROPOSED MEDIAN DIRECTIONAL CHP OBSERVATION AREA

PROPOSED MEDIAN CHP ENFORCEMENT AREA

PROPOSED AUX LANE

ABBREVIATIONS

AVE - AVENUE	PKWY - PARKWAY
BLVD - BOULEVARD	PM - POST MILE
DR - DRIVE	RD - ROAD
FWY - FREEWAY	SB - SOUTHBOUND
HWY - HIGHWAY	SR - STATE ROUTE
NB - NORTHBOUND	ST - STREET

I-15 CORRIDOR PROJECT ALTERNATIVE 2 SCHEMATIC LAYOUTS WITH CHP OBSERVATION AREAS

SCALE: 1"=2000'

L-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans®

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

DATE PLOTTED => 26-NOV-2018
TIME PLOTTED => 16:33

LAST REVISION 00-00-00

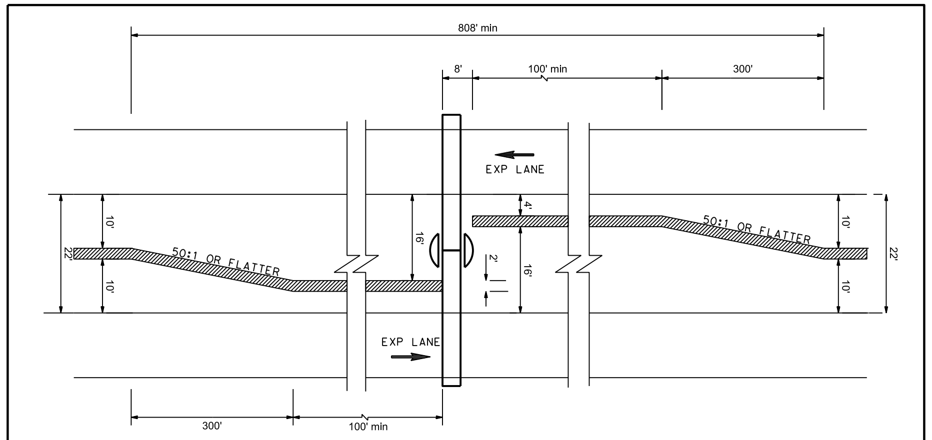
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	RIV SBd	15	49.8/52.3 0.0/12.2	2	2

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

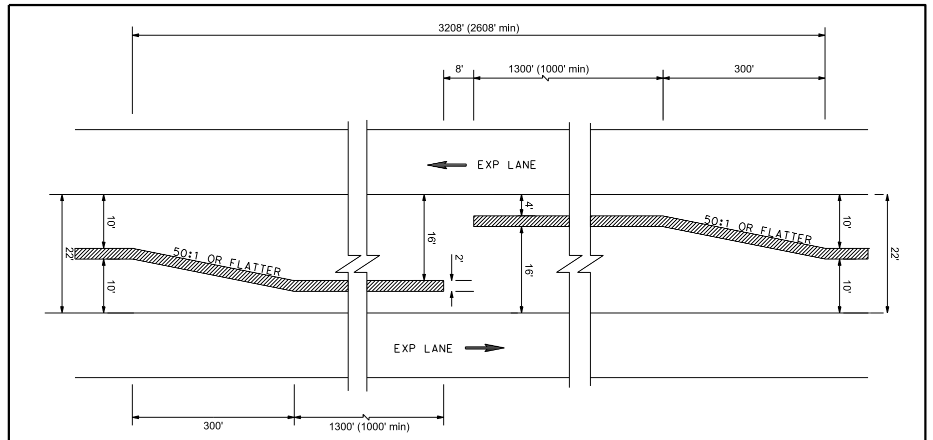
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA



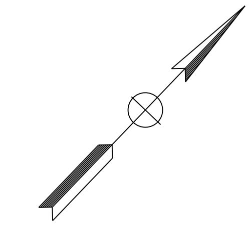
BI-DIRECTIONAL CHP OBSERVATION AREA FOR 22' MEDIAN

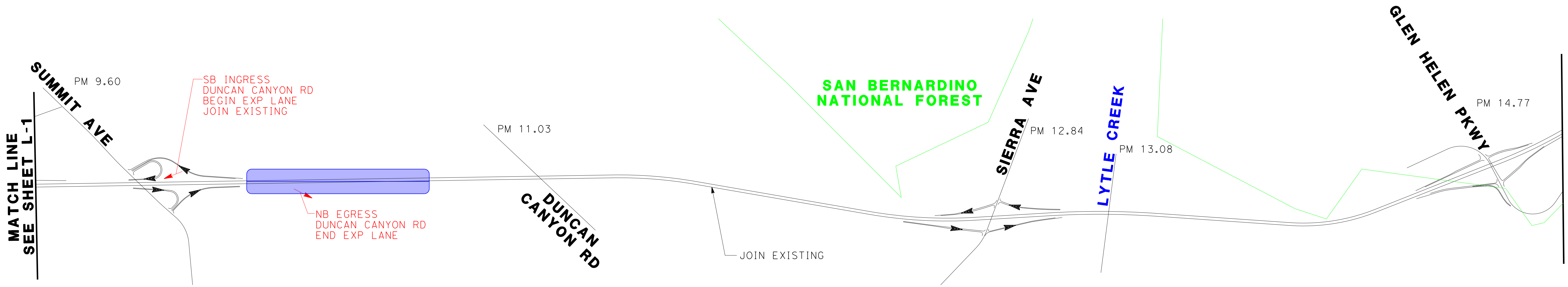
No Scale



BI-DIRECTIONAL CHP ENFORCEMENT AREA FOR 22' MEDIAN

No Scale





LEGEND

PROPOSED TOLL GANTRY FOR SB DIRECTION

PROPOSED MEDIAN
DIRECTIONAL CHP OBSERVATION AREA

PROPOSED MEDIAN
CHP ENFORCEMENT AREA

PROPOSED AUX LANE

I-15 CORRIDOR PROJECT
ALTERNATIVE 2
SCHEMATIC LAYOUTS
WITH CHP OBSERVATION AREAS

SCALE: 1"=2000'

L-2

REVISED BY | DATE REVISED

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

LAST REVISION 00-00-00 | DATE PLOTTED => 26-NOV-2018 | TIME PLOTTED => 16:36

This page intentionally left blank

ATTACHMENT I

Project Cost Estimates

This page intentionally left blank

I-15 CORRIDOR PROJECT ROADWAY COST ESTIMATE

EA 08-0R800, Project ID 0812000184

Type of Estimate :	Project Report
Program Code :	**20.20.400.610**
Project Limits :	08-Riv-15-PM 49.8/52.3, 08-SBd-15-PM 0.0/12.2
Description:	Entire Project - Cantu-Galleano Ranch Road to Duncan Canyon Road
Scope :	Provide 2 Express Lanes each direction between SR-60 and SR-210, 1 Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60, and 1 Express Lane in each direction between SR-210 and Duncan Canyon Road
Alternative :	Build Alternative (Alternative 2)

		Current Cost		Escalated Cost
ROADWAY ITEMS	**$**	**201,603,000**	**$**	**247,639,000**
STRUCTURE ITEMS	**$**	**69,755,000**	**$**	**85,684,000**
SUBTOTAL CONSTRUCTION COST	**$**	**271,358,000**	**$**	**333,323,000**
RIGHT OF WAY	**$**	**3,676,055**	**$**	**4,483,915**
DESIGN BUILD PROJECT AND CONSTRUCTION MANAGEMENT ITEMS	**$**	**33,992,000**	**$**	**41,755,000**
DESIGN BUILD DESIGN SERVICES	**$**	**19,656,000**	**$**	**24,137,000**
TOTAL CAPITAL OUTLAY COST	**$**	**328,682,000**	**$**	**403,699,000**
PR/ED SUPPORT	**$**	**11,000,000**	**$**	**11,000,000**
RIGHT OF WAY SUPPORT	**$**	**177,500**	**$**	**215,956**
PMC CONTRACT	**$**	**28,080,600**	**$**	**34,493,000**
LEGAL/PROCUREMENT SUPPORT	**$**	**2,716,000**	**$**	**3,336,000**
TOTAL CAPITAL OUTLAY SUPPORT COST	**$**	**41,975,000**	**$**	**49,045,000**
LANDSCAPE MAINTENANCE (EEP)*	**$**	**900,000**	**$**	**1,106,000**
CONSTRUCTION MANAGEMENT (EEP)*	**$**	**900,000**	**$**	**1,106,000**
TOTAL EEP COST	**$**	**1,800,000**	**$**	**2,212,000**
TOTAL ROADWAY COST	**$**	**373,000,000**	**$**	**455,000,000**

	Month / Year	
Date of Estimate (Month/Year)	6 / 2017	
Estimated Date of Construction Start (Month/Year)	3 / 2021	
Number of Working Days	750	Working Days
	Month / Year	
Estimated Mid-Point of Construction (Month/Year)	8 2022	
Number of Plant Establishment Days	365	Days

Estimated Project Schedule

PA/ED Approval	Month-Year	8 / 2018
Issue D-B RFP	Month-Year	9 / 2019
D-B NTP	Month-Year	6 / 2020
Begin Construction	Month-Year	3 / 2021

Approved by Project Manager	Dennis Saylor		(909) 884-8276
	Project Manager, SBCTA	**Date**	**Phone**

*Landscape Maintenance and Constrcution Management (EEP) is assumed to be required only where outside widening is proposed i.e. approx. 6 miles

I. ROADWAY ITEMS SUMMARY

	Section	Cost
1	Earthwork	$ 12,889,100
2	Pavement Structural Section	$ 46,183,300
3	Drainage	$ 4,593,600
4	Specialty Items	$ 46,494,900
5	Environmental	$ 7,279,800
6	Traffic Items	$ 35,359,500
7	Detours	$ 671,800
8	Minor Items	$ 4,143,800
9	Roadway Mobilization	$ 7,880,800
10	Supplemental Work	$ 7,842,000
11	State Furnished	$ 930,100
12	Overhead	$ 9,006,300
13	Contingencies	$ 18,327,500

TOTAL ROADWAY ITEMS	$ 201,602,500

	Name and Title	Date	Phone
Estimate Prepared By	Ted Lebida	6/22/2018	857-272-7124
Estimate Reviewed By			

By signing this estimate you are attesting that you have discussed your project with all functional units

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
160102	Clearing & Grubbing	LS	1	x	955,900.76	=	$	955,901
170101	Develop Water Supply	LS	1	x	300,000.00	=	$	300,000
190101	Roadway Excavation	CY	98,121	x	14.85	=	$	1,457,193
190107	Roadway Excavation (Type Y-1) ADL	CY	14,720	x	36.65	=	$	539,556
192037	Structure Excavation (Retaining Wall)	CY	95,540	x	33.44	=	$	3,194,858
193013	Structure Backfill (Retaining Wall)	CY	52,050	x	49.11	=	$	2,556,176
198010	Imported Borrow	CY	247,300	x	15.71	=	$	3,885,406

TOTAL EARTHWORK SECTION ITEMS $ 12,889,100

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	Rehabilitate Existing Pavement (CAPM CPRB at Year 0)	SY	437,378	x	13.85	=	$	6,059,000
250201	Class 2 Aggregate Subbase	CY	77,360	x	41.97	=	$	3,246,888
260203	Class 2 Aggregate Base	CY	700	x	41.26	=	$	28,882
280000	Lean Concrete Base	CY	48,840	x	114.12	=	$	5,573,621
390132	Hot Mix Asphalt (Type A)	TON	1,060	x	110.30	=	$	116,918
394075	Place Hot Mix Asphalt Dike (Type D)	LF	33,800	x	1.50	=	$	50,700
397005	Tack Coat	TON	1	x	1,700.00	=	$	1,700
401050	Jointed Plain Concrete Pavement	CY	151,555	x	197.40	=	$	29,916,957
420201	Grind Existing Concrete Pavement	SQYD	101,740	x	5.00	=	$	508,700
360200	Base Bond Breaker (# 5, Geosynthetic)	SQYD	383,496		1.73	=	$	663,448
414241	Isolation Joint Seal (Silicone)	LF	1,000		13.76	=	$	13,760
390100	Prime Coat	TON	1	x	2,643.91	=	$	2,644

TOTAL STRUCTURAL SECTION ITEMS $ 46,183,300

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)		Cost
XXXXXX	Project Drainage	LF	30,624	x	150	=	$ 4,593,600

TOTAL DRAINAGE ITEMS $ 4,593,600

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)		Cost
150662	Remove Metal Beam Guard Railing	LF	37,322	x	15.63	=	$ 583,315
XXXXXX	Remove Double Thrie Beam Barrier	LF	18,400	x	20.84	=	$ 383,438
150655	Remove Barrier	LF	2,837	x	16.13	=	$ 45,759
398100	Remove Asphalt Concrete Dike	LF	5,800	x	1.92	=	$ 11,136
150820	Remove Inlet	EA	12	x	2,974.68	=	$ 35,696
153130	Remove Concrete Curb	LF	870	x	14.48	=	$ 12,598
418006	Remove Concrete Pavement	CY	14,220	x	126.60	=	$ 1,800,252
70030	Lead Compliance Plan	LS	1	x	5,056.96	=	$ 5,057
200114	Rock Blanket	SQFT	53,370	x	13.84	=	$ 738,641
498016	CIDH Concrete Piling *(16")(Sound Wall)*	LF	18,920	x	106.90	=	$ 2,022,548
498XXX	CIDH Concrete Piling *(16")(CCTV Pole)*	LF	240	x	126.53	=	$ 30,367
510060	Structural Concrete (Retaining Wall)	CY	29,410	x	434.81	=	$ 12,787,762
511035	Architectural Treatment *(Walls)*	SQFT	341,442	x	18.00	=	$ 6,145,956
598001	Apply Anti-Graffiti Coating	SQFT	341,442	x	0.98	=	$ 334,613
582001	Sound Wall (Masonry Block)	SQFT	151,060	x	28.04	=	$ 4,235,816
520103	Bar Reinf. Steel (Retaining Wall)	LB	2,689,161	x	0.93	=	$ 2,500,920
582002	Access Gate (Sound Wall)	EA	30	x	5,000.00	=	$ 150,000
707117	36" Precast Concrete Pipe Inlet	EA	12	x	7,445.49	=	$ 89,346
731627	Minor Concrete (Curb, C&G, Sidewalk)	CY	240	x	226.19	=	$ 54,286
832007	Midwest Guardrail System (wood post)	LF	13,460	x	30.63	=	$ 412,270
839521	Cable Railing	LF	220	x	102.52	=	$ 22,554
839543	Transition Railing *(Type WB-31)*	EA	25	x	3,875.65	=	$ 96,891
839585	Alternative Flared Terminal System	EA	44	x	3,906.90	=	$ 171,904
839605	Crash Cushion *(REACT 9SCBS)*	EA	2	x	55,003.40	=	$ 110,007
839706	Concrete Barrier *(Type 60MG)*	LF	43,846	x	75.69	=	$ 3,318,704
839708	Concrete Barrier *(Type 60MGC)*	LF	6,885	x	112.85	=	$ 776,972
839734	Concrete Barrier *(Type 736SV)*	LF	14,490	x	107.54	=	$ 1,558,255
839726	Concrete Barrier *(Type 736A)*	LF	23,020	x	97.12	=	$ 2,235,602
XXXXXX	RailRoad Spur Track at Mission OH	LS	1	x	1,050,000.00	=	$ 1,050,000
XXXXXX	Power Service Connections	LF	56,000	x	41.00	=	$ 2,296,000
XXXXXX	Additional Structure Cost for Soundwall on Brid	LF	1,080	x	780.00	=	$ 842,400
XXXXXX	Flagging costs (Vina Vista+Rochester)	LS	1	x	1,635,747.84	=	$ 1,635,748

TOTAL SPECIALTY ITEMS $ 46,494,900

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	Biological Mitigation	LS	1	x	200,000.00	=	$	200,000
141000	Temporary Fence (Type ESA)	LF	64,000	x	5.64	=	$	361,013

Subtotal Environmental *$ 561,013*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	Landscape and Irrigation	LS	1	x	4,031,200	=	$	4,031,200

Subtotal Landscape and Irrigation *$ 4,031,200*

5C - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	NPDES	LS	1	x	2,687,500	=	$	2,687,500

Supplemental Work for NPDES

(These costs are not accounted in total here but under Supplemental Work on sheet 7 of 11).

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	250,000.00	=	$	250,000
066596	Additional Water Pollution Control**	LS	1	x	100,000.00	=	$	100,000
130320	Storm Water Sampling and Analysis***	LS	1	x	20,000.00	=	$	20,000
XXXXXX	Some Item							

Subtotal NPDES (Without Supplemental Work) *$ 2,687,500*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL $ 7,279,800

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
150757	Remove Sign Structure	EA	39	x	3,000.00	=	$	117,000
560218	Furnish Sign Structure	LB	1,875,000	x	4.00	=	$	7,500,000
560219	Install Sign Structure	LB	1,875,000	x	0.25	=	$	468,750
5602XX	Furnish CCTV Steel Pole Structure	LB	16,000	x	4.00	=	$	64,000
5602XX	Install CCTV Steel Pole Structure	LB	16,000	x	0.25	=	$	4,000
498052	60" CIDHC Pile (Sign Foundation)	LF	2,080	x	950.00	=	$	1,976,000
860090	Replace Existing Traffic Management	LS	1	x	1,000,000.00	=	$	1,000,000
860460	Lighting & Sign Illumination	EA	25	x	75,000.00	=	$	1,875,000
860930	Traffic Monitoring Stations	EA	4	x	50,000.00	=	$	200,000
860201	Signals & Lighting	EA	4	x	250,000.00	=	$	1,000,000
861100	Ramp Metering System	EA	9	x	100,000.00	=	$	900,000
86XXXX	Fiber Optic Conduit System	MILE	16	x	274,000.00	=	$	4,384,000
86XXXX	Fiber Optic Conduit System (Redundant)	MILE	16	x	239,000.00	=	$	3,824,000
860401	Lighting (At EL access points)	LS	1	x	1,900,000.00	=	$	1,900,000

Subtotal Traffic Electrical *$ 25,212,800*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
120090	Construction Area Signs	LS	1	x	445,000.00	=	$	445,000
141101	Remove Yellow Painted Traffic Stripe	LF	142,000	x	2.29	=	$	325,180
150711	Remove Traffic Stripe	LF	632,000	x	0.20	=	$	126,400
150712	Remove Pavement Marking	SQFT	1,200	x	2.50	=	$	3,000
150742	Remove Roadside Sign	EA	100	x	120.00	=	$	12,000
152390	Relocate Roadside Sign	EA	14	x	380.00	=	$	5,320
566011	Roadside Sign (One Post)	EA	70	x	271.00	=	$	18,970
566012	Roadside Sign (Two Post)	EA	30	x	775.00	=	$	23,250
560233	Furnish Sign Panels	SQFT	11,100	x	15.23	=	$	169,053
568016	Install Sign Panels	SQFT	11,100	x	8.53	=	$	94,683
150763	Remove Sign Panel	EA	23	x	831.21	=	$	19,118
152396	Relocate Sign Panel	EA	46	x	773.00	=	$	35,558
82010X	Delineator (Class 1)	EA	11,000	x	40.00	=	$	440,000
84XXXX	Permanent Pavement Delineation	LF	973,000	x	0.61	=	$	593,530
150722	Remove Pavement Marker	EA	35,000	x	1.11	=	$	38,850
850101	Pavement Marker (Non-Reflective)	EA	13,000	x	1.12	=	$	14,560

Subtotal Traffic Signing and Striping *$ 2,364,500*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120100	Traffic Control System	LS	1	x	2,685,155	=	$	2,685,155
128651	Portable Changeable Message Signs	EA	34	x	10,000.00	=	$	340,000
129000	Temporary Railing (Type K)	LF	221,383	x	16.00	=	$	3,542,128
129100	Temp. Crash Cushion Module	LS	1	x	48,000.00	=	$	48,000
120159	Temporary Traffic Stripe (Paint)	LF	640,600	x	0.36	=	$	230,616
120300	Temporary Pavement Marker	EA	41,000	x	5.01	=	$	205,410
129150	Temporary Traffic Screen	LF	208,800	x	3.50	=	$	730,800
XXXXXX	Some Item							

Subtotal Stage Construction and Traffic Handling *$ 7,782,200*

TOTAL TRAFFIC ITEMS $ 35,359,500

SECTION 7: DETOURS

Include constructing, maintaining, and removal

Item code		Unit	Quantity		Unit Price ($)		Cost
260203	Class 2 Aggregate Base	CY	2,972	x	41.26	=	$ 122,625
390100	Prime Coat	TON	5	x	2,643.91	=	$ 13,220
390132	Hot Mix Asphalt (Type A)	TON	4,500	x	117.21	=	$ 527,445
397005	Tack Coat	TON	5	x	1,700.00	=	$ 8,500

TOTAL DETOURS $ 671,800

SUBTOTAL SECTIONS 1-7 $ 153,472,000

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items					
ADA Items			0.5%		$ 767,360
8B - Bike Path Items					
Bike Path Items			0.2%		$ 306,944
8C - Other Minor Items					
Other Minor Items			2.0%		$ 3,069,440
Total of Section 1-7	$ 153,472,000	x	2.7%	=	$ 4,143,744

TOTAL MINOR ITEMS $ 4,143,800

SECTIONS 9: MOBILIZATION

Item code						
999990	Total Section 1-8	$ 157,615,800	x	5%	=	$ 7,880,790

TOTAL MOBILIZATION $ 7,880,800

Note: Mobilization value calculated % shown represents calcuated value divided by const. cost.

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)		Cost
066063	TMP - Public Information	LS	1	x	1,180,000	=	$1,180,000
XXXXXX	TMP - Motorist Information Strategies	LS	1	x	505,000	=	$505,000
066062	TMP - Incident Management - COZEEP	LS	1	x	607,500.00	=	$607,500
066065	TMP - Incident Management - Freeway Service Patrol	LS	1	x	865,260.00	=	$865,260
120105	TMP - Incident Management - Automated Workzone Information System	LS	1	x	750,000.00	=	$750,000
XXXXXX	TMP - Incident Management - System Impact Reduction	LS	1	x	50,000.00	=	$50,000
XXXXXX	TMP - Incident Management - Additonal Staff for TMC	LS	1	x	50,000.00	=	$50,000
066067	TMP - Demand Management - Rideshare Promotion	LS	1	x	50,000.00	=	$50,000
XXXXXX	TMP - Demand Management - PA/CL	LS	1	x	20,000.00	=	$20,000
066700	Partnering	LS	1	x	90,000.00	=	$ 90,000
XXXXXX	AC Price Fluctuation	LS	1	x	90,000.00		$ 90,000
XXXXXX	Fed Training	LS	1	x	100,000.00		$ 100,000

*Cost of **NPDES** Supplemental Work specified in Section 5C* = $ 370,000

Total Section 1-8*	$ 157,615,800	x	2%	=	$ 2,846,752

TOTAL SUPPLEMENTAL WORK $ 7,842,000

Note: Mobilization item will automatically calculate if working days are 50 or more. For Project less than 50 Working Days Mobilization is not required as a separate contract item, however contract item prices should take into consideration mobilization as part of the price.
If the building portion of the project is greater than 50% of the total project cost, then mobilization is not included.
*1% used to bring cost to 5% allowable.

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
06684X	TMS Controller Assembly	EA	16	x	50,000	=	$800,000
06684X	Traffic Signal Controller Assembly	LS	1	x	30,000	=	$30,000
XXXXXX	Annual Construction General Permit Fee	EA	3	x	6,700	=	$20,100
	Total Section 1-8	$	157,615,800		0%	=	$ -

TOTAL STATE FURNISHED	**$930,100**

SECTION 12: TIME-RELATED OVERHEAD

Estimated Time-Releated Overhead (TRO) Percentage (0% to 10%) = **4%**

Item code		Unit	Quantity		Unit Price ($)		Cost
	Total of Roadway and Structures Contract Items excluding Mobilization						$ 224,310,849
	Total Construction Cost (excluding TRO and Contingency)						$ 240,963,749
070018	Time-Related Overhead	WD	750	X	$12,008	=	$9,006,300

TOTAL TIME-RELATED OVERHEAD	**$9,006,300**

SECTION 13: CONTINGENCY

(Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-11	$	183,275,000	x	10%	=	$18,327,500

TOTAL CONTINGENCY	**$18,327,500**

II. STRUCTURE ITEMS

Bridge

	Bridge 1	**Bridge 2**	**Bridge 3**
DATE OF ESTIMATE	01/11/16	01/11/16	01/11/16
Bridge Name	Cherry Avenue UC (Widen)	East Etiwanda Creek (Widen)	Etiwanda OH (Widen)
Bridge Number	54-0970	54-0964	54-0963
Structure Type	CIP/PS Concrete Box Girder	CIP/PS Concrete Box Girder	CIP Reinf. Concrete Box Girder
Width (Feet) [out to out]	50.50 LF	50.50 LF	50.50 LF
Total Bridge Length (Feet)	229.10 LF	138.40 LF	174.15 LF
Total Area (Square Feet)	11570 SQFT	6989 SQFT	8795 SQFT
Structure Depth (Feet)	5.50 LF	6.00 LF	3.75 LF
Footing Type (pile or spread)	Spread	Pile	Pile
Cost Per Square Foot	$233.0	$248.00	$277.00
COST OF EACH STRUCTURE	**$2,696,000**	**$1,733,000**	**$2,436,000**

	Bridge 4	**Bridge 5**	**Bridge 6**
DATE OF ESTIMATE	12/29/15	05/31/16	05/31/16
Bridge Name	MWD Pipeline UC (Widen)	Fourth Street UC (Widen)	Airport Drive UC (Widen)
Bridge Number	54-0986	54-0912	54-0906
Structure Type	CIP/PS Concrete Box Girder	CIP/PS Concrete Box Girder	CIP/PS Conc. Box and Bulb-T
Width (Feet) [out to out]	79.20 LF	49.90 LF	18.13 LF
Total Bridge Length (Feet)	114.80 LF	161.00 LF	143.67 LF
Total Area (Square Feet)	9092 SQFT	8034 SQFT	2604.7 SQFT
Structure Depth (Feet)	5.17 LF	6.50 LF	6.5/7.17 LF
Footing Type (pile or spread)	Pile	Spread	Pile
Cost Per Square Foot	$241.00	$209.00	$337.00
COST OF EACH STRUCTURE	**$2,191,000**	**$1,679,000**	**$878,000**

	Bridge 7	**Bridge 8**	**Bridge 9**
DATE OF ESTIMATE	05/31/16	05/31/16	11/11/15
Name	Ontario Mills PWY UC(Widen)	Vina Vista OH (Widen)	Victoria Street UC (Widen)
Bridge Number	54-0911	54-0907	54-0965
Structure Type	CIP/PS Concrete Box Girder	Precast Concrete I-Girder	PC/PS Bulb-T Girder
Width (Feet) [out to out]	113.00 LF	29.25 LF	50.50 LF
Total Length (Feet)	123.08 LF	161.70 LF	134.60 LF
Total Area (Square Feet)	13908 SQFT	4730 SQFT	6797 SQFT
Structure Depth (Feet)	5.00 LF	4.00 LF	6.36 LF
Footing Type (pile or spread)	Spread	Pile	Pile
Cost Per Square Foot	$215.00	$412.00	$299.00
COST OF EACH STRUCTURE	**$2,990,000**	**$1,949,000**	**$2,032,000**

	Bridge 10		Bridge 11		Bridge 12	
DATE OF ESTIMATE	06/28/16		06/28/16		06/23/16	
Name	Arrow Route UC (Widen)		RT 15/60 Separation (Widen)		Mission Blvd OH (Widen)	
Bridge Number	54-0921		56-0691		56-0695	
Structure Type	CIP/PS Concrete Box Girder		CIP/PS Concrete Box Girder		PC Bulb-T Girder	
Width (Feet) [out to out]	74.92	LF	48.45	LF	64.86	LF
Total Length (Feet)	155.00	LF	274.00	LF	349.83	LF
Total Area (Square Feet)	11613	SQFT	13275	SQFT	22690	SQFT
Structure Depth (Feet)	6.50	LF	5.50	LF	4.75	LF
Footing Type (pile or spread)	Pile		Pile		Pile	
Cost Per Square Foot	$250.00		$241.00		$252.00	
COST OF EACH STRUCTURE	**$2,903,000**		**$3,199,000**		**$5,718,000**	

	Bridge 13		Bridge 14		Bridge 15	
DATE OF ESTIMATE	08/10/16		06/28/16		06/15/16	
Name	RT 15/10 Separation (Widen)		Sixth Street UC (Widen)		Rochester OH (Widen)	
Bridge Number	54-0909		54-0918		54-0919	
Structure Type	CIP/PS Concrete Box Girder		CIP/PS Concrete Box Girder		PC I-Girder/PC Slab	
Width (Feet) [out to out]	27.00	LF	51.20	LF	80.38	LF
Total Length (Feet)	234.00	LF	125.00	LF	158.75	LF
Total Area (Square Feet)	6318	SQFT	6400	SQFT	12760	SQFT
Structure Depth (Feet)	5/5.75	LF	5.625/4.7!	LF	4.13/5.13	LF
Footing Type (pile or spread)	Pile		Spread		Pile	
Cost Per Square Foot	$446.00		$222.00		$280.00	
COST OF EACH STRUCTURE	**$2,818,000**		**$1,421,000**		**$3,573,000**	

	Bridge 16		Bridge 17		Bridge 18	
DATE OF ESTIMATE	06/27/16		06/28/16		07/20/16	
Name	Day Canyon Channel (Widen)		RT 15/66 Separation (Widen)		Etiwanda Ave UC (Widen)	
Bridge Number	54-0920		54-0922		54-0973	
Structure Type	CIP/PS Concrete Box Girder		PC I-Gider		PC Bulb-T/PC I-Girder	
Width (Feet) [out to out]	84.00	LF	63.00	LF	50.50	LF
Total Length (Feet)	313.68	LF	230.50	LF	249.00	LF
Total Area (Square Feet)	26349	SQFT	14522	SQFT	12575	SQFT
Structure Depth (Feet)	6.00	LF	5.92/6.5	LF	8.25/3.75	LF
Footing Type (pile or spread)	Pile		Pile		Pile/Abut; Spread/Bent	
Cost Per Square Foot	$421.00		$369.00		$239.00	
COST OF EACH STRUCTURE	**$11,093,000**		**$5,359,000**		**$3,005,000**	

	Bridge 19		Ground Anchor Walls		Riverside Ave. UC	
DATE OF ESTIMATE	07/19/16		07/05/17		01/29/18	
Name	Baseline Rd UC (Widen)		Ground Anchor Walls At Jurupa OC		Riverside Ave UC (Median Widening)	
Bridge Number	54-0974		57-XXX		57-XXX	
Structure Type	CIP/PS Concrete Box Girder		Ground Anchor Walls		Median Widening	
Width (Feet) [out to out]	50.50	LF	15.00	LF	40.50	LF
Total Length (Feet)	498.05	LF	278.00	LF	103.33	LF
Total Area (Square Feet)	25152	SQFT	4170	SQFT	4185	SQFT
Structure Depth (Feet)	5.58	LF	0.00	LF	0.00	LF
Footing Type (pile or spread)	Pile/Abut; Spread/Bent		xxxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxxx	
Cost Per Square Foot	$238.00		$386.00		$278.00	

COST OF EACH STRUCTURE	**$5,986,000**	**$1,610,000**	**$1,164,000**

TOTAL COST OF BRIDGES (2016)		**$66,433,000**
5%	**Escalation (2017)**	**$3,321,650.00**

TOTAL COST OF STRUCTURES[1]	**$69,755,000**

Estimate Prepared By: Mehdi Raoof
WSP

6/28/2017
Date

[1]Structure's Estimate includes 10% Mobilization and 25% Contigency.

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill,		$	1,384,055
	A2)	SB-1210		$	0
B)	Acquisition of Offsite Mitigation			$	0
C)	C1)	Utility Relocation (State Share)		$	2,292,000
	C2)	Potholing (Design Phase)		$	0
D)	Railroad Acquisition			$	0
E)	Clearance / Demolition			$	0
F)	Relocation Assistance (RAP and/or Last Resort Housing Costs)			$	0
G)	Title and Escrow			$	0
H)	Environmental Review			$	0
I)	Condemnation Settlements (Items G & H applied to items A + B)		0%	$	0
J)	Design Appreciation Factor		0%	$	0
K)	Utility Relocation (Construction Cost)			$	0

L) **TOTAL RIGHT OF WAY ESTIMATE** **$3,676,055**

(Excluding Item #8 - Hazardous Waste)

M) **TOTAL R/W ESTIMATE: Escalated*** **$4,483,915**

* Includes escalated Utility relocation costs. Right of Way Data Sheet shows only the current Utility Relocation Costs

N) **Right of Way Support** **$** **177,500**

Support Cost Estimate Prepared By	Project Coordinator[1]	Phone
Utility Estimate Prepared By	Joe Sawtelle, PE (Transystems) Utiliy Coordinator[2]	Phone
R/W Acquistion Estimate Prepared By	Josh Cosper (Overland Pacific and Cutler, Inc.) Right of Way Estimator[3]	Phone

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

I-15 CORRIDOR PROJECT TOLL COST ESTIMATE

EA 08-0R800, Project ID 0812000184

Type of Estimate : Project Report

Program Code : **20.20.400.610**

Project Limits : 08-Riv-15-PM 49.8/52.3, 08-SBd-15-PM 0.0/12.2

Description: Entire Project - Cantu-Galleano Ranch Road to Duncan Canyon Road

Scope : Provide 2 Express Lanes each direction between SR-60 and SR-210, 1 Express Lane in each direction between Cantu-Galleano Ranch Road and SR-60, and 1 Express Lane in each direction between SR-210 and Duncan Canyon Road

Alternative : Build Alternative (Alternative 2)

		Current Cost		Escalated Cost
TOLL ITEMS	**$**	**9,242,400**	**$**	**11,354,000**
STRUCTURE ITEMS	**$**	**-**	**$**	**-**
SUBTOTAL CONSTRUCTION COST	**$**	**9,242,400**	**$**	**11,354,000**
RIGHT OF WAY	**$**	**-**	**$**	**-**
PROJECT MANAGEMENT ITEMS	**$**	**1,221,610**	**$**	**1,500,566**
TOTAL CAPITAL OUTLAY COST	**$**	**10,465,000**	**$**	**12,855,000**
PR/ED SUPPORT	**$**	**500,000**	**$**	**500,000**
PS&E SUPPORT	**$**	**-**	**$**	**-**
RIGHT OF WAY SUPPORT	**$**	**-**	**$**	**-**
CONSTRUCTION SUPPORT	**$**	**927,000**	**$**	**1,138,682**
LEGAL/PROCUREMENT SUPPORT	**$**	**94,000**	**$**	**115,465**
TOTAL CAPITAL OUTLAY SUPPORT COST*	**$**	**1,521,000**	**$**	**1,755,000**
TOTAL TOLL COST	**$**	**12,000,000**	**$**	**14,650,000**

If Project has been programmed enter Programmed Amount	$	-
	Month / Year	
Date of Estimate (Month/Year)	6 / 2017	
Estimated Date of Construction Start (Month/Year)	3 / 2021	
Number of Working Days	750	Working Days
	Month / Year	
Estimated Mid-Point of Construction (Month/Year)	8 2022	
Number of Plant Establishment Days	365	Days

Estimated Project Schedule

PA/ED Approval	Month-Year	8 / 2018
Issue D-B RFP	Month-Year	9 / 2019
D-B NTP	Month-Year	6 / 2020
Begin Construction	Month-Year	3 / 2021

Approved by Project Manager

Dennis Saylor		(909) 884-8276
Project Manager, SANBAG	**Date**	**Phone**

I. TOLL ITEMS SUMMARY

	Section	Cost
1	**Earthwork**	$ -
2	**Pavement Structural Section**	$ -
3	**Drainage**	$ -
4	**Specialty Items**	$ 8,002,000
5	**Environmental**	$ -
6	**Traffic Items**	$ -
7	**Detours**	$ -
8	**Minor Items**	$ 400,100
9	**Roadway Mobilization**	$ -
10	**Supplemental Work**	$ -
11	**State Furnished**	$ -
12	**Overhead**	$0
13	**Contingencies**	$840,300

TOTAL TOLL ITEMS	**$ 9,242,400**

	Name and Title	Date	Phone
Estimate Prepared By	Vikrant Sanghai	1/30/2018	909-386-2819
Estimate Reviewed By	Vikrant Sanghai		909-386-2814

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

TOTAL EARTHWORK SECTION ITEMS	$	-

SECTION 2: PAVEMENT STRUCTURAL SECTION

TOTAL STRUCTURAL SECTION ITEMS	$	-

SECTION 3: DRAINAGE

TOTAL DRAINAGE ITEMS	**$ -**

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
XXXXXX	Tolling Point Location Equipment (1 lane, single direction)	EA	2	x	327,222.00	=	$	654,444
XXXXXX	Tolling Point Location Equipment (2 lane, single direction)	EA	6	x	394,234.00	=	$	2,365,404
XXXXXX	Dynamic Message Sign	EA	18	x	211,105.00	=	$	3,799,890
XXXXXX	CCTV	EA	16	x	20,093.00	=	$	321,488
XXXXXX	Vehicle Detection System (VDS)	EA	32	x	21,436.00	=	$	685,952
XXXXXX	Integration Testing (to existing BOS)	LS	1	x	19,022.00	=	$	19,022
XXXXXX	Integration Testing (transactions to CSC)	LS	1	x	19,507.00	=	$	19,507
XXXXXX	End-to-End Testing	LS	1	x	57,677.00	=	$	57,677
XXXXXX	Commission Testing	LS	1	x	78,072.00	=	$	78,072

TOTAL SPECIALTY ITEMS	**$ 8,002,000**

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Subtotal Environmental	*$*	*-*

5B - LANDSCAPE AND IRRIGATION

Subtotal Landscape and Irrigation	*$*	*-*

5C - NPDES

Subtotal NPDES (Without Supplemental Work)	*$*	*-*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.
**Applies to both SWPPPs and WPCP projects.
*** Applies only to project with SWPPPs.

TOTAL ENVIRONMENTAL	**$**	**-**

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Subtotal Traffic Electrical	*$*	-

6B - Traffic Signing and Striping

Subtotal Traffic Signing and Striping	*$*	-

6C - Stage Construction and Traffic Handling

Subtotal Stage Construction and Traffic Handling	*$*	-
TOTAL TRAFFIC ITEMS	**$**	**-**

SECTION 7: DETOURS

Include constructing, maintaining, and removal

TOTAL DETOURS	**$**	**-**
SUBTOTAL SECTIONS 1-7	$	8,002,000

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
ADA Items				0.0%		$	-
8B - Bike Path Items							
Bike Path Items				0.0%		$	-
8C - Other Minor Items							
Other Minor Items				5.0%		$	400,100
Total of Section 1-7	$	8,002,000	x	5.0%	=	$	400,100

TOTAL MINOR ITEMS	**$**	**400,100**

SECTIONS 9: MOBILIZATION

TOTAL MOBILIZATION	**$**	**-**

SECTION 10: SUPPLEMENTAL WORK

TOTAL SUPPLEMENTAL WORK	**$**	**-**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

TOTAL STATE FURNISHED	**$0**

SECTION 12: TIME-RELATED OVERHEAD

TOTAL TIME-RELATED OVERHEAD	**$0**

SECTION 13: CONTINGENCY

(Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-11	$	8,402,100	x	10%	=	$840,210

TOTAL CONTINGENCY	**$840,300**

II. STRUCTURE ITEMS

TOTAL COST OF STRUCTURES[1]	**$0**

Estimate Prepared By:______________________________ ____________________________
XXXXXXXXXXXXXXXXX ------ Division of Structures Date

[1]Structure's Estimate includes Overhead and Mobilization.
Add more sheets if needed. Call them 9a, 9b, 9c, …, etc

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1) Acquisition, including Excess Land Purchases, Damages & Goodwill,		$	
	A2) SB-1210		$	0
B)	Acquisition of Offsite Mitigation		$	0
C)	C1) Utility Relocation (State Share)		$	0
	C2) Potholing (Design Phase)		$	0
D)	Railroad Acquisition		$	0
E)	Clearance / Demolition		$	0
F)	Relocation Assistance (RAP and/or Last Resort Housing Costs)		$	0
G)	Title and Escrow		$	0
H)	Environmental Review		$	0
I)	Condemnation Settlements (Items G & H applied to items A + B)	0%	$	0
J)	Design Appreciation Factor	0%	$	0
K)	Utility Relocation (Construction Cost)		$	

L) **TOTAL RIGHT OF WAY ESTIMATE** **$0**

(Excluding Item #8 - Hazardous Waste)

M) **TOTAL R/W ESTIMATE: Escalated** **$0**

N) **Right of Way Support** **$** **0**

Support Cost Estimate Prepared By	Project Coordinator[1]	Phone
Utility Estimate Prepared By	Utiliy Coordinator[2]	Phone
R/W Acquistion Estimate Prepared By	Right of Way Estimator[3]	Phone

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

8/7/2018 4:45 PM

ATTACHMENT J

Right of Way Data Sheet

This page intentionally left blank

To: Paul C. Mim Mack
Associate Right of Way Agent
Department of Transportation
District 8 – San Bernardino Office

Date: 8/15/2018

Co. Riv/SBd Rte. 15
Expense Authorization 08-0R800

Attn: District Branch Chief
R/W Local Programs

Subject: **RIGHT OF WAY DATA SHEET – LOCAL PUBLIC AGENCIES**

Project Description:

Right of way necessary for the subject project will be the responsibility of **San Bernardino County Transportation Authority (SBCTA).**

The information in this data sheet was developed by **Josh Cosper of OPC, LLC. in collaboration with Vikrant Sanghai of WSP USA.**

I. *Right of Way Engineering*

Will Right of Way Engineering be required for this project?

- No ☐
- Yes ☒ (If yes, submit a copy of the *Right of Way Engineering Surveys and Mapping Services checklist for Locally Funded Projects.* This checklist includes, but is not limited to, the following items.)
  - Hard copy (base map) ☒
  - Appraisal map ☒
  - Acquisition documents ☒
  - Property Transfer Documents ☒
  - R/W Record Map ☒
  - Record of Survey ☒

II. *Engineering Surveys*

1. Is any surveying or photogrammetric mapping required?
   No ☐ Yes ☒ if yes, complete the following:

   Photogrammetric mapping was completed during the PA&ED phase based on control established by Caltrans. In addition, the photogrammetric mapping has been through the ABC Caltrans process. Milestones A, B and C are still currently under review. Photogrammetric mapping and engineering surveying will be once again initiated during the PS&E phase.

2. Datum Requirements

   Yes ☒ Project will adhere to the following criteria:
   - Horizontal - datum policy is NAD 83, CA HPGN, EPOCH 1991.35 and English system of units and measures.
   - Vertical - datum policy is NAVD 88.
   - Units – FeetUS.

3. Will land survey monument perpetuation be scoped into the project, if required?

   Yes ☒
   No ☐ Provide explanation on additional page.

III. *Parcel Information (Land and Improvements)*

Are there any property rights required within the proposed project limits?

No ☐ Yes ☒ (Complete the following.)

	Part Take	Full Take	Estimate $
A. Number of Vacant Land Parcels	0	0	$0
B. Number of Single Family Residential Units	0	0	$0
C. Number of Multifamily Residential Units	0	0	$0
D. Number of Commercial/Industrial Parcels	0	0	$0
E. Number of Farm/Agricultural Parcels	0	0	$0
F. Permanent and/or Temporary Easements	3	0	$1,683,915
G. Other Parcels (define in "Remarks" section)	0	0	$0
Totals*	**3**	**0**	**$1,683,915**

*** Costs include 20% contingency & escalated for 5 years at 4% per year.**

Provide a general description of the right of way and excess lands required (zoning, use, improvements, critical, or sensitive parcels, etc.).

For this project, approximately 207,551 square feet of Temporary Construction Easement (TCE) and 4,779 square feet of Permanent Easement (PE) is required. It affects a total of three larger parcels; one vacant land parcel owned by San Bernardino County Transportation Authority, one railroad larger parcel (two APNs) owned by Union Pacific RR, and an industrial parcel owned by CPRT Land Holding used for storage. The TCE temporarily impacts the driveway into the parcel owned by CPRT Land Holding, assumed access is maintained.

IV. *Dedications*

Are there any property rights which have been acquired, or anticipate will be acquired, through the "dedication" process for the Project?

No ☒ Yes ☐ (Complete the following.)

Number of dedicated parcels 0

Have the dedication parcel(s) been accepted by the municipality involved?

There are no dedications anticipated by surrounding developers / property owners.

V. *Excess Lands/Relinquishments*

Are there Caltrans property rights which may become excess lands or potential relinquishment areas?

No ☒ Yes ☐ (Provide an explanation on additional page.)

VI. *Relocation Information*

Are relocation displacements anticipated?

No ☒ Yes ☐ (Complete the Following.)

A. Number of Single Family Residential Units Estimated RAP Payments	N/A	$0
B. Number of Multifamily Residential Units Estimated RAP Payments	N/A	$0
C. Number of Business/Nonprofit Estimated RAP Payments	N/A	$0
D. Number of Farms Estimated RAP Payments	N/A	$0
E. Other (define in the "Remarks" section) Estimated RAP Payments	N/A	$0
Total	N/A	$0

No property relocation is anticipated for this project.

VII. *Utility Relocation Information*

Do you anticipate any utility facilities or utility rights of way to be affected?

No ☐ Yes ☒ (Complete the following.)

	Facility	Owner	Estimated Relocation Expense: State Obligation	Local Obligation	Utility Owner Obligation
A	Electric Overhead 66KV Transmission	Southern California Edison	$1,420,000	$0	$0
B	8" Water	Cucamonga Valley Water District	$115,000	$0	$0
C	15" Sewer	Cucamonga Valley Water District	$125,000	$0	$0
D	36" Water	Inland Empire Utilities Agency	$250,000	$0	$0
	Subtotal		$1,910,000*	$0	$0
	Total (including 20% Contingency and 4% Escalation for 5 years)		**$2,800,000**	**$0**	**$0**
	Number of Facilities		4		4

*This amount reflects the estimated total financial obligation by the State.

Any additional information concerning utility involvement on this project?

Refer to the project Utility Information Sheet Dated February 3rd, 2017.

VIII. *Rail Information*

Are railroad facilities or railroad rights of way affected?

No ☐ Yes ☒ (Complete the following.)

Describe the railroad facilities to be affected.

Owner's Name	Transverse Crossing	Longitudinal Encroachment
A. Union Pacific RR	Mission Blvd OH Br. No. 56-0695 (Los Angeles Subdivision)	
B. Union Pacific RR	Vina Vista OH Br. No. 54-0907 (Alhambra Subdivision)	
C. Metrolink	Rochester OH Br. No. 53-0919	
D. Abandoned Railroad	Etiwanda OH Br. No. 54 0963 (Pacific Electric Bike Trial)	

Discuss types of agreements and rights required from railroads. Are grade crossings that require services contracts, or grade separations that require construction and maintenance agreements involved?

Title to the Rail Road corridor has not yet been performed. It is anticipated a Construction and Maintenance Agreement with Union Pacific Railroad / Metrolink is required for insertion into Specifications. There are no at-grade crossings. A CPUC Application, General Order 88B, will be required where existing bridge structures will be widened over rail road facilities.

IX. *Clearance Information*

Are there improvements that require clearance?

No ☒ Yes ☐ (Complete the following.)

A. Number of structures to be Demolished 0
Estimated Cost of Demolition $0

Demolition of structures within proposed right of way is not anticipated as part of this project.

X. *Hazardous Materials/Waste*

Are there any site(s) and/or improvements(s) in the Project Limits that are known to contain *hazardous materials*? None ☒ Yes ☐ (Explain in the "Remarks" section.)

Are there any site(s) and or improvement(s) in the Project Limits that are suspected to contain *hazardous waste*? None ☒ Yes ☐ (Explain in the "Remarks" section.)

Temporary Construction Easements are for access only, ground disturbance is not anticipated at these locations therefore soil investigation in these areas does not appear to be warranted.

XI. *Project Scheduling*

	Proposed lead time		Completion Date
* Preliminary Engineering Surveys	12	months	7/2019
* R/W Engineering Submittals	6	months	1/2020
* R/W Appraisals/Acquisition	18	months	7/2021
Proposed Environmental Clearance	24	months	8/2018
Proposed R/W Certification	6	months	1/2022

XII. *Proposed Funding*

	Local		State		Federal		Other
Acquisition	$1,683,915		$0		$0		
Utilities	$2,800,000		$0		$0		
Relocation Assistance Program	$0		$0		$0		
Loss of Business Goodwill	$0		$0		$0		
Structures Testing + Demolition	$0		$0		$0		
Condemnation	$0		$0		$0		
R/W Support Cost	$215,348		$0		$0		
TOTAL	$4,699,263		$0		$0		
COMBINED TOTAL	**$4,699,263**						

The proposed funding allocation above is conceptual based upon preliminary discussions with the project team. Acquisition and R/W support cost include 20% contingency & escalated for 5 years at 4% per year.

XIII. *Remarks*

None

Project Sponsor Consultant
Prepared by:

Joshua Cosper, P.E., P.L.S.
OPC, LLC

August 15, 2018
Date

Project Sponsor
Reviewed and Approved by:

Paula Beauchamp, Director of Project Delivery
San Bernardino County Transportation Authority

8/15/18
Date

Caltrans
Reviewed and approved based on information provided to date:

Paul C Mim Mack

Paul C. Mim Mack
Associate Right of Way Agent
Department of Transportation
District 8 – San Bernardino Office

8/16/18
Date

1. Name of utility companies involved in project:

- **Airtouch Cellular**
- **AT&T Distribution**
- **AT&T Transmission**
- **Charter Communications (CC)**
- **Cingular**
- **City of Fontana**
- **City of Norco**
- **City of Ontario**
- **City of Rancho Cucamonga**
- **City of Rialto Water Department**
- **Crown Castle**
- **Cucamonga Valley Water District (CVWD)**
- **Cucamonga County Water District (CCWD)**
- **Fontana Water Company (FWC)**
- **Frontier Communications**
- **Inland Empire Utilities Agency (IEUA)**
- **Jurupa Community Services**
- **Kinder Morgan Energy Partners**
- **Level 3 Communications**
- **MCI (Verizon)**
- **Metropolitan Water**
- **Plains All American Pipeline (PAAP)**
- **San Bernardino County**
- **San Bernardino Valley Municipal Water District (SBVWD)**
- **San Gabriel Valley Municipal Water District (SGVMWD)**
- **Santa Ana Watershed**
- **Southern California Gas (SCG)**
- **Southern California Edison (SCE)**
- **Sprint**
- **Sunesys**
- **T-Mobile**
- **Terradex**
- **TW Telecom**
- **Time Warner Cable (TWC)**
- **West Valley Water District**
- **Wilcon**
- **Zayo Abovenet**

2. Types of facilities and agreements required:

- **I-15 Crossings (Transverse):**
  - **Notice to owner to pothole and protect a 12kV underground SCE electrical line that crosses Route 15 at station 240+00.**
  - **Notice to owner to pothole and protect 21" RCP CVWD sewer line in 30" casing that crosses Route 15 at station 240+35.**
  - **Notice to owner to relocate 66kV SCE overhead electrical line crossing Route 15 at station 267+75, including the installation of five new steel pole south of Arrow Route. A utility easement will be required south of Arrow Route east of I-15.**
  - **Notice to owner to pothole and protect 12" CMLC CVWD water line crossing Route 15 at station 404+90.**
- **Mission Boulevard:**
  - **Notice to owner to pothole and protect 6" gas line, SCG at Route 15 at station C 2742+88.**
- **Ontario Mills Parkway:**
  - **Notice to owner to pothole and protect a 12kV SCE underground electrical line.**
  - **Notice to owner to pothole and protect four 4" Frontier telephone line.**
  - **Notice to owner to pothole and protect 24" VCP CCWD sewer line.**
- **4th Street:**
  - **Notice to owner to pothole and protect four 4" Frontier telephone line.**
  - **Notice to owner to pothole and protect 12" CMLW CVWD water line.**
  - **Notice to owner to pothole and protect a 12kV SCE underground electrical line.**
- **6th Street:**
  - **Notice to owner to pothole and protect four 4" Frontier telephone line.**
- **Rochester OH/Metrolink RR:**
  - **Notice to owner to relocate and encase 8" steel CMLW CVWD water line.**
  - **Notice to owner to pothole and protect 21" RCP (30" Casing) IEUA sewer line.**
  - **Notice to owner to pothole and protect 12 kV SCE underground electrical line.**
- **Day Creek Channel:**
  - **Notice to owner to pothole and encase 15" VCP CVWD sewer line.**

- **Foothill Boulevard:**
    - **Notice to owner to pothole and protect 10” CMLC CVWD water line.**
    - **Notice to owner to pothole and protect 12” CMLC CVWD water line.**
    - **Notice to owner to pothole and protect four 4” Frontier telephone lines.**
- **Etiwanda Avenue**
    - **Notice to owner to pothole and protect 12" CVWD water line.**
- **East Avenue:**
    - **Notice to owner to relocate and encase 36” MLCSP IEUA recycled water line.**
- **Baseline Avenue:**
    - **Notice to owner to pothole and protect 41” IEUA water line.**
    - **Notice to owner to pothole and protect 12” CMLW CVWD water line.**

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.

There are 70 locations within the project limits where existing longitudinal encroachments are proposed to remain in place. All facilities cross Route 15 (Station) at an angle less than 60°.

- **Along east side of EB Route 60 connector to NB Route 15: One 12kV SCE underground electrical distribution line along Route 15 (Sta 2726+00 to 2741+20).**
- **North of Mission Blvd (Sta 2747+50): Two 220kV SCE overhead electrical transmission lines.**
- **South of Jurupa St (Sta 65+80): Three 500kV SCE overhead electrical transmission lines.**
- **South of Sixth St, along southbound Route 15 (Sta 224+20 to 225+35): Two 4” Frontier telephone conduits.**
- **West of Day Creek Channel (Sta 255+90): Two 500kV SCE overhead electrical transmission lines.**
- **Along Day Creek Channel (Sta 262+65): A 15” VCP CVWD sewer line crosses under Route 15.**
- **South of Arrow Route (Sta 264+40 and 264+95): Two 220kV SCE overhead electrical transmission lines.**
- **South of Arrow Route along northbound Route 15 (Sta 266+50 to 268+60): A 66kV SCE overhead electrical transmission line.**
- **Along Arrow Route:**
    - **(Sta 267+75) A 66kV SCE overhead electrical transmission line.**
    - **(Sta 268+00) A 16” CCWD water line.**
    - **(Sta 268+00) A 12kV SCE underground electrical distribution line.**
    - **(Sta 268+10) Four 4” Frontier telephone conduits.**
    - **(Sta 268+10) An ATT fiberoptic transmission line.**
    - **(Sta 268+23) A 12kV SCE underground electrical distribution line.**
    - **(Sta 268+30) A 30” VCP CVWD sewer line**
    - **(Sta 268+60) An 8” SCG transmission gas line.**
    - **(Sta 268+70) A 36” SCG transmission gas line.**
    - **(Sta 268+75) A telephone line.**
- **Along Foothill Boulevard:**
    - **(Sta 303+55) A 10” CMLW steel CVWD water line.**
    - **(Sta 304+70) A 12” CML CVWD water line with 24” steel casing.**
    - **(Sta 305+15) Four 4” Frontier telephone conduits.**
- **Along Etiwanda Avenue:**
    - **(Sta 340+20): A Sunesys fiberoptic line in a Frontier duct.**
    - **(Sta 340+50): A 30” CMLC CVWD water line.**
    - **(Sta 340+80): Four 4” Frontier telephone conduits.**
    - **(Sta 340+95): A 15” VCP CVWD sewer line.**
    - **(Sta 340+95): Six 4” Frontier telephone conduits.**
    - **(Sta 341+10): A 6” SCG distribution gas line.**
    - **(Sta 341+30): A 12” CVWD water line.**
- **Along Church Street/Miller Avenue:**
    - **(Sta 340+40): A 30” CMLC CVWD water line.**
    - **(Sta 340+50): A 12kV SCE underground electrical distribution line.**
    - **(Sta 340+70): A 6” SCG distribution gas line.**
    - **(Sta 340+90): A 30” CMLC CVWD water line.**
    - **(Sta 341+00): A 12kV SCE underground electrical distribution line.**
    - **(Sta 341+20): A 12kV SCE underground electrical distribution line.**

- **Along East Avenue:**
  - **(Sta 379+10): A 15” VCP CVWD sewer line.**
  - **(Sta 379+20): A 36” IEUA recycled water line with concrete encasement.**
  - **(Sta 379+60): A 24” CMLC Steel CVWD water line.**
  - **(Sta 379+70): A 12kV SCE underground electrical distribution line.**
  - **(Sta 379+75): A 12” CMLW CVWD water line.**
  - **(Sta 379+85): Four 4” Frontier telephone conduits.**
- **Along Baseline Avenue:**
  - **(Sta 381+48): A CC television cable.**
  - **(Sta 381+95): A 41” SGVMWD water line.**
  - **(Sta 382+55): A 24” IEUA recycled water line with concrete encasement.**
  - **(Sta 382+80): A 12” CMLW CVWD water line.**
  - **(Sta 382+85): A 12kV SCE underground electrical distribution line.**
  - **(Sta 382+90): Two 4” Frontier telephone conduits.**
  - **(Sta 382+95): Four 4” Frontier telephone conduits.**
- **Along abandoned railroad/bike path (Sta 398+30): Six 2” Sprint fiberoptic cables in steel casing.**
- **North of abandoned railroad/bike path (Sta 405+00): 12” CMLW CVWD water line.**
- **Along Victoria Street:**
  - **(Sta 417+35): A 12” CMLC CVWD water line.**
  - **(Sta 417+50): A 10” SCG distribution gas line.**
  - **(Sta 417+50): Four 4” Frontier ducts.**
  - **(Sta 417+55): Four 4” Frontier ducts.**
  - **(Sta 417+70): A 12kV SCE underground electrical distribution line.**
- **Along Cherry Avenue:**
  - **(Sta 490+65): A 21” VCP City of Fontana sewer line.**
  - **(Sta 491+55): Four 4” Frontier telephone conduits.**
  - **(Sta 491+60): A TWC television cable.**
  - **(Sta 491+75): A 12kV SCE underground electrical distribution line.**
- **South of Beech Avenue:**
  - **(Sta 513+90): Six 4” Frontier telephone conduits.**
  - **(Sta 517+00): Nine 4” Frontier telephone conduits.**
  - **(Sta 517+60): Six 4” Frontier telephone conduits.**
  - **(Sta 529+20): A 30” CLC FWC water line in 54” casing with 34” wall.**
- **Along Beech Avenue:**
  - **(Sta 530+50): An 8” SCG distribution gas line with encasement.**
  - **(Sta 531+50): A 12kV SCE underground electrical distribution line.**
- **North of Beech Avenue along southbound Route 15, over southbound ramps (Sta 530+00 to 543+00): A 12kV SCE underground electrical distribution line.**
- **South of Duncan Canyon:**
  - **(Sta 570+15): A 96” prestressed concrete MWD water line with 97.5” steel casing.**
  - **(Sta 577+10): An 12kV SCE overhead electrical distribution line.**
  - **(Sta 583+85): Four 4” Frontier telephone conduits.**
  - **(Sta 605+35): A 12kV SCE overhead electrical distribution line.**
- **North of Duncan Canyon (Sta 638+50): A 12kV SCE overhead electrical distribution line.**

There is 1 location within the project limits with a potential proposed longitudinal encroachment, along I-15 within Caltrans right-of-way

  - **(Sta 2596+00 to Sta 661+00): There is the potential for a dedicated fiber optic system for the Express Lanes communications system which would run for the length of the project within Caltrans right-of-way. The conduit location would be determined during final design and would require a longitudinal encroachment exception.**

Disposition of longitudinal encroachment(s):

☐ Relocation required.
☒ Exception to policy needed.
☐ Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

Steel poles will be required to relocate Edison overhead transmission line along Arrow Route that crosses Route 15 at station 267+75. The typical time for Edison to complete the design and have the poles fabricated is 18 months.

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project:

$ 1,910,000 (2017 Dollars)

$ 2,800,000 (includes 20% Contingency and 4% Escalation for 5 years)

Note: To tal estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire any necessary utility easements.

Utility Involvements:

U4-1______(Total number of expected owner expense involvements)

-2______(Total number of expected State expense involvements - conventional highway, no Federal aid)

-3______(Total number of expected State expense involvements - freeway, no Federal aid)

-4__4__(Total number of expected State expense involvements - conventional or freeway, with Federal aid)

U5-7__20__(Total number of expected utility verifications, which will not result in involvements)

-8______(Total number of expected utility verifications - 50% will result in involvements and 50% will not)

-9__4__(Total number of expected utility verifications, which will result in involvements)

Prepared By:

Joseph Sawtelle Joseph W. Sawtelle 7/30/18

Right of Way Utility Estimator Date

ATTACHMENT K

Cover Page and signed Title Sheet, MND, and FONSI from approved *Initial Study with Mitigated Negative Declaration /Environmental Assessment with finding of No Significant Impact*

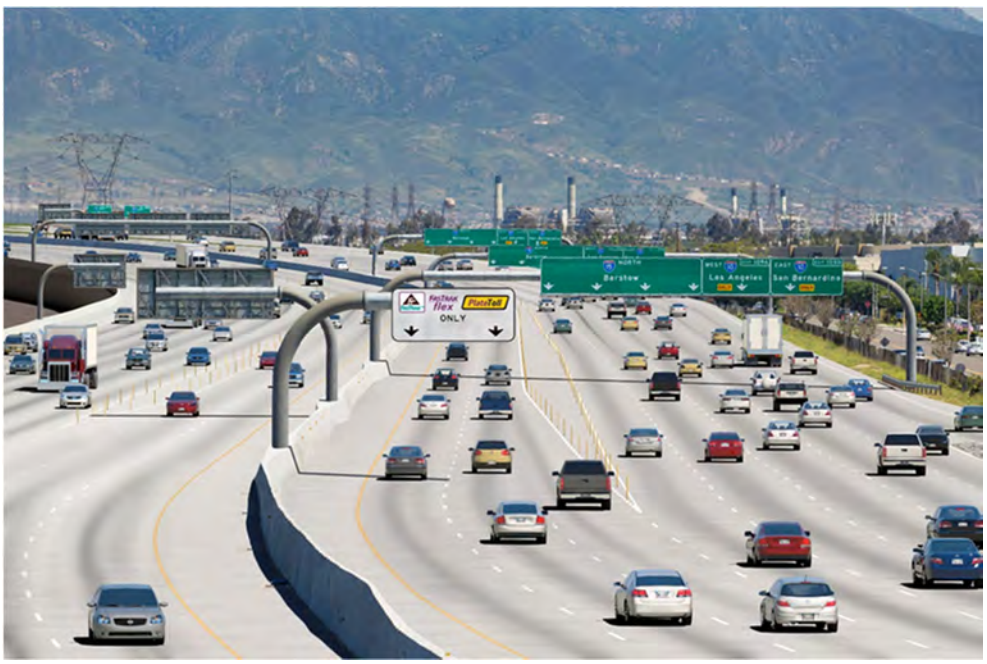
This page intentionally left blank

Interstate 15 Corridor Project

Cities of Eastvale, Jurupa Valley, Ontario, Rancho Cucamonga, and Fontana
Riverside and San Bernardino Counties, California

DISTRICT 8 – RIV – 15 (PM 49.8/52.3), SBD – 15 (PM 0.0/12.2)
PN 0812000184 / EA 08-0R8000

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



Prepared by the
State of California Department of Transportation
and San Bernardino County Transportation Authority

December 2018

Caltrans

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 U.S.C. 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

SCH# 2018021044
08-RIV-15-PM 49.8/52.3
08-SBD-15-PM 0.0/12.2
EA 08-0R8000
PN 0812000184

Construct tolled Express Lanes, in both directions on Interstate 15, from approximately 0.3 miles south of Cantu-Galleano Ranch Road in the Cities of Eastvale and Jurupa Valley at Post Mile (PM) 49.8 in Riverside County, to the Riverside/San Bernardino County line (PM 49.8/52.3), continuing from the Riverside/San Bernardino County line to approximately 1.2 miles north of Duncan Canyon Road at PM 12.2 (PM 0.0/12.2) in the City of Fontana in San Bernardino County.

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

and

San Bernardino County Transportation Agency

12/20/18
Date of Approval

for David Bricker
Deputy District Director
District 8 Division of Environmental Planning
California Department of Transportation
CEQA Lead Agency
NEPA Lead Agency

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

California Department of Transportation
Shawn Oriaz, Senior Environmental Planner
464 West 4th Street, 6th Floor, MS-827
San Bernardino, CA 92401-1400
(909) 388-7034

San Bernardino County Transportation Agency
Tim Watkins, Chief of Legislative and Public Affairs
1170 West Third Street, Second Floor
San Bernardino, CA 92410
(909) 884-8276

SCH # 2018021044

MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The San Bernardino County Transportation Authority (SBCTA), in cooperation with the California Department of Transportation (Caltrans), proposes to construct one to two tolled express lanes along Interstate 15 (I-15) through the cities of Eastvale, Jurupa Valley, Ontario, Rancho Cucamonga, and Fontana in Riverside and San Bernardino counties, California.

Determination

An Initial Study has been prepared for this project, and following public review, Caltrans has determined from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on:

- Farmlands and Timberlands, and Land Use.

In addition, the proposed project would have less-than-significant effects on:

- Aesthetics and Visual Resources, Air Quality, Noise, Cultural Resources, Floodplains, Water Quality, Community Character and Cohesion, Animals and Plants, and Threatened and Endangered Species.

With the following mitigation measures incorporated, the proposed project would have less-than-significant effects on:

- Paleontological Resource

  P-1: A Paleontological Mitigation Plan (PMP) that follows Caltrans guidelines and the recommendations of the Society of Vertebrate Paleontology (SVP) will be prepared. The measures in this PMP will be conducted by a qualified vertebrate paleontologist. The PMP is anticipated to include, but not be limited to, the following mitigation measures:

  a. A project-specific PMP will be prepared by a qualified principal paleontologist (MS or PhD in paleontology) once adequate project design information is available regarding location, depth, and lateral extent of subsurface disturbance.

  b. If fossils are discovered, the paleontologist (or paleontological monitor) will recover them. Construction work in these areas may be halted or diverted by the Resident Engineer to allow the prompt recovery of fossils.

  c. Fossils collected during the monitoring and salvage portion of the mitigation program will be prepared to the point of identification, sorted, and cataloged.

d. A Paleontological Mitigation Report will be completed that outlines the results of the mitigation program.

- <u>Waters of the State</u>

WET-4 Project impacts on jurisdictional waters of the U.S. and waters of the state will be mitigated at a minimum 3:1 ratio for permanent impacts and a minimum 1:1 ratio for temporary impacts, at an approved mitigation bank, applicant sponsored mitigation area, or on site. A total of 4.98 acres of mitigation credits will be purchased for project impacts on non-wetland Waters of the US and non-wetland Waters of the State.

for

David Bricker
Deputy District Director
District 8 Division of Environmental Planning
California Department of Transportation

12/20/18
Date

CALIFORNIA DEPARTMENT OF TRANSPORTATION
FINDING OF NO SIGNIFICANT IMPACT

FOR

Interstate 15 Corridor Project
RIV – 15 (PM 49.8/52.3), SBD – 15 (PM 0.0/12.2)

The California Department of Transportation (Caltrans) has determined that the Build Alternative will have no significant impact on the human environment. The Build Alternative includes the construct of tolled Express Lanes, in both directions on Interstate 15, from approximately 0.3 miles south of Cantu-Galleano Ranch Road in the Cities of Eastvale and Jurupa Valley at Post Mile (PM) 49.8 in Riverside County, to the Riverside/San Bernardino County line (PM 49.8/52.3), continuing from the Riverside/San Bernardino County line to approximately 1.2 miles north of Duncan Canyon Road at PM 12.2 (PM 0.0/12.2) in the City of Fontana in San Bernardino County.

This Finding of No Significant Impact (FONSI) is based on the attached Environmental Assessment (EA) and the associated Technical Studies and Design documents, 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. It 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 attached EA and the associated Technical Studies and design documents.

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.

12/20/18
Date

for David Bricker
Deputy District Director
District 8 Division of Environmental Planning
California Department of Transportation

This page intentionally left blank

ATTACHMENT L

Caltrans Concurrence on the 2-Foot Buffer

This page intentionally left blank

Koneru, Srikanth

From:	Den Hartog, Jonathan C@DOT <jonathan.c.den.hartog@dot.ca.gov>
Sent:	Wednesday, December 07, 2016 10:26 AM
To:	Sanghai, Vikrant
Cc:	Paez, Jesus@DOT; Radhakrishnan, Raghuram@DOT; dsaylor@sanbag.ca.gov; Brian Smith; Koneru, Srikanth; Tso, Sam W.; Yang, Jing; 12800A - Sanbag I-15 PA/ED-HM; Hannawi, Philip@DOT
Subject:	RE: 12800A I-15 PA/ED (EA 08-0R800): Buffer Width Evaluation

Vikrant,

This email may serve as concurrence from the Department for the use of the 2' buffer for 08-0R800. Thanks for the reminder.

Regards,

Jonathan den Hartog, P.E.
Phone: (909) 383-5998
California Department of Transportation
District 08
jonathan.c.den.hartog@dot.ca.gov

From: Sanghai, Vikrant [mailto:Sanghai@pbworld.com]
Sent: Tuesday, December 06, 2016 5:38 PM
To: Den Hartog, Jonathan C@DOT <jonathan.c.den.hartog@dot.ca.gov>
Cc: Paez, Jesus@DOT <jesus.paez@dot.ca.gov>; Radhakrishnan, Raghuram@DOT <raghuram.radhakrishnan@dot.ca.gov>; dsaylor@sanbag.ca.gov; Brian Smith <bsmith@sanbag.ca.gov>; Koneru, Srikanth <Koneru@pbworld.com>; Tso, Sam W. <TsoS@pbworld.com>; Yang, Jing <yangj@pbworld.com>; 12800A - Sanbag I-15 PA/ED-HM <12800A@pbworld.com>; Hannawi, Philip@DOT <Philip.Hannawi@dot.ca.gov>
Subject: RE: 12800A I-15 PA/ED (EA 08-0R800): Buffer Width Evaluation

Jonathan,

I was not able to find an email from you providing concurrence on the use of 2 ft wide buffer in our project files. I have attached the buffer evaluation PDF and the original email for your reference. I would appreciate if you can re-send an email to document concurrence on the buffer width.

Thanks,
Vikrant

From: Sanghai, Vikrant
Sent: Tuesday, August 16, 2016 10:12 AM
To: Jonathan Den Hartog <jonathan.c.den.hartog@dot.ca.gov>
Cc: Jesus Paez <jesus.paez@dot.ca.gov>; RK <raghuram.radhakrishnan@dot.ca.gov>; Dennis Saylor <dsaylor@sanbag.ca.gov>; Brian Smith <bsmith@sanbag.ca.gov>; Koneru, Srikanth <Koneru@pbworld.com>; Tso, Sam W. <TsoS@pbworld.com>; Yang, Jing <yangj@pbworld.com>; 12800A - Sanbag I-15 PA/ED-HM <12800A@pbworld.com>
Subject: 12800A I-15 PA/ED (EA 08-0R800): Buffer Width Evaluation

Jonathan,

As discussed attached is the 2 feet v/s the 4 feet buffer width evaluation for your reference. We have added a conclusion statement at the end of the tables that summarizes the reasons/justifications for proceeding with the use of a 2-foot wide buffer. Please let us know if you have any further questions.

Thanks,

Vikrant Sanghai, P. E.
Supervising Engineer

WSP | PARSONS BRINCKERHOFF
451 E Vanderbilt Way, Suite 200
San Bernardino, CA 92408
Office: 909-888-1106
Direct: 909-386-2814
sanghai@pbworld.com
wsp-pb.com/usa

I-15 Corridor Project
4 feet Wide Buffer Evaluation
(Proposed Buffer Width = 2 feet)

Segment	Northbound Feature	Approx. Station	Length of Potential Widening (X - Taper)	Proposed Inside Shoulder Width	Currently Proposed Outside Widening???	Issues within Segment (I/E = Ingress/Egress)
1	Cantu-Galleano Ranch Rd Entrance	2653+00	3150	8'	No	- Minor outside widening near Cantu-Galleano. -This portion is within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	SR-60 EB Exit	2687+50				
2	SR-60 EB Exit	2693+50	1550	8'	No	- Requires additional outside widening to Riverside Dr UC bridge and potential impacts to Caltrans Maintenance Area. -This portion is within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	SR-60 WB Exit	2712+00				
3	SR-60 WB Exit	2714+50	750	8' to 20'	No	- Requires additional outside widening to SR-60/I-15 Separation Structure. - This portion is within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	SR-60 WB Entrance	2725+00				
4	SR-60 EB Entrance	2740+00	5508	8'-10'	Portion	- Requires additional outside widening to Mission/UPRR OH bridge which will further decrease the existing non-standard vertical clearance and also requires additional outside widening to Philadelphia St UC Bridge. - ROW impacts in portion where we have 10' inside shoulder and widen buffer for I/E. - This portion is partially within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	Jurupa Street Exit	62+50				
5	Jurupa Street Exit	66+50	1800	10'	Yes	This section is on a horizontal curve where there are proposed lane transitions to provide I/E area.
	Jurupa Street Entrance	87+50				
6	Jurupa Street Entrance	94+50	2150	10'	Yes	- This section is on a horizontal curve and I/E transition with 12' to 2' buffer transition. - Potential ROW impacts in SE quadrant.
	I-10 Exit	119+00				
7	I-10 Exit	123+00	3200	10'	Yes	- Requires additional outside widening to Airport Dr UC bridge and Vina Vista OH bridge which will further decrease the existing non-standard vertical clearance. - Existing connector column constraints at I-10/I-15 Separation Structure.
	I-10 Entrance	158+00				
8	I-10 Entrance	173+40	760	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	4th Street Exit	184+00				
9	4th Street Exit	187+00	800	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	4th Street Entrance	198+00				

Segment	Northbound Feature	Approx. Station	Length of Potential Widening (X - Taper)	Proposed Inside Shoulder Width	Currently Proposed Outside Widening???	Issues within Segment (I/E = Ingress/Egress)
10	4th Street Entrance	205+30	8070	4' to 10'	Yes	- This section is on a horizontal curve and may result in superelevation issues. - Requires additional outside widening to 6th St UC bridge, MWD Pipeline UC bridge, Rochester OH, Day Creek Channel bridge, Arrow Route UC bridge. - Additional outside widening to Rochester OH will further decrease the existing non-standard vertical clearance. - Proposed I/E in this segment with 4' Inside Shoulders (about 4,200').
	Foothill Blvd Exit	289+00				
11	Foothill Blvd Exit	293+00	750	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	Foothill Blvd Entrance	303+50				
12	Foothill Blvd Entrance	321+00	4200	7.25'-10'	Portion	Requires additional outside widening to Etiwanda Ave UC bridge (skew).
	Base Line Exit	366+00				
13	Base Line Exit	371+00	2100	8'	No	- Requires additional outside widening to Base Line Rd UC bridge (skew) and Abandoned RR (Bike Path) UC bridge. - Proposed I/E Weave in this portion of the freeway.
	Base Line Entrance	395+00				
14	Base Line Entrance	400+00	3800	8' to 20'	No	Requires Victoria Bridge and East Etiwanda Creek bridge widening.
	210 Exit	441+00				
15	210 Exit	448+00	700	20'	No	- Providing a 4-foot wide buffer will have impacts on EB 210 to NB 15 connector bridge. - This wide should is required to accommodate 2nd express lane in future.
	210 Loop Exit	458+00				
16	210 Loop Exit	466+00	1500	20'	No	- Providing a 4-foot wide buffer will have impacts on WB 210 to SB 15 connector bridge. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	210 Entrance	484+00				
17	210 Entrance	494+50	3300	20'	No	- This will cause multiple lane shifts within a small stretch of the freeway. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	Beech Exit	530+50				
18	Beech Exit	534+00	700	20'	No	- This will cause multiple lane shifts within a small stretch of the freeway. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	Beech Entrance	544+00				
19	Beech Entrance	555+00	50	20'	No	- This will cause multiple lane shifts within a small stretch of the freeway. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	End of Express Lanes Buffer	558+50				

I-15 Corridor Project
4 feet Wide Buffer Evaluation
(Proposed Buffer Width = 2 feet)

Segment	Southbound Feature	Approx. Station	Length of Potential Widening (X - Taper)	Proposed Inside Shoulder Width	Currently Proposed Outside Widening???	Issues within Segment (I/E = Ingress/Egress)
20	Beech Entrance	529+00	3200	20'	No	- This will cause multiple lane shifts within a small stretch of the freeway. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	210 Exit	494+00				
21	210 Exit	480+00	4000	20'	No	- Providing a 4-foot wide buffer will have impacts to WB 210 to SB 15 connector bridge, 210/15 separation structure, EB 210 to NB 15 connector bridge. - The wide inside shoulder is required to accommodate 2nd express lane in future.
	210 Entrance	437+00				
22	210 Entrance	432+50	2950	8'-20'	No	Requires additional outside widening to Victoria Ave UC bridge and East Etiwanda Creek bridge.
	Base Line Exit	400+00				
23	Base Line Exit	392+50	1400	7.25'-8'	No	- Requires additional outside widening to Base Line Rd UC bridge (skew) and Abandoned RR (Bike Path) UC bridge. - Proposed I/E Weave in this portion of the freeway.
	Base Line Entrance	375+50				
24	Base Line Entrance	356+00	3500	8' to 10'	Portion	Requires additional outside widening to Etiwanda Ave UC bridge (skew).
	Foothill Exit	318+00				
25	Foothill Exit	316+00	800	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	Foothill Entrance	305+00				
26	Foothill Entrance	284+00	7700	10'	Yes	- This section is on a horizontal curve and may result in superelevation issues. - Requires additional outside widening to 6th St UC bridge, MWD Pipeline UC bridge, Rochester OH, Day Creek Channel bridge, Arrow Route UC bridge. - Proposed I/E in this section with 4' Inside Shoulders (about 4,200').
	4th St Exit	204+00				
27	4th St Exit	199+00	500	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	4th St Entrance	191+00				
28	4th St Entrance	184+00	500	10'	Yes	This will cause multiple lane shifts within a small stretch of the freeway.
	I-10 Exit	176+00				
29	I-10 Exit	158+00	1300	2'-10'	Yes	- Requires additional outside widening to Airport Ave UC bridge and Vina Vista OH which will further decrease the existing non-standard vertical clearance. - Existing connector column constraints at I-10/I-15 Separation Structure.
	I-10 Entrance	142+00				

I-15 Corridor Project
4 feet Wide Buffer Evaluation
(Proposed Buffer Width = 2 feet)

Segment	Southbound Feature	Approx. Station	Length of Potential Widening (X - Taper)	Proposed Inside Shoulder Width	Currently Proposed Outside Widening???	Issues within Segment (I/E = Ingress/Egress)
30	I-10 Entrance	126+00	3050	10'	Yes	This section is on a horizontal curve and I/E transition with 12' to 2' buffer transition.
	Jurupa St Exit	92+50				
31	Jurupa St Exit	89+00	2000	12'	Yes	This section is on a horizontal curve where there are proposed lane transitions to provide I/E area.
	Jurupa St Entrance	66+00				
32	Jurupa St Entrance	60+00	2150	8'-10'	Yes	- Requires additional outside widening to Mission/UPRR OH bridge which will further decrease the existing non-standard vertical clearance and also requires additional outside widening to Philadelphia St UC bridge. - ROW impacts in portion where we have 10' inside shoulder and widen buffer for I/E. - This portion is partially within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	SR-60 Exit	2748+50				
33	SR-60 Exit	2740+50	2850	8'	No	- Requires additional outside widening to SR-60/I-15 Separation Structure. - This portion is within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	SR-60 Entrance	2709+00				
34	SR-60 Entrance	2692+00	2900	8'	No	- Minor outside widening near Cantu-Galleano. - This portion is within Riverside County and the buffer width is consistent with the Riverside County Express Lanes.
	Cantu-Galleano Ranch Rd Exit	2660+00				

Conclusion: This project is proposing a 2-foot wide buffer between express lanes and general purpose lanes based on the information provided above. Below is a summary of the reasons for proposing a 2-foot wide buffer.

1. To be consistent with RCTC I-15 Tolled Express Lanes project at the southerly end of this project
2. To avoid non-standard vertical clearances at certain undercrossing/overhead structures as described above
3. To avoid multiple lane shifts within a small stretch of the freeway, and
4. To accommodate future I-15 express lanes project between Sierra Ave and US-395.

Based on above mentioned reasons and justifications an increase in the buffer width from 2 feet to 4 feet is not feasible and hence design is proceeding with a 2-foot wide buffer for this project.

ATTACHMENT M

TMP Data Sheets

This page intentionally left blank

Caltrans District 8 (Riverside & San Bernardino)

TMP Data Sheet (Ver. Aug. 2015)

Transportation Management Plan (TMP) Data Sheet is for PID, PSR, PR and PS&E considering DTM's requirements. The validity of this TMP expires at the same time the associated LRCs expires.

The TMP Data Sheet includes background & signatures, TMP elements & TMP estimate

Developer: Use the info on the LRC & TMP request to complete the yellow cells of sections A, B & C

TMP receiver: Please note that

Project shall not be certified without the approval of the Lane Requirement Charts (LRCs)

& the TMP by the DTM

(A) Requester's info.

1-Date of request	2/2/2016	2-Department	Traffic
3-Full name	Joe De La Garza	4- Phone No.	1 619-849-5433
5-E-mail address	delagarzajr@pbworld.com		
6-Project Manager's name	Sam Tso		
7-Project Manager's E-mail	Tsos@pbworld.com		

(B) Project information

		1-EA#/ID#	08-0R800
2-County/Route	Riverside&San Bernardino/Interstate 15	3-phase/sub object	PA/ED
4-Post mile (From-To)	Riv-15-49.8/52.3; SBD-15-0.0/12.2		
5-Short description of job	This project adds Express Lane(s) from Cantu-Galleano Ranch Road to Duncan Canyon Road.		

Construction period per WPS

6-Estimated start date	2021	8-# of working days	750
7-Estimated end date	2024	9-Estimated Proj. cost	N/A

10- Developerer: Use section (H), in the bottom of the page, to add any remarks

DTM office is located on the south side of 11th. Floor of Caltrans, District 8 (See address in section G below) | Questions: call 383-6262

Developer: Fill info in green cells only

C) BACKGROUND INFORMATION

			Date request received		Job assigned to
# of working days	750				
Estimated Project cost ($)	N/A	Per E-mail dated			
TMP estimate($)	$4,077,760	Equal to	#VALUE!	Of the project cost	

D) IMPACT

D) IMPACT	High	Medium	Low	NA
State Hwy.	X			
Local road		X		
Ramp/connector	X			

Developer: (*Briefly, explain the high impact/mitigation):*

E) Developer: Complete the info

Developed by	Joe De La Garza	Original signed by:		Date	
Title	Senior Traffic Engineer				
E-mail	delagarzajr@pbworld.com				
Phone/Fax	6198495433				

F) Approved by		Original signed by:	Al Afaneh	Date	
Name:					
Title					
E-mail					
Phone/Fax					

G) District's info:

Department of Transportation		
District:	8	
Address:	464 W. Fourth St., San Bernardino, Ca., 92401-1400	
Operations, DTM, MS 1150	DTM location	South side of 11th floor

H) Remarks:

Form was developed by Saleh Yadegari (September 2014)

TMP Elements	EA #/ID#	08-0R800	Date	

Note: An X in the check box means you need to include this in the project unless staging, material, or work hour changes eliminate the need for the item. A ? in the box means TMP anticipates this - please check into this. A blank box means the item is not needed at this time based on the information received.

1 Public Information/Public Awareness Campaign (PAC)

			PA	CA	Cost
		BEES 066063 (Traffic Management Plan-Public Information). Cost to be reduced by Public Affairs (PA) and Construction Liaison (CL) only. Show under State Furnished as the total of PA+CL.			
1.1	X	Include Rideshare information in PA/CL project material to encourage vehicles reduction in work area			
1.2	X	Brochures and Mailers			$ 300,000
1.3	X	Media Releases (& minority media sources)			$ 5,000
1.4	X	Paid Advertising			$ 500,000
1.5		DT			
1.6	X	Public Meetings/PAC Mtgs./Speakers Bureau (show cost also for room rental)			$ 200,000
1.7		Hand deliver notices to vicinity			
1.8		Broadcast fax service			
1.9	X	Telephone Hotline OR			
1.10	X	1-800-COMMUTE (The telephone number is shown on CS-Info signs) -			
1.11		Visual Information (videos, slide shows, etc.)			
1.12	X	Local cable TV and News			$ 25,000
1.13	X	Traveler Information System (Internet)			
1.14	X	Internet, E-mail			$ 100,000
1.15	X	Notification to targeted groups:			$ 50,000
	X	Revised Transit Schedules/maps			
	X	Rideshare organizations			
	X	schools			
	X	organizations representing people with disabilities			
	X	bicycle organizations			
1.16		Include PA/CL/Consultant resources in WPS			
1.17	X	Insert SSP's "A representative of the Contractor, at Superintendent level or higher, and authorized to commit the Contractor, shall attend and participate in all Public Awareness Campaign meetings. Time commitment for the meeting(s) varies from two to four hours per month."			
1.18	X	Community Task Force			
1.19		Others			
				Section 1 Total	$ 1,180,000

2 Traveler Information Strategies

Project team needs to coordinate with Traffic Design!

2.1	X	Existing Electronic Message Signs (Stationary) - list locations. See Note 5	
		New Installation (Stationary) - BEES 860532 CHANGEABLE MESSAGE SIGN SYSTEM - list locations. See Note 5	
2.2	X	Portable Changeable Message Signs (PCMS).BEES 128650	$ 500,000

These PCMS advise motorists to divert at remote advance decision points - outside the usual work limits. Unlike stationary CMS, you are allowed to use them for advance motorist information - e.g. a week ahead. Their placement may need to be cleared environmentally so that they can be included in plans and SSP later. They may be in addition to Traffic Design's PCMS for regular traffic handling in and next to a work area.

Placement Details: units to be placed in the direction of travel towards the closure at 1 mile and 1/2 mile before getting to the closure. Total No. of PCMSs needed is units for 6 months ( )= $

 Form was developed by Saleh Yadegari (September 2014)

TMP Elements	EA #/ID#	08-0R800	Date	

2.3 [X] Lane Closure Web Site

2.4 [X] Caltrans Highway Information Network (CHIN) $ 5,000

2.5 [ ] Radar Speed Message Sign (Specter sign) BEES 066064 (approx. EA @ $30,000)

2.6 [ ] Bicycle and pedestrian information, e.g. Detour maps

2.7 [ ] Others

Section 2 Total	$ 505,000

3 Incident Management

3.1 CHP's Construction or Maintenance Zone Enhanced Enforcement Program – COZEEP or MAZEEP. BEES 066062 - show under "State or Agency furnished" in the Cost Estimate.

Make sure to consider the LC hours and add CHP driving time to/from their office

Day COZEEP: To protect active closures

# of days	hours/day	CHP vehicles	# of officers.	Rate/Hr.	
75	9	1	1	$ 100	$ 67,500

Night COZEEP: To protect active closures

# of nights	hours/night	CHP vehicles	# of officers (Nights need 2 per car)	Rate/Hr.	
300	9	1	2	$ 100	$ 540,000

3.2 Motorist Information

Automated Work Zone Infomration System (AWIS) $ 750,000

3.3 Freeway Service Patrol (FSP) for Construction (CFSP) $/hr./truck $55

BEES 066065 - show under "State or Agency furnished" in the Cost Estimate

Short duration or remote area CFSP usually is bid with much higher hourly rates. If enhancement of program FSP feasible, CFSP could tie into the lower long-term FSP rates.

	# of trucks	# of days	Hours per day	
A For service within the regular FSP hours				$0
For service outside the regular FSP hours B Extended Peak hour coverage	2	750	4	$330,000
C Night support during structure freeway closures and major traffic shifts	2	200	9	$198,000
D Weekend support	2	75	12	$99,000

Local agency (SAFE) support 8% $50,160

8% of truck cost

CFSP CHP support 5% $0

5% of truck cost only if within regular FSP and area

Equipment/Supplies 10% $62,700

% of truck cost unless more detail available

Consult with the Inland Empire division of CHP or the border division in the southern Riverside county to select the method which is acceptable for the B,C,D that are outside the regular FSP hours or area.

Method 1

CFSP/CHP support 20% $125,400

20% of truck cost or

TMP Elements	EA #/ID#	08-0R800	Date	

CFSP Dispatcher @

# of days		# of nights	hours	# of FSP	Rate	# of FSP vehicles	
			0		$45		$ -
			0				

CFSP CHP Officers (See Cozeep rate)

# of days		# of nights	hours	# of officers	Rate	# of CHP vehicles	
							$ -
							$ -

- [ ] Cooperative Agreement or Task Order with SAFE
  for $677,160
- [ ] Task Order with CHP (State-wide Master Agreement for FSP support).
  for $125,400
  Contact District FSP Coordinator for task orders.
- [ ] Service Contract
- [ ] Local Agency will arrange CFSP with SAFE
- [ ] Local Agency will arrange CFSP administration with CHP

3.3 Total $865,260

3.4 [X] Traffic Management Teams Needed to assist w system diversion/impact reduction. Project Needs to provide resources. $ 50,000

3.5 [X] Project needs to provide resources to Transportation Management Center Unit 370 for additional staff during high impact closures. $ 50,000

3.5 [ ] Traffic Surveillance Stations for construction impact mitigation (loop detectors, radar, and CCTV). Keep existing operational during construction.

Section 3 Total	$ 2,322,760

4 Construction Strategies

Contact DTM, at 909-383-6262, to get Delay Calculations, Lane Requirement Charts (LRC), Table Z and Special events list. Inform DTM of any concerns/commitments Re special LC days, times, seasons, events; environmental restrictions; if work may be affected by snow and low or high temperatures. E.g. desert heat may delay AC dig out curing which may increase traffic impact when vehicles overheat in the queue; etc. IF traffic volumes vary significantly between seasons, consider 2 sets of LRCs to avoid CCOs.

4.1 This TMP presumes that work is planned as below. If different, TMP needs to be revised. The Lead Project Engineer is responsible to include all appropriate closure charts.

- [X] Off peak
- [X] Night
- [X] Weekend

4.2

- [ ] Flagging
- [X] Shoulder
- [X] Lane
- [ ] Street
- [X] Ramp
- [X] Connector*
- [X] Extended Weekend Closures*
- [X] Total Facility Closures*

*Consult with TMP developer and the DTM regarding Cozeep & other costs. Show your detour and traffic diversion plans.

CAUTION: If the Lane Requirement Chart (LRC) for full mainline closures, of one or both directions on a highway or freeway, does not show the maximum number of allowable closures, the PSE cannot be certified by DTM/TMP.

4.3 [X] Coordinate with adjacent construction and planned projects - also on detour routes.
Use SSP 07-850

4.4 [ ] BEES 066008 Incentives/Disincentives

4.5 [ ] Strictly enforce Constr. Progress Schedule (CPM)

4.6 [ ] Include Specification 12-4.03_A0

BEES 066022 (Traffic) Right of Way delay. Show in supplemental work. If State (or agency) denies an approved closure or orders the contractor an earlier pick up, this shall be used to pay damages, e.g. for AC cold load, etc.

TMP Elements	EA #/ID#	08-0R800	Date	

4.7 [x] 10-Min. Delay Penalty — Contact DTM at 909-838-6262 for 10 Min. Delay penalty Calculations. Note that Delay Penalty is different from the R/W Delay shown above!

4.8 [ ] Others

Section 4 Total $ -

5 Demand Management (DM)

Project team needs to coordinate with RCTC/SANBAG/CVAG

Traffic diversion may increase available work hours.

5.1 [ ] A coop will be executed - mentioned in PSR or PR.

[ ] Instead of a coop, 15% is added to the cost of DM elements since the payment to the local agency will be routed through the contractor.

[ ] Instead of a coop, the local agency will make their own arrangements with RCTC/SANBAG.

[X] PA/CL or local agency need to inform commuters through RCTC/SANBAG. Funds part of PA/CL. $ 20,000

5.2 [ ] HOV Lanes/Ramps (New or Convert)

5.3 [ ] Park-and-Ride Lots

[ ] Leased spaces (Sponsored spaces may be feasible in exchange for signs and print coverage)

5.4 [ ] Parking Management/Pricing (Coordination with local agency is required)

5.5 [X] BEES 066067 Rideshare Promotion $ 50,000

5.6 Rideshare Incentives -

Section 5 Total $ 70,000

6 Alternate Route Strategies

Caution - signed detours may require environmental clearance. Traffic diversion may increase available work hours. Please work with Traffic Design.

6.1 [ ] Add Capacity to Freeway connector

6.2 [X] Ramp Closures

6.3 [X] Temporary Highway Lanes or Shoulder Use

6.4 [ ] Parking Restrictions

6.5 [ ] Street Improvements

- [ ] State R/W - Signals, Widen, etc.
- [X] Local R/W - Signals, Widen, etc. Coop or Permit may be needed

6.6 [ ] Local Street USE - Coop or Permit may be needed

6.7 [X] Traffic Control Officers (see 3.1 Cozeep)

6.8 [ ] Signed detour - using State routes

6.9 [X] Signed detour - using local streets and roads

6.10 [ ] Adjust signals

6.11 [ ] Temporary bicycle or pedestrian facilities

Section 6 Total $ -

TMP Estimate

EA#/ID# *08-0R800* *Date*

TMP developer: Amounts under the cost column will automatically be copied from the TMP elements

TMP Elements	BEES (Code)	Cost
1. Public Information	066063	$1,180,000
2. Motorist Information Strategies		$505,000
3. Incident Management		$2,322,760
4. Construction Strategies		$0
5. Demand Management (DM)		$70,000
6. Alternate Route Strategies		$0
Total TMP Estimate		$ 4,077,760

Form developed by Saleh Yadegari

ATTACHMENT N

Level 3 Risk Register

This page intentionally left blank

I-15 CORRIDOR PROJECT
RISK REGISTER

Risk Scoring Matrix

Qualitative Score	V Low 1	Low 2	Medium 3	High 4	V High 5	Legend
Likelihood	Very Unlikely > 10%	Unlikely 10% - 35%	Likely 35% - 65%	Very Likely 65% - 90%	Highly Likely / Near Certainty < 90%	<=4
Cost Impact ($)	Thousands ($1k - $10k)	Tens of Thousands ($10k - $100k)	Hundreds of Thousands ($100k - $1m)	Millions ($1m to $10m)	Tens of Millions (>$10m)	4-13
Time Impact	Weeks	1 - 3 Months	3 - 6 Months	6 - 12 Months	Year or Longer	>=13

$$\text{Risk Score} = \frac{(\text{Cost + Time})}{2} \times \text{Probability}$$

Item No.	Risk ID[1]	Risk Type	Risk Description	Date	Cost	Time	Prob	Risk Score	Risk Owner	Mitigation Strategy	Action Items	Action By	Status Comments
1	8	Construction	Relocation of Caltrans Fiber Optics Cable	03-Jun-15	3	2	4	10	D-B	Mitigate	1. Prior to final design identify additional locations that conflict with existing Caltrans Fiber Optic network and estimate associated costs. In advance of construction, plan and coordinate with Caltrans to minimize impacts associated with relocation of facilities.	D-B	
2	9	Construction	Hazardous materials encountered during construction may require an on-site storage area and potential additional costs to dispose.	9/14/2014 (PSR-PDS)	2	2	4	8	D-B	Accept	1. Perform review of as-builts to determine likelihood of hazardous materials. Ensure storage space will be available	D-B	
3	10	Design	Proximity of proposed bridge abutments near railroad ROW/tracks require an extensive geotechnical investigation of how to design temporary shoring system adjacent to the railroad tracks and maintain standard clearance from railway tracks.	9/14/2014 (PSR-PDS)	4	3	5	17.5	D-B	Avoid	1. Develop design considering the railroad's standard, coordinate with railroad representatives and get their concurrence.	D-B	
4	11	Design	Existing structures are not evaluated for seismic retrofit and structural capacity.	9/14/2014 (PSR-PDS)	4	3	3	10.5	D-B	Avoid	1. Perform seismic retrofit analysis for existing structures prior to Release for Construction plans.	D-B	
5	20	Design	Non-standard existing/proposed vertical clearance at railroad overhead structures	03-Jun-15	2	3	2	5	D-B	Mitigate	1. Develop structure design that will be acceptable to SBCTA, Caltrans, BNSF, Metrolink and UPRR. 2. Meet with parties to develop mutually acceptable concepts.	D-B	
6	24	Design	Contractor may require adjusted work zone size/location for both access and material and equipment storage.	03-Jun-15	2	2	2	4	D-B	Mitigate	1. Staging plans will identify potential contractor staging areas on the concept plans.	D-B	
7	25	Design	Project not to preclude I-10/I-15 express lanes direct connectors	03-Jun-15	1	1	1	1	SBCTA	Transfer	1. Since the inclusion of these direct connectors are not financially feasible, ensure the proposed improvements do not preclude the future addition of these facilities by specifically stating this in technical provisions.	D-B	
8	31	Environmental	If the final environmental document is challenged following completion of the Project Report the project schedule could be affected.	03-Jun-15	3	4	2	7	SBCTA	Avoid	1. The final environmental document has adequately addressed all the public comments received during the circulation of the draft environmental document for public review and comment.	SBCTA	
9	32	Environmental	A design change that is outside of the parameters contemplated in the Environmental Document may trigger a supplemental ED which causes a delay due to the public comment period.	9/14/2014 (PSR-PDS)	2	4	2	6	SBCTA	Avoid	1. Monitor design changes against ED to avoid reassessment of ED 2. Maintain continuous communications and coordination with Caltrans through the PA&ED process.	SBCTA	
10	33	Environmental	Regulatory agency(ies) may not be timely in permitting process.	03-Jun-15	2	2	3	6	SBCTA	Mitigate	1. Maintain active communications with resource agencies to ensure they have all required technical information.	SBCTA	
11	35	Environmental	Noise complaints from communities during construction.	17-Nov-17	2	1	3	4.5	SBCTA	Mitigate	1. This is for construction potential noise impact. Working hour restrictions, etc. that would be included in the ED and contract documents.	D-B	

I-15 CORRIDOR PROJECT
RISK REGISTER

Risk Scoring Matrix

Qualitative Score	V Low 1	Low 2	Medium 3	High 4	V High 5	Legend
Likelihood	Very Unlikely > 10%	Unlikely 10% - 35%	Likely 35% - 65%	Very Likely 65% - 90%	Highly Likely / Near Certainty < 90%	<=4
Cost Impact ($)	Thousands ($1k - $10k)	Tens of Thousands ($10k - $100k)	Hundreds of Thousands ($100k - $1m)	Millions ($1m to $10m)	Tens of Millions (>$10m)	4-13
Time Impact	Weeks	1 - 3 Months	3 - 6 Months	6 - 12 Months	Year or Longer	>=13

$$\text{Risk Score} = \frac{(\text{Cost} + \text{Time})}{2} \times \text{Probability}$$

Item No.	Risk ID[1]	Risk Type	Risk Description	Date	Cost	Time	Prob	Risk Score	Risk Owner	Mitigation Strategy	Action Items	Action By	Status Comments
12	38	Environmental	A new endangered biological species is listed and/or found within the project area.	03-Jun-15	2	4	1	3	SBCTA	Mitigate	1. Maintain communications with Caltrans and resource agencies regarding potential new critical species.	SBCTA	
13	41	Environmental	Nesting birds, protected from harassment under the Migratory Bird Treaty Act, may delay construction during the nesting season.	9/14/2014 (PSR-PDS)	2	2	1	2	D-B	Mitigate	1. Pre-construction survey will be performed and if nests are detected it would be anticipated that the measures (ANI-1, ANI-2, and ANI-5) identified in Environmental Commitments Record would be implemented.	D-B	
14	42	Environmental	Buried objects uncovered during construction require removal and disposal resulting in additional cost and remediation.	03-Jun-15	2	2	1	2	D-B	Accept	1. Include a Supplemental Work item to cover this risk.	D-B	
15	43	External Risks	Unreasonably high expectations from stakeholders/request late changes.	9/14/2014 (PSR-PDS)	3	2	2	5	SBCTA	Mitigate	1. Reach agreements with the stakeholders at the early stages of the project	SBCTA	
16	44	External Risks	Public or Stakeholders require more information related with Express Lanes	9/14/2014 (PSR-PDS)	2	1	2	3	SBCTA	Mitigate	1. Continue Public outreach throughout project development. 2. Maintain on-going coordination with SBCTA's CAG outreach efforts.	SBCTA	
17	45	Organizational	Deviation of toll revenues from projections represents a potential risk.	9/14/2014 (PSR-PDS)	1	2	3	4.5	SBCTA	Mitigate	1. Refresh projections during investment grade study.	SBCTA	
18	46	Organizational	Delay to obtain approvals/decisions from Caltrans Headquarters (HQ) during final design.	9/14/2014 (PSR-PDS)	3	3	3	9	D-B	Mitigate	1. Coordinate early with Caltrans senior management, involve HQ in early review of key documents.	D-B	
19	47	Organizational	Capital funding unavailable for construction	9/14/2014 (PSR-PDS)	3	4	2	7	SBCTA	Accept	1. Rescore and "right-size" the project to reduce costs to meet available fund	SBCTA	
20	50	Right of Way	Due to construction staging, water quality BMPs, construction easements, acquisitions or condemnations some additional ROW may be required to complete the work.	9/14/2014 (PSR-PDS)	3	3	3	9	D-B	Mitigate	1. Early identification of project footprint and evaluate alternative construction staging options.	D-B	
21	51	Utilities	Major utility crossings may require costly relocation or in-place protections - Channel(s), power transmission, etc.	9/14/2014 (PSR-PDS)	2	3	4	10	SBCTA	Mitigate	1. Coordinate with the utility companies and make agreements in advance to DB phase; 2. Develop utility conflict exhibits	SBCTA	
22	53	Utilities	Caltrans may require that non encased waterlines crossing I-15 will need to be encased	03-Jun-15	2	3	3	7.5	D-B	Mitigate	1. Coordinate early with Caltrans if non encased waterline crossings existing in the project limits.	D-B	
23	54	Utilities	Project schedule impacts for long lead time utility relocations – example for steel pole fabrication or splicing of large communication lines	03-Jun-15	2	4	2	6	D-B	Mitigate	1. Long lead time relocation work will be identified in the Right of Way Data Sheet so the D-B designer can start this coordination at the beginning of the final design phase.	D-B	
24	55	Utilities	131D process for Edison overhead transmission relocations of more than 2000 feet for project	03-Jun-15	1	4	2	5	SBCTA	Mitigate	1. If 131D is required for OH transmission relocations of more than 2000 feet - need to make sure our environmental document covers this adequately for Edison. Edison will need to review and approve the language covering this item in the ED. Otherwise if Edison has to do their own 131D environmental clearance, they will take approximately 2 years to do so.	SBCTA	
25	56	Utilities	Buy America requirements for projects with Federal funding	03-Jun-15	2	2	2	4	SBCTA	Mitigate	1. Coordinate with utility owners on any required relocation work to verify they can meet Buy America requirements.	SBCTA	

This page intentionally left blank

I-15 CORRIDOR PROJECT
RISK REGISTER

Risk Scoring Matrix

Qualitative Score	V Low 1	Low 2	Medium 3	High 4	V High 5	Legend
Likelihood	Very Unlikely > 10%	Unlikely 10% - 35%	Likely 35% - 65%	Very Likely 65% - 90%	Highly Likely / Near Certainty < 90%	<=4
Cost Impact ($)	Thousands ($1k - $10k)	Tens of Thousands ($10k - $100k)	Hundreds of Thousands ($100k - $1m)	Millions ($1m to $10m)	Tens of Millions (>$10m)	4-13
Time Impact	Weeks	1 - 3 Months	3 - 6 Months	6 - 12 Months	Year or Longer	>=13

$$\textbf{Risk Score} = \frac{(\text{Cost + Time})}{2} \times \text{Probability}$$

Item No.	Risk ID[1]	Risk Type	Risk Description	Date	Cost	Time	Prob	Risk Score	Risk Owner	Mitigation Strategy	Action Items	Action By	Status Comments

[1]: Risk IDs are unchanged as they are used to track the risk status.

"Mitigate" meaning is defined in Caltrans Project Risk Management handbook (Version 1 June 2012) under Section 7-1. Risk mitigation reduces the probability and/or impact of an adverse risk event to an acceptable threshold. Taking early action to reduce the probability and/or impact of a risk is often more effective than trying to repair the damage after the risk has occurred. Risk mitigation may require resources or time and thus presents a tradeoff between doing nothing verus the cost of mitigating the risk.

ATTACHMENT O

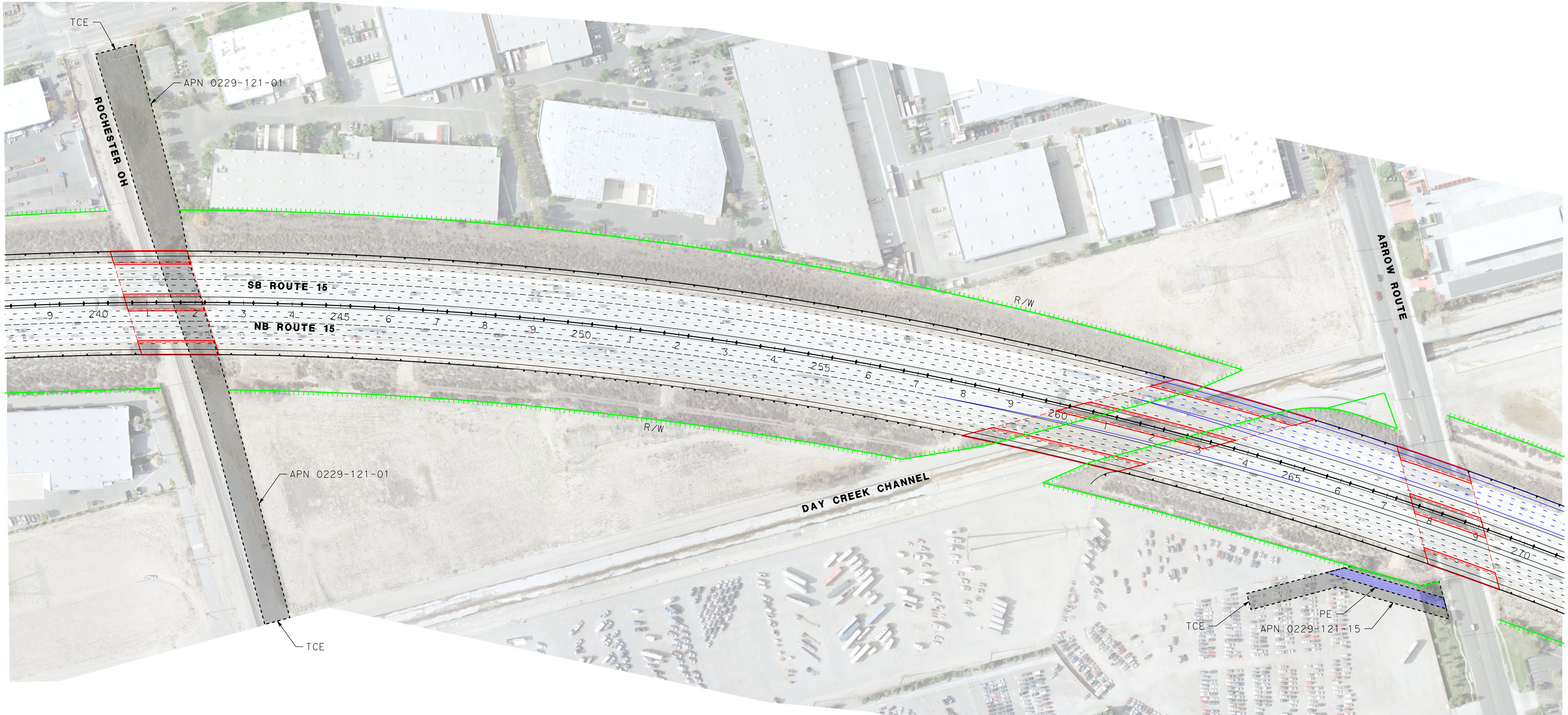
Right of Way Impacted Parcels Exhibit

This page intentionally left blank

LEGEND

TEMPORARY CONSTRUCTION EASEMENT (TCE)

PERMANENT EASEMENT (PE)



NOTES:

APN 0229-121-01 (SBCTA):
TEMPORARY CONSTRUCTION EASEMENT REQUIRED FOR CONSTRUCTION STAGING AREA

APN 0229-121-15 (CRPT LAND HOLDING):
TEMPORARY CONSTRUCTION EASEMENT AND PERMANENT EASEMENT REQUIRED TO RELOCATE SCE 66KV OVERHEAD ELECTRICAL LINES

I-15 CORRIDOR PROJECT

1"=200'

DGN FILE = IP_PWP:d0211927\Arrow.dgn

DATE PLOTTED => 24-JUL-2018
TIME PLOTTED => 11:16

LAST REVISION 00-00-00

BORDER LAST REVISED 7/2/2010

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

USERNAME => rodriguezd
DGN FILE => Arrow.dgn

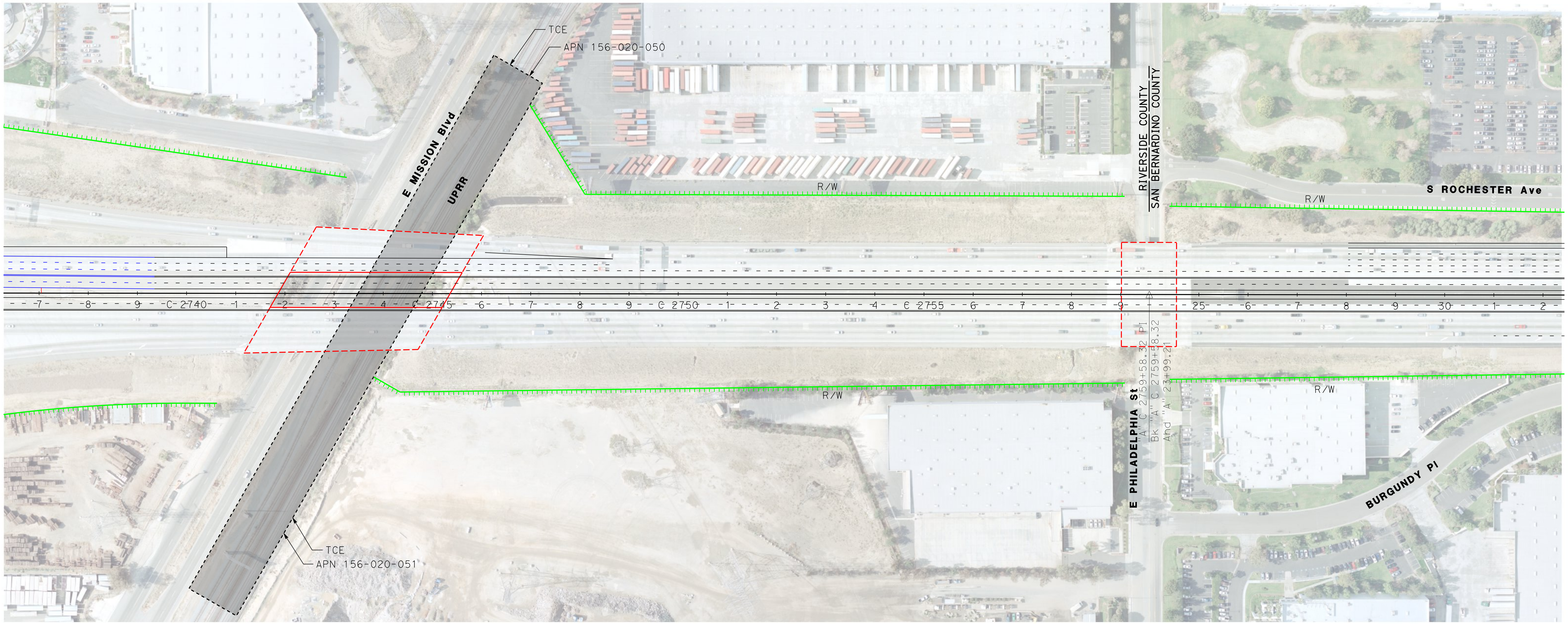
CU 00000

EA 000000

This page intentionally left blank

LEGEND

TEMPORARY CONSTRUCTION EASEMENT (TCE)



NOTES:

APN 156-020-050 & APN 156-020-051 (UPRR):
TEMPORARY CONSTRUCTION EASEMENT REQUIRED TO REALIGN UPRR SIDING TRACK

I-15 CORRIDOR PROJECT

1"=200'

This page intentionally left blank

ATTACHMENT P

Coordination Meeting Minutes with Cities

This page intentionally left blank

1170 W 3rd Street
2nd Floor
San Bernardino, CA 92410
Main: 909-884-8276
Fax: 909-885-4407
www.gosbcta.com

I-15 CORRIDOR PROJECT PA/ED
MEETING MINUTES

451 E Vanderbilt Way
Suite 200
San Bernardino, CA 92408
Main: 909-888-1106
Fax: 909-889-1884
www.wspgroup.com
www.pbworld.com

Meeting Type: City of Fontana Coordination Meeting
Meeting Date: Thursday, March 30, 2017
Meeting Time: 10:00 – 10:30 am
Location: City Hall, Room #229
8353 Sierra Ave, Fontana, CA 92335
Subject: I-15 PA/ED Draft Temporary Detour Routes
Attachments: Sign-in Sheet

Project EA: 08-0R800
Project ID: 0812000184
PB Project No.: 12800A

ITEM #	DISCUSSION TOPIC
1	Attendees and Self-Introductions Dennis Saylor (SBCTA) Brian Smith (SBCTA) Jeff Kim (City of Fontana) Kevin Ryan (City of Fontana) Dave Teater (City of Fontana) Oscar Alejandre (Caltrans D8 –Traffic) Sam Tso (WSP/Parsons Brinkerhoff) Srikanth Koneru (WSP/Parsons Brinckerhoff) Joe Sawtelle (TranSystems) Self-Introductions were made.
2	Meeting Purpose and Project Status SBCTA, the design team and Caltrans District 8 met with the City of Fontana to go over the draft Stage Construction and Traffic Handling Plan comments from Kevin Ryan. The purpose of the meeting was to coordinate with the City to foster on-going communication, discuss temporary detour routes during construction and give an update on the current project status. Some of the major upcoming milestones for the project include: • End of 2017 – Circulate the Draft Environmental Document for Public Review • Mid 2020 – Award Design-Build contract • 2023/2024 –Completion of construction
3	Stage Construction and Traffic Handling Plans The design team stated that the need for temporary closures of local road will result from the bridge widening work to be done along I-15 as part of the proposed project. Closures will be needed to remove existing bridge railings and to erect and remove falsework. The draft Traffic Handling Plans call for closures for this work of less than 10 days in total. The required closures for the bridge work are anticipated be night-time closures only. SBCTA will be drafting performance specifications for the upcoming design build contract which will likely propose some restrictions to the contractor for temporary closures. SBCTA will coordinate these performance specifications with the City and give them a chance to review and comment on them. SBCTA will also have a comprehensive outreach program to notify the local community with regards to construction efforts and associated temporary closures. Ramp closures have also been identified within the project limits. These ramp closures will be less than 10 days in total. Consecutive on-ramps or off-ramps will not be closed simultaneously. During final design the

	duration of these closures will be further coordinated with the City and performance specifications may be implemented to limit durations to less than 10 days. The City expressed concerns that temporary detours through East Avenue may be sensitive since the community has been living through several recent construction projects. Any temporary closures of Victoria Street would be best to do over the summer. The City expressed concern that they do not want closures and detours set up during Friday night football games at Etiwanda High School. The City discussed other significant projects that could be ongoing during the freeway construction. Etiwanda Ave and Slover Ave project will be completed prior to the project construction most likely. Construction will start late 2018 and be completed late 2019. There is also a future project to widen Baseline Road. SBCTA will continue to work with the City to ensure their ongoing local projects are coordinated with the proposed I-15 freeway work.
4	Other Items – Questions/Comments None.
5	Next meeting: TBD
	END OF MINUTES

1170 W 3rd Street
2nd Floor
San Bernardino, CA 92410
Main: 909-884-8276
Fax: 909-885-4407
www.gosbcta.com

I-15 CORRIDOR PROJECT PA/ED MEETING MINUTES

451 E Vanderbilt Way
Suite 200
San Bernardino, CA 92408
Main: 909-888-1106
Fax: 909-889-1884
www.wspgroup.com
www.pbworld.com

Project EA: 08-0R800
Project ID: 0812000184
PB Project No.: 12800A

Meeting Type: City of Rancho Cucamonga Coordination Meeting
Meeting Date: Thursday, April 6, 2017
Meeting Time: 2:00 – 3:00 pm
Location: City of Rancho Cucamonga, Conference Room
10500 Civic Center Drive, Rancho Cucamonga, CA 91730
Subject: I-15 PA/ED Draft Temporary Detour Routes
Attachments: Sign-in Sheet

ITEM #	DISCUSSION TOPIC
1	Attendees and Self-Introductions Jason Welday (City of Rancho Cucamonga) Albert Espinoza (City of Rancho Cucamonga) Dennis Saylor (SBCTA) Brian Smith (SBCTA) Sam Tso (WSP|Parsons Brinkerhoff) Srikanth Koneru (WSP|Parsons Brinckerhoff) Joe Sawtelle (TranSystems) Suzanne Moubayed (TranSystems) Self-Introductions were made.
2	Meeting Purpose and Project Status SBCTA and the design team got together with the City of Rancho Cucamonga to go over the Stage Construction and Traffic Handling Plan comments from Albert Espinoza. The purpose of the meeting was to coordinate with the City to foster on-going communication, discuss temporary detour routes during construction and give an update on the current project status. Some of the major upcoming milestones for the project include: • End of 2017 – Circulate the Draft Environmental Document for Public Review • Mid 2020 – Award Design-Build contract • 2023/2024 –Completion of construction The design team is currently working on Draft Project Report and completing the Technical Studies for the Draft Environmental Document.
3	Stage Construction and Traffic Handling Plans The design team stated that the need for temporary closures of local roads will result from the bridge widening work to be done along I-15 as part of the proposed project. Closures will be needed to remove existing bridge railings, to erect and remove falsework, or to place precast girders. The draft Traffic Handling Plan Detours call for closures for this work of less than 10 days in total. The required closures for the bridge work are anticipated night-time closures. The notes for the closures for bridge work have been revised to night-time closures only. SBCTA will also be drafting performance specifications for the upcoming design build contract which will propose some restrictions to the contractor for temporary closures. SBCTA will coordinate these performance specifications with the City and give them a chance to review and comment on them. SBCTA will also have a comprehensive outreach program to notify the local community with regards to construction efforts and associated temporary closures.

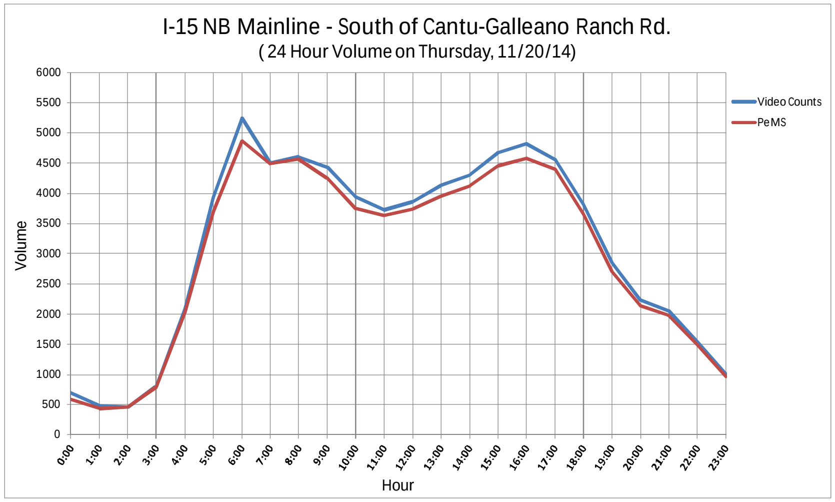
	Ramp closures have also been identified within the project limits. These ramp closures will be less than 10 days in total. Consecutive on-ramps or off-ramps will not be closed simultaneously. During final design the duration of these closures will be further coordinated with the City and performance specifications may be implemented to limit durations to less than 10 days. The City expressed concerns that temporary detours during 6th street closure will impact the businesses that are land locked. The detour route has therefore been adjusted to 4th street to the south along Santa Anita Avenue to the east of the I-15 and Milliken Avenue to the west of the I-15. *Action Item: TranSystems will revise the draft detour plans to show the break on 6th street and change the notes to reflect night time closures only for bridge work.* *Action Item: TranSystems will revise detour plan and add notes to sheets to specify night work only to remove existing bridge rails, place and remove falsework or place pre-cast girders.* A truck detour may be required for bridge work on the Arrow Route Overcrossing due to temporary falsework clearances. The City expressed concern because there are large manufacturing companies in this area which rely on Arrow Route as a truck route. The detour will be adjusted down to 4th Street to avoid traffic on Foothill Boulevard and any impact to Victoria Gardens. SBCTA will work with the City on the technical provisions during Design Build RFP phase to minimize disruptions to local traffic during Arrow Route bridge widening construction. The City is concerned with the area around Victoria Gardens. Performance Specifications will be coordinated with the City, especially during the holiday months of October through January. The detour in this area was adjusted to use Cherry Street. In order to minimize impacts to Victoria Gardens, the detours will be revised on TH 10B and TH 12. It was discussed that a pre-project conditions survey of the local streets may be conducted followed by a post construction survey to help identify any project impacts to local streets. SBCTA anticipates allocating some supplemental funds to account for potential repairs to local roads. *Action Item: The City of Rancho Cucamonga will review the revised detour plans and comment responses and provide any additional feedback.*
4	Other Items – Questions/Comments None.
5	Next meeting: TBD
	END OF MINUTES

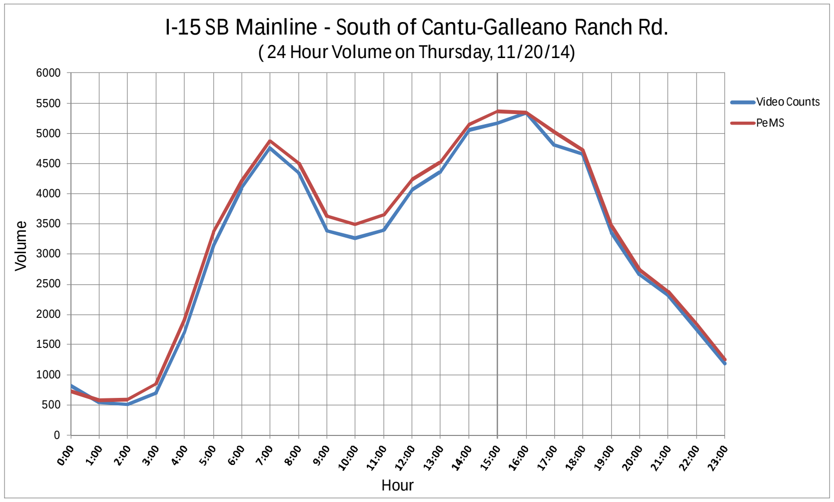
ATTACHMENT Q

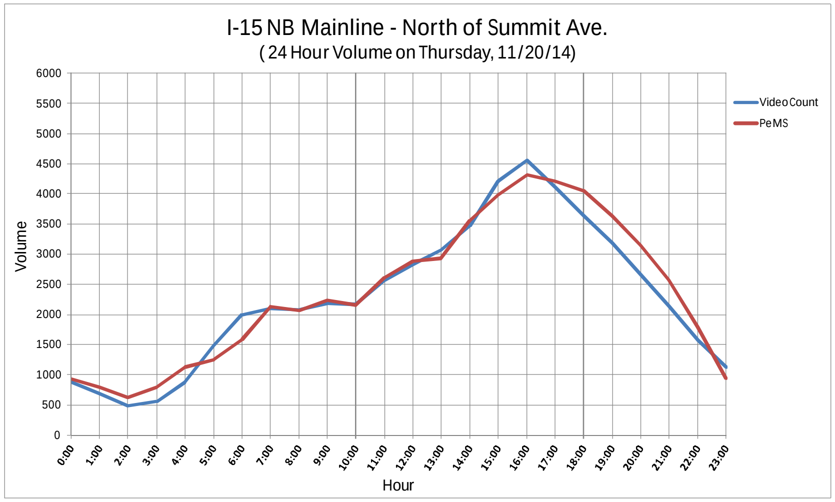
Exhibits 23, 24, 84, and 85 from

Final Traffic Study Report

This page intentionally left blank







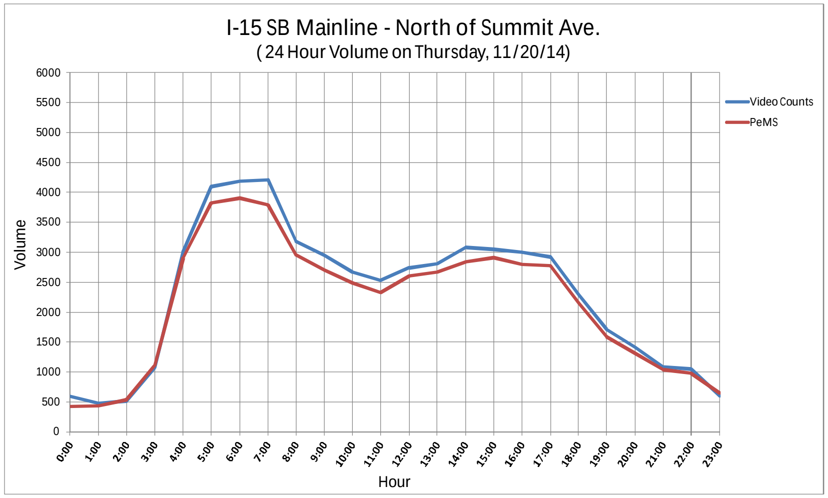


Exhibit 23: Time-of-Day Traffic Pattern, Typical Weekday

Excerpt from *I-15 Corridor Project Final Traffic Study Report*

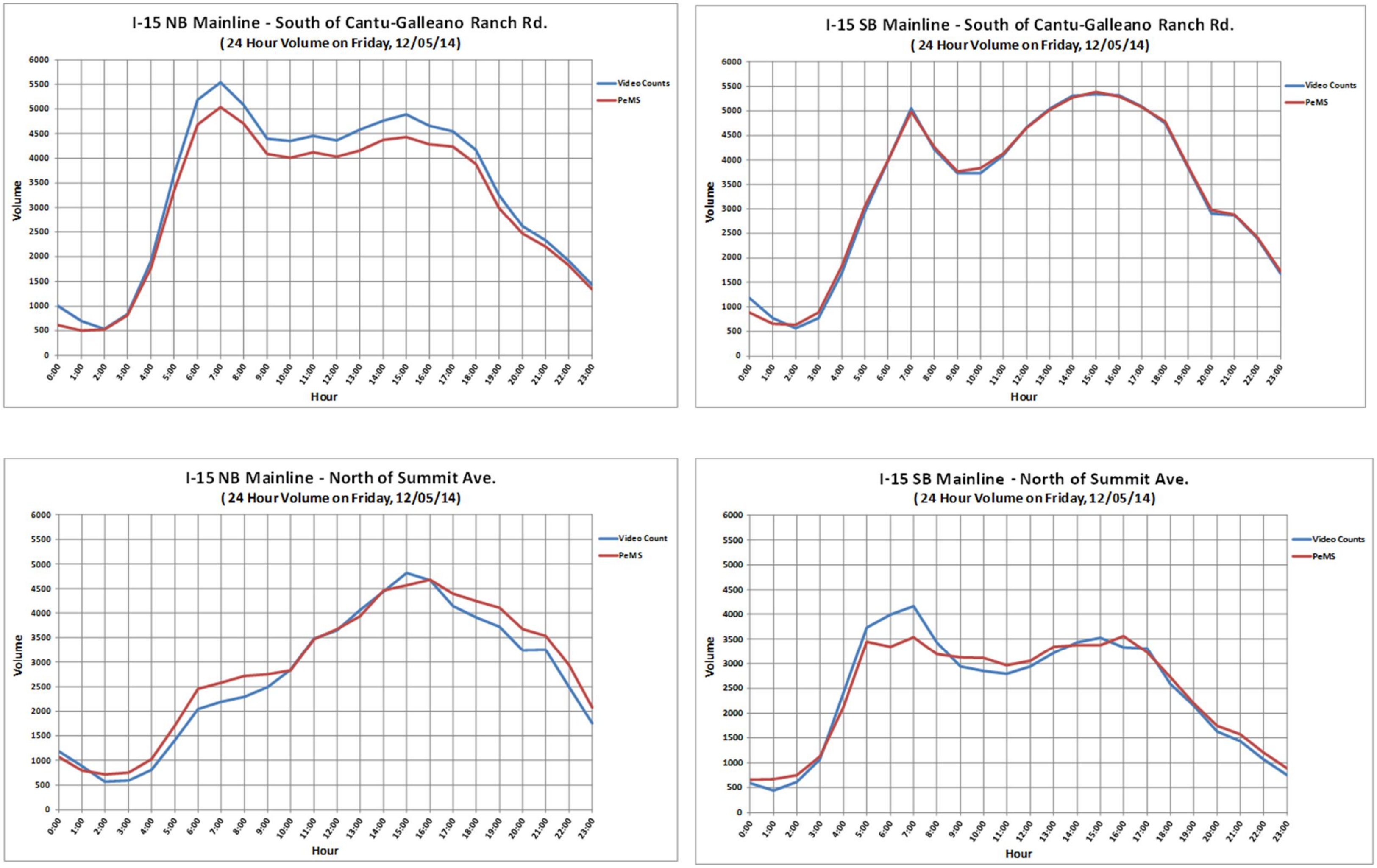


Exhibit 24: Time-of-Day Traffic Pattern, Friday

Excerpt from *I-15 Corridor Project Final Traffic Study Report*

I-15 NB Mainline Segment south of	2045 No Build GP Lane Speed (mph)	2045 Build Alternative GP Lane Speed (mph)	2045 Build Alternative Express Lane Speed (mph)
Cantu Galleano Ranch Rd. (Off)	16	58	64
Cantu Galleano Ranch Rd. (On)	14	61	60
SR 60 EB (Off)	32	34	64
SR 60 WB (Off)	19	37	64
SR 60 WB (On)	9	61	64
SR 60 EB (On)	10	41	64
E Jurupa St (Off)	19	21	64
E Jurupa St (On)	49	54	64
I-10 (Off)	44	60	64
I-10 WB (On)	16	63	65
I-10 EB (On)	15	52	65
4th St (Off)	13	56	65
4th St (On)	16	60	64
Arrow Route (Off)	46	55	64
Arrow Route (On)	54	51	65
E Foothill Blvd. (Off)	58	56	65
E Foothill Blvd. EB (On)	60	60	65
E Foothill Blvd. WB (On)	60	61	65
Baseline Ave (Off)	60	61	65
Baseline Ave (On)	60	61	64
I-210 EB (Off)	61	62	63
I-210 WB (Off)	61	62	63
I-210 (On)	60	62	63
Beech Ave (Off)	58	59	63
Beech Ave (On)	57	57	63
Duncan Canyon (Off)	56	56	63
Duncan Canyon (On)	54	54	64
I-15 NB Mainline North Limit	54	60	64

Color Code

- 0 to 20 MPH
- 20 to 30 MPH
- 30 to 40 MPH
- 40 to 55 MPH
- >55 MPH

I-15 SB Mainline Segment north of	2045 No Build GP Lane Speed (mph)	2045 Build Alternative GP Lane Speed (mph)	2045 Build Alternative Express Lane Speed (mph)
Duncan Canyon (Off)	37	62	-
Duncan Canyon (On)	28	62	-
Beech Ave (Off)	21	59	63
Beech Ave (On)	20	56	63
I-210 EB (Off)	15	61	63
I-210 WB (Off)	12	48	63
I-210 WB (On)	11	40	63
I-210 EB (On)	11	15	63
Baseline Ave (Off)	12	19	63
Baseline Ave (On)	13	20	59
Baseline Ave EB (On)	14	19	64
E Foothill Blvd. (Off)	18	36	64
E Foothill Blvd. WB (On)	14	35	64
E Foothill Blvd. EB (On)	19	29	64
Arrow Route (Off)	21	33	64
Arrow Route (On)	20	29	64
4th St (Off)	16	53	64
4th St (On)	14	55	64
I-10 EB (Off)	12	48	64
I-10 WB (Off)	12	42	64
I-10 EB (On)	13	35	64
I-10 WB (On)	14	24	64
E Jurupa St (Off)	21	22	64
E Jurupa St (On)	18	15	59
SR 60 (Off)	23	34	64
SR 60 EB (On)	15	56	64
SR 60 WB (On)	21	25	64
Cantu Galleano Ranch Rd.(Off)	27	27	64
Cantu Galleano Ranch Rd. WB (On)	48	50	63
Cantu Galleano Ranch Rd. EB (On)	61	57	62
I-15 SB Mainline South Limit	30	29	63

Color Code

- 0 to 20 MPH
- 20 to 30 MPH
- 30 to 40 MPH
- 40 to 55 MPH
- >55 MPH

Exhibit 84: Forecast Speed by Section in 2045, AM Peak Hour

Excerpt from *I-15 Corridor Project Final Traffic Study Report*

I-15 NB Mainline Segment south of	2045 No Build GP Lane Speed (mph)	2045 Build Alternative GP Lane Speed (mph)	2045 Build Alternative Express Lane Speed (mph)
Cantu Galleano Ranch Rd. (Off)	43	57	63
Cantu Galleano Ranch Rd. (On)	44	60	59
SR 60 EB (Off)	26	61	64
SR 60 WB (Off)	19	49	64
SR 60 WB (On)	20	59	64
SR 60 EB (On)	41	56	64
E Jurupa St (Off)	19	48	64
E Jurupa St (On)	45	52	63
I-10 (Off)	54	54	64
I-10 WB (On)	57	60	64
I-10 EB (On)	41	53	64
4th St (Off)	26	53	64
4th St (On)	24	60	64
Arrow Route (Off)	52	58	64
Arrow Route (On)	55	54	64
E Foothill Blvd. (Off)	56	53	64
E Foothill Blvd. EB (On)	61	58	64
E Foothill Blvd. WB (On)	56	53	64
Baseline Ave (Off)	55	57	64
Baseline Ave (On)	59	59	62
I-210 EB (Off)	59	60	62
I-210 WB (Off)	60	61	62
I-210 (On)	61	61	62
Beech Ave (Off)	53	58	62
Beech Ave (On)	53	56	62
Duncan Canyon (Off)	55	52	62
Duncan Canyon (On)	54	50	63
I-15 NB Mainline North Limit	59	54	62

Color Code

- 0 to 20 MPH
- 20 to 30 MPH
- 30 to 40 MPH
- 40 to 55 MPH
- >55 MPH

I-15 SB Mainline Segment north of	2045 No Build GP Lane Speed (mph)	2045 Build Alternative GP Lane Speed (mph)	2045 Build Alternative Express Lane Speed (mph)
Duncan Canyon (Off)	61	61	-
Duncan Canyon (On)	61	60	-
Beech Ave (Off)	60	61	64
Beech Ave (On)	61	60	63
I-210 EB (Off)	61	62	63
I-210 WB (Off)	58	61	63
I-210 WB (On)	63	62	63
I-210 EB (On)	55	54	63
Baseline Ave (Off)	61	60	63
Baseline Ave (On)	62	60	64
Baseline Ave EB (On)	58	59	64
E Foothill Blvd. (Off)	60	60	64
E Foothill Blvd. WB (On)	50	61	64
E Foothill Blvd. EB (On)	35	59	64
Arrow Route (Off)	27	51	64
Arrow Route (On)	24	59	64
4th St (Off)	18	57	64
4th St (On)	29	59	63
I-10 EB (Off)	13	50	64
I-10 WB (Off)	10	56	64
I-10 EB (On)	11	59	64
I-10 WB (On)	11	62	64
E Jurupa St (Off)	12	25	64
E Jurupa St (On)	14	24	61
SR 60 (Off)	22	31	64
SR 60 EB (On)	14	50	64
SR 60 WB (On)	15	18	64
Cantu Galleano Ranch Rd.(Off)	14	17	64
Cantu Galleano Ranch Rd. WB (On)	19	20	63
Cantu Galleano Ranch Rd. EB (On)	14	16	63
I-15 SB Mainline South Limit	25	25	62

Color Code

- 0 to 20 MPH
- 20 to 30 MPH
- 30 to 40 MPH
- 40 to 55 MPH
- >55 MPH

Exhibit 85: Forecast Speed by Section in 2045, PM Peak Hour

Excerpt from *I-15 Corridor Project Final Traffic Study Report*

ATTACHMENT R

Traffic Operation Policy Directive Memo

This page intentionally left blank

san bernardino county transportation authority

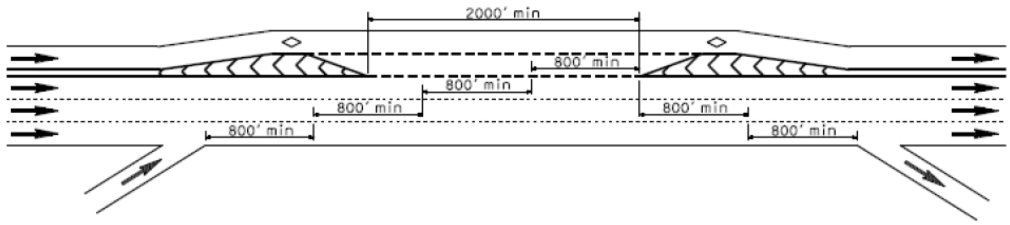
I-15 CORRIDOR PROJECT (PA/ED)

EA 08-0R800, PN 0812000184

DECISION DOCUMENT A-1

Topic: **Deviation from the TOPD 11-02 Ingress Weave Length**

Issues: The Traffic Operations Policy Directive (TOPD) 11-02, dated March 2011, provides guidelines for the planning and development of freeway managed lane projects. The TOPD states that a minimum of 800 feet per lane change should be provided between the opening and the nearest freeway entrance or exit ramp (see schematic below):



Source: Traffic Operations Policy Directive 11-02 (Date Issued: March 23, 2011)

The Build Alternative of the I-15 Corridor Project proposes to construct Express Lanes, including tolled facilities, in both directions of Interstate 15 from approximately 0.3 miles south of Cantu-Galleano Ranch Road in the cities of Eastvale and Jurupa Valley at Post Mile (PM) 49.8 in Riverside County to approximately 1.2 miles north of Duncan Canyon Road at PM 12.2 in the city of Fontana in San Bernardino County. The Express Lanes would be buffer-separated from the general-purpose lanes via striping in combination with surface-mounted channelizers placed within the 2-foot buffer space throughout the corridor. Four (4) at-grade Ingress/Egress (I/E) access points would be provided in each direction typically spaced at 3 to 4-mile intervals. The locations of proposed access locations are listed below:

- Cantu-Galleano Ranch Road
- Jurupa Street
- Arrow Route
- Base Line Road

Jurupa Street and Arrow Route access points are designed as combined I/E access points with an additional weave lane between the No. 1 GP lane and the No. 2 Express Lane; Cantu-Galleano Ranch Road and Base Line Road access points are designed without the weave lane. These access locations are all in accordance with the TOPD 11-02 access opening and weaving length requirements except for the Arrow Route access point in the northbound direction between Fourth Street Interchange and Foothill Boulevard Interchange. Hence, deviation from the TOPD design criteria regarding ingress weaving length would be required.

Discussion: The I-15 Corridor Project proposes a non-standard weave length of 720 feet per lane change in the northbound direction between Fourth Street entrance ramp and the end of the access opening located south of Arrow Route (Attachment 1). This deviation has been discussed at several I-15 Geometric Workshops.

At this I/E location, the distance between the northbound Fourth Street entrance ramp and Foothill Boulevard exit ramp is not sufficient to accommodate the total weaving distance recommended for the I/E. Providing standard 800 feet per lane change would require moving the divergence point of the Foothill Boulevard northbound exit ramp for approximately 480 feet to the north. This modification to the off-ramp would require right-of-way acquisition of two commercial buildings and the parking lots at Wal-Mart, Jiffy Lube Oil Change Center, and In-N-Out Burger. The driveway through the shopping center would be realigned. The associated added cost is as below:

Roadway Construction	Structure Construction	Right-of-way	Total
$0.7 M	$0	$43 M	$43.7 M

This section of I-15 is on an uphill grade of around 2.5%. Due to the impact on vehicle speeds that the uphill grade has, it is anticipated that the slightly reduced distance per lane change will be sufficient for ingress from Fourth Street. It is not anticipated that this slight reduction in weave length will negatively affect operations of the mainline freeway or express lanes.

Decision: The slight reduction of 80 feet per lane change in ingress weave length is required at the access point in the northbound direction between Fourth Street Interchange and Foothill Boulevard Interchange, due to limited distance between the interchange ramps.

Reference: PA&ED Phase:
Geometry Workshop #1 Minutes (April 29, 2015), Item 3
Geometry Workshop #3 Minutes (October 20, 2015), Item 5

Attachment: Attachment 1: TOPD Exhibit
Attachment 2: Geometry Workshop #1 Minutes (April 29, 2015)
Geometry Workshop #3 Minutes (October 20, 2015)

Note: Traffic Operations, District Design Liaison, and the Project Delivery Coordinator have been given an opportunity to review and comment this memo, and have no comments.

Signatures: This decision document has been reviewed and concurred by the following:

Submitted By:	Prepared By:
7/9/18	7/9/18
Paula Beauchamp Date	**Vikrant S. Sanghai** Date
SBCTA, Director of Project Delivery	Design Manager, WSP
Concurred By:	Approved By:
7/11/18	7/11/18
Jonathan den Hartog Date	**Joe Rouse** Date
Design Oversight	Chief, Office of Traffic Management, Caltrans Traffic Operations
Approved By:	Approved By:
7/13/18	7-16-18
Christy Connors Date	**Catalino A. Pining III** Date
Deputy District Director, Design	Deputy District Director, Traffic Operations

This page intentionally left blank

Attachment 1: TOPD Exhibit

This page intentionally left blank

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv,SBd	15	RIV-15-49.8/52.3, SBD-15-0.0/12.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

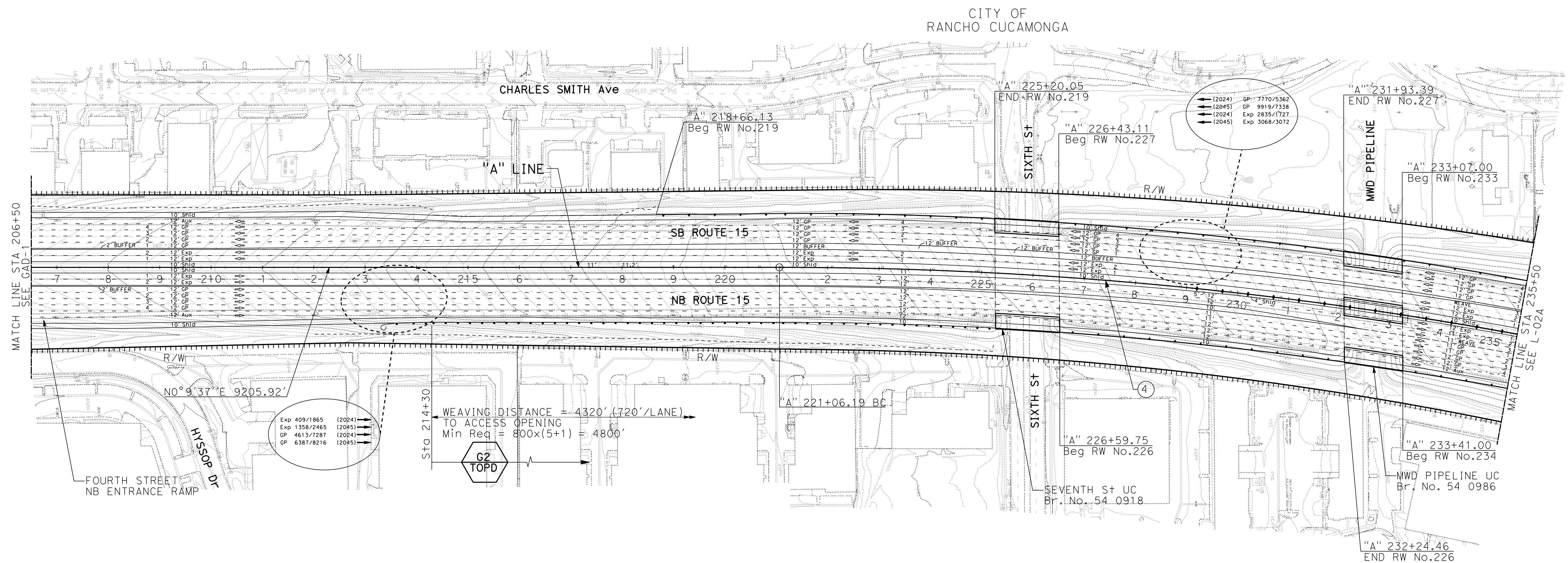
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WSP USA Inc.
862 E. HOSPITALITY LANE
SUITE 350
SAN BERNARDINO, CA 92408

SAN BERNARDINO COUNTY
TRANSPORTATION AUTHORITY
1170 W. 3RD STREET
SAN BERNARDINO, CA 92410

DEVIATION FROM TOPD GUIDELINE

FEATURE No.	DESIGN STANDARD	DESCRIPTION
G2 TOPD	TOPD 11-02	MINIMUM WEAVE DISTANCES



CURVE DATA

No.	R	Δ	T	L
4	8000.00'	44°38'00"	3283.76'	6231.99'

I-15 CORRIDOR PROJECT

GAD-2
EXCEPTIONS TO TOPD GUIDELINES

SCALE 1"=200'

TOPD-01

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => 29-MAY-2018 | TIME PLOTTED => 14:15

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv,SBd	15	RIV-15-49.8/52.3, SBD-15-0.0/12.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

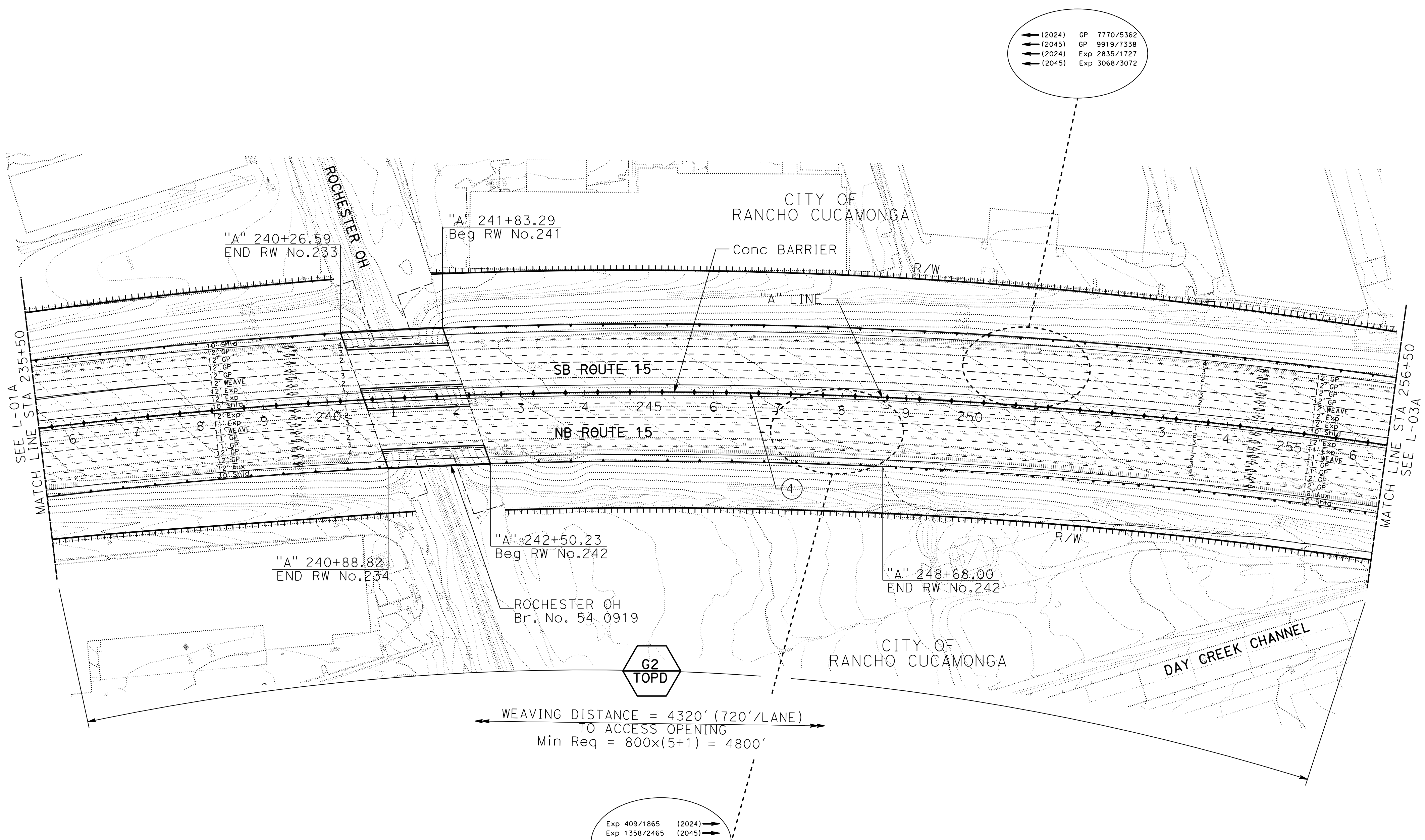
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WSP USA Inc.
862 E. HOSPITALITY LANE
SUITE 350
SAN BERNARDINO, CA 92408

SAN BERNARDINO COUNTY
TRANSPORTATION AUTHORITY
1170 W. 3RD STREET
SAN BERNARDINO, CA 92410

DEVIATION FROM TOPD GUIDELINE

FEATURE No.	DESIGN STANDARD	DESCRIPTION
G2 TOPD	TOPD 11-02	MINIMUM WEAVE DISTANCES



CURVE DATA

No.	R	Δ	T	L
4	8000.00′	44°38′00″	3283.76′	6231.99′

I-15 CORRIDOR PROJECT

GAD-2 EXCEPTIONS TO TOPD GUIDELINES

SCALE 1"=200′

TOPD-02

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

DATE PLOTTED => 29-MAY-2018
TIME PLOTTED => 14:17
LAST REVISION 00-00-00

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv,SBd	15	RIV-15-49.8/52.3, SBD-15-0.0/12.2		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

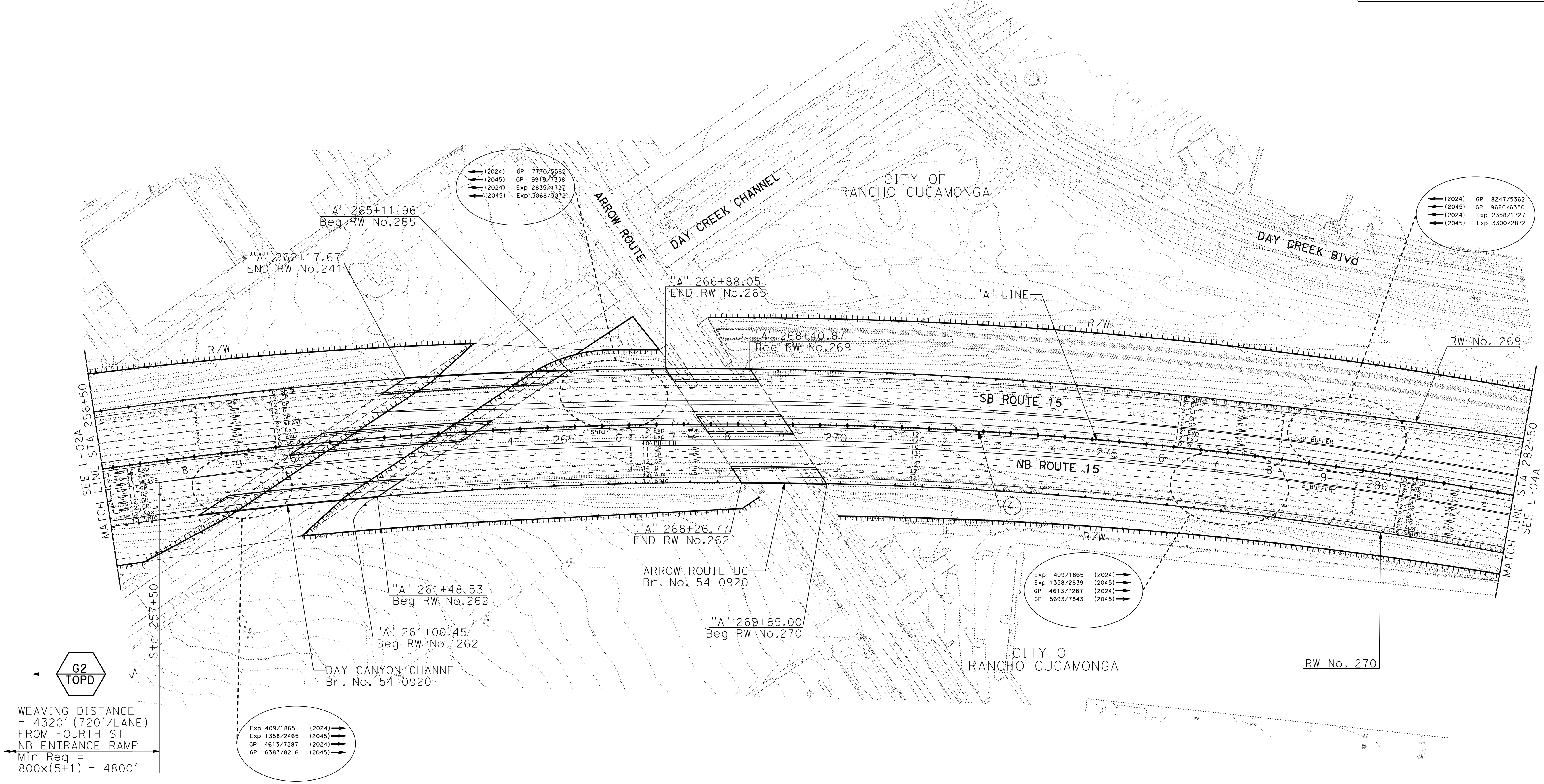
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WSP USA Inc.
862 E. HOSPITALITY LANE
SUITE 350
SAN BERNARDINO, CA 92408

SAN BERNARDINO COUNTY
TRANSPORTATION AUTHORITY
1170 W. 3RD STREET
SAN BERNARDINO, CA 92410

DEVIATION FROM TOPD GUIDELINE

FEATURE No.	DESIGN STANDARD	DESCRIPTION
G2 TOPD	TOPD 11-02	MINIMUM WEAVE DISTANCES



CURVE DATA

No.	R	Δ	T	L
4	8000.00'	44°38'00"	3283.76'	6231.99'

I-15 CORRIDOR PROJECT

GAD-2 EXCEPTIONS TO TOPD GUIDELINES

SCALE 1"=200'

TOPD-03

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 00-00-00 | DATE PLOTTED => 29-MAY-2018 | TIME PLOTTED => 14:17

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
08	Riv,SBd	15	RIV-15-49.8/52.3, SBD-15-0.0/12.2		

REGISTERED CIVIL ENGINEER DATE

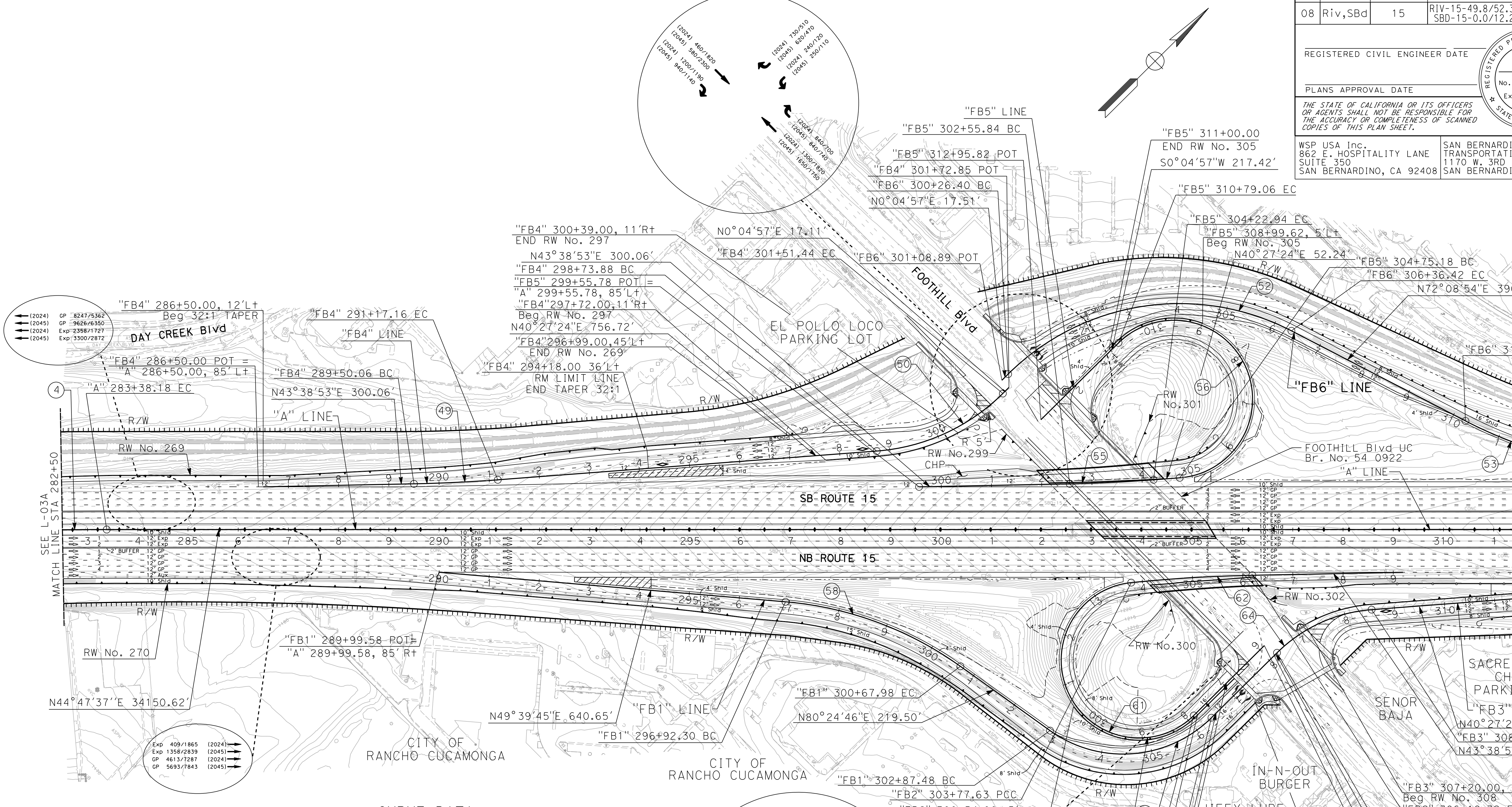
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

WSP USA Inc.
862 E. HOSPITALITY LANE
SUITE 350
SAN BERNARDINO, CA 92408

SAN BERNARDINO COUNTY TRANSPORTATION AUTHORITY
1170 W. 3RD STREET
SAN BERNARDINO, CA 92410



CURVE DATA

No.	R	Δ	T	L
4	8000.00'	44°38'00"	3283.76'	6231.99'
49	3000.00'	03°11'29"	83.57'	167.10'
50	400.00'	40°22'26"	147.07'	281.86'
52	485.00'	72°03'57"	352.80'	610.03'
53	875.00'	22°29'09"	173.93'	343.39'
55	3000.00'	03°11'29"	83.57'	167.10'
56	157.00'	220°22'26"	-	576.94'
58	700.00'	30°45'01"	192.49'	375.69'
59	250.00'	80°19'49"	211.01'	350.51'
61	155.00'	218°56'58"	-	592.32'
62	3000.00'	04°36'57"	120.91'	241.69'
64	300.00'	40°22'31"	110.31'	211.40'

I-15 CORRIDOR PROJECT

GAD-2 EXCEPTIONS TO TOPD GUIDELINES

SCALE 1"=200'

TOPD-04

DATE PLOTTED => 05-JUL-2018
TIME PLOTTED => 10:09
LAST REVISION 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
FUNCTIONAL SUPERVISOR
CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010 | USERNAME => Koneru | DGN FILE => GAD2A_TOPD-04.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 0000 | PROJECT NUMBER & PHASE | EA 08-0R800 | PROJECT ID: 0812000184

Attachment 2:

Geometry Workshop #1 Minutes (April 29, 2015)
Geometry Workshop #3 Minutes (October 20, 2015)

This page intentionally left blank

Governments SANBAG Working Together
1170 W 3rd Street
2nd Floor
San Bernardino, CA 92410
Main: 909-884-8276
Fax: 909-885-4407

www.sanbag.ca.gov

I-15 CORRIDOR PROJECT PA/ED MEETING MINUTES

PARSONS BRINCKERHOFF
451 E Vanderbilt Way
Suite 200
San Bernardino, CA 92408
Main: 909-888-1106
Fax: 909-889-1884

www.pbworld.com

Project EA: 08-0R800
Project ID: 0812000184
PB Project No.: 12800A

Meeting Type: Focus Meeting – Geometry
Meeting No: 20
Meeting Date: Wednesday, April 29, 2015
Meeting Time: 1:00 – 4:00 pm
Location: CALTRANS District 8, Room 1227
464 W. Fourth Street
San Bernardino, CA 92401
Subject: Geometry Workshop #1
Attachments: Agenda and Sign-in sheet

ITEM #	DISCUSSION TOPIC
1	Self Introductions Self introductions were made.
2	Project Overview Raghuram Radhakrishnan (RK) started the meeting by stating that the Project Endorsement Meeting was held on 4/23/2015, five (5) PDT meetings have been held to date, and the team will be preparing a project charter in coordination with the PDT and input from Caltrans deputies. RK also mentioned that Caltrans design staff, Jesus Paez and Jonathan den Hartog, will be involved in the project. Dennis Saylor mentioned that the previous phase of this project i.e., I-15 Corridor Project PSR-PDS, had multiple geometric meetings with Caltrans, FHWA and various stakeholders and this project will refine that geometric design for Project Approval and Environmental Document (PA&ED). Dennis also mentioned that the purpose of this workshop is to review the preliminary geometry which was developed in the previous phase and get comments and feedback from Caltrans and eventually develop the Geometric Approval Drawings (GADs). Du Lu clarified that Caltrans did not sign off on any decision documents at PSR-PDS phase and this workshop will help identify fatal flaws in design and prepare decision documents. *Luis Betancourt mentioned that the geometry through I-10/I-15 separation structure will require FHWA's concurrence before Caltrans approves non-standard lane and shoulder widths.* Luis mentioned that Zylkia Martin Yambo is the FHWA Coordinator for this corridor and RK mentioned that Zylkia can be briefed on these constraint areas once additional details are available. Sam mentioned that these geometric design concepts will be the starting point to develop PA&ED geometric design and this workshop will help to get all the concerns and comments on these geometric design concepts. Sam also mentioned that Don Hubbard's group working on travel forecasting and traffic data and will be testing that data against the geometric design.
3	Geometry Details Vikrant Sanghai started by asking the team about the access to ProjectSolve website and to this workshop's handouts. RK and Luis had questions regarding the access and Vikrant answered to use the "projectsolve" as the password for the first time users and click on "I-15 Corridor Project PA/ED" to access meeting minutes, meeting handouts, and other project data.

Vikrant presented an overview of the project by going through the handouts. Vikrant also discussed about the coordination required with RCTC I-15 Toll Express Lanes project team.

It was discussed that most of the undercrossing structures along I-15 except for I-15/SR-60 separation structure, I-10/I-15 separation structure and Mission Boulevard Overhead, were already widened in the median as a part of the I-15 pavement rehabilitation project and from north of Sixth Street the undercrossing bridge structures will be widened in the median as part of this project.

Vikrant also discussed about California Highway Patrol (CHP) observation areas. Luis suggested looking at SR-91 Corridor Improvement Project (CIP) CHP observation area details to provide longer tapers for CHP vehicles to maneuver around in a safe manner. It was discussed that SR-91 CIP CHP design may be a more current representation of CHP needs and the SR-91 CIP project combined gantry/CHP areas where possible.

Vikrant and Srikanth Koneru (Sri) started presenting geometric strip maps by laying out RCTC's I-15 Toll Express Lanes draft Geometric Approval Drawings (GADs) and discussed its design compatibility with SANBAG's I-15 Corridor Project.

RCTC I-15 Toll Express Lanes Project Draft GADs (Cantu-Galleano Ranch Road)

It was discussed that RCTC's I-15 project is protecting the existing median high mast lightings and since this project is using the existing median to provide standard inside shoulder width it is difficult to protect these high mast lightings in place. It was suggested that removing them and relocating them outside the freeway travelled lanes (but within existing Caltrans right-of-way) would be one option and other option would to protect them in place and widen on the outside which would require ramp modifications. *It was discussed that lighting options for the freeway and the interchange will be evaluated for proper illumination.*

Sheet 1A (Cantu-Galleano Ranch Road)

It was discussed that geometry through Cantu-Galleano Ranch Road and at access point has standard shoulder and lane widths except at overcrossing column and spot locations.

It was discussed that a schematic diagram for potential toll gantry locations was prepared during PSR-PDS but further details will be analyzed during PA&ED, to the extent possible.

It was discussed that the ultimate lane configuration for an LOS D Concept Facility per the latest Transportation Concept Report (TCR) (September 2012) was identified in the PSR-PDS. It was discussed that the lane configuration proposed in this project matches with the Planned SCAG Regional Transportation Plan (RTP) Facility (as shown in the TCR) by providing 8 general purpose (GP) lanes and 4 managed lanes (ML). It should be noted that there are only 6 GP and 4 MLs proposed south of SR-60. The 6 GPs match the existing GP lane configuration.

Oscar Alejandre asked about the lane drop after southbound off-ramp and mentioned that it would be difficult to sign the drop lane after the off-ramp. It was discussed that it would be preferable to trap the lane in to the off-ramp instead of dropping the lane. It was decided that PB will look in to this change and make the design modifications accordingly.

Sheet 1B (SR-60 Interchange)

It was discussed that the geometry through the SR-60 interchange has standard shoulder and lane widths.

Luis asked the design team to check the skew/angle of the transition on the northbound direction just south of I-15/SR-60 separation structure. He suggested providing a standard transition length.

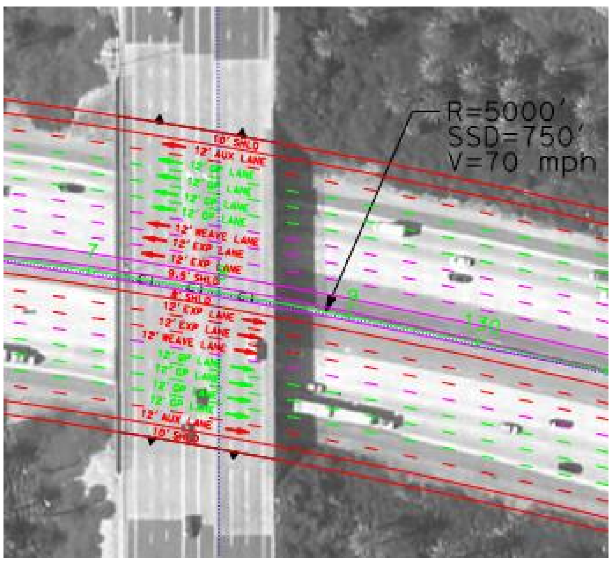
Vikrant mentioned that the design speed through the project corridor is 70 miles per hour.

It was discussed that under the Mission Boulevard Overhead (OH) structure the siding track is very close to the existing columns and based on previous Caltrans experience adding a new column along the existing column bent due to widening in the median may be an issue. *It was discussed that closing the bridge gap in the median on Mission Boulevard OH will be a challenge and it would be better to start the discussion with Union Pacific Railroad early in the design phase.*

It was discussed and decided to look in to a different design option to change the lane transition between Philadelphia Street undercrossing and SR-60 interchange in the southbound direction to potentially avoid outside widening on Philadelphia Street undercrossing structure.

Sheet 2 (Jurupa Street)

Geometry through the Jurupa street has standard shoulder and lane widths except at the overcrossing column locations. This project adds one auxiliary lane in both directions between SR-60 and I-10



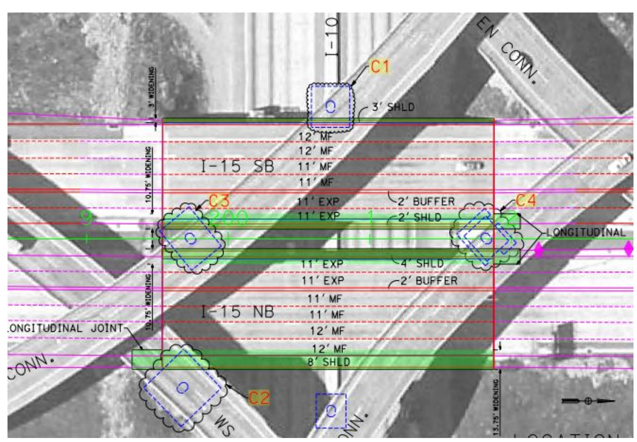
Proposed Lane and Shoulder Widths at Jurupa Street

Jonathan mentioned that there is a saw tooth condition which would require a wider median concrete barrier. He added that this condition is on all horizontal curves between SR-60 and Sixth Street. He asked the design team to consider this while calculating horizontal stopping sight distance and for measuring shoulder widths.

It was discussed that this project will replace all the affected overhead sign structures because of outside widening. The new overhead sign structures will be coordinated along with the toll gantries and whenever feasible toll and general purpose lane signage will be combined.

Sheet 3 (I-10 Interchange)

It was discussed that because of the proximity of the existing connector columns in the median and on the outside at the I-10/I-15 separation structure, non-standard lane and shoulder widths were proposed at this location. Non-Standard lane and shoulder widths are proposed for a short, tangent segment stretch which transitions back to the standard lanes widths outside the constrained location. It was also discussed that the I-10/I-15 separation structure would require special design considerations as the existing connector column footings are very close to the existing I-10/I-15 separation structure abutment footing. *Vikrant mentioned that the feasibility of non-standard lane and shoulder widths and the widening the I-10/I-15 separation structure has been previously discussed during*



Proposed Lane and Shoulder Widths at I-10 *the PSR-PDS phase with Luis and Headquarters structures staff and during those discussions Caltrans indicated that there were no apparent fatal flaw concerns.*

It was discussed that the preliminary concept plans for Express Lanes direct connectors were developed based on the coordination between I-10 Corridor Project and I-15 Corridor Project design teams. *It was discussed that this project does not preclude the future Express Lanes direct connectors and would minimize "throw-away" as much as possible.* It was also discussed that existing I-10/I-15 ramp connectors would be impacted because of the future Express Lanes direct connectors design but the proposed widening at the I-10/I-15 separation structure would not be impacted.

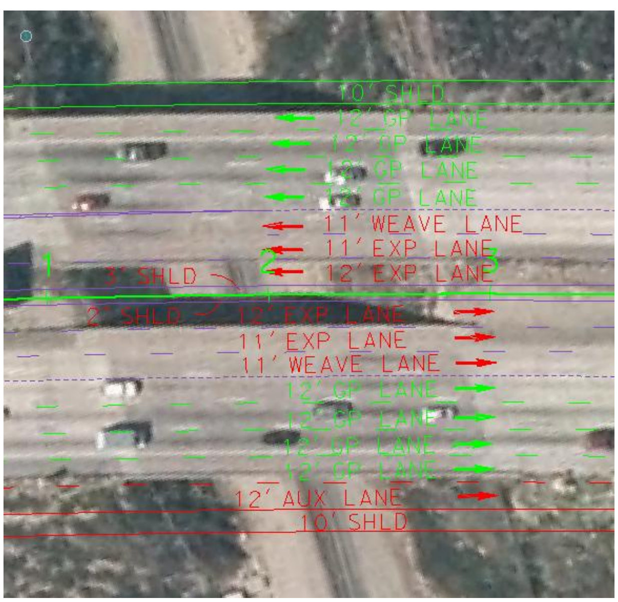
Theresa Sasis mentioned a safety lighting project at the I-10 /I-15 interchange that may impact the I-15 Corridor Project. PB will coordinate with Caltrans to get more information on this safety lighting project.

It was mentioned that the 4th Street northbound and southbound loop ramp geometry would be tightened due to existing drainage channel east of I-15 and right-of-way constraints. Oscar asked if the I-15 Corridor Project is planning any improvements along the mainline and for Fourth Street Interchange. *Dennis responded that this project is not proposing any interchange improvements. Ramp adjustments will be proposed at some locations based on mainline geometrics. No major changes in ramp tie-in points are required and hence a Modified Access Report (MAR) is not anticipated for this project.*

It was discussed that this project will evaluate drainage and will identify the grade breaks at outside widening locations to allow water to flow away from the mainline.

Sheet 4 (Arrow Highway and Foothill Boulevard)

It was discussed that the geometry through Foothill Boulevard has standard shoulder and lane widths except at Arrow Highway access point where non-standard shoulder and Express Lane widths are proposed. *These non-standard widths in the northbound direction are proposed because of widening limitations due to the existing vertical clearance constraints at Rochester Overhead.*



Proposed Lane and Shoulder Widths at Rochester OH

It was discussed that the existing minimum vertical clearance at Rochester Overhead is non-standard (23'-1") and the proposed widening is planned to maintain the same existing vertical clearance. It was also discussed that the access point is based on the recommended weaving distances per the Managed Lanes Traffic Operations Policy Directive (TOPD) 11-02. *It was discussed that the proposed weaving distance from the northbound Fourth Street on-ramp, for ingress to the access opening at Arrow Highway, is approximately 780 feet per lane change which is slightly less than the 800 feet per lane change as recommended in TOPD 11-02.*

The Arrow Highway interchange design was not shown on these geometric plans but it was discussed that if the Arrow Highway interchange project is constructed in the future then the access opening at Arrow Highway would still be maintained but with weaving distance of less than 800 feet per lane change from Fourth Street northbound on-ramp. Du asked if the Arrow Highway interchange is on SANBAG's priority list and Vikrant and Dennis responded that the Arrow Highway Interchange project is not on the SANBAG's priority list.

It was discussed that to achieve standard horizontal stopping sight distance for 70 miles per hour design speed in the southbound direction, a 11-foot wide shoulder is proposed on the tangent section, north of Arrow Highway with a 3-foot non-standard inside shoulder width at the access opening. This would require minimal transition of the mainline lanes along the horizontal curve and provide concentric radius for the mainline lanes thus reducing major existing JPCP pavement reconstruction by matching existing cross slope and superelevation transitions. Du asked if the design team can mitigate these non-standard widths which may help justify the design exceptions, for example by providing a longer access opening.

Theresa Sasis mentioned that addition of ramp metering to Foothill Boulevard northbound on-ramp is being considered and Dennis requested for any project files related to ramp metering design developed by Caltrans and then the design team can evaluate the impact of the addition of ramp metering to this project.

Sheet 5 (Baseline Road)

It was discussed that non-standard lane widths are proposed south of the Baseline Road access point to avoid impacts to the sound wall which is currently under construction. Brian Smith mentioned that the Baseline Road interchange project designed had changed as is no longer proposing any sound walls along either sides of the mainline and asked the design team to verify with As-Advertised plans.

It was also discussed that the Baseline Road access point design may change depending on the number of vehicles existing and entering the express lanes facility. One option that was discussed was to provide an opening with egress-only and to evaluate if access to Baseline Street northbound off-ramp has to be provided. This design wouldn't provide any ingress at the Baseline Road Access opening and only one Express Lane would continue north after Baseline egress-only opening. A similar design would be proposed on the southbound direction i.e., only ingress will be proposed with no egress.

There were discussions about gap closure constraints at Etiwanda Avenue/Miller Avenue and Baseline Road Undercrossings. Vikrant mentioned that a full structure replacement was assumed for the Etiwanda Avenue undercrossing for cost estimating purposes during the PSR-PDS phase. *It was discussed that the design team will evaluate some other option to construct a separate bridge structure for Express Lanes facility and have steel plates within the buffer area.*

Sheet 6 (SR-210)

Geometry through the SR-210 has 20-foot shoulder and 12-foot lane widths. From SR-210 interchange there will be one express lane in each direction with 2-foot wide buffer.

Du asked if a 4-foot wide buffer can be used in this location and Vikrant responded that the proposed continuation of 2-foot wide buffer width is to maintain consistency between this section and the section north of I-215. Vikrant added that some sections north of I-215 have steep cut and fill slopes and it is hard to propose a standard 4-foot wide buffer. This would provide consistency with the current I-10 Express Lanes proposed facility and the future I-15 Express Lanes facility.

Sheet 7 (Duncan Canyon Road)

It was discussed that in the northbound direction the Express Lane will open as a general purposed lane and the outside existing general purpose lane will drop after Duncan Canyon Road northbound off-ramp. The transition from the proposed right edge of travel way to the existing right edge of travel way and taper for the proposed drop lane will take place at the same time. *Du and Oscar asked the design team to carry the outer general purpose lane through the interchange and then drop the lane after the interchange.*

Vikrant mentioned that the comments from this meeting will be addressed as the design team is moving forward in development of geometric design and convene again to discuss further details.

	It was discussed to schedule a meeting with FHWA to provide them with an overview of the project and also discuss with them some of the constrained locations. James Shankel mentioned that the project needs to be designed in a way to address the project purpose and have access point locations and connectivity between I-15 and I-10 Express Lanes. James asked about the potential for incentives for high occupancy vehicles and for transit usage. Dennis responded that the bus transit agencies have some plans on I-10 and they might be interested on I-15 as well. Dennis also mentioned that so far Omni trans does not have any specific future plans for using Express Lanes for Bus Rapid Transit but they have indicated that they would be interested in potential future use of the Express Lanes facility on I-15. *Vikrant mentioned that I-10 Corridor project team prepared a memo for the I-10/I-15 Express Lanes direct connectors based on the horizontal and vertical design considerations as well as the forecast traffic volumes for the connectors.* Dennis mentioned that he will verify the status of the memo with Chad Costello.
4	Design Exceptions Anticipated non-standard features for which design exceptions may be required were discussed in conjunction with item #3 and are noted in these minutes.
5	Other Items – Questions/Comments Vikrant showed the team how to access the Projectsolve website and this project.
6	Next Meeting : TBD
	END OF MINUTES

Governments SANBAG Working Together
1170 W 3rd Street
2nd Floor
San Bernardino, CA 92410
Main: 909-884-8276
Fax: 909-885-4407

www.sanbag.ca.gov

I-15 CORRIDOR PROJECT PA/ED MEETING MINUTES

PARSONS BRINCKERHOFF
451 E Vanderbilt Way
Suite 200
San Bernardino, CA 92408
Main: 909-888-1106
Fax: 909-889-1884

www.pbworld.com

Meeting Type:	Focus Meeting – Geometry
Meeting No:	41
Meeting Date:	Tuesday, October 20, 2015
Meeting Time:	2:00 – 4:30 pm
Location:	CALTRANS District 8, Room 1225 464 W. Fourth Street San Bernardino, CA 92401
Subject:	Geometry Workshop #3 and discuss signage concepts
Attachments:	Project Map, Schematic Layouts and Sign-in sheet

Project EA: 08-0R800
Project ID: 0812000184
PB Project No.: 12800A

ITEM #	DISCUSSION TOPIC
1	Self Introductions Self introductions were made.
2	Project Overview Sam Tso stated that the meeting is to ensure the on-going design meets Caltrans expectation, and to obtain clarifications on some design decisions. Dennis Saylor provided an overview of the design change in Riverside County. The geometry design at the southern end of the project was modified to be compatible with Riverside County Transportation Commission's (RCTC) proposed design. The changes generally include: 1. *Eliminating the weave lane at Cantu-Galleano Ranch Road access point to be consistent with RCTC's design at express lane access points.* 2. *Continuing RCTC's proposed 8-foot median shoulder through Riverside County in both directions to match RCTC's median shoulder.* The modified design is a more integrated solution for both projects (RCTC's I-15 Express Lane Project and SANBAG's I-15 Corridor Project), and thus would minimize repetitive construction activities that SANBAG and RCTC are performing at the same location in a short time span. There is also significant capital cost reduction with the modified design. Jesus Paez raised a concern of public perception that some portion of the express lanes are provided with weave lanes but some are not. Dennis S. explained the choice of providing weave lanes is consistent with county limits. Raghuram Radhakrishnan asked if the Concept of Operations report included this change. Dennis S. answered yes, and added that SANBAG has coordination discussion with RCTC, and that another one was scheduled for next month.
3	Geometry Details A. <u>Layouts</u> a. Sheet 1 <u>Design Detail</u> Srikanth Koneru presented the details of the modified design at the southern end. 1. *There is no weave lane at Cantu-Galleano Ranch Road access point in both directions.* 2. *Lane width and shoulder width are consistent with RCTC's design features in both directions:* a. *8-foot median shoulder;*

b. *Two 12-foot express lanes;*
c. *A 2-foot buffer.*

The modified design has eliminated most of the outside widening in Riverside County. Outside widening is only provided at one location in Riverside County in the northbound (NB) (Figure 1, orange shaded area indicates widening and orange line work indicates RCTC's proposed design). At this location, RCTC is introducing one lane from Cantu-Galleano Ranch Road Northbound On Ramp, while the second Express Lane ends and serves as General Purpose lane. However, SANBAG's design team is continuing the second Express Lane, and thus to maintain the same number of General Purpose Lanes, two lanes are introduced from Cantu-Galleano Ranch Road NB on-ramp. This outside widening continues for approximately 3,000 feet till the proposed design matches with the existing condition. Dennis S. asked if there is an issue when a non-restrictive lane becomes a restrictive lane in short time period. Vikrant Sanghai explained that the number of General Purpose lanes will remain the same because the design is adding one General Purpose lane back from the ramp, so it is just a matter of lanes shifting, not reducing.

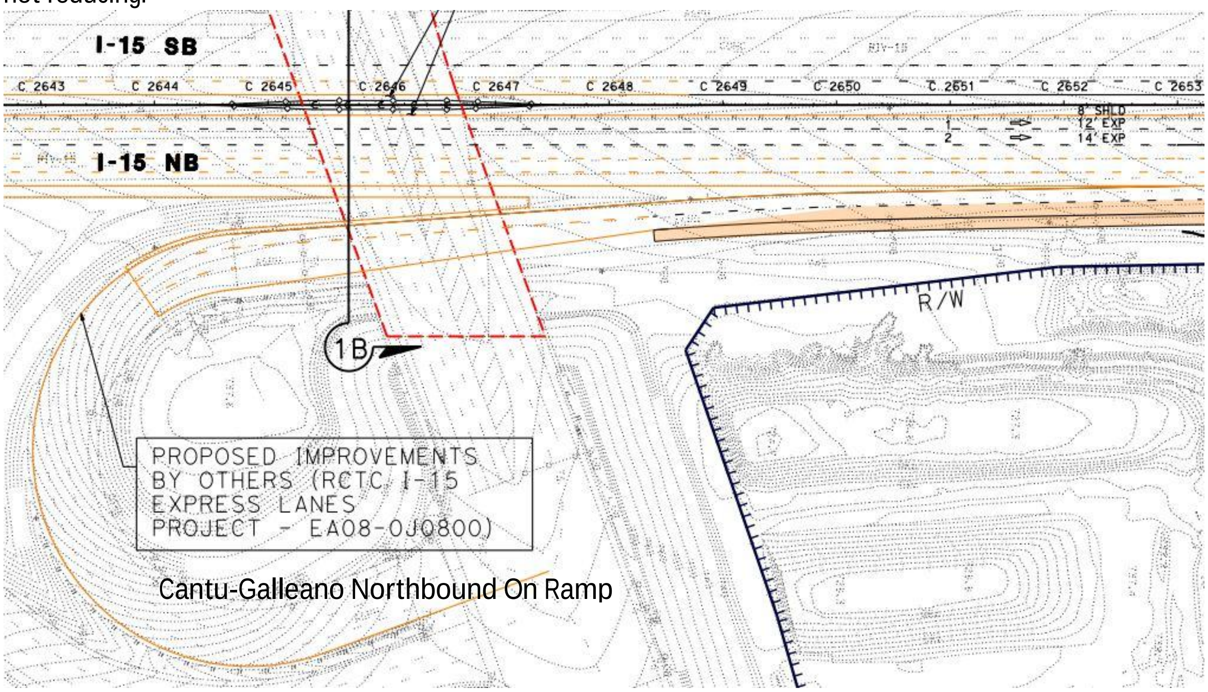


Figure 1 Widening In Riverside County

In the southbound (SB) direction, there is no outside widening in Riverside County. *There is one pinch point at Cantu-Galleano Ranch Road Overcrossing column location, where median shoulders in both directions are reduced to 5 feet. The RCTC I-15 Express Lanes project is currently proposing design exception at these pinch point locations.* The modified design allows complete elimination of Cantu-Galleano Ranch Road ramp improvements except for northbound on-ramp. Although there is no weave lane at this access point, in the NB direction the design is provided with enough weaving distance for traffic to access SR-60 interchange.

Caltrans Comments
No comment.

b. Sheet 2
Design Detail
The 8-foot median shoulder continues throughout Riverside county. Inside bridge widening on Mission Boulevard Undercrossing is proposed to provide 8-foot median shoulders in both directions. On SR-60/I-15 separation structure, standard 10-foot median shoulders are proposed.

Caltrans Comments
No comment.

c. Sheet 3

Design Detail

In both directions between Philadelphia Street Undercrossing and Jurupa Street Overcrossing transition from 8-foot to 10-foot median shoulder and transition for the addition of weave lane occurs simultaneously, to avoid multiple mainline transitions. Tie-back walls will be required at Jurupa Street Overcrossing abutment locations.

Caltrans Comments

No comment.

d. Sheet 4

Design Detail

At I-10/I-15 separation structure, northbound outside shoulder was changed (from the previous design) from 8 feet to 10 feet, and median shoulder from 4 feet to 2 feet.

Caltrans Comments

Truck volume at this location is expected to be 10-15%, so outside two General Purpose Lanes should be kept at 12 feet. Future modification to the northbound median shoulder to 4 feet might be required, but the design team does not need to decide at this moment, because it requires only striping changes.

e. Sheet 5

Design Detail

Near Arrow Route, northbound outside shoulder is 10 feet and median shoulder is 2 feet.

Caltrans Comments

This section is on a horizontal curve, so 4-foot median shoulder should be considered. It was discussed that the design will include the following features:

Width (feet)	Feature
4	Median Shoulder
12	First Express Lane
11	Second Express Lane
11	Weave Lane
11	First General Purpose Lane
11	Second General Purpose Lane
12	Third General Purpose Lane
12	Fourth General Purpose Lane
10	Outside Shoulder

It was discussed and agreed that 4-foot median shoulder shall be used in the northbound direction near Arrow Route.

Decision Document

It was discussed that the hierarchy presented in the decision document (Discussion A. vii.) should be modified to include following wording: "*This is the standard precedent. However, variances of this order may be required on a case-by-case basis. These are the elements that we agreed to adjust for pinch point location cross-sections.*"

B. Profile and Superelevation Diagrams

a. Jurupa Street Northbound Off-Ramp

Design Detail

Existing condition has non-standard superelevation rate of 5% on the 500-foot radius curve near ramp *terminal. The proposed design will match the existing 5% superelevation rate at the match point on the ramp and no modifications are proposed at the ramp terminal.*

Caltrans Comments
No comment.

b. Jurupa Street Southbound On-Ramp
Design Detail
Existing condition has 3% superelevation rate on the tangent section and the proposed design will match the existing 3% superelevation rate at the match point.

Caltrans Comments
No comment.

c. N15-W/E10
Design Detail
A non-standard superelevation rate of 2% is proposed on the 1550-foot radius curve to maintain less than 5% algebraic grade difference in the gore area. Existing condition does not have the 1550-foot radius curve. The proposed design has a smaller radius curve following a larger radius curve. The comfortable design speed of 1550-foot radius curve at 2% superelevation rate is between 55-65 MPH.

Caltrans Comments
A larger radius curve should be considered in lieu of 1550-foot radius curve. The radius of the smaller curve should be at least 2/3 of the radius of the larger curve. The mainline is on a horizontal curve hence the connector's left edge of traveled way should match with the mainline radius, if possible. It was noted that the gore area for this particular connector should be designed such that it easily allows vehicles to traverse as vehicles tend to cross over at this gore very often. It was noted that there is a depressed inlet at the gore which has caused accidents in the past.

It is acceptable to develop one superelevation diagram for combined off-ramp connector.

d. S15-W10
Design Detail
I-10 Project is proposing non-standard superelevation transition to provide a standard gore. The proposed design is perpetuating this feature.

Caltrans Comments
Highway Design Manual (HDM) allows non-standard superelevation rate for the 3000-foot radius curve at the entrance. Jonathan Den Hartog will double check if this location needs a design exception. *The design will be acceptable as long as it provides comfortable design speed, and standard cross slope grade difference.*

e. W10-N15
Design Detail
Shoulder and ramp transition together to 4% due to constructability on structure.

Caltrans Comments
Stage construction is potentially a large issue. The team will need a focus meeting for discussion on stage construction of Ontario Mills Pkwy and Fourth Street bridge widenings. *Putting superelevation transition on the bridge is necessary due to the comfortable speed at this location, and 4% superelevation rate for outside shoulder on structure does not require design exception.*

f. E10-S15
Design Detail
Due to the profile constraints from the structure downstream, and I-10 Corridor Project's profile upstream, non-standard algebraic grade difference at gore area will be proposed if standard superelevation transition is

required.

Caltrans Comments
It is important to examine to what extent the gore area will be non-standard. The gore must meet the standard at the 6-foot point. Anthony Ng should be involved to discuss alternatives: non-standard algebraic grade difference at the beginning of the gore or non-standard superelevation transition.

g. 4th Street Southbound On-Ramp
Design Detail
There will be stage construction issue on structure.

Caltrans Comments
Focus meeting on stage construction will be required.

h. 4th Street Southbound Off-Ramp
Design Detail
There is a non-standard superelevation transition to provide a maximum of 5% algebraic grade difference in the gore area. It meets the standard of transitioning 6% per 100 feet.

Caltrans Comments
No comment.

i. 4th Street Southbound Loop On-Ramp
Design Detail
1. *There is non-standard superelevation transition for compound curves to provide maximum of 5% algebraic grade difference in the gore area.*
2. It was discussed that CHP limit be 15feet from edge of traveled way

Caltrans Comments
No comments.

j. 4th Street Northbound On-Ramp
Design Detail
1. *A 1.23% longitudinal grade is proposed which matches with the existing grade of 0.96% which results in a grade break of less than 0.5%. This design is necessary to provide less than 5% algebraic grade difference in the gore.*
2. It was discussed that it is acceptable to propose the Maintenance Vehicle Pullout (MVP) location further north to avoid impacts to the existing concrete channel to the east.

Caltrans Comments
1. No comment.
2. *There is flexibility in locating the MVP but further discussion with CHP is recommended. It is acceptable to propose the MVP location further north.*

k. Foothill Boulevard Northbound Off-Ramp
1. *Non-standard superelevation transition is proposed because the length between two horizontal curves is insufficient to provide standard runoff. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.*
2. *To match with Foothill Boulevard grade, non-standard superelevation transition was used. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.*

Caltrans Comments
No comment.

l. Foothill Boulevard Northbound Loop On-Ramp

1. *Non-standard superelevation transition is proposed to match Foothill Blvd grade. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.*
2. *Non-standard superelevation transition of compound curves is proposed to provide less than 5% algebraic grade difference in the gore. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.*
3. *Non-standard superelevation rate of 2% is proposed for the 3000-foot radius curve. Comfortable speed requirement is met.*
4. MVP location will be proposed north of the structure.

Caltrans Comments

1. No comment.
2. No comment.
3. No comment.
4. *There is flexibility in locating the MVP but further discussion with CHP is recommended.*

m. Foothill Boulevard Northbound On Ramp

Non-standard superelevation rate is proposed to match Foothill Boulevard grade at the ramp terminal. Comfortable speed is met. Free right turns are prohibited at the ramp terminal.

Caltrans Comments

No comment. *However, this on-ramp is more than 1000-foot long hence two lanes shall be proposed, one of them being HOV preferential lane.*

n. Foothill Boulevard Southbound Off-Ramp

1. Non-standard superelevation transition is proposed between two reverse curves due to insufficient length for standard runoff. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.
2. Non-standard superelevation transition is proposed to match Foothill Blvd grade. A minimum superelevation transition rate of 6% per 100 feet is applied to the design.

Caltrans Comments

No comment.

o. Foothill Boulevard Southbound Loop On-Ramp

1. *To match 2% cross slope on the structure, non-standard superelevation rate for 3000-foot radius curve and non-standard superelevation transition is proposed. Comfortable speed is met and transitioning 6% per 100 feet is applied to the design.*
2. MVP location will be provided at the structure if the design follows that CHP location should be 70 feet ahead of limit line.

Caltrans Comments

1. No comment.
2. *MVP location may be moved to downstream preferably, but discussion with CHP is recommended. Variations of MVP locations will not require a design exception.*

C. Other Items

Maintenance Road

Along northbound direction between Rochester Overhead and Day Creek Channel, existing maintenance access road is impacted due to proposed 2:1 side slope. *It was discussed that the maintenance superintendent will need to be involved for further discussion.*

Access Location at Arrow Route

In the northbound direction, non-standard weave length per lane (768 ft/lane versus 800 ft/lane for standard) is proposed, due to the on-ramp location at 4th Street, but there is standard weaving distance for exiting to Foothill

	Blvd. This feature is a deviation from Traffic Operations Policy Directive (TOPD) 11-02. This issue has been discussed in Project Study Report-Project Development Support (PSR-PDS) phase, and Haissam Yahya prefers to maintain standard weaving distance for egress. *The team agreed to this approach.* Pavement on Ramps *It was discussed that pavement type will depend on the design standard specified in HDM. Lifecycle cost analysis will be required to determine pavement type. Construction staging and existing pavement will also need to be considered is only partial improvements to ramps is proposed.*
4	Design Exceptions Anticipated non-standard features for which design exceptions may be required were discussed in conjunction with item #3 and are noted in these minutes.
5	Signage Miriam Jim led the signage design discussion. The discussion is to obtain inputs from Caltrans on the preliminary locations of the proposed overhead signs. California MUTCD 2014 Edition was used as the signage design standards. The highlights of this discussion are the following: • Minimum 800 feet clearance is required between successive overhead signs. The team will discuss with Caltrans if this cannot be achieved at some sign locations. • Consider changing Cantu-Galleano Rancho Road 1 Mile sign to 3/4 Mile sign and relocate it due to its close proximity to the proposed Express Lane overhead signs. Similar approach may apply to other existing sign locations. Evaluate if some of the existing overhead advanced guide signs are needed. If not, remove instead of relocate the sign. • Overhead advanced guide signs for exits will be provided for freeway-freeway interchanges only, while arterial local street exit information will be posted on roadside signs in the median for express lane users. • Slash on signs to show destinations is not allowed; slash can only be used to show fractions. • Caltrans concurs to include the pull-through overhead signs (Express Lanes with down arrows) adjacent to the overhead advanced guide signs for exits only at ingress/egress locations with weaving lane. • Shoulders will be reduced at locations where overhead sign in the median are proposed. • At this point, fact sheets can be prepared for GADs without signs; design exceptions due to overhead sign structures in the median can be added to fact sheets in the final design phase when the design is certain. • Details of sign panel messages and layouts will be further discussed with Caltrans. • The existing overhead guide signs in the median near Arrow Route and Foothill Boulevard are recommended to be relocated to the outside of the freeway. It is recommended to evaluate relocating other existing overhead guide signs from the median to the outside of the freeway. There will be further discussions between the team and Caltrans. • Concrete barrier should be considered in the median north of SR-210. • A pricing sign may be considered at the entrance of Duncan Canyon Road Southbound on ramp. • Time saving information may be considered to add onto signs.
6	Next Meeting : TBD
	END OF MINUTES

This page intentionally left blank

ATTACHMENT S

Storm Water Data Report signature page

This page intentionally left blank

Caltrans

Dist-County-Route: 08-RIV-15 and 08-SBD-15
Post Mile Limits: 49.8 – 52.3 (RIV) and 0 – 12.2 (SBD)
Type of Work: Highway Widening
Project ID (EA): 0812000184 (08-0R8000)
Program Identification: HE 13 (800.100)
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Santa Ana

Total Disturbed Soil Area: 160 acres PCTA: 66.5 acres

Alternative Compliance (acres): Not Applicable ATA 2 (50% Rule)? Yes ☐ No ☒

Estimated Const. Start Date: 03/2021 Estimated Const. Completion Date: 03/2024

Risk Level: RL 1 ☐ RL 2 ☒ RL 3 ☐ WPCP ☐ Other: ______

Is MWELO applicable? Yes ☒ No ☐

Is the Project within a TMDL watershed? Yes ☐ No ☒

TMDL Compliance Units (acres):______

Notification of ADL reuse (if yes, provide date): Yes ☐ Date: TBD at PS&E No ☐

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Ankita Vyas, Registered Project Engineer — Date: 8/31/18

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Raghuram Radhakrishnan, Project Manager — Date: 9-5-18

Leonard Estrella, Designated Maintenance Representative — Date: 9/10/2018

Rose Bishop, District Landscape Architect — Date: 9/10/18

[Stamp Required at PS&E only]

Jon Bumps, District Storm Water Coordinator — Date: 9/12/18

AN 9/12/2018

This page intentionally left blank