

3.5 TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

The information in this section is based on the following documents:

- *Freeway Traffic Operations Analysis Report* (URS 2012)
- *Intersection Traffic Impact Analysis Report* (URS 2012)
- *I-710 Corridor Project EIR/EIS Travel Demand Modeling Methodology* (URS and Cambridge Systematics 2010)

3.5.1 REGULATORY SETTING

Caltrans, as assigned by the FHWA, directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 CFR 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in Federally-assisted programs is governed by the USDOT regulations (49 CFR part 27) implementing Section 504 of the Rehabilitation Act (29 U.S.C. [United States Code] 794). FHWA has enacted regulations for the implementation of the ADA, including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

3.5.2 AFFECTED ENVIRONMENT

The *Freeway Traffic Operations Analysis Report* and *Intersection Traffic Impact Analysis Report* evaluated the effects of the Interstate 710 (I-710) Corridor Project alternatives on freeway segments, freeway ramps, and local intersections within the Study Area.

Traffic operations within the Study Area were evaluated and defined in terms of level of service (LOS), which ranges from LOS A to LOS F. LOS describes the efficiency of traffic flow and how such conditions are perceived by persons traveling in the traffic stream, and accounts for variables such as speed and travel time, freedom to maneuver, traffic interruptions, traveler comfort and convenience, and safety. LOS A indicates free traffic flow with low volumes and high speeds, resulting in low densities, while LOS F indicates traffic volumes that exceed

capacity and result in forced-flow operations at low speeds, resulting in high densities. LOS is categorized for uninterrupted and interrupted traffic flow facilities. Uninterrupted flow facilities (e.g., freeways) do not have fixed elements such as traffic signals that cause interruptions in traffic flow. Interrupted flow facilities (e.g., intersections and arterial roadways) have fixed elements that cause an interruption in the flow of traffic, such as cross streets, stop signs, and traffic signals. Graphical demonstrations of LOS for uninterrupted flow facilities (freeway facilities) and interrupted flow facilities (signalized intersections) are provided on Figures 3.5-1 and 3.5-2, respectively.

3.5.2.1 TRAFFIC ACCIDENT DATA

Traffic accident data was collected from the California Department of Transportation (Caltrans) Traffic Accident Surveillance and Analysis System (TASAS) database for a 36-month period (October 1, 2004, to September 30, 2007). The detailed accident data is provided in the *Freeway Traffic Operations Analysis Report* (URS, 2012). Based on the TASAS data, the following conclusions can be made regarding safety within the I-710 Corridor:

I-710 NORTHBOUND.

- Of the four mainline study segments, two segments have higher accident rates than the State average and three have higher fatal accident rates than the State average.
- Of the 59 northbound Study Area ramp locations, 31 have higher accident rates than the State average.
- From the southern terminus to Interstate 405 (I-405), the total accident rates are 1.14 (actual) compared to 1.06 (average) which is 8 percent higher. The fatal accident rates are 0.016 (actual) compared to 0.006 (average) which is 167 percent higher.
- From Interstate 105 (I-105) to Leonis Street, the total accident rates are 1.20 (actual) compared to 1.12 (average) which is 7 percent higher. The fatal accident rates are 0.010 (actual) compared to 0.006 (average) which is 67 percent higher.

Truck-related accidents account for 31 percent of the northbound TASAS-reported mainline accidents.

I-710 SOUTHBOUND.

- Of the four mainline study segments, one has a higher accident rate than the State average.

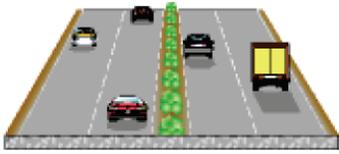
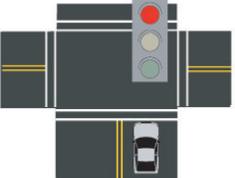
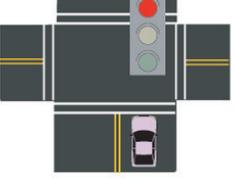
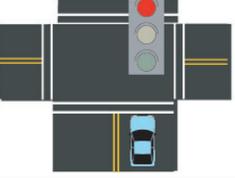
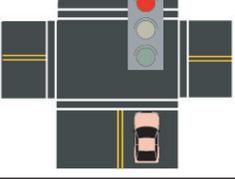
Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. No delays
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. No delays
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. Minimal delays
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. Minimal delays
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. Significant delays
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. Considerable delays

FIGURE 3.5-1

I-710 Corridor Project EIR/EIS
Level of Service Illustration for Freeway Facilities

07-LA-710-PM 4.9/24.9
EA 249900

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Level of Service	Delay per Vehicle (seconds)
	 ≤ 10
	 11-20
	 21-35
	 36-55
	 56-80
	 >80

- Factors Affecting LOS of Signalized Intersections**
- Traffic Signal Conditions:**
- Signal Coordination
 - Cycle Length
 - Protected left turn
 - Timing
 - Pre-timed or traffic activated signal
 - Etc.
- Geometric Conditions:**
- Left- and right-turn lanes
 - Number of lanes
 - Etc.
- Traffic Conditions:**
- Percent of truck traffic
 - Number of pedestrians
 - Etc.

FIGURE 3.5-2

I-710 Corridor Project EIR/EIS
 Level of Service Illustration for Signalized Intersections

07-LA-710-PM 4.9/24.9
 EA 249900

SOURCE: California Department of Transportation

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- Of the 54 southbound Study Area ramp locations, two have higher accident rates than the State average.
- From I-405 to State Route 91 (SR-91), the total accident rates are 1.19 (actual) compared to 1.02 (average) which is 17 percent higher. The fatal accident rates are 0.008 (actual) compared to 0.005 (average) which is 60 percent higher.

Truck-related accidents account for 31 percent of the southbound TASAS-reported mainline accidents.

3.5.2.2 EXISTING AND FUTURE NO BUILD TRAFFIC CONDITIONS

Traffic conditions for existing 2008 baseline conditions and future 2035 conditions under Alternative 1 (No Build) were evaluated to determine LOS without the proposed project. The forecasts for Alternative 1 include those transportation projects that are already programmed and/or committed to be constructed by or before 2035. The projects included in this alternative are based on SCAG's 2008 Federal Transportation Improvement Program (FTIP) project list, including freeway, arterial, and transit improvements within the SCAG region. This alternative also assumes that goods movement to and from the ports make maximum utilization of existing and planned railroad capacity within the I-710 Corridor. Alternative 1 conditions are the basis against which the build alternatives proposed for the I-710 Corridor Project were assessed. The existing I-710 mainline generally consists of eight general purpose lanes north of I-405 and six general purpose lanes south of I-405.

Existing 2008 and 2035 Alternative 1 (No Build) conditions for the Study Area are described below.

FREEWAY SEGMENTS.

I-710 MAINLINE SEGMENTS. Existing 2008 and 2035 No Build LOS for I-710 northbound and southbound mainline (basic and weaving¹) segments and ramp merge/diverge areas are shown in Tables 3.5-1 through 3.5-4. The following summary describes the I-710 mainline operations.

¹ A "weaving" section is where vehicles are entering the freeway in an area where other vehicles are attempting to exit the freeway at the next off-ramp, requiring vehicles to "weave" across each others' path.

Table 3.5-1 I-710 Northbound Basic and Weaving Segments Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)			No Build (2035)		
		AM	PM	Midday	AM	PM	Midday
North of SR-60 On (4 Lanes)	Basic	C	D	C	C	D	D
North of SR-60 On (5 Lanes)	Basic	C	C	C	C	D	C
SR-60 On/New York Off	Basic	D	D	C	D	E	D
New York Off/Ford On	Basic	D	E	D	D	E	E
Ford On/S. Ford Off	Basic	D	D	C	D	E	D
S. Ford Off/SR-60 Off	Basic	C	D	C	C	D	D
SR-60 Off/Olympic On	Weave B	E	F	E	F	F	F
Olympic On/I-5 NB On	Basic	D	E	D	D	E	E
I-5 NB On/Olympic Off	Basic	D	E	D	D	E	E
Olympic Off/I-5 NB Off	Basic	D	E	D	E	F	F
I-5 NB Off/Washington On	Basic	D	D	D	D	D	E
Washington On/Washington Off	Basic	N/A	N/A	N/A	D	D	E
Washington Off/Atlantic On	Basic	D	D	D	D	D	E
Atlantic On/Atlantic SB Off	Basic	N/A	N/A	N/A	D	D	D
Atlantic SB Off/Atlantic NB Off	Basic	N/A	N/A	N/A	D	D	E
Atlantic NB Off/Florence On	Basic	F	D	F	F	F	F
Florence On/Florence Off	Basic	N/A	N/A	N/A	F	E	F
Florence EB On/Florence WB Off	Weave A ¹	C	F	F	B	B	B
Florence Off/Firestone On	Basic	F	E	F	F	F	F
Firestone On/Firestone Off	Basic	N/A	N/A	N/A	E	E	F
Firestone Off/Imperial On	Basic	D	D	D	F	F	F
Imperial On/Imperial Off	Basic	N/A	N/A	N/A	E	E	F
Imperial EB On/Imperial WB Off	Weave A ¹	F	F	F	B	C	B
I-105 On/Imperial Off	Weave A	F	F	F	F	F	F
I-105 On/Rosecrans On	Basic	D	E	F	D	D	F
Rosecrans On/I-105 Off	Basic	D	D	E	C	D	E
I-105 Off/Rosecrans Off	Basic	D	D	D	D	D	E
Rosecrans Off/Alondra On	Basic	C	F	E	D	D	E
Alondra On/Alondra Off	Basic	D	F	E	D	E	F
SR-91 On/Alondra Off	Weave C	D	F	F	D	E	E
SR-91 On/SR-91 EB On	Basic	B	C	C	D	E	F
SR-91 EB On/SR-91 WB Off	Basic	E	E	E	E	F	F
SR-91 WB Off/Artesia Off	Basic	D	D	D	D	D	F
Long Beach On/SR-91 EB & Artesia Off	Weave C	C	C	C	D	D	E
Long Beach On/Long Beach Off	Basic	N/A	N/A	N/A	D	D	E
Long Beach Off/Del Amo WB On	Basic	C	F	C	D	E	E
Del Amo WB On/Del Amo WB Off	Basic	D	D	C	E	F	F
Del Amo EB On/Del Amo WB Off	Weave A	D	D	C	F	F	F
Del Amo EB On/Del Amo EB Off	Basic	N/A	N/A	N/A	F	E	F
Del Amo EB Off/I-405 SB On	Basic	E	E	D	F	F	F
I-405 SB On/Wardlow On	Basic	E	D	D	F	F	F
Wardlow On/I-405 NB Off	Basic	D	C	C	E	D	F
Wardlow On/I-405 NB Off	Weave C ¹	B	A	B	C	B	D

Table 3.5-1 I-710 Northbound Basic and Weaving Segments Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)			No Build (2035)		
		AM	PM	Midday	AM	PM	Midday
Wardlow On/I-405 SB Off	Weave A ¹	D	C	C	<i>F</i>	C	C
I-405 Off/Willow WB On	Basic	<i>F</i>	<i>E</i>	<i>E</i>	<i>F</i>	<i>F</i>	<i>F</i>
Willow WB On/Willow WB Off	Basic	N/A	N/A	N/A	<i>F</i>	<i>F</i>	<i>F</i>
Willow EB On/Willow WB Off	Weave A	<i>F</i>	<i>E</i>	<i>E</i>	<i>F</i>	<i>F</i>	<i>F</i>
Willow EB On/Willow EB Off	Basic	N/A	N/A	N/A	<i>F</i>	<i>F</i>	<i>F</i>
Willow EB Off/PCH NB On	Basic	<i>E</i>	D	<i>E</i>	<i>F</i>	<i>F</i>	<i>F</i>
PCH NB On/PCH NB Off	Basic	N/A	N/A	N/A	<i>F</i>	<i>F</i>	<i>F</i>
PCH SB On/PCH NB Off	Weave A	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>
PCH SB On/PCH SB Off	Basic	N/A	N/A	N/A	<i>F</i>	<i>E</i>	<i>F</i>
Anaheim WB On/PCH SB Off	Weave B	D	C	C	<i>E</i>	<i>E</i>	<i>E</i>
Anaheim WB On/Anaheim WB Off	Basic	N/A	N/A	N/A	D	D	D
Anaheim EB On/Anaheim WB Off	Weave A	D	D	D	D	D	<i>E</i>
Anaheim EB On/7th&3rd On	Basic	C	C	C	D	D	D
7th & 3rd On/Anaheim EB Off	Basic	B	C	C	D	<i>E</i>	<i>E</i>
9th & Pier B & Pico On/Anaheim EB Off	Weave B	B	B	B	C	D	D
9th & Pier B On/Harbor Scenic On	Basic	A	B	B	C	C	C
South of Harbor Scenic On	Basic	A	A	A	C	C	B

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

¹ Weaving operation occurs on freeway collector/distributor.

EB = eastbound	NB = northbound
I-5 = Interstate 5	PCH = Pacific Coast Hwy.
I-105 = Interstate 105	SB = southbound
I-405 = Interstate 405	SR-60 = State Route 60
I-710 = Interstate 710	SR-91 = State Route 91
LOS = level(s) of service	WB = westbound
N/A = not available	

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Table 3.5-2 I-710 Northbound Ramp Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
SR-60	Major On ²	0.43	N/A	0.58	N/A	0.42	N/A	0.47	N/A	0.62	N/A	0.54	N/A
New York	Off	28.4	D	35.8	E	24.5	C	30.5	D	38.3	E	30	D
Ford	On	28.6	D	37.1	E	26.3	C	30.8	D	--*	F	34.8	D
S. Ford	Off ⁴	N/A	N/A										
SR-60	Off	N/A	N/A										
Olympic	On	N/A	N/A										
I-5 NB	On ⁴	N/A	N/A										
Olympic	Off	31.5	D	35.2	E	30.4	D	33.4	D	37.4	E	36.2	E
I-5 NB	Major Off ³	30	D	30.9	D	30.1	D	32.2	D	--*	F	35.4	E
Washington	On	23.7	C	22.8	C	23.7	C	22.4	C	22.5	C	26.2	C
Washington	Off	35.2	E	33.8	D	36.2	E	34.9	D	34.8	D	40.2	E
Atlantic	On	21.2	C	21.5	C	22.8	C	22.5	C	22.6	C	24.5	C
Atlantic SB	Off	35.5	E	27.7	C	32.9	D	38.5	E	31.9	D	38.7	E
Atlantic NB	Off	--*	F	10.7	B	--*	F	--*	F	--*	F	--*	F
Florence	On	--*	F	23.1	C	--*	F	--*	F	--*	F	--*	F
Florence	Off	--*	F										
Firestone	On	23.3	C	18.9	B	23.3	C	--*	F	26.3	C	--*	F
Firestone	Off	33.2	D	34.4	D	39.4	E	--*	F	--*	F	--*	F
Imperial	On	5	F	5	F	5	F	--*	F	--*	F	--*	F
Imperial	Off	N/A	N/A										
I-105	On	N/A	N/A										
Rosecrans	On	23.9	C	26.1	C	28.6	D	22.5	C	24.7	C	28.7	D
I-105	Major Off ³	22.3	C	25.5	C	28.2	D	22.7	C	25.3	C	30.9	D
Rosecrans	Off	31.4	D	35.9	E	37.1	E	32.5	D	37.3	E	40.5	E
Alondra	On ⁴	N/A	N/A										
Alondra	Off	N/A	N/A										
SR-91	On	N/A	N/A										
SR-91 EB	On ⁴	N/A	N/A										
SR-91 WB	Off ⁴	N/A	N/A										
Artesia/SR-91 EB	Off	N/A	N/A										
Long Beach	On	N/A	N/A										
Long Beach	Off	28.2	D	29.1	D	27.4	C	33.7	D	33.7	D	38.5	E
Del Amo WB	On ⁴	N/A	N/A										
Del Amo WB	Off	N/A	N/A										
Del Amo EB	On	N/A	N/A										
Del Amo EB	Off	21.9	C	22.8	C	17.3	B	--*	F	--*	F	--*	F
I-405 SB	Major On ²	0.84	N/A	0.81	N/A	0.78	N/A	1.05	N/A	1.08	N/A	1.25	N/A
Wardlow/I-405 NB	On	35.1	E	31.4	D	31.2	D	--*	F	40.6	F	--*	F
I-405	Major Off ³	32.1	D	25.2	C	25.3	C	38.8	E	34.5	D	--*	F
Willow WB	On	--*	F	29.2	D	30.7	D	--*	F	--*	F	--*	F
Willow WB	Off	N/A	N/A										
Willow EB	On	N/A	N/A										
Willow EB	Off	36.1	E	33.5	D	34.5	D	--*	F	--*	F	--*	F

Table 3.5-2 I-710 Northbound Ramp Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS						
PCH NB	On	32.5	D	28.9	D	30.8	D	--*	F	--*	F	--*	F
PCH NB	Off	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCH SB	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCH SB	Off	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim WB	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim WB	Off	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim EB	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7th/3rd/Shoreline	Major On ²	0.53	N/A	0.5	N/A	0.46	N/A	0.76	N/A	0.72	N/A	0.73	N/A
Anaheim EB	Off	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9th/Pier B/Pico	On	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Harbor Scenic	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

⁵ Observed speed at this location lower than 55 mph; the junction is assumed to be oversaturated.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 mph = miles per hour

N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound
 SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-3 I-710 Southbound Basic and Weaving Segments Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)			No Build (2035)		
		AM	PM	Midday	AM	PM	Midday
North of Cesar Chavez On	Basic	D	C	C	D	D	C
Cesar Chavez On/3rd On	Basic	D	D	C	E	D	D
3rd On Eagle & Humphreys Off	Weave A	D	C	C	D	C	C
Eagle & Humphreys Off/SR-60 On	Basic	D	D	C	D	D	D
SR-60 On/Eastern & Whittier & Olympic Off	Weave A	F	F	D	F	F	E
Eastern & Whittier Off/I-5 SB Off	Basic	E	E	D	E	E	D
I-5 SB Off/Eastern On	Basic	D	D	D	E	D	D
Eastern On/I-5 SB On	Basic	E	D	D	E	E	D
I-5 SB On/Washington Off	Basic	D	D	D	D	D	D
Washington Off/Washington On	Basic	N/A	N/A	N/A	D	D	D
Washington On/Atlantic Off	Weave B	D	D	E	E	E	E
Atlantic Off/Atlantic SB On	Basic	N/A	N/A	N/A	D	E	E
Atlantic SB On/Atlantic NB On	Basic	N/A	N/A	N/A	E	E	E
Atlantic NB On/Florence Off	Basic	D	E	E	E	F	F
Florence WB On/Florence EB Off	Weave A ¹	C	F	C	C	F	E
Florence Off/Florence On	Basic	N/A	N/A	N/A	D	E	E
Florence On/Firestone Off	Basic	E	E	F	F	F	F
Firestone Off/Firestone On	Basic	N/A	N/A	N/A	E	E	F
Firestone On/Wright Off	Basic	F	E	E	F	F	F
Wright Off/Imperial EB Off	Basic	N/A	N/A	N/A	F	F	F
Imperial WB On/Imperial EB Off	Weave A ¹	C	C	C	F	C	A
Imperial EB Off/Imperial On	Basic	N/A	N/A	N/A	F	F	F
Imperial On/MLK Off	Weave B	F	E	F	F	F	F
Imperial On/I-105 Off	Weave B	F	E	F	F	F	F
I-105 Off/Rosecrans Off	Basic	N/A	N/A	N/A	E	D	E
MLK On/Rosecrans Off	Weave A ¹	B	B	B	B	B	A
Rosecrans Off/MLK On	Basic	D	C	D	D	D	D
MLK On/I-105 On	Basic	D	C	D	E	D	E
I-105 On/Rosecrans WB On	Basic	D	C	D	D	D	D
Rosecrans WB On/Rosecrans EB On	Basic	N/A	N/A	N/A	E	D	D
Rosecrans EB On/Alondra WB Off	Basic	D	C	D	E	D	D
Alondra WB Off/Alondra EB Off	Basic	E	D	D	F	D	E
Alondra EB Off/Alondra On	Basic	N/A	N/A	N/A	F	D	E
Alondra On/SR-91 EB Off	Weave B	C	C	D	E	D	E
SR-91 EB Off/SR-91 WB Off	Basic	F	D	D	E	D	D
SR-91 WB Off/SR-91 WB On	Basic	E	D	D	E	D	E
SR-91 WB On/SR-91 & Artesia On	Basic	E	D	D	F	E	F
Artesia & SR-91 EB On/Long Beach NB Off	Weave B	D	F	D	F	D	F
Artesia & SR-91 EB On/Long Beach SB Off	Weave A	E	F	D	F	E	F
Long Beach SB Off/Long Beach On	Basic	N/A	N/A	N/A	F	E	F
Long Beach On/Susana Off	Basic	F	D	E	F	E	F
Susana Off/Del Amo On	Basic	N/A	N/A	N/A	F	D	F
Del Amo On/I-405 & Wardlow	Basic	E	F	D	F	E	F
I-405 NB On/I-405 SB Off	Weave A ¹	F	F	F	F	F	F
I-405 SB Off/I-405 SB On	Basic	C	B	C	E	D	F

Table 3.5-3 I-710 Southbound Basic and Weaving Segments Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)			No Build (2035)		
		AM	PM	Midday	AM	PM	Midday
I-405 SB On/I-405 NB On	Basic	<i>E</i>	D	D	<i>F</i>	<i>E</i>	<i>F</i>
I-405 NB On/Willow WB Off	Basic	<i>F</i>	<i>E</i>	<i>E</i>	<i>F</i>	<i>F</i>	<i>F</i>
Willow WB Off/Willow WB On	Basic	N/A	N/A	N/A	<i>F</i>	<i>F</i>	<i>F</i>
Willow WB On/Willow EB Off	Weave A	<i>F</i>	<i>E</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>
Willow EB Off/Willow EB on	Basic	N/A	N/A	N/A	<i>F</i>	<i>F</i>	<i>F</i>
Willow EB On/PCH Off	Basic	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>
PCH Off/PCH On	Weave A ¹	B	B	B	B	B	D
PCH Off/PCH On	Basic	N/A	N/A	N/A	<i>F</i>	<i>E</i>	<i>F</i>
PCH On/Anaheim WB Off	Basic	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>
Anaheim WB Off/Anaheim WB On	Basic	N/A	N/A	N/A	<i>F</i>	<i>E</i>	<i>F</i>
Anaheim WB On/Anaheim EB Off	Weave A	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>F</i>
Anaheim EB Off/6th & Broadway Off	Basic	C	C	C	D	C	D
6th & Broadway Off/Anaheim EB On	Basic	B	B	B	C	B	D
Anaheim EB On/Pico & 9th Off	Basic	C	B	B	D	C	<i>E</i>
Pico & 9th Off/Harbor Scenic Off	Basic	B	A	B	C	B	D
South of Harbor Scenic Off	Basic	B	A	A	C	B	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

¹ Weaving operation occurs on freeway collector/distributor.

EB = eastbound

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

MLK = Martin Luther King Jr. Blvd.

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

Table 3.5-4 I-710 Southbound Ramp Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
Cesar Chavez	On	28.9	D	24.9	C	22.2	C	29.6	D	25.9	C	26.1	C
3rd	On	N/A	N/A										
Eagle & Humphreys	Off	N/A	N/A										
SR-60	On	N/A	N/A										
Eastern & Whittier & Olympic	Off	N/A	N/A										
I-5 SB	Off ⁴	N/A	N/A										
Eastern	On	32.7	D	30.4	D	26.7	C	35.2	E	32.4	D	30.2	D
I-5 SB	Major On ²	0.8	N/A	0.7	N/A	0.7	N/A	0.8	N/A	0.74	N/A	0.73	N/A
Washington	Off	31.6	D	26.7	C	33.8	D	35	E	32.1	D	33	D
Washington	On	N/A	N/A										
Atlantic	Off	N/A	N/A										
Atlantic SB	On	21	C	23.3	C	25.5	C	25.1	C	26.7	C	26	C
Atlantic NB	On	22.1	C	24.7	C	27	C	27	C	--*	F	28.8	F
Florence	Off	31.8	D	39	E	--*	F	40	E	--*	F	43.9	F
Florence	On	24.3	C	24.6	C	25.8	F	25.5	F	--*	F	26.7	F
Firestone	Off	40.3	E	--*	F	--*	F	41.7	F	--*	F	47.7	F
Firestone	On	--*	F	25.2	C	--*	F	26.7	F	--*	F	28.4	F
Wright	Off	--*	F	39.7	E	--*	F	43.3	F	--*	F	45	F
Imperial EB	Off	39.4	E	37.5	E	--*	F	41.8	F	--*	F	42.9	F
Imperial	On	N/A	N/A										
MLK	Off	N/A	N/A										
I-105 Off	Off	N/A	N/A										
Rosecrans	Off	32.6	D	31.2	D	--*	F	36.3	E	34.5	D	33.4	D
MLK	On	23.4	C	21.1	C	--*	F	26	C	23.7	C	25.3	C
I-105	Major On ²	0.71	N/A	0.61	N/A	0.85	N/A	0.84	N/A	0.69	N/A	0.78	N/A
Rosecrans WB	On	18.4	B	16.3	B	20.9	C	24.3	C	19.8	B	23	C
Rosecrans EB	On	19.8	B	18	B	21.7	C	25.3	C	20.7	C	22.8	C
Alondra WB	Off ⁴	N/A	N/A										
Alondra EB	Off	10.2	B	5.4	A	8.1	A	14.2	F	6.8	A	10.1	B
Alondra	On	N/A	N/A										
SR-91 EB	Off	N/A	N/A										
SR-91 WB	Major Off ³	29.6	D	23.7	C	26	C	35.9	E	25.5	C	30.9	D
SR-91 WB	On ⁴	N/A	N/A										
SR-91 EB & Artesia	On	N/A	N/A										
Long Beach NB	Off	N/A	N/A										
Long Beach SB	Off	N/A	N/A										
Long Beach	On	26.4	C	⁵	F	25.1	C	--*	F	27	C	--*	F
Susana	Off	--*	F	⁵	F	--*	F	--*	F	38.9	E	--*	F
Del Amo	On	26.4	C	⁵	F	24.9	C	--*	F	25.9	C	--*	F
I-405/Wardlow	Major Off ³	--*	F	29.7	D	35.7	E	--*	F	37.2	E	--*	F
I-405 SB	On	32.9	D	30.6	D	32	D	--*	F	35.2	E	--*	F
I-405 NB	On	--*	F	30.2	D	--*	F	--*	F	--*	F	--*	F
Willow WB	Off	--*	F	33.9	D	37.1	E	--*	F	--*	F	--*	F
Willow WB	On	N/A	N/A										

Table 3.5-4 I-710 Southbound Ramp Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
Willow EB	Off	N/A	N/A										
Willow EB	On	32.2	D	26.2	C	30	D	--*	F	--*	F	--*	F
PCH	Off	--*	F										
PCH	On	--*	F	37.3	E	--*	F	--*	F	--*	F	--*	F
Anaheim WB	Off	--*	F										
Anaheim WB	On	N/A	N/A										
Anaheim EB	Off	N/A	N/A										
6th & Broadway & Shoreline	Major Off ³	29.8	D	25.9	C	27.2	C	27	C	20.3	C	27.7	C
Anaheim EB	On	19.2	B	12.3	B	17.6	B	24.3	C	17.6	B	30.7	D
Pico & 9th & Pier B	Off	31	D	18.2	B	29.9	D	36.3	E	27.3	C	--*	F
Harbor Scenic	Major Off ³	16.4	B	10.4	B	15.7	B	21.7	C	14.2	B	28.1	D

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

⁵ Observed speed at this location lower than 55 mph; the junction is assumed to be oversaturated.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

MLK = Martin Luther King Jr. Blvd.

mph = miles per hour

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

In the existing condition:

- **Northbound Direction:** 16 basic, 7 weaving segments, and 14 merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.
- **Southbound Direction:** 14 basic, 9 weaving segments, and 17 merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.

In the Alternative 1 condition:

- **Northbound Direction:** 38 basic, 10 weaving segments, and 20 merge or diverge segments are forecast to operate at LOS E or F in 2035.
- **Southbound Direction:** 36 basic, 12 weaving segments, and 24 merge or diverge segments are forecast to operate at LOS E or F in 2035.

In general, the northbound lanes show heavy traffic flows during the evening peak hour and the southbound lanes show heavy traffic flows during the morning peak hour. This typically characterizes the general travel pattern where commuters go to work from home in the southbound direction during the morning and return in the northbound direction during the evening peak hours. Currently, I-710 segments closest to the southern terminus have the highest truck percentages and lowest general purpose traffic relative to the rest of the I-710 corridor. These segments generally experience acceptable LOS. However, general purpose traffic volumes increase on freeway segments further away from the Ports, while truck traffic volumes remain relatively high, resulting in increased traffic congestion at those locations.

Based on the analysis and findings presented in this section, it can be concluded that the I-710 Corridor is currently operating at congested conditions during all three peak hours analyzed for Existing 2008 conditions and will experience severe congestion under the 2035 No Build conditions.

INTERSTATE 405 MAINLINE SEGMENTS. Table 3.5-5 shows the LOS for I-405 in the vicinity of the I-710/I-405 interchange. The following summary describes the existing and No Build Alternative I-405 mainline operations.

In the 2008 existing condition:

- **Northbound Direction:** Two basic, five weaving segments, and one merge or diverge segment currently operate at unsatisfactory LOS E or F in the existing condition.

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Table 3.5-5 I-405 Basic/Weaving Segments and Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
Northbound													
North of Alameda Off	Basic	34	D	24.6	C	27	D	--*	F	--*	F	39.8	E
Alameda	Off	N/A	N/A										
I-710 & Santa Fe On/Alameda Off	Weave B	57	F	41.2	E	42.5	E	54.4	F	47.2	F	49.9	F
I-710 & Santa Fe	On	N/A	N/A										
I-710 On/Santa Fe On	Basic	32.1	D	29.2	D	29.6	D	--*	F	--*	F	32	D
Santa Fe	On ³	35.8	E	23.6	C	24.1	C	30.3	D	23	C	32.8	D
I-710 SB On/Santa Fe Off	Weave A ³	68	F	31.6	D	33.4	D	42	F	28.3	C	43.2	F
I-710 NB On/I-710 SB Off	Weave A ³	85.1	F	61.9	F	64.9	F	125.9	F	98.6	F	135.2	F
I-710 SB & Santa Fe	Off	N/A	N/A										
Pacific On/I-710 SB & Santa Fe Off	Weave A	44.8	F	39	E	37.8	E	49.1	F	49.1	F	42	E
Pacific	On	N/A	N/A										
Pacific On/I-710 NB Off	Basic	40.4	E	30.7	D	31.3	D	--*	F	--*	F	43.3	E
I-710 NB	Off	N/A	N/A										
Wardlow On/I-710 NB Off	Weave C	40.6	E	35.4	E	33.9	D	34.2	D	34.3	D	30.9	D
Wardlow	On	N/A	N/A										
South of Wardlow On	Basic	39.6	E	32.8	D	31.3	D	36.5	E	37.6	E	30.8	D
Southbound													
North of Alameda On	Basic	25.5	C	31.2	D	25.7	C	34.9	D	44.1	E	34	D
Alameda	On	N/A	N/A										
Alameda On/Wardlow & I-710 NB Off	Weave B	38.8	E	44.8	F	39.9	E	44.2	F	57	F	50.2	F
I-710 NB & Wardlow	Off	N/A	N/A										
Wardlow On/Off	Weave A ³	28.7	C	41.6	F	33.3	D	50.6	F	49.4	F	61.8	F
Wardlow Off/I-710 SB Off	Basic	30.3	D	34.3	D	29.9	D	38.5	E	--*	F	36.4	E
I-710 SB	Off ²	N/A	N/A										
I-710 SB Off/Wardlow On	Basic	34.7	D	37.7	E	36	E	42.2	E	--*	F	43.8	E
Wardlow	On	N/A	N/A										
Wardlow On/Pacific Off	Weave B	32.1	D	37.8	E	33.4	D	40.2	E	48.2	F	39.8	E
Pacific	Off	N/A	N/A										
I-710 NB On/Pacific Off	Weave A ³	22.6	B	27.6	C	27.8	C	26.9	C	22	B	24.7	C
Pacific Off/I-710 On	Basic	28.5	D	31.3	D	29.7	D	30.2	D	44.7	E	30.7	D
I-710	On	N/A	N/A										
I-710 On/Long Beach Off	Weave B	40.4	E	46.7	F	43.7	F	39.2	E	42.8	E	40.1	E
Long Beach	Off	N/A	N/A										

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Single-lane addition/drop; HCM methodology applied for analysis.

³ Operation occurs on freeway collector/distributor.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

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- **Southbound Direction:** One basic, four weaving segments, and no merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.

In the 2035 No Build Alternative condition:

- **Northbound Direction:** Four basic, four weaving segments, and no merge or diverge segments are forecast to operate at LOS E or F in 2035.
- **Southbound Direction:** Four basic, four weaving segments, and no merge or diverge segments are forecast to operate at LOS E or F in 2035.

In summary, the northbound lanes show heavy congestion during the morning peak hours, and southbound lanes show heavy congestion during the evening peak hours. This indicates that these study locations along I-405 and within 1 mile of the I-710 are near or exceed capacity and are operating under congested conditions through this section for both 2008 existing and 2035 No Build conditions.

SR-91 MAINLINE SEGMENTS. Table 3.5-6 shows the LOS for State Route 91 (SR-91) in the vicinity of the I-710/SR-91 interchange. The following summary describes the 2008 existing and 2035 No Build SR-91 mainline operations.

In the 2008 existing condition:

- **Eastbound Direction:** Four basic and no weaving segments or merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.
- **Westbound Direction:** Five basic, one weaving segment, and no merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.

In the 2035 No Build condition:

- **Eastbound Direction:** Three basic, two weaving segments, and one merge or diverge segment are forecast to operate at LOS E or F in 2035.
- **Westbound Direction:** Six basic, one weaving segment, and one merge or diverge segment are forecast to operate at LOS E or F in 2035.

In summary, the eastbound lanes show higher density during all three peak hours, and westbound lanes show heavy congestion during the morning peak hours in the 2008 existing condition. In the 2035 No Build condition, the results show that the study locations

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Table 3.5-6 SR-91 Basic/Weaving Segments and Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
Eastbound													
West of Santa Fe On	Basic	25.7	C	29.7	D	31.8	D	24.3	C	33.4	D	25.4	C
Santa Fe	On	N/A	N/A										
Santa Fe On/Long Beach Off	Weave A	24	C	32.4	D	34.1	D	23.3	C	36.4	E	27.4	C
Long Beach	Off	N/A	N/A										
Long Beach Off/Long Beach On	Basic	25.9	C	30.1	D	32.2	D	29.7	D	39.8	E	31.6	D
Long Beach	On	N/A	N/A										
Long Beach On/I-710 SB Off	Weave A	24.8	C	32.4	D	34.4	D	28.6	C	42	F	32.5	D
I-710 SB	Off	N/A	N/A										
I-710 SB Off/I-710 NB Off	Basic	⁵	F	⁵	F	⁵	F	23.1	C	32.8	D	25.5	C
I-710 NB & Atlantic	Major Off ³	22.5	C	27.4	C	27.8	C	27	C	35.6	E	29.6	D
I-710 NB Off/I-710 NB On	Basic	⁵	F	⁵	F	⁵	F	30.3	D	39.9	E	30.5	D
I-710 NB	On ⁴	N/A	N/A										
I-710 NB On/I-710 SB On	Basic	⁵	F	⁵	F	⁵	F	27.2	D	34.7	D	26.7	D
I-710 SB	On ⁴	N/A	N/A										
I-710 SB On/Atlantic On	Basic	⁵	F	⁵	F	⁵	F	27.8	D	33.1	D	26.2	D
Atlantic	On	21.5	C	21.5	C	20.9	C	23.4	C	26.3	C	22.3	C
East of Atlantic On	Basic	25.1	C	31.1	D	30.2	D	30.9	D	36.5	E	29.1	D
Westbound													
West of Santa Fe Off	Basic	34	D	23.4	C	26.7	D	--*	F	41.4	E	--*	F
Santa Fe	Off	N/A	N/A										
Long Beach On/Santa Fe Off	Weave C	20.5	C	17.3	B	19	B	28.9	D	29.7	D	31.3	D
Long Beach	On	N/A	N/A										
Long Beach On/Long Beach Off	Basic	⁵	F	17.8	B	⁵	F	31.5	D	31.4	D	35.9	E
Long Beach	Off	N/A	N/A										
I-710 SB On/Long Beach Off	Weave C	44	F	29.6	D	33.3	D	58.2	F	43	F	48.6	F
I-710 SB	On	N/A	N/A										
I-710 SB On/I-710 NB On	Basic	⁵	F	28.7	D	⁵	F	31.3	D	34.7	D	40.1	E
I-710 NB & Atlantic	Major On ²	0.68	N/A	0.69	N/A	0.66	N/A	0.78	N/A	0.85	N/A	0.9	N/A
I-710 NB On/I-710 Off	Basic	⁵	F	27.9	D	⁵	F	32.6	D	39.3	E	34.4	D
I-710	Major Off ³	23.4	C	24.5	C	22	C	33.9	D	36.1	E	31.9	D
I-710 Off/Atlantic Off	Basic	⁵	F	30.3	D	28.5	D	33.1	D	35.1	E	30.7	D
Atlantic	Off	18	B	10.6	B	9.4	A	18.1	B	15.5	B	15.9	B
Atlantic Off/Cherry On	Basic	⁵	F	25.4	C	24.2	C	41.1	E	40.5	E	37.5	E
Cherry	On	21.8	C	21.3	C	20.4	C	23.9	C	23.8	C	21.1	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

⁵ Observed speed at this location lower than 55 mph; the junction is assumed to be oversaturated.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 mph = miles per hour

N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

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(within 1 mile of I-710) on westbound SR-91 would experience congestion during midday and p.m. peak hours, and on eastbound SR-91 during the p.m. peak hour only.

I-105 MAINLINE SEGMENTS. Table 3.5-7 shows the LOS for I-105 in the vicinity of the I-710/I-105 interchange. The following summary describes the 2008 existing and 2035 No Build I-105 mainline operations.

In the 2008 existing condition:

- **Eastbound Direction:** Three basic, no weaving segments, and one merge or diverge segment currently operate at unsatisfactory LOS E or F in the existing condition.
- **Westbound Direction:** Six basic, no weaving segments, and no merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.

In the 2035 No Build condition:

- **Eastbound Direction:** Two basic, no weaving segments, and one merge or diverge segment are forecast to operate at LOS E or F in 2035.
- **Westbound Direction:** Four basic, no weaving segments, and one merge or diverge segment are forecast to operate at LOS E or F in 2035.

In summary, the eastbound lanes show higher density during the evening peak hours, and westbound lanes show heavy congestion during the morning peak hours in the 2008 existing condition. The majority of congestion occurs along the I-105 corridor near the I-710 connectors. In the 2035 No Build Condition, the study locations (within 1 mile of I-710) on both eastbound and westbound I-105 would experience congested freeway segments during all peak hours with the westbound direction more congested during the p.m. peak hour.

I-5 MAINLINE SEGMENTS. Table 3.5-8 shows the LOS for I-5 in the vicinity of the I-710/I-5 interchange. The following summary describes the 2008 existing and 2035 No Build I-5 mainline operations.

In the 2008 existing condition:

- **Northbound Direction:** Eight basic, and no weaving segments or merge or diverge segment currently operate at unsatisfactory LOS E or F in the existing condition.

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Table 3.5-7 I-105 Basic/Weaving Segments and Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS										
Eastbound													
West of I-710 Off (3 Lanes)	Basic	43.3	E	40.9	E	--*	F	--*	F	--*	F	42.6	E
West of I-710 Off (4 Lanes)	Basic	30.1	D	29.2	D	31.3	D	29	D	33.1	D	26.8	D
I-710	Major Off ³	29	D	28.1	D	30.1	D	33	D	36.4	E	31.1	D
I-710 Off/Garfield Off	Basic	22.5	C	20.9	C	21.4	C	27.7	D	32	D	25.3	C
Garfield	Off	11.3	B	9.4	B	9.4	A	16.4	B	19.1	B	14.8	B
Garfield Off/I-710 NB On	Basic	22.9	C	20.5	C	23.4	C	22.6	C	25.3	C	20.2	C
I-710 NB	Major On ²	0.42	N/A	⁵	F	0.4	N/A	0.58	N/A	0.59	N/A	0.62	N/A
I-710 NB On/I-710 SB On	Basic	17.5	B	⁵	F	6	F	20.5	C	21.5	C	21.6	C
I-710 SB	On	18	B	13.7	B	16.8	B	17.5	B	18.3	B	19.6	B
East of I-710 On	Basic	26.7	D	⁶	F	⁵	F	--*	F	--*	F	--*	F
Westbound													
West of I-710 NB On (3 Lane)	Basic	⁵	F	⁵	F	--*	F	--*	F	--*	F	39.4	E
West of I-710 NB On (4 Lane)	Basic	⁵	F	⁵	F	28.9	D	31.5	D	35.5	E	26.4	D
I-710 NB	On ⁴	N/A	N/A										
I-710 NB On/I-710 SB On	Basic	⁵	F	36.8	E	35.8	E	--*	F	--*	F	38	E
I-710 SB	On	18.4	B	21.1	C	20.9	C	--*	F	--*	F	35.3	E
I-710 SB On/Garfield On	Basic	⁵	F	⁵	F	25.8	C	33.3	D	38.7	E	27.4	D
Garfield	On	19	B	20.6	C	21.6	C	27.8	C	31	D	24.1	C
Garfield On/I-710 Off	Basic	⁵	F	⁵	F	⁵	F	26.4	D	28.5	D	21.8	C
I-710	Major Off ³	22.1	C	18.7	B	20.5	C	28.1	D	28.4	D	25.9	C
East of I-710 Off	Basic	38.2	E	26.7	D	32.2	D	24.6	C	24.6	C	22.8	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

⁶ Observed speed at this location lower than 55 mph; the junction is assumed to be oversaturated.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

Table 3.5-8 I-5 Basic/Weaving Segments and Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS										
Northbound													
North of Dennison	Basic	31.3	D	20.5	C	38.2	E	38.1	E	27.1	D	--*	F
Dennison On-Ramp	On	19.5	B	14.5	B	23.8	C	23.8	C	17.4	B	27.1	C
Dennison On/Dennison Off	Basic	30.9	D	19.7	C	37.4	E	37.5	E	26.2	D	--*	F
Ditman & Dennison	Off	28.6	D	21.1	C	32.3	D	33.4	D	24.9	C	--*	F
Dennison Off/Telegraph On	Basic	31.7	D	20.3	C	37.4	E	38.8	E	27.2	D	--*	F
Telegraph & Downey	On	18.4	B	14.2	B	20.7	C	21.7	C	16.6	B	23	C
Telegraph On/I-710 NB On	Basic	30.5	D	19.7	C	34.7	D	36.9	E	26.1	D	40.8	E
I-710 NB	On ⁴	N/A	N/A										
I-710 NB On/I-710 NB Off	Basic	24.3	C	15	B	28.6	D	31.4	D	23.1	C	33.6	D
I-710 NB	Off ⁴	N/A	N/A										
I-710 NB Off/McBride Off	Basic	25.7	C	20.3	C	28.8	D	31.4	D	27.3	D	32.7	D
McBride & Telegraph	Off	24.6	C	21.2	C	27	C	29.3	D	25.9	C	30.2	D
McBride Off/Woods On (5 Lanes)	Basic	26.2	D	20.8	C	29.3	D	32	D	27.6	D	33.2	D
McBride Off/Woods On (4 Lanes)	Basic	32.8	D	26.1	D	37.2	E	42.9	E	34.6	D	--*	F
Woods & Telegraph	On	19.4	B	16.4	B	21.3	C	22.6	C	20.2	C	23.5	C
Woods On/Woods Off	Basic	31.8	D	24.8	C	36.4	E	41	E	33.6	D	44.8	E
Woods & Telegraph	Off	30.6	D	25	C	32.9	D	36.5	E	32.6	D	36.9	E
Woods Off/Camfield On	Basic	32.9	D	26.1	D	36.4	E	43.2	E	35	E	44.8	E
Camfield & Telegraph	On	18.5	B	16.2	B	20.3	C	21.1	C	18.8	B	22.4	C
Camfield On/Camfield Off	Basic	31.5	D	23.1	C	36.4	E	40.3	E	31.8	D	44.8	E
Camfield & Telegraph	Off	31.4	D	24.4	C	35	D	37.3	E	31.6	D	39	E
South of Camfield & Telegraph Off	Basic	34.2	D	25.7	C	40.2	E	--*	F	34.2	D	--*	F
Southbound													
North of Ditman Off	Basic	29.2	D	24.9	C	32.9	D	30.5	D	26.3	D	35.4	E
Ditman	Off	26.6	C	24.1	C	29.4	D	27.6	C	24.1	C	31.2	D
Ditman Off/Ditman On	Basic	28.7	D	24.5	C	32.8	D	30	D	25.8	C	35.3	E
Ditman	On	17.7	B	16	B	19.9	B	18.4	B	16.7	B	21.6	C
Ditman On/Boswell Off	Basic	29.2	D	25.2	C	32.8	D	30.5	D	26.6	D	35.3	E
Boswell	Off	27.4	C	25.4	C	30.4	D	28.5	D	25.3	C	32.4	D
Boswell Off/I-710 SB Off	Basic	28.6	D	24.6	C	32.3	D	29.9	D	25.9	C	34.5	D
I-710 SB	Major Off ²	27.6	D	23.6	C	31.1	D	28.8	D	24.9	C	33.1	D
I-710 SB Off/I-710 SB On	Basic	31.1	D	24.7	C	37	E	33.2	D	26.8	D	41.9	E
I-710 SB	On ³	N/A	N/A										
I-710 SB On/Triggs Off	Basic	34	D	31.4	D	34.8	D	36	E	33.2	D	39.8	E
Triggs	Off	30.8	D	29	D	31.6	D	32.2	D	30.4	D	34.6	D
Triggs Off/Triggs On	Basic	33	D	31	D	34.8	D	34.9	D	32.8	D	39.8	E
Triggs	On	19.2	B	18.5	B	19.9	B	19.9	B	19.2	B	21.5	C
Triggs On/Stevens Off	Basic	34.4	D	32.5	D	35.2	E	37	E	35	E	40.6	E

Table 3.5-8 I-5 Basic/Weaving Segments and Merge/Diverge Areas Existing and No Build Alternative Levels of Service

Location Description	Freeway Type	Existing (2008)						No Build (2035)					
		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS										
Stevens & Eastern	Off	31.3	D	29.6	D	31.7	D	33.1	D	31.5	D	34.8	D
South of Stevens & Eastern Off	Basic	31.2	D	31.2	D	33.3	D	33.3	D	33.4	D	37.7	E

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

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- **Southbound Direction:** Two basic and no weaving segments or merge or diverge segments currently operate at unsatisfactory LOS E or F in the existing condition.

In the 2035 No Build condition:

- **Northbound Direction:** Nine basic, no weaving segments, and three merge or diverge segments are forecast to operate at LOS E or F in 2035.
- **Southbound Direction:** Eight basic and no weaving segments or merge or diverge segments are forecast to operate at LOS E or F in 2035.

The majority of the congestion occurs along the I-5 corridor in the vicinity of I-710 during the midday peak hour. However, field observations show severe congestion levels during both a.m. and p.m. peak hours in the 2008 existing condition. The northbound lanes show heavy congestion during the morning and midday peak hours, and the southbound lanes show heavy congestion in the midday peak hour in the 2035 No Build condition. The results show that the study locations (within 1 mile of I-710) in both directions of I-5 would experience heavy congestion under both 2008 existing conditions and 2035 No Build conditions.

ROADWAY SEGMENTS. A total of 179 local arterial roadway segments were included in the Study Area. The analysis of the Study Area roadway segments is provided in the *Intersection Traffic Impact Analysis Report*. The existing and No Build Alternative roadway segment operations are summarized below.

Approximately 33 percent (59 of 179) of the roadway segments currently experience volume-to-capacity (V/C) ratios approaching or exceeding the existing capacity. Approximately 41 percent (74 of 179) of the roadway segments are projected to experience V/C ratios approaching ($0.90 \leq V/C < 1.0$) or exceeding ($V/C \geq 1.0$) the planned future year capacity as depicted in the I-710 traffic model in the Alternative 1 (No Build) Condition.

The following summary notes the arterial roadway segments operating with a V/C ratio of 0.90 or greater (indicating LOS E or F) in the 2008 existing and 2035 No Build conditions (unless noted below).

- **North-South Segments:**
 - Wilmington Ave., between I-405 and Sepulveda Blvd. (2035 No Build only);
 - Alameda St., from Pacific Coast Hwy. to I-405, from I-105 to Firestone Blvd., from Florence Ave. to Slauson Ave., and from Bandini Blvd. to I-10 (2035 No Build only);

- Santa Fe Blvd., between Del Amo Blvd. and Carson St.;
 - Long Beach Blvd., from Del Amo Blvd. to Alondra Blvd., from Rosecrans Ave. to I-105 (2035 No Build only), and from Imperial Hwy. to Firestone Blvd.;
 - Atlantic Ave./Atlantic Blvd., from Artesia Blvd. to Alondra Blvd. and from Rosecrans Ave. to I-105 (2035 No Build only);
 - Atlantic Blvd. and Eastern Ave., between Florence Ave. and Washington Blvd.;
 - Cherry Ave., from Carson to I-405 (2035 No Build only) and from Rosecrans Ave. to Imperial Hwy.;
 - Garfield Ave., north of Florence Ave. to Whittier Blvd.; and
 - Paramount Blvd., between Rosecrans Ave. and I-105, from Florence Ave. to Slauson Ave., and from Slauson Ave. to Whittier Blvd. (2035 No Build only).
- **East-West Segments:**
- Anaheim St., west of Alameda St., and from Santa Fe Ave. to I-710;
 - Pacific Coast Hwy., west of I-710, and between Atlantic Blvd. and Cherry Ave.;
 - Willow St., between Alameda St. and I-710, and between Atlantic Blvd. and Cherry Ave. (2035 No Build only);
 - Wardlow Rd., between Alameda St. and Atlantic Blvd.;
 - Carson St., between Long Beach Blvd. and Atlantic Ave. (2035 No Build only);
 - Del Amo Blvd., west of I-710 to west of Alameda St., and between Cherry Ave. and Paramount Blvd.;
 - Alondra Blvd., between I-710 and Cherry Ave. (2035 No Build only);
 - Rosecrans Ave., from Alameda St. to Long Beach Blvd., and from Atlantic Ave. to Paramount Blvd., and from Paramount to Cherry Ave. (2035 No Build Only);
 - Imperial Hwy., near the I-710 interchange, and between Cherry Ave. and Atlantic Ave. (2035 No Build only);

- Firestone Blvd., near the I-710 interchange, and between Alameda St. and Long Beach Blvd.;
- Florence Blvd., from Alameda St. to Atlantic Ave. and from Eastern Ave. to Garfield Ave. (2035 No Build only);
- Slauson Ave., west of Eastern Ave., from Eastern Ave. to Atlantic Blvd. (2035 No Build only), and between Garfield Ave. and Paramount Blvd.;
- Bandini Blvd., west of Alameda St., and between Soto St. and the I-710 interchange;
- Washington Blvd., west of Soto St., near the I-710 interchange area, and between Garfield Ave. and Paramount Blvd.; and
- Whittier Blvd., west of Soto St., from Soto St. to Alameda St. (2035 No Build only), from the I-710 interchange to Atlantic Blvd. (2035 No Build only), and between Garfield Ave. and Paramount Blvd.

In summary, major north-south arterials are most congested in the area between Florence Ave. and north of I-5, while the east-west arterials are most congested near the I-710 interchanges and near the Alameda Corridor. More arterial roadway segments under 2035 No Build conditions are projected to operate near or over capacity than under existing conditions. The results are attributed to the overall ambient traffic growth within the Study Area. Increases in roadway volumes are most prominently observed in port truck volumes on all major north-south arterials and on east-west arterials south of Florence Blvd.

INTERSECTIONS. An analysis of the Study Area intersections is provided in the *Intersection Traffic Impact Analysis Report*. The following summary describes the 2008 existing and 2035 No Build intersection operations for the a.m., midday, and p.m. peak hours. It should be noted that fewer intersections were evaluated in the midday peak hour due to the lack of available midday peak-hour traffic volumes at many intersections.

The average intersection delay and operating conditions will get worse under 2035 No Build conditions compared to the 2008 existing conditions. This is attributed to the projected growth in peak-hour traffic volumes within the Study Area. The total number of intersections projected to operate at LOS E or F will increase during all three peak hours analyzed under 2035 No Build conditions compared to the 2008 existing conditions. A total of 39 intersections are currently operating at poor LOS E or F considering any of the three peak hours, and 64 intersections are projected to operate at poor LOS E or F during the morning, midday, or evening peak hours under 2035 No Build conditions.

A comparison of the total number of intersections with poor LOS E or F between 2035 No Build and existing conditions are shown below:

- **Morning Peak Hour:** 42 of 142 (30 percent) compared to 19 of 141 (13 percent) under 2008 existing conditions
- **Midday Peak Hour:** 12 of 128 (9 percent) compared to 2 of 127 (2 percent) under 2008 existing conditions
- **Evening Peak Hour:** 59 of 142 (42 percent) compared to 34 of 141 (24 percent) under 2008 existing conditions

Similar to 2008 existing conditions, the evening peak hour has the highest number of intersections projected to operate at an unacceptable LOS E or F under 2035 No Build conditions. Average intersection delay will increase by approximately 44 percent under 2035 No Build compared to 2008 existing conditions considering average delay for all three peak hours. The same comparison shows an increase in delay of approximately 56 percent over 2008 existing conditions if only the evening peak hour is considered.

It should be noted that a number of intersections along the following streets currently operate or have been projected to operate at a LOS E or F in 2035, which indicates a potential systematic capacity deficiency along these corridors:

- Anaheim St. (2035 No Build only)
- Pacific Coast Hwy. (2035 No Build only)
- Alameda St. (2035 No Build only)
- Willow St.
- Del Amo Blvd.
- Alondra Blvd.
- Rosecrans Ave.
- Imperial Hwy.
- Firestone Blvd.
- Florence Ave. (2035 No Build only)

- Slauson Ave.
- Atlantic Blvd.
- 223rd St.

BICYCLE AND PEDESTRIAN FACILITIES. Bicycle travel is accommodated in the Study Area through the use of designated bikeways and existing roadways. Class 1 Bikeways provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians, with cross-flow by motorists minimized. Class 2 Bikeways provide a striped lane for one-way bike travel on a street or highway. Class 3 Bikeways provide for shared use by pedestrian or motor vehicle traffic.²

Class 1 Bikeways within the Study Area include the Los Angeles River Trail and the Rio Hondo Trail. Within the Study Area, the Los Angeles River Trail runs parallel to the I-710 mainline from the city of Long Beach to the city of Vernon, and access points are provided along the trail near local interchanges, parks, and other trail connections. The Rio Hondo Trail, a Class 1 Bikeway, is also located within the Study Area. The southern terminus of the trail is located in the city of South Gate and proceeds in a northeasterly direction toward the city of El Monte. Figure 3.1-4 in Section 3.1 of this Environmental Impact Report/Environmental Impact Statement (EIR/EIS) provides the locations of local and regional bikeways in the Study Area.

Pedestrian facilities within the Study Area include sidewalks, walkways, and crosswalks. These facilities are located throughout the Study Area. Pedestrian access is also provided via the Los Angeles River Trail and the Rio Hondo Trail.

3.5.3 ENVIRONMENTAL CONSEQUENCES

3.5.3.1 PERMANENT IMPACTS

This section discusses the operation of Study Area transportation facilities under the various build alternatives.

FREEWAYS.

I-710 MAINLINE SEGMENTS. Tables 3.5-9 through 3.5-19 provide a summary of the freeway segment analysis for I-710. As a reference, Tables 3.5-1 through 3.5-4 provide the existing 2008 baseline and 2035 No Build (Alternative 1) LOS results for comparison. These tables show the following results:

² Highway Design Manual, Chapter 1000 Bikeway Planning and Design, California Department of Transportation, 2006.

**Table 3.5-9 I-710 2035 Northbound Basic and Weaving Segments
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A		
		AM	PM	Midday
North of Floral On	Basic	C	F	D
Floral On/SR-60 On	Basic	C	E	D
SR-60 On/New York Off	Basic	C	F	E
New York Off/Ford On	Basic	D	F	F
Ford On/Ford Off	Basic	D	F	F
Ford Off/SR-60 Off	Basic	C	F	D
SR-60 Off/Olympic On	Weave C	E	E	E
Olympic On/I-5 NB On	Basic	D	F	E
I-5 NB On/Olympic Off	Basic	D	F	E
Olympic Off/I-5 NB Off	Basic	D	F	E
Washington On/I-5 Off	Weave C	E	F	F
Washington On/Washington Off	Basic	D	E	E
Bandini On/Washington Off	Weave B	D	E	E
Bandini On/Slauson On	Basic	D	D	D
Slauson On/Bandini Off	Basic	D	E	D
Bandini Off/Slauson Off	Basic	D	E	D
Slauson Off/Florence On	Basic	D	E	E
Florence On/Florence Off	Basic	E	F	F
Florence Off/Firestone WB On	Basic	D	E	E
Firestone WB On/Firestone EB On	Basic	E	E	F
Firestone EB On/Firestone Off	Basic	D	E	E
Firestone Off/Imperial On	Basic	D	E	E
Imperial On/Imperial Off	Basic	D	F	F
I-105 On/Imperial Off	Weave B	D	F	F
I-105 On/Rosecrans On	Basic	D	F	F
Rosecrans On/I-105 Off	Basic	D	F	F
I-105 Off/Rosecrans Off	Basic	C	E	E
Rosecrans Off/Alondra On	Basic	D	F	F
Alondra On/SR-91 EB On	Basic	C	E	E
SR-91 EB On/SR-91 WB On	Basic	C	E	E
SR-91 WB On/Alondra Off	Basic	C	F	F
Alondra Off/SR-91 Off	Basic	C	D	E
Long Beach On/SR-91 & Artesia Off	Weave B	D	E	E
Long Beach On/Long Beach Off	Basic	C	E	E
Long Beach Off/Del Amo On	Basic	D	E	E
Del Amo On/Del Amo Off	Basic	D	F	F
Del Amo Off/I-405 SB On	Basic	D	E	E
I-405 SB On/I-405 NB On	Basic	D	E	E
I-405 NB On/I-405 Off	Basic	D	E	E
Willow On/I-405 Off	Weave B	D	E	F
Willow On/Willow Off	Basic	C	D	D
PCH On/Willow Off	Weave B	C	D	E
PCH On/Anaheim On	Basic	D	D	D
Anaheim On/7th & 3rd On	Basic	C	C	C
7th & 3rd On/9th & Pier On	Basic	D	F	D

**Table 3.5-9 I-710 2035 Northbound Basic and Weaving Segments
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A		
		AM	PM	Midday
9th & Pier On/PCH Off	Basic	<i>F</i>	<i>F</i>	<i>F</i>
PCH Off/Anaheim Off	Basic	C	<i>E</i>	C
Anaheim Off/Harbor Scenic On	Basic	B	C	C
South of Harbor Scenic On	Basic	B	C	A

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

EB = eastbound

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

**Table 3.5-10 I-710 2035 Northbound Merge/Diverge Areas Alternative 5A
Levels of Service**

Location Description	Type	AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
Floral	On	17.9	B	--*	F	22.8	C
SR-60	Major On ²	0.58	N/A	--*	F	0.79	N/A
New York	Off	33.6	D	--*	F	--*	F
Ford	On	33.1	D	--*	F	--*	F
Ford	Off ⁴	N/A	N/A	N/A	N/A	N/A	N/A
SR-60	Off	N/A	N/A	N/A	N/A	N/A	N/A
Olympic	On	N/A	N/A	N/A	N/A	N/A	N/A
I-5 NB	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Olympic	Off	33	D	--*	F	38.7	E
I-5 NB	Off	N/A	N/A	N/A	N/A	N/A	N/A
Washington	On	N/A	N/A	N/A	N/A	N/A	N/A
Washington	Off	N/A	N/A	N/A	N/A	N/A	N/A
Bandini	On	N/A	N/A	N/A	N/A	N/A	N/A
Slauson	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Bandini	Major Off ³	33	D	36.8	E	36.3	E
Slauson	Off	38.7	E	40.8	E	--*	F
Florence	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Florence	Major Off ³	34.8	D	--*	F	--*	F
Firestone WB	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Firestone EB	On	23.2	C	26.6	C	--*	F
Firestone	Major Off ³	31.9	D	39.1	E	39.3	E
Imperial	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Imperial	Off	N/A	N/A	N/A	N/A	N/A	N/A
I-105	On	N/A	N/A	N/A	N/A	N/A	N/A
Rosecrans	On	21.9	C	--*	F	--*	F
I-105	Major Off ³	23.9	C	--*	F	--*	F
Rosecrans	Off	33.7	D	--*	F	--*	F
Alondra	On	19.6	B	--*	F	--*	F
SR-91 EB	Major On ²	0.69	N/A	0.96	N/A	0.99	N/A
SR-91 WB	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Alondra	Major Off ³	25.2	C	--*	F	--*	F
SR-91 & Artesia	Off	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach	On	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach	Off	30.8	D	38.5	E	36.8	E
Del Amo	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Del Amo	Major Off ³	33.2	D	--*	F	--*	F
I-405 SB	Major On ²	0.81	N/A	0.99	N/A	0.97	N/A
I-405 NB	Major On ²	0.77	N/A	0.94	N/A	0.92	N/A
I-405	Off	N/A	N/A	N/A	N/A	N/A	N/A
Willow	On	N/A	N/A	N/A	N/A	N/A	N/A
Willow	Off	N/A	N/A	N/A	N/A	N/A	N/A
PCH	On	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim	On	20.1	C	21.8	C	22.2	C
7th & 3rd & Shoreline	Major On ²	0.59	N/A	--*	F	0.61	N/A

**Table 3.5-10 I-710 2035 Northbound Merge/Diverge Areas Alternative 5A
Levels of Service**

Location Description	Type	AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
9th & Pier B & Pico	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
PCH	Off ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim	Major Off ³	19.6	B	27	C	24.3	C
Harbor Scenic	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

**Table 3.5-11 I-710 2035 Southbound Basic and Weaving Segments
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A		
		AM	PM	Midday
North of I-10 On	Basic	C	C	C
I-10 On/Floral Off (4 lanes)	Basic	D	D	C
I-10 On/Floral Off (3 lanes)	Basic	F	F	E
Floral Off/SR-60 Off	Basic	E	F	E
SR-60 Off/Cesar Chavez On	Basic	E	E	D
Cesar Chavez On/3rd On	Basic	F	E	E
3rd On/Eagle Off	Weave A	D	E	D
Eagle Off/SR-60 On	Basic	F	F	E
Lane Add	Weave C	F	F	F
Eastern Off/I-5 SB Off	Basic	E	F	E
I-5 SB Off/Eastern On	Basic	E	E	E
Eastern On/I-5 SB On	Basic	F	F	F
I-5 SB On/Washington Off (6 lanes)	Basic	E	E	E
I-5 SB On/Washington Off (7 lanes)	Basic	D	D	D
Washington Off/Washington On	Basic	E	E	E
Washington On/Atlantic Off	Weave B	E	E	E
Atlantic Off/Atlantic On	Basic	E	F	F
Atlantic On/Slauson Off	Weave C	E	F	F
Slauson Off/Slauson On	Basic	D	E	E
Slauson On/Florence Off	Basic	D	E	E
Florence Off/Florence On	Basic	E	F	F
Florence On/Firestone Off	Basic	D	F	F
Firestone Off/Firestone WB On	Basic	E	F	F
Firestone WB On/Firestone EB On	Basic	F	F	F
Firestone EB On/Imperial Off	Basic	F	F	F
Imperial Off/Imperial On	Basic	E	F	F
Imperial On/I-105 Off	Weave C	F	F	F
I-105 Off/Rosecrans Off	Basic	F	F	F
MLK On/Rosecrans Off	Weave A ¹	B	B	A
Rosecrans Off/MLK On	Basic	E	E	E
MLK On/I-105 EB On	Basic	F	F	F
I-105 EB On/Rosecrans Off	Weave B ¹	C	B	C
I-105 On/Rosecrans WB On	Basic	E	D	E
Rosecrans WB On/Rosecrans EB On	Basic	E	D	E
Rosecrans EB On/Alondra Off	Basic	F	E	E
Alondra Off/SR-91 EB Off	Basic	E	D	D
SR-91 EB Off/Alondra On	Basic	E	D	D
Alondra On/SR-91 WB Off	Weave B	E	D	E
SR-91 WB Off/SR-91 WB On	Basic	E	E	E
SR-91 WB On/SR-91 EB On	Basic	F	E	F
SR-91 EB On/Long Beach Off	Weave B	E	E	E
Long Beach Off/Long Beach On	Basic	F	F	F
Long Beach On/Del Amo Off	Basic	E	D	E
Del Amo Off/Del Amo On	Basic	F	E	F
Del Amo On/I-405 SB Off	Basic	E	D	E

**Table 3.5-11 I-710 2035 Southbound Basic and Weaving Segments
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A		
		AM	PM	Midday
I-405 SB Off/I-405 NB Off	Basic	D	D	D
I-405 NB Off/I-405 SB On	Basic	D	D	<i>E</i>
I-405 SB On/I-405 NB On	Basic	D	C	D
I-405 NB On/Willow Off (7 lanes)	Basic	C	C	D
I-405 NB On/Willow Off (6 lanes)	Basic	D	D	<i>E</i>
Willow Off/Willow On	Basic	D	D	<i>E</i>
Willow On/PCH Off	Weave B	D	D	<i>E</i>
PCH Off/Shoreline Off	Basic	D	D	D
Shoreline Off/Anaheim Off	Basic	D	C	<i>E</i>
Anaheim Off/PCH On	Basic	C	B	D
PCH On/Anaheim On	Basic	B	B	C
Anaheim On/Harbor Scenic Off	Basic	C	B	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

¹ Operation occurs on freeway collector/distributor.

EB = eastbound

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

MLK = Martin Luther King Jr. Blvd.

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

**Table 3.5-12 I-710 2035 Southbound Merge/Diverge Areas Alternative 5A
Levels of Service**

Location Description	Type	AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
I-10 & Romona	Major On ²	0.75	N/A	0.79	N/A	0.71	N/A
Floral & Humphries	Off	--*	F	--*	F	37.1	E
SR-60	Major Off ³	24.2	C	25.2	C	22.5	C
Cesar Chavez	On	--*	F	35.6	E	34.6	D
3rd	On	N/A	N/A	N/A	N/A	N/A	N/A
Eagle	Off	N/A	N/A	N/A	N/A	N/A	N/A
SR-60	On	N/A	N/A	N/A	N/A	N/A	N/A
Eastern	Off	N/A	N/A	N/A	N/A	N/A	N/A
I-5 SB	Off ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Eastern	On	--*	F	--*	F	--*	F
I-5 SB	On	--*	F	--*	F	--*	F
Washington	Off	N/A	N/A	N/A	N/A	N/A	N/A
Washington	On	N/A	N/A	N/A	N/A	N/A	N/A
Atlantic & Bandini	Off	N/A	N/A	N/A	N/A	N/A	N/A
Atlantic & Bandini	On	N/A	N/A	N/A	N/A	N/A	N/A
Slauson	Off	N/A	N/A	N/A	N/A	N/A	N/A
Slauson	On	22.1	C	25.3	C	25.4	C
Florence	Major Off ³	35.3	E	--*	F	--*	F
Florence	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Firestone	Major Off ³	36.2	E	--*	F	--*	F
Firestone WB	On	--*	F	--*	F	--*	F
Firestone EB	On	--*	F	--*	F	--*	F
Imperial & MLK	Off	--*	F	--*	F	--*	F
Imperial	On	N/A	N/A	N/A	N/A	N/A	N/A
I-105	Off	N/A	N/A	N/A	N/A	N/A	N/A
Rosecrans	Off	--*	F	--*	F	--*	F
MLK	On	--*	F	--*	F	--*	F
I-105	Major On ²	--*	F	--*	F	--*	F
Rosecrans WB	On	25.8	C	22.8	C	25.2	C
Rosecrans EB	On	--*	F	23.3	C	25.3	C
Alondra	Off	--*	F	38.8	E	--*	F
SR-91 EB	Major Off ³	39.7	E	34.1	D	36.6	E
Alondra	On	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 WB	Off	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 WB	Major On ²	--*	F	0.95	N/A	--*	F
SR-91 EB & Artesia	On	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach	Off	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Del Amo & Susana	Major Off ³	--*	F	36.4	E	--*	F
Del Amo & Susana	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
I-405 SB	Major Off ³	38.9	E	35.7	E	38.3	E
I-405 NB	Major Off ³	33.7	D	31.5	D	35.8	E
I-405 SB	Major On ²	0.72	N/A	0.67	N/A	0.76	N/A
I-405 NB	Major On ²	0.7	N/A	0.64	N/A	0.77	N/A

**Table 3.5-12 I-710 2035 Southbound Merge/Diverge Areas Alternative 5A
Levels of Service**

Location Description	Type	AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
Willow	Major Off ³	33.8	D	30.9	D	37.1	<i>E</i>
Willow	On	N/A	N/A	N/A	N/A	N/A	N/A
PCH	Off	N/A	N/A	N/A	N/A	N/A	N/A
Shoreline	Major Off ³	34.9	D	29.5	D	35.6	<i>E</i>
Anaheim & Pico	Major Off ³	32.6	D	26.3	C	37.7	<i>E</i>
PCH	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim	On	20.8	C	18.2	B	26	C
Harbor Scenic	Major Off ³	21.8	C	18.7	B	27.8	C

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

MLK = Martin Luther King Jr. Blvd.

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

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Table 3.5-13 I-710 2035 Northbound Basic and Weaving Segment Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A			Alternative 6B			Alternative 6C		
		AM	PM	Midday	AM	PM	Midday	AM	PM	Midday
North of Floral On	Basic	C	F	E	C	F	E	C	F	E
Floral On/SR-60 On	Basic	C	E	E	C	E	E	C	E	E
SR-60 On/New York Off	Basic	D	F	F	D	F	F	D	F	F
New York Off/Ford On	Basic	E	F	F	D	F	F	E	F	F
Ford On/Ford Off	Basic	E	F	F	D	F	F	D	F	F
Ford Off/SR-60 Off	Basic	C	F	E	C	F	E	C	F	E
SR-60 Off/Olympic On	Weave B	E	F	F	E	F	F	E	F	F
Olympic On/I-5 NB On	Basic	F	F	F	F	F	F	F	F	F
I-5 NB On/Olympic Off	Basic	F	F	F	F	F	F	F	F	F
Olympic Off/I-5 NB Off	Basic	F	F	F	F	F	F	F	F	F
See Tables 3.5-17 and 3.5-19 for operational analysis results for northern terminus segments (between Slauson Ave. and Washington Blvd.) for Alternatives 6A/B/C and their corresponding design options.										
Florence On/Florence Off	Basic	E	D	E	E	D	D	D	D	D
Florence Off/Firestone WB On	Basic	D	D	D	D	D	D	D	D	D
Firestone WB On/Firestone EB On	Basic	D	D	E	D	D	D	D	D	E
Firestone EB On/Firestone Off	Basic	D	D	D	D	D	D	D	D	D
Firestone Off/Imperial On	Basic	C	D	D	C	D	D	C	D	D
Imperial On/Imperial Off	Basic	D	E	E	D	D	D	D	D	D
I-105 On/Imperial Off	Weave B	E	E	E	E	E	E	D	E	E
I-105 On/Rosecrans On	Basic	D	E	E	D	D	D	C	D	D
Rosecrans On/I-105 Off	Basic	C	D	D	C	D	D	C	D	D
I-105 Off/Rosecrans Off	Basic	C	D	D	C	D	D	C	D	D
Rosecrans Off/Alondra On	Basic	C	D	D	C	D	D	C	D	D
Alondra On/SR-91 EB On	Basic	C	D	D	C	D	D	C	D	D
SR-91 EB On/SR-91 WB On	Basic	C	D	D	C	D	D	C	D	D
SR-91 WB On/Alondra Off	Basic	C	D	D	C	D	C	C	D	D
Alondra Off/SR-91 Off	Basic	C	C	C	C	C	C	B	C	C
Long Beach On/SR-91 & Artesia Off	Weave B	C	D	D	C	D	D	C	D	C
SR-91 Off/Del Amo On	Basic	C	D	C	C	C	C	C	C	C
Deal Amo On/Long Beach Off	Weave B	C	D	C	C	D	C	C	D	D
Del Amo On/Del Amo Off	Basic	C	D	D	C	D	C	C	D	D
Del Amo Off/I-710 FC NB Off	Basic	C	D	D	C	D	C	C	D	D
I-710 FC NB Off/I-405 SB On	Basic	C	D	D	C	D	D	D	D	D
I-405 SB On/I-405 NB On	Basic	C	D	C	C	C	C	C	C	C
I-405 NB On/I-405 Off	Basic	C	C	C	C	C	C	C	C	C
Willow On/I-405 Off	Weave B	D	D	D	D	C	D	D	C	D
Willow On/Willow Off	Basic	C	C	C	C	C	C	C	C	C
PCH On/Willow Off	Weave B	C	C	D	C	C	D	C	C	D
PCH On/Anaheim On	Basic	C	C	C	C	C	B	C	C	C
Anaheim On/Shoreline On	Basic	B	B	B	B	B	B	B	B	B
Shoreline On/Pico On	Basic	A	B	A	A	B	A	B	B	A
Pico On/PCH On	Basic	B	C	B	B	B	A	C	C	B

Table 3.5-13 I-710 2035 Northbound Basic and Weaving Segment Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A			Alternative 6B			Alternative 6C		
		AM	PM	Midday	AM	PM	Midday	AM	PM	Midday
PCH On/Anaheim Off	Basic	B	B	A	B	A	A	B	B	A
Anaheim Off/Harbor Scenic On	Basic	A	A	B	A	A	A	B	A	B
Harbor Scenic On/I-710 FC NB Off	Basic	A	A	A	A	A	A	A	A	A
From Ocean	Basic	B	C	A	B	C	A	B	C	A

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

EB = eastbound
 FC = freight corridor
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-14 I-710 2035 Northbound Merge/Diverge Areas Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Floral	On	20.0	B	--*	F	26	C	20.1	C	--*	F	25.3	C	19.6	B	27.5	F	25.5	C
SR-60	Major On ²	0.67	N/A	--*	F	--*	F	0.67	N/A	--*	F	--*	F	0.6	N/A	--*	F	--*	F
New York	Off	37.4	E	--*	F	--*	F	37.6	E	--*	F	--*	F	36.7	E	--*	F	--*	F
Ford	On	--*	F	--*	F	--*	F	38.1	E	--*	F	--*	F	36.8	E	--*	F	--*	F
Ford	Off ⁴	N/A	N/A																
SR-60	Off	N/A	N/A																
Olympic	On	N/A	N/A																
I-5 NB	On ⁴	N/A	N/A																
Olympic	Off	--*	F																
See Tables 3.5-17 and 3.5-19 for operational analysis results for northern terminus segments (between Slauson Ave. and Washington Blvd.) for Alternatives 6A/B/C and their corresponding design options.																			
Florence	On ⁴	N/A	N/A																
Florence	Major Off ³	32.4	D	32	D	35.1	E	32.2	D	30.6	D	33.1	D	31.4	D	30.8	D	34.1	D
Firestone WB	On ⁴	N/A	N/A																
Firestone EB	On	21.2	C	21.7	C	23.2	C	21	C	20.7	C	22.1	C	20.6	C	20.9	C	22.6	C
Firestone	Major Off ³	28.8	D	32.9	D	33.3	D	28.6	D	31.5	D	32	D	27.8	C	31.7	D	32.7	D
Imperial	On ⁴	N/A	N/A																
Imperial	Off	N/A	N/A																
I-105	On	N/A	N/A																
Rosecrans	On	20.3	C	24.4	C	24.9	C	20.2	C	23.5	C	23.7	C	19.4	B	223.3	E	24	C
I-105	Major Off ³	21.8	C	27.8	C	28.1	D	21.7	C	26.7	C	26.5	C	21.1	C	26.7	C	27.3	C
Rosecrans	Off	31.6	D	39.8	E	37.9	E	31.5	D	38.9	E	36.5	E	30.9	D	38.8	E	37.2	E
Alondra	On	18.8	B	22.6	C	22	C	18.7	B	21.8	C	20.9	C	18.4	B	21.8	C	21.5	C
SR-91 EB	On ⁴	N/A	N/A																
SR-91 WB & Atlantic	On ⁴	N/A	N/A																
Alondra	Major Off ³	20.7	C	28.7	D	27.6	C	20.6	C	27.3	C	25.4	C	20.1	C	27.2	C	26.2	C
SR-91 & Artesia	Off	N/A	N/A																
Long Beach	On	N/A	N/A																
Long Beach	Off	N/A	N/A																
Del Amo	On	N/A	N/A																
Del Amo	Major Off ³	26.2	C	32.2	D	30.3	D	25.9	C	30.9	D	28.6	D	25.5	C	30.6	D	29.5	D
I-710 FC NB	Off	32.2	D	34	D	32.5	D	31.5	D	32.6	D	30.6	D	35.3	E	33.6	D	32.2	D
I-405 SB	On ⁴	N/A	N/A																
I-405 NB	On ⁴	N/A	N/A																
I-405	Off	N/A	N/A																
Willow	On	N/A	N/A																
Willow	Off	N/A	N/A																
PCH	On	N/A	N/A																
Anaheim	On	17.8	B	18	B	18.8	B	17.5	B	17.3	B	17.6	B	18.4	B	17.8	B	18.7	B
Shoreline	Major On ²	0.45	N/A	0.46	N/A	0.39	N/A	0.44	N/A	0.42	N/A	0.32	N/A	0.5	N/A	0.45	N/A	0.38	N/A
Pico	On ⁴	N/A	N/A																
PCH	On ⁴	N/A	N/A																
Anaheim	Major Off ³	11	B	11.7	B	13.6	B	10.4	B	9	A	10.1	B	14	B	10.9	B	12.8	B

Table 3.5-14 I-710 2035 Northbound Merge/Diverge Areas Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Harbor Scenic	On ⁴	N/A	N/A																
I-710 FC NB	Off	20.8	C	25.7	C	13.6	B	21.2	C	25.7	C	13.6	B	20.3	C	25.9	C	13.5	B

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 FC = freight corridor
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service

N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-15 I-710 2035 Southbound Basic and Weaving Segment Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A			Alternative 6B			Alternative 6C		
		AM	PM	Midday	AM	PM	Midday	AM	PM	Midday
North of I-10 On	Basic	C	C	C	C	C	C	C	C	C
I-10 On/Floral Off (4 lanes)	Basic	D	D	D	D	D	D	D	D	D
I-10 On/Floral Off (3 lanes)	Basic	F	E	F	F	E	F	F	E	E
Floral Off/SR-60 Off	Basic	F	E	E	F	E	E	F	E	E
SR-60 Off/Cesar Chavez On	Basic	E	D	E	E	D	E	E	D	E
Cesar Chavez On/3rd On	Basic	F	E	F	F	E	F	F	E	F
3rd On/Eagle Off	Weave A	F	E	E	F	E	E	F	E	E
Eagle Off/SR-60 On	Basic	D	D	D	D	D	D	D	D	D
SR-60 On/Eastern Off	Weave C	F	F	F	F	F	F	F	F	F
Eastern Off/I-5 SB Off	Basic	E	E	D	E	E	D	D	E	D
I-5 SB Off/Eastern On	Basic	E	D	E	E	D	E	D	D	D
Eastern On/Florence Off	Basic	E	E	E	E	E	E	E	E	E
See Tables 3.5-18 and 3.5-19 for operational analysis results for northern terminus segments (between Slauson Ave. and Washington Blvd.) for Alternatives 6A/B/C and their corresponding design options.										
Florence Major Off/Florence Off	Basic	E	F	F	E	F	F	E	F	F
Florence Off/Firestone Off	Basic	D	E	F	D	E	E	D	E	F
Firestone Off/Firestone WB On	Basic	E	F	F	E	F	F	E	F	F
Firestone WB On/Firestone EB On	Basic	F	F	F	E	F	F	F	F	F
Firestone EB On/Imperial Off	Basic	F	F	F	F	F	F	F	F	F
Imperial Off/Imperial On	Basic	F	F	F	E	F	F	F	F	F
Imperial On/I-105 Off	Weave C	F	F	F	F	F	F	F	F	F
I-105 Off/Rosecrans Off	Basic	F	F	F	F	F	F	F	F	F
Rosecrans Off/MLK On	Basic	F	E	F	F	E	F	F	F	F
MLK On/Rosecrans Off	Weave A ¹	B	B	B	B	B	B	B	B	B
MLK On/Rosecrans Off	Basic	F	F	F	F	E	F	F	F	F
I-105 EB On/Rosecrans Off	Weave B ¹	C	B	C	C	B	B	C	B	B
I-105 On/Rosecrans WB On	Basic	E	D	E	E	D	E	F	D	F
Rosecrans WB On/Rosecrans EB On	Basic	F	D	E	F	D	E	F	D	F
Rosecrans EB On/Alondra Off	Basic	F	D	F	F	D	E	F	D	F
Alondra Off/SR-91 EB Off	Basic	E	D	E	E	D	D	F	D	E

Table 3.5-15 I-710 2035 Southbound Basic and Weaving Segment Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A			Alternative 6B			Alternative 6C		
		AM	PM	Midday	AM	PM	Midday	AM	PM	Midday
SR-91 EB Off/Alondra On	Basic	<i>E</i>	C	D	<i>E</i>	C	D	<i>E</i>	D	D
Alondra On/SR-91 WB Off	Weave B	F	D	<i>E</i>	F	D	<i>E</i>	F	D	<i>E</i>
SR-91 WB Off/SR-91 WB On	Basic	D	D	D	D	D	D	<i>E</i>	D	D
SR-91 WB On/SR-91 EB On	Basic	<i>E</i>	D	<i>E</i>	<i>E</i>	D	D	<i>E</i>	D	<i>E</i>
SR-91 EB On/Long Beach Off	Weave B	<i>E</i>	D	<i>E</i>	<i>E</i>	D	<i>E</i>	<i>E</i>	D	<i>E</i>
Long Beach Off/Long Beach On	Basic	<i>E</i>	D	<i>E</i>	<i>E</i>	D	D	<i>F</i>	D	<i>E</i>
Long Beach Off/Del Amo Major Off	Basic	D	C	D	D	C	D	<i>E</i>	D	D
Del Amo Major Off/Del Amo On	Basic	D	D	D	D	D	D	<i>E</i>	D	D
Del Amo On/I-710 SB FC On	Basic	D	C	D	D	C	D	D	C	D
I-710 SB FC On/I-405 SB Off	Weave B	F	E	E	F	E	E	F	E	E
I-405 SB Off/I-405 NB Off	Basic	D	C	D	C	C	C	D	C	D
I-405 NB Off/I-405 SB On	Basic	D	C	D	C	C	D	D	C	D
I-405 SB On/I-405 NB On	Basic	C	C	C	C	C	C	C	C	C
I-405 NB On/Willow Off (7 lanes)	Basic	C	C	C	C	C	C	C	C	C
I-405 NB On/Willow Off (6 lanes)	Basic	D	C	D	C	C	D	D	C	D
Willow Off/Willow On	Basic	D	C	D	C	C	D	D	C	D
Willow On/PCH Off	Weave B	D	C	D	D	C	D	D	C	D
PCH Off/Shoreline Off	Basic	D	C	D	C	C	C	D	C	D
Shoreline Off/Anaheim Off	Basic	C	B	C	B	B	C	C	B	C
Anaheim Off/PCH On	Basic	B	A	B	A	A	B	B	A	C
PCH On/I-710 SB FC On	Basic	A	A	B	A	A	B	B	A	B
I-710 SB FC On/Anaheim On	Basic	C	A	C	B	A	C	B	A	C
Anaheim On/Harbor Scenic Off	Basic	C	B	D	C	B	C	C	B	C
To Ocean	Basic	B	A	C	B	A	B	B	A	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

¹ Operation occurs on freeway collector/distributor.

EB = eastbound
 FC = freight corridor
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-16 I-710 2035 Southbound Merge/Diverge Areas Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS																
I-10 & Romona	Major On ²	0.8	N/A	0.74	N/A	0.76	N/A	0.8	N/A	0.75	N/A	0.76	N/A	0.78	N/A	0.73	N/A	0.75	N/A
Floral & Humphries	Off	--*	F	38.3	E	--*	F	--*	F	38.4	E	--*	F	--*	F	38	E	38.3	E
SR-60	Major Off ³	--*	F	23.9	C	24.5	C	25.6	C	24.1	C	24.6	C	25.3	C	23.6	C	24.1	C
Cesar Chavez	On	--*	F	35.1	E	--*	F	--*	F	35.2	E	--*	F	--*	F	34.5	D	--*	F
3rd	On	N/A	N/A																
Eagle	Off	N/A	N/A																
SR-60	On	N/A	N/A																
Eastern	Off	N/A	N/A																
I-5 SB	Off ⁴	N/A	N/A																
Eastern	On	24.1	C	23.6	C	24.7	C	24.5	C	23.8	C	24.4	C	23.7	C	23	C	23.9	C
See Tables 3.5-18 and 3.5-19 for operational analysis results for northern terminus segments (between Slauson Ave. and Washington Blvd.) for Alternatives 6A/B/C and their corresponding design options.																			
Florence	Major Off ³	34	D	--*	F	--*	F	33.1	D	--*	F	--*	F	34.8	D	--*	F	--*	F
Florence	Off ⁴	N/A	N/A																
Firestone	Major Off ³	35.8	E	--*	F	--*	F	34.9	D	--*	F	--*	F	36.5	E	--*	F	--*	F
Firestone WB	On	25.6	C	--*	F	--*	F	25	C	--*	F								
Firestone EB	On	--*	F																
Imperial & MLK	Off	--*	F																
Imperial	On	N/A	N/A																
I-105	Off	N/A	N/A																
Rosecrans	Off	--*	F																
MLK	On	--*	F	28	C	--*	F	--*	F	27.9	C	--*	F	--*	F	--*	F	--*	F
I-105	Major On ²	--*	F	--*	F	--*	F	--*	F	0.81	N/A	--*	F	--*	F	--*	F	--*	F
Rosecrans WB	On	--*	F	22.2	C	27.5	C	26.7	C	21.9	C	26.6	C	--*	F	22.5	C	--*	F
Rosecrans EB	On	--*	F	22.6	C	--*	F	--*	F	22.4	C	--*	F	--*	F	22.9	C	--*	F
Alondra	Off	--*	F	38.4	E	--*	F	--*	F	38.2	E	--*	F	--*	F	38.8	E	--*	F
SR-91 EB	Major Off ³	40.7	E	32.2	D	37.8	E	39.8	E	31.8	D	36.5	E	--*	F	32.7	D	38.8	E
Alondra	On	N/A	N/A																
SR-91 WB	Off	N/A	N/A																
SR-91 WB	Major On ²	0.96	N/A	0.78	N/A	0.92	N/A	0.93	N/A	0.77	N/A	0.87	N/A	0.98	N/A	0.80	N/A	0.95	N/A
SR-91 EB & Artesia	On	N/A	N/A																
Long Beach	Off	N/A	N/A																
Long Beach	Off ⁴	N/A	N/A																
Del Amo & Susana	Major Off ³	36	E	29.2	D	33.2	D	34.7	D	28.9	D	31.5	D	36.7	E	29.8	D	34.6	D
Del Amo & Susana	Off ⁴	N/A	N/A																
I-710 SB FC	On	N/A	N/A																
I-405 SB	Off	N/A	N/A																
I-405 NB	Major Off ³	29.8	D	26.7	C	29.8	D	28.5	D	26.5	C	27.7	C	30.9	D	27.3	C	30.7	D
I-405 SB	Major On ²	0.63	N/A	0.56	N/A	0.65	N/A	0.6	N/A	0.56	N/A	0.61	N/A	0.66	N/A	0.59	N/A	0.68	N/A
I-405 NB	Major On ²	0.62	N/A	0.53	N/A	0.66	N/A	0.59	N/A	0.53	N/A	0.63	N/A	0.64	N/A	0.55	N/A	0.7	N/A
Willow	Major Off ³	29.8	D	25.6	C	31.8	D	28.4	D	25.4	C	30.1	D	30.9	D	26.5	C	33.4	D
Willow	On	N/A	N/A																
PCH	Off	N/A	N/A																
Shoreline	Major Off ³	--*	F	22.2	C	29.7	D	--*	F	21.9	C	27.5	C	30.4	D	22.7	C	30	D
Anaheim	Major Off ³	22.4	C	13.3	B	26.1	C	19.4	B	12.6	B	22.2	C	23.4	C	14	B	26.7	C

Table 3.5-16 I-710 2035 Southbound Merge/Diverge Areas Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS																
PCH	On ⁴	N/A	N/A																
I-710 SB FC	On	22	C	13.7	B	25.1	C	20.5	C	13.4	B	23.5	C	20.6	C	13.2	B	23.7	C
Anaheim	On	20.1	C	12.4	B	24.6	C	18.1	B	12.9	B	22.5	C	19.3	B	12.3	B	24.1	C
Harbor Scenic	Major Off ³	24.1	C	15	B	29.4	D	21.8	C	14.5	B	26.7	C	23.4	C	14.8	B	28.7	D

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 FC = freight corridor
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service

MLK = Martin Luther King Jr. Blvd.
 N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.

SB = southbound
 SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-17 I-710 Northern Termini Northbound 2035 Alternatives 6A/B/C (Design Options 1 and 2) Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS																
Design Option 1																			
Washington	On	--*	F																
Lane Drop	Basic	--*	F																
Washington On/I-5 NB Off	Basic	24.6	C	31.8	D	34.7	D	24.9	C	32	D	33.8	D	23.9	C	31.5	D	33	D
I-5 NB	Off	N/A	N/A																
Bandini On/I-5 NB Off	Weave B	39.7	E	41.5	E	50	F	40.2	E	41.2	E	50.8	F	39	E	41.2	E	50.6	F
Bandini	On	N/A	N/A																
Bandini On/I-710 FC NB	Basic	27.8	D	30.3	D	35.7	E	28.2	D	30.2	D	35.2	E	26.8	D	29.5	D	34.2	D
I-710 FC NB	On ³	N/A	N/A																
I-710 FC NB/Slauson On	Basic	27.5	D	28.8	D	34.2	D	27.2	D	27.2	D	30.9	D	26.8	D	27.7	D	32.8	D
Slauson	On	19.6	B	20	B	21.8	C	19.5	B	19.4	B	20.6	C	19.3	B	19.6	B	21.4	C
Slauson On/Washington Off	Basic	24.9	C	26.1	D	29.2	D	24.6	C	24.8	C	26.9	D	24	C	24.8	C	28.2	D
Washington & Bandini	Major Off ²	28.5	D	28.4	D	30	D	28.3	D	27.1	C	28.1	D	27.8	C	27.1	C	29.4	D
Washington Off/Slauson Off	Basic	25.1	C	25	C	26.5	D	25	C	23.9	C	24.7	C	24.4	C	23.8	C	26	C
Slauson	Off	37.3	E	36.5	E	37.4	E	37.2	E	35.4	E	35.8	E	36.5	E	35.4	E	36.7	E
Slauson Off	Basic	29.3	D	28.7	D	30.5	D	29.1	D	27.3	D	28.2	D	28.3	D	27.4	D	29.7	D
Design Option 2																			
Washington	On	--*	F																
Lane Drop	Basic	--*	F																
Washington On/I-5 NB Off	Basic	24.6	C	31.8	D	34.7	D	24.9	C	32	D	33.8	D	23.9	C	31.5	D	33	D
I-5 NB	Off	N/A	N/A																
Bandini On/I-5 NB Off	Weave B	39.7	E	41.5	E	50	F	40.2	E	41.2	E	50.8	F	39	E	41.2	E	50.6	F
Bandini	On	N/A	N/A																
Bandini On/I-710 FC NB	Basic	27.8	D	30.3	D	35.7	E	28.2	D	30.2	D	35.2	E	26.8	D	29.5	D	34.2	D
I-710 FC NB	On ³	N/A	N/A																
I-710 FC NB/Slauson On	Basic	27.5	D	28.8	D	34.2	D	27.2	D	27.2	D	30.9	D	26.8	D	27.7	D	32.8	D
Slauson	On	19.6	B	20	B	21.8	C	19.5	B	19.4	B	20.6	C	19.3	B	19.6	B	21.4	C
Slauson On/Washington Off	Basic	24.9	C	26.1	D	29.2	D	24.6	C	24.8	C	26.9	D	24	C	24.8	C	28.2	D
Washington & Bandini	Major Off ²	24.4	C	24.3	C	25.7	C	24.3	C	23.3	C	24.1	C	23.8	C	23.2	C	25.2	C
Washington Off/Slauson Off	Basic	25.1	C	25	C	26.5	D	25	C	23.9	C	24.7	C	24.4	C	23.8	C	26	C
Slauson	Off	37.3	E	36.5	E	37.4	E	37.2	E	35.4	E	35.8	E	36.5	E	35.4	E	36.7	E
Slauson Off	Basic	29.3	D	28.7	D	30.5	D	29.1	D	27.3	D	28.2	D	28.3	D	27.4	D	29.7	D

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

Table 3.5-18 I-710 Northern Termini Southbound 2035 Alternatives 6A/B/C (Build Options 1 and 2) Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
<i>Design Options 1 & 2</i>																			
Washington	Off	40.4	E	38.7	E	40.8	E	--*	F	38.7	E	40.4	E	39.9	E	37.6	E	39.7	E
Washington Off/I-5 SB On	Basic	36.1	E	35.6	E	39.8	E	37.4	E	35.9	E	39	E	34.6	D	33.6	D	36.7	E
I-5 SB	Major On ²	0.88	N/A	0.85	N/A	0.95	N/A	0.9	N/A	0.9	N/A	0.9	N/A	0.9	N/A	0.8	N/A	0.9	N/A
I-5 SB on/Bandini Off	Basic	34.4	D	32.5	D	39.4	E	35.1	E	32.7	D	39.5	E	33.1	D	31.3	D	36.9	E
Bandini & Atlantic	Major Off ³	36.2	E	35	D	--*	F	36.7	E	35.1	E	--*	F	35.4	E	34.1	D	--*	F
Bandini Off/I-710 SB FC	Basic	37.9	E	36.8	E	--*	F	37	E	36.8	E	--*	F	36.1	E	35.4	E	--*	F
I-710 SB FC	Major Off ³	38.2	E	37.6	E	--*	F	37.7	E	37.6	E	--*	F	37.2	E	36.8	E	--*	F
I-710 SB FC/Slauson Off	Basic	36	E	35.6	E	--*	F	34.1	D	35.3	E	43.6	E	37.5	E	36	E	--*	F
Slauson	Off	39.1	E	39.2	E	--*	F	38.1	E	39	E	--*	F	39.9	E	39.5	E	--*	F
Slauson Off/Washington On	Basic	31.4	D	30.8	D	39.7	E	29.6	D	30.5	D	36.1	E	32.3	D	30.9	D	41.7	E
Washington & Bandini & Atlantic	On ⁴	N/A	N/A																
Washington On/Slauson On	Basic	28.1	D	31.4	D	36	E	27.1	D	31.2	D	33.4	D	29	D	32.2	D	37.2	E
Slauson	On	21.2	C	22.8	C	24.3	C	20.6	C	22.7	C	23.5	C	21.6	C	23.1	C	--*	F
From Slauson On	Basic	31.2	D	36.7	E	42.2	E	30	D	36.3	E	38.7	E	32.2	D	37.6	E	--*	F

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

NA = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

FC = freight corridor

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

**Table 3.5-19 I-710 Northern Termini 2035 Alternative 6B (Build Design Option 3)
Levels of Service**

Location Description	Freeway Type	AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
<i>Design Option 3 Northbound</i>							
Washington	On	--*	F	--*	F	--*	F
Lane Drop	Basic	--*	F	--*	F	--*	F
Washington On/I-5 NB Off	Basic	25.4	C	33.5	D	35.1	E
I-5 NB	Off	N/A	N/A	N/A	N/A	N/A	N/A
Bandini On/I-5 NB Off	Weave B	36.1	E	38.5	E	46.3	F
Bandini	On	N/A	N/A	N/A	N/A	N/A	N/A
Bandini On/I-710 FC NB	Basic	23.9	C	26.1	D	28.5	D
I-710 FC NB	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
I-710 FC NB/Slauson On	Basic	23.2	C	23.2	C	25.4	C
Slauson	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
Slauson On/Bandini Off	Basic	25.1	C	25.3	C	27.4	D
Bandini	Major Off ³	28.9	D	27.5	C	28.4	D
Bandini Off/Slauson Off	Basic	25.5	C	24.2	C	25	C
Slauson	Off	37.3	E	32.4	D	33.1	D
From Slauson	Basic	29.4	D	27.5	D	28.8	D
<i>Design Option 3 Southbound</i>							
Washington	Off	38	E	36.6	E	38.5	E
Washington Off/I-5 SB On	Basic	39.4	E	34.3	D	39.9	E
I-5 SB	Major On ²	0.93	N/A	0.85	N/A	0.96	N/A
I-5 SB On/Bandini Off	Basic	37.3	E	32.8	D	40.4	E
Bandini & Atlantic	Major Off ³	37.9	E	35.2	E	--*	F
Bandini Off/I-710 SB FC	Basic	42.6	E	35.1	E	--*	F
I-710 SB FC	Major Off ³	40.3	E	36.7	E	--*	F
I-710 SB FC/Bandini On	Basic	38.1	E	31.9	D	43.1	E
Bandini & Atlantic	On	N/A	N/A	N/A	N/A	N/A	N/A
Bandini & Atlantic On/Slauson Off	Weave C	33.5	D	39.5	E	38.5	E
Slauson	Off	N/A	N/A	N/A	N/A	N/A	N/A
Slauson Off/Slauson On	Basic	29.9	D	29.5	D	33.3	D
Slauson	On	20.6	C	20.6	C	20.6	C
From Slauson	Basic	33.9	D	34.4	D	39.7	E

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

FC = freight corridor

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

- It is expected that under Alternative 5A conditions, future traffic operations along I-710 for both northbound and southbound directions will improve when compared to the traffic operations under existing and 2035 No Build conditions. The morning peak hour benefits the most from the proposed Alternative 5A improvements in either direction. However, even with geometric enhancements, severe congestion still occurs during the evening peak hour because projected future traffic demand that includes heavy duty truck traffic is expected to exceed future capacity.
- It is expected that under Alternative 6A conditions, future traffic operations along the I-710 freeway for both the northbound and southbound directions will improve substantially when compared to the traffic operations under Alternative 1 and an improvement (overall better performance during midday and evening peak hours) over Alternative 5A conditions. The operational improvements are the direct result of diverting the majority of the port truck traffic onto the freight corridor.
- It is expected that under Alternative 6B conditions, future traffic operations along the I-710 freeway corridor for both northbound and southbound directions will improve substantially when compared to the traffic operations under Alternative 1. The operational improvements are the direct result of diverting the majority of the port truck traffic out of general purpose lanes onto the freight corridor with the addition of the automated guidance technology under Alternative 6B.
- It is expected that under Alternative 6C conditions, future traffic operations along the I-710 freeway corridor for both northbound and southbound directions will improve substantially when compared to the traffic operations under Alternative 1. The operational improvements are the direct result of diverting port truck traffic onto the freight corridor with a tolling option.
- Under Alternatives 6A/B/C, the only operational variation between Design Option 1 and Option 2 on the I-710 Northern Termini mainline segments occur at the Washington/Bandini diverge junction in the northbound direction. Under Design Option 2, an additional auxiliary lane is introduced approximately 1,200 feet upstream of the diverge junction. The Washington/Bandini major diverge is expected to operate at acceptable LOS D or better under both design options.
- Design Option 3 (Alternative 6B) differs from Design Option 1 and 2 just north of the Slauson on-ramp on I-710 in the northbound direction and south of the freight corridor on-ramp in the southbound direction. On northbound I-710 under Design Option 3, the Slauson on-ramp introduces an additional auxiliary lane that carries through until it exits with the I-5 northbound off-ramp. The LOS is improved in the

evening, midday, and morning peak hour compared to the other design options. There are also minor LOS improvements for basic freeway operations between the Slauson on-ramp and I-5 northbound off-ramp under Design Option 3. In the southbound direction, the weave segment between Bandini/Atlantic on-ramp and Slauson off-ramp is eliminated under Design Options 1 and 2. The LOS during the evening and midday peak hours is improved in Design Option 3 compared to other design options.

I-710 FREIGHT CORRIDOR SEGMENTS. Tables 3.5-20 and 3.5-21 show the LOS for the various segments of the I-710 freight corridor under Alternatives 6A/B/C. There are three design options associated with these various alternatives. As these tables illustrate, some segments are forecast to operate at LOS E or F. The following summary describes operations on the I-710 freight corridor under Alternatives 6A/B/C.

- In general, demand on the freight corridor under Alternative 6A (Design Options 1 and 2) is highest within the two-mile segment just south of the SR-91 freight corridor connectors. An influx of non-port trucks gain access to the northbound freight corridor through the general purpose on-ramp near the I-710/Del Amo Blvd. interchange, and the freight corridor operates at near capacity until the SR-91 eastbound off-ramp. Similarly on the southbound freight corridor, non-port trucks exit the freight corridor from the general purpose off-ramp just north of Del Amo Blvd., thus relieving congestion on the freight corridor.
- Demand on the freight corridor under Alternative 6B (Design Options 1, 2 and 3) is expected to be under capacity except for the segment just south of the SR-91 freight corridor connectors in the northbound direction during midday and evening peak hours. Similar to Alternative 6A, an influx of non-port trucks gain access to the northbound freight corridor through the general purpose on-ramp near the I-710/Del Amo Blvd. interchange, and the freight corridor operates at near capacity until the I-710/SR-91 eastbound off-ramp. Since Alternative 6B has an enhanced capacity as a result of automated guidance technology, an overall LOS improvement is observed under this build alternative.
- The freight corridor is expected to operate below capacity under Alternative 6C (Design Options 1 and 2) conditions. The imposed toll on freight corridor access diverts a portion of the truck traffic to the I-710 Mainline, other freeways, and local arterials, leaving the majority of the freight corridor segments underutilized during analyzed peak hours.

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Table 3.5-20 I-710 Freight Corridor 2035 Peak-Hour Alternatives 6A/B/C (Design Options 1 and 2) Levels of Service

	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS
Northbound Design Options 1 and 2																			
To I-710 NB GP	Basic	14.1	B	17.3	B	18.2	C	11.6	B	15.2	B	16.6	B	9.8	A	13.6	B	13.4	B
Washington	Major Off ²	18.4	B	20.9	C	20.1	C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lane Add	Basic	16.1	B	18.3	C	17.6	B	12.7	B	15.6	B	15.2	B	10.7	A	13.9	B	12.9	B
Washington Off/Patata Off	Basic	24.3	C	27.9	D	26.7	D	19.1	C	23.6	C	23	C	16	B	20.8	C	19.4	C
Patata	Off	33.5	D	39.4	E	38.3	E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Patata Off/SR-91 EB Off	Basic	27.7	D	35.8	E	34	D	21.5	C	28.3	D	28.3	D	18.2	C	24.6	C	23.5	C
SR-91 EB	Off	--*	F	--*	F	--*	F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 EB Off/I-710 NB On	Basic	38.6	E	--*	F	--*	F	27.3	D	36.5	E	37.3	E	23.5	C	29.8	D	27.7	D
I-710 NB GP	On	35.6	E	--*	F	--*	F	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB GP On/Anaheim On	Basic	26.9	D	39.4	E	36.4	E	21.5	C	31.5	D	32.1	D	15	B	25.2	C	23.6	C
Anaheim	On	28.4	D	36	E	34.5	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim On/Pico On	Basic	20	C	27.3	D	23.3	C	16.2	B	23.7	C	21.4	C	10.5	A	19.6	C	16.4	B
From Pico	On ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
From Ocean & HSD	On ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
From Ocean	On ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Southbound Design Options 1 and 2																			
From I-710 SB GP	Basic	19.4	C	18	C	20.3	C	15.2	B	13.9	B	16	B	11.2	B	11.1	B	10.7	A
Washington	On ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Washington On/Patata	Basic	16.5	B	15.8	B	17.9	B	12.9	B	12	B	14	B	9.8	A	9.9	A	10.1	A
Lane Drop	Basic	24.8	C	23.7	C	27.1	D	19.3	C	18.1	C	21	C	14.7	B	14.9	B	15.1	B
Patata	On	29.8	D	27.6	C	28.9	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Patata On/SR-91 WB On	Basic	28.4	D	25.8	C	31.2	D	22	C	19.7	C	23.8	C	16.7	B	16.2	B	17.3	B
SR-91 WB	On	33	D	31.2	D	35	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 WB On/Del Amo Off	Basic	33	D	30.3	D	36.7	E	25.2	C	22.6	C	27	D	18.9	C	18.8	C	19.3	C
FC to GP (Del Amo)	Off	37.7	E	35.7	E	39.9	E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Del Amo Off/PCH On	Basic	25.9	C	20.3	C	25.4	C	20.5	C	15.6	B	20.6	C	15.9	B	12.7	B	15.7	B
FC to GP (PCH)	On	31.7	D	25.7	C	31.3	D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PCH On/Anaheim Off	Basic	14.8	B	12.9	B	14.5	B	11.9	B	10	A	11.7	B	9.6	A	8	A	9.7	A
Anaheim	Off ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pico	Off ³	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 FC = freight corridor
 GP = General Purpose
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710

LOS = level(s) of service
 N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.

SB = southbound
 SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

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Table 3.5-21 I-710 Freight Corridor 2035 Peak-Hour Alternative 6B (Design Option 3) Levels of Service

Location Description	Freeway Type	Alternative 6B					
		AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
<i>Northbound Design Option 3</i>							
To Hobart Yard	Basic	10.2	A	10.7	A	5.8	A
Sheila/GP	Off	N/A	N/A	N/A	N/A	N/A	N/A
Sheila Off/Patata Off	Basic	19.6	C	26.6	D	24.2	C
Patata	Off	N/A	N/A	N/A	N/A	N/A	N/A
Patata Off/SR-91 EB Off	Basic	21.5	C	31.3	D	28.6	D
SR-91 EB	Off	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 EB Off/I-710 NB On	Basic	27.4	D	41.2	E	37.1	E
I-710 NB GP	On	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB GP On/Anaheim On	Basic	21.7	C	34.7	D	32.2	D
Anaheim	On	N/A	N/A	N/A	N/A	N/A	N/A
Anaheim On/Pico On	Basic	16.3	B	25.3	C	21.8	C
From Pico	On	N/A	N/A	N/A	N/A	N/A	N/A
Pico On/HSD On	Basic	11.7	B	17	B	16	B
From HSD	On ²	N/A	N/A	N/A	N/A	N/A	N/A
From Ocean	On ²	N/A	N/A	N/A	N/A	N/A	N/A
<i>Southbound Design Option 3</i>							
From Hobart Yard	Basic	3.7	A	1.2	A	6.1	A
I-710 SB GP	On	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB On/Patata On	Basic	17.7	B	16.1	B	19.2	C
Patata	On	N/A	N/A	N/A	N/A	N/A	N/A
Patata On/SR-91 WB On	Basic	20.8	C	19.5	C	21.7	C
SR-91 WB	On	N/A	N/A	N/A	N/A	N/A	N/A
SR-91 WB On/Del Amo Off	Basic	25.8	C	22.4	C	26.4	D
FC to GP (Del Amo)	Off	N/A	N/A	N/A	N/A	N/A	N/A
Del Amo Off/PCH Off	Basic	21.3	C	15.5	B	21.8	C
FC to GP (PCH)	Off	N/A	N/A	N/A	N/A	N/A	N/A
PCH Off/Anaheim Off	Basic	13	B	10.4	A	14	B
Anaheim	Off ²	N/A	N/A	N/A	N/A	N/A	N/A
Pico	Off ²	N/A	N/A	N/A	N/A	N/A	N/A

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Single-lane addition/drop; HCM methodology applied for analysis.

- | | |
|---------------------------|--------------------------|
| EB = eastbound | N/A = not available |
| FC = freight corridor | NB = northbound |
| GP = General Purpose | PCH = Pacific Coast Hwy. |
| I-5 = Interstate 5 | SB = southbound |
| I-105 = Interstate 105 | SR-60 = State Route 60 |
| I-405 = Interstate 405 | SR-91 = State Route 91 |
| I-710 = Interstate 710 | WB = westbound |
| LOS = level(s) of service | |

I-405 MAINLINE SEGMENTS. Tables 3.5-22 and 3.5-23 provide a summary of the freeway segment analysis for I-405 under Alternatives 5A and 6A/B/C. These tables show the following:

- The northbound and southbound segments show heavy congestion during the morning and evening peak hours under Alternatives 5A and 6A/B/C in 2035. This indicates that these areas are near or exceed capacity and operate under congested conditions through this section. However, the elimination of the collector distributor (CD) road along I-710 for both the I-405 northbound and southbound connectors eliminates the poor weaving conditions and may reduce the high accident rates in the area. The additional capacity provided on the proposed flyover connector ramps would provide safer operation among the options considered. Even though this would result in a loss of circulation, there are alternative means of gaining access to I-710, and the demand for these movements is relatively low.
- Compared to Alternative 1 (Table 3.5-5), under Alternatives 6A/B/C, some of the segments will be improved as a result of the reduction in traffic on both the I-710 mainline and connector ramps due to the incorporation of the freight corridor. This is a result of the diversion of truck traffic into the freight corridor.

SR-91 MAINLINE SEGMENTS. Tables 3.5-24 and 3.5-25 provide a summary of the freeway segment analysis for SR-91. These tables show the following:

- The eastbound lanes experience heavy congestion during the evening peak hours, while the westbound lanes experience heavy congestion during both a.m. and p.m. peak hours. This indicates that these areas are near or exceed capacity and operate under congested conditions through this section.
- Compared to Alternative 1 (Table 3.5-6), under Alternative 5A, some of the segments would be improved as a result of geometric enhancements and capacity improvements on the I-710 mainline.
- Compared to Alternative 1, under Alternatives 6A/B/C, some of the segments will be improved as a result of the reduction in traffic on both the I-710 mainline and connector ramps due to the incorporation of the freight corridor. Therefore, Alternatives 6A/B/C would not only improve the overall conditions, but may also help improve safety in this area by separating trucks from automobile traffic.

Table 3.5-22 I-405 2035 Basic/Weaving Segments and Merge/Diverge Areas Alternative 5A Levels of Service

Location Description	Freeway Type	Alternative 5A					
		AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
Northbound							
North of Alameda Off	Basic	--*	F	--*	F	38.7	E
Alameda	Off	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB & Santa Fe On/Alameda Off	Weave A	64.3	F	23.5	C	58.6	F
Santa Fe & I-710 NB	On	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB On/I-710 SB On	Basic	42.6	E	41.1	E	28.8	D
I-710 SB	Major On ²	--*	F	--*	F	0.78	N/A
I-710 SB On/Santa Fe Off	Basic	--*	F	--*	F	32.5	D
Santa Fe	Off	N/A	N/A	N/A	N/A	N/A	N/A
Pacific On/Santa Fe Off	Weave A	39.3	E	41.9	E	30.3	D
Pacific	On	N/A	N/A	N/A	N/A	N/A	N/A
Pacific On/I-710 Off	Basic	--*	F	--*	F	30.4	D
I-710	Off	N/A	N/A	N/A	N/A	N/A	N/A
Wardlow On/I-710 Off	Weave C	50.3	F	49.5	F	46.3	F
Wardlow	On	N/A	N/A	N/A	N/A	N/A	N/A
South of Wardlow On	Basic	39.2	E	40.2	E	32.9	D
Southbound							
North of Alameda On	Basic	34.8	D	44.5	E	33.5	D
Alameda	On	N/A	N/A	N/A	N/A	N/A	N/A
Alameda On/I-710 NB & Wardlow Off	Weave B	54.1	F	64.5	F	56.5	F
I-710 NB & Wardlow	Off	N/A	N/A	N/A	N/A	N/A	N/A
Wardlow Off/I-710 SB Off	Basic	--*	F	--*	F	44.1	E
I-710 SB	Major Off ³	--*	F	--*	F	--*	F
I-710 SB Off/Wardlow On	Basic	--*	F	--*	F	--*	F
Wardlow	On	N/A	N/A	N/A	N/A	N/A	N/A
Wardlow On/Pacific Off	Weave B	32.2	D	41.5	E	32.2	D
Pacific	Off	N/A	N/A	N/A	N/A	N/A	N/A
Pacific Off/I-710 On	Basic	27.9	D	41.3	E	29.8	D
I-710	Major On ²	0.95	N/A	--*	F	0.90	N/A
I-710 On/Long Beach Off	Basic	39.8	E	--*	F	35.9	E
Long Beach	Off	N/A	N/A	N/A	N/A	N/A	N/A

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

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Table 3.5-23 I-405 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Northbound																			
North of Alameda Off	Basic	--*	F	44.8	E	33.8	D	--*	F	44.8	E	33.2	D	--*	F	44.6	E	33.4	D
Alameda	Off	N/A	N/A																
I-710 NB & Santa Fe On/Alameda Off	Weave A	51.7	F	43.7	F	43	F	51.9	F	43.8	F	42.9	E	51.7	F	43.6	F	42.3	E
Santa Fe & I-710 NB	On	N/A	N/A																
Santa Fe On/I-710 SB On	Basic	36.8	E	37.2	E	26.3	D	36.7	E	37	E	26	D	36.8	E	36.9	E	26.3	D
I-710 SB	Major On ²	0.92	N/A	0.92	N/A	0.72	N/A	0.92	N/A	0.92	N/A	0.72	N/A	0.91	N/A	--*	F	0.72	N/A
I-710 SB On/Santa Fe Off	Basic	40.8	E	44.9	E	30.1	D	40.6	E	44.4	E	29.9	D	41.5	E	--*	F	30.2	D
Santa Fe	Off	N/A	N/A																
Pacific On/Santa Fe Off	Weave A	49	F	52.1	F	35.6	E	48.8	F	51.9	F	35.5	E	49.1	F	52.5	F	36.2	E
Pacific	On	N/A	N/A																
Pacific On/I-710 Off	Basic	--*	F	--*	F	33.1	D	--*	F	--*	F	32.3	D	--*	F	--*	F	33.1	D
I-710	Off	N/A	N/A																
Wardlow On/I-710 Off	Weave C	47.7	F	46.9	F	44.6	F	48.2	F	47	F	44.9	F	47	F	46.9	F	44.4	F
Wardlow	On	N/A	N/A																
South of Wardlow On	Basic	42.2	E	43.8	E	35.4	E	42	E	43	E	35.2	E	42.5	E	43.7	E	35.4	E
Southbound																			
North of Alameda On	Basic	33.4	D	42.1	E	31.6	D	33.3	D	42.3	E	31.6	D	33.5	D	42.2	E	31.8	D
Alameda	On	N/A	N/A																
Alameda On/I-710 NB & Wardlow Off	Weave B	45.7	F	58	F	48.9	F	45.5	F	57.2	F	45.5	F	46.4	F	58.1	F	48	F
I-710 NB & Wardlow	Off	N/A	N/A																
I-710 NB Off/I-710 SB Off	Basic	35.9	E	--*	F	34.1	D	36	E	--*	F	33.9	D	36	E	--*	F	35.1	E
I-710 SB	Major Off ³	37.1	E	--*	F	36	E	37.1	E	--*	F	35.9	E	37.2	E	--*	F	36.6	E
I-710 SB Off/Wardlow On	Basic	36.4	E	--*	F	40	E	36.7	E	--*	F	39.9	E	36.6	E	--*	F	41.2	E
Wardlow	On	N/A	N/A																
Wardlow On/Pacific Off	Weave B	40.8	E	45.8	F	39.7	E	40.8	E	46.1	F	39.8	E	41	E	46.3	F	39.8	E
Pacific	Off	N/A	N/A																
Pacific Off/I-710 On	Basic	28.9	D	36	E	28.8	D	28.9	D	36.4	E	28.8	D	29.1	D	36.4	E	29.4	D
I-710	Major On ²	0.97	N/A	--*	F	0.92	N/A	0.97	N/A	--*	F	0.92	N/A	0.97	N/A	--*	F	0.92	N/A
From I-710	Basic	40.8	E	--*	F	37.2	E	40.9	E	--*	F	37	E	40.9	E	44.9	E	36.5	E

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

* = Demand exceeds capacity, no density is predicted.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

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**Table 3.5-24 SR-91 2035 Basic/Weaving Segments and Merge/Diverge Areas
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A					
		AM		PM		Midday	
		Density/V/C ¹	LOS	Density/V/C ¹	LOS	Density/V/C ¹	LOS
Eastbound							
West of Santa Fe On	Basic	24.8	C	33.7	D	26.5	D
Santa Fe	On	N/A	N/A	N/A	N/A	N/A	N/A
Santa Fe On/Long Beach Off	Weave A	25.5	C	35.9	E	27.7	C
Long Beach	Off	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach Off/Long Beach On	Basic	24.9	C	35.1	E	27.1	D
Long Beach	On	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach On/I-710 SB Off	Weave A	24.7	C	38	E	28.7	D
I-710 SB	Off	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB Off/I-710 NB Off	Basic	23.6	C	31.8	D	26.3	D
I-710 NB & Atlantic	Major Off ²	26.4	C	33.8	D	29.2	D
I-710 NB Off/I-710 NB On	Basic	27.3	D	36	E	24.2	C
I-710 NB	On ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB On/I-710 SB On	Basic	28	D	35	D	24.7	C
I-710 SB	On ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB On/Atlantic On	Basic	27.8	D	33.3	D	28.3	D
Atlantic	On	20.8	C	23.5	C	21	C
East of Atlantic On	Basic	30.9	D	36.2	E	31.2	D
Westbound							
West of Santa Fe Off	Basic	44.9	E	42.1	E	--*	F
Santa Fe	Off	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach On/Santa Fe Off	Weave C	29.2	D	30.7	D	35.2	E
Long Beach	On	N/A	N/A	N/A	N/A	N/A	N/A
Long Beach On/I-710 NB On	Basic	24.5	C	25	C	30	D
I-710 NB	On ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB On/Long Beach Off	Basic	25.3	C	25.3	C	32.4	D
Long Beach	Off	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB On/Long Beach Off	Weave B	40.8	E	28.4	D	37.7	E
I-710 SB	On	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB On/Atlantic On	Basic	25.1	C	28.1	D	32.9	D
Atlantic	On ³	N/A	N/A	N/A	N/A	N/A	N/A
Atlantic On/I-710 Off	Basic	30.8	D	36.4	E	32.2	D
I-710	Major Off ²	34.9	D	35.6	E	33.8	D
I-710 Off/Atlantic Off	Basic	31.7	D	32.9	D	30.4	D
Atlantic	Major Off ²	31.5	D	31.2	D	30.1	D
Atlantic Off/Cherry On	Basic	37.2	E	36.5	E	34.3	D
Cherry	On	26.1	C	26.1	C	24.8	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

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Table 3.5-25 SR-91 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ VIC ¹	LOS																
Eastbound																			
West of Santa Fe On	Basic	24.1	C	32.6	D	26.3	D	24	C	32.2	D	26.3	D	24.1	C	32.7	D	26.3	D
Santa Fe	On	N/A	N/A																
Santa Fe On/Long Beach Off	Weave A	31.5	D	35.6	E	27.8	C	31.5	D	31.3	D	27.8	C	31.4	D	35.7	E	27.8	C
Long Beach	Off	N/A	N/A																
Long Beach Off/Long Beach On	Basic	19.4	C	33.4	D	26.6	D	19.3	C	33.6	D	26.6	D	19.5	C	33.6	D	26.6	D
Long Beach	On	N/A	N/A																
Long Beach On/I-710 SB Off	Weave A	18.9	B	36.5	E	28.5	D	18.8	B	36.7	E	28.4	D	18.9	B	36.6	E	28.4	D
I-710 SB	Off	N/A	N/A																
I-710 SB Off/I-710 NB Off	Basic	18.4	C	31.2	D	26.7	D	18.3	C	31.5	D	26.7	D	18.4	C	31.2	D	26.5	D
I-710 NB & Atlantic	Major Off ²	20.4	C	33.4	D	29.5	D	20.4	C	33.6	D	29.6	D	20.4	C	33.4	D	29.4	D
I-710 NB Off/I-710 NB On	Basic	18.6	C	36	E	27.9	D	18.6	C	36.2	E	27.9	D	19	C	36	E	27.1	D
I-710 NB	On ³	N/A	N/A																
I-710 NB On/I-710 SB On	Basic	17.9	B	30.2	D	24.8	C	17.9	B	30.3	D	24.8	C	18.3	C	30.3	D	24.5	C
I-710 SB	On ³	N/A	N/A																
I-710 SB On/Atlantic On	Basic	21.3	C	30.9	D	27.7	D	21.2	C	30.8	D	27.5	D	21.5	C	30.6	D	27.2	D
Atlantic	On	18	B	22.3	C	20.7	C	18	B	22.3	C	20.6	C	18.1	B	22.2	C	20.3	C
Atlantic On/I-710 FC NB On	Basic	23.6	C	33.3	D	30.2	D	23.5	C	33.1	D	30	D	23.9	C	33.1	D	29.5	D
I-710 FC NB	On	N/A	N/A																
I-710 FC NB On/Cherry Off	Weave B	29.8	D	37.8	E	36	E	29.9	D	37.9	E	36.1	E	29.9	D	36.9	E	34.1	D
Cherry	Off	N/A	N/A																
Westbound																			
West of Santa Fe Off	Basic	--*	F	41.3	E	43.8	E	44.7	E	41.5	E	43.9	E	--*	F	40.7	E	43.4	E
Santa Fe	Off	N/A	N/A																
Long Beach On/Santa Fe Off	Weave C	29.6	D	30.6	D	31.5	D	29.6	D	30.7	D	31.6	D	29.7	D	30.4	D	31	D
Long Beach	On	N/A	N/A																
Long Beach On/I-710 NB On	Basic	24.9	C	24.9	C	25.9	C	24.6	C	25	C	25.8	C	24.7	C	24.7	C	25.4	C
I-710 NB	On ³	N/A	N/A																
I-710 NB On/Long Beach Off	Basic	24.9	C	25.9	C	26.5	D	24.8	C	26	D	26.2	D	25.4	C	26	D	26.7	D
Long Beach	Off	N/A	N/A																
I-710 SB On/Long Beach Off	Weave B	39.7	E	29.5	D	32.8	D	39.7	E	29.8	D	32.8	D	40.4	E	29.6	D	33	D
I-710 SB	On	N/A	N/A																
I-710 SB On/Atlantic On	Basic	23.2	C	26.9	D	24.1	C	23.1	C	27.1	D	24.1	C	23.7	C	27.1	D	24.6	C
Atlantic	On ³	N/A	N/A																
Atlantic On/I-710 Off	Basic	29.1	D	33.4	D	31.2	D	29.1	D	33.8	D	30.9	D	30.1	D	33.9	D	31.8	D
I-710	Major Off ²	33.5	D	33.9	D	31.8	D	33.3	D	34.3	D	31.6	D	33.9	D	34.1	D	32.2	D
I-710 Off/Atlantic Off	Basic	29.7	D	29.9	D	27.9	D	29.5	D	30.4	D	27.6	D	30.3	D	30.1	D	28.4	D
Atlantic	Major Off ²	30.1	D	29.3	D	28.3	D	30	D	29.6	D	28.3	D	30.4	D	29.4	D	28.6	D
Atlantic Off/I-710 FC SB Off	Basic	34.3	D	32.7	D	31.2	D	34	D	33.3	D	31.1	D	34.9	D	32.9	D	31.6	D
I-710 FC SB	Off	N/A	N/A																

Table 3.5-25 SR-91 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Cherry On/I-710 FC SB Off	Weave A	34.5	D	33.2	D	31.5	D	34.5	D	33.7	D	31.6	D	34.3	D	33.2	D	31.5	D
Cherry	On	N/A	N/A																
East of Cherry On	Basic	32.9	D	32.1	D	29.9	D	32.9	D	32.6	D	29.9	D	33.4	D	32.2	D	30.2	D

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 FC = freight corridor
 HCM = Highway Capacity Manual
 I-5 = Interstate 5

I-105 = Interstate 105
 I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service

N/A = not available
 NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

- Tolling on the I-710 freight corridor under Alternative 6C results in a decrease in overall traffic volumes on SR-91 compared to Alternative 6B conditions. However, delay and LOS remain relatively consistent between the tolling and nontolling alternatives due to the higher truck percentages on both mainline SR-91 and connector ramps to/from I-710 under Alternative 6C conditions.

I-105 MAINLINE SEGMENTS. Tables 3.5-26 and 3.5-27 provide a summary of the freeway segment analysis for I-105. These tables show the following:

- I-105 eastbound and westbound lanes show congestion during the three peak hours under Alternatives 5A and 6A/B/C in 2035. This indicates that these areas are near or exceed capacity and operate under congested conditions through this section.
- Compared to Alternative 1 (Table 3.5-7), under Alternatives 6A/B/C, overall traffic operations remain unchanged. Therefore, the addition of the I-710 freight corridor would not further deteriorate the operations on these segments. Overall, Alternatives 6A/B/C are projected to improve the regional circulation and provide an alternate path for future truck traffic demand in the area.
- Tolling on the I-710 freight corridor under Alternative 6C conditions results in a decrease in overall traffic volumes on I-105 (particularly in the westbound direction) compared to Alternative 6B conditions. In addition, minor reductions in delay are observed within the study corridor. The overall LOS, however, remain relatively consistent between the tolling and nontolling alternatives due to the higher truck percentages on both mainline I-105 and connector ramps to/from I-710 under Alternative 6C conditions.

I-5 MAINLINE SEGMENTS. Tables 3.5-28 and 3.5-29 provide a summary of the freeway segment analysis for I-5. These tables show the following:

- The northbound lanes show heavy congestion in the morning and midday peak hours in 2035. This indicates that these areas are near or exceed capacity and operating under congested conditions through this section.
- Compared to Alternative 1 (Table 3.5-8), under Alternative 5A, some of the segments would be improved as a result of geometric enhancements and capacity improvements on the I-710 mainline. Therefore, Alternative 5A would not only improve the overall operation, but may also provide the additional capacity to accommodate projected future traffic demand in this area.

**Table 3.5-26 I-105 2035 Basic/Weaving Segments and Merge/Diverge Areas
Alternative 5A Levels of Service**

Location Description	Freeway Type	Alternative 5A					
		AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
Eastbound							
West of I-710 Off	Basic	--*	F	--*	F	41.3	E
Lane Addition	Basic	28.5	D	32.2	D	26.4	D
I-710	Major Off ³	32.6	D	35.7	E	30.5	D
I-710 Off/Garfield Off	Basic	24.7	C	30.9	D	22.9	C
Garfield	Off	12	B	15.6	B	11.8	B
Garfield Off/I-710 NB On	Basic	22.7	C	28.2	D	19.5	C
I-710 NB	Major On ²	0.55	N/A	0.64	N/A	0.62	N/A
I-710 NB On/I-710 SB On	Basic	19.8	C	23.4	C	21.6	C
I-710 SB	On	19.4	B	21.1	C	21.2	C
I-710 SB On/East of I-710	Basic	24.4	C	30.3	D	28.7	D
East of I-710 On (Lane Drop)	Basic	--*	F	--*	F	--*	F
Westbound							
West of Long Beach Off	Basic	41.6	E	--*	F	32.8	D
Long Beach	Off	--*	F	--*	F	37.1	E
Lane Drop	Basic	--*	F	--*	F	37.9	E
Long Beach Off/I-710 NB On	Basic	30.3	D	32.3	D	25.8	C
I-710 NB	On ⁴	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB On/I-710 SB On	Basic	--*	F	--*	F	36.7	E
I-710 SB	On	--*	F	--*	F	35.6	E
I-710 SB On/Garfield On	Basic	29.8	D	33.9	D	25.5	C
Garfield	On	24.9	C	27.1	C	21.7	C
Garfield On/I-710 Off	Basic	25.6	C	29.5	D	22.1	C
I-710	Major Off ³	27.6	C	28.1	D	25.9	C
East of I-710 Off	Basic	24.2	C	24.4	C	22.8	C

Source: *I-710 Corridor Project Traffic Operations Analysis Report*, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-5 = Interstate 5

I-105 = Interstate 105

I-405 = Interstate 405

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

PCH = Pacific Coast Hwy.

SB = southbound

SR-60 = State Route 60

SR-91 = State Route 91

WB = westbound

Table 3.5-27 I-105 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
West of I-710 Off	Basic	--*	F	--*	F	42.8	E	--*	F	--*	F	42.8	E	--*	F	--*	F	43	E
Lane Addition	Basic	29.1	D	33.1	D	26.8	D	29.2	D	33	D	26.8	D	29.2	D	32.9	D	26.9	D
I-710	Major Off ³	33.1	D	36.3	E	31	D	33.1	D	36.3	E	31	D	33.1	D	36.2	E	31.1	D
I-710 Off/Garfield Off	Basic	26.9	D	32.3	D	25.9	C	26.9	D	32.6	D	26	D	26.6	D	32	D	25.7	C
Garfield	Off	14	B	16.8	B	14.8	B	14.1	B	16.9	B	15	B	14	B	16.7	B	14.9	B
Garfield Off/I-710 NB On	Basic	23.9	C	29	D	21.2	C	23.9	C	29.2	D	21.3	C	23.7	C	28.7	D	21.1	C
I-710 NB	Major On ²	0.5	N/A	0.6	N/A	0.6	N/A	0.5	N/A	0.6	N/A	0.6	N/A	0.55	N/A	0.65	N/A	0.58	N/A
I-710 NB On/I-710 SB On	Basic	19.6	C	23.3	C	20.4	C	19.6	C	23.4	C	20.2	C	19.9	C	23.3	C	20.8	C
I-710 SB	On	18.3	B	20.1	C	19.4	B	18.4	B	20.1	C	19.3	B	18.5	B	20.2	C	19.7	B
I-710 SB On/East of I-710	Basic	22.8	C	28	D	25.1	C	22.9	C	27.9	D	24.8	C	23.3	C	28.4	D	25.7	C
East of I-710 On (Lane Drop)	Basic	--*	F																
Westbound																			
West of Long Beach Off	Basic	30	D	30.3	D	--*	F	30	D	30.3	D	--*	F	29.2	D	29.5	D	--*	F
Long Beach	Off	35.6	E	36.1	E	--*	F	35.6	E	36.1	E	--*	F	35.2	E	35.7	E	--*	F
Lane Drop	Basic	33.8	D	34.9	D	--*	F	33.8	D	34.9	D	--*	F	32.9	D	33.8	D	--*	F
Long Beach Off/I-710 NB On	Basic	24.3	C	24.7	C	38.1	E	24.2	C	24.7	C	38	E	23.8	C	24.3	C	37.8	E
I-710 NB	On ⁴	N/A	N/A																
I-710 NB On/I-710 SB On	Basic	33.2	D	33.8	D	--*	F	33.2	D	33.8	D	--*	F	32.5	D	32.9	D	--*	F
I-710 SB	On	33.3	D	33.6	D	--*	F	33.2	D	33.5	D	--*	F	32.8	D	33	D	--*	F
I-710 SB On/Garfield On	Basic	24.8	C	25.1	C	35.4	E	24.9	C	25.1	C	35.3	E	24.4	C	24.6	C	35.6	E
Garfield	On	21	C	21.4	C	28.1	D	21	C	21.5	C	28	C	20.6	C	21	C	28.2	D
Garfield On/I-710 Off	Basic	21.3	C	21.7	C	30.7	D	21.4	C	21.7	C	30.6	D	21	C	21.3	C	30.8	D
I-710	Major Off ³	24.1	C	24.1	C	29.9	D	24.3	C	24.5	C	29.4	D	24.1	C	24.1	C	30.1	D
East of I-710 Off	Basic	21.3	C	21.3	C	26.1	D	21.4	C	21.6	C	25.5	C	21.2	C	21.2	C	26.3	D

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major merge area; HCM methodology applied for analysis.

³ Major diverge area; HCM methodology applied for analysis.

⁴ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound
 HCM = Highway Capacity Manual
 I-5 = Interstate 5
 I-105 = Interstate 105

I-405 = Interstate 405
 I-710 = Interstate 710
 LOS = level(s) of service
 N/A = not available

NB = northbound
 PCH = Pacific Coast Hwy.
 SB = southbound

SR-60 = State Route 60
 SR-91 = State Route 91
 WB = westbound

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Table 3.5-28 I-5 2035 Basic/Weaving Segments and Merge/Diverge Areas Alternative 5A Levels of Service

Location Description	Freeway Type	Alternative 5A					
		AM		PM		Midday	
		Density/ V/C ¹	LOS	Density/ V/C ¹	LOS	Density/ V/C ¹	LOS
Northbound							
North of Dennison On	Basic	34.6	D	22.9	C	44.2	E
Dennison	On	23.8	C	17.4	B	27.1	C
Dennison On/Ditman Off	Basic	33.2	D	21.7	C	41.4	E
Ditman & Dennison	Off	33.7	D	24.9	C	36.3	E
Ditman Off/Telegraph On	Basic	34.8	D	22.8	C	41.7	E
Telegraph & Downey	On	21.5	C	16.6	B	23	C
Telegraph On/I-710 NB On	Basic	32.1	D	21.7	C	36.6	E
I-710 NB	On ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB On/I-710 NB Off	Basic	24.5	C	17.3	B	26.8	D
I-710 NB	Off ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 NB Off/McBride Off	Basic	26.7	D	22.4	C	28.5	D
McBride & Telegraph	Off	29.1	D	25.1	C	30.6	D
McBride Off/Woods On	Basic	27.2	D	22.8	C	29	D
Lane Drop	Basic	38	E	29.1	D	42.8	E
Woods & Telegraph	On	22.4	C	19.7	B	23.6	C
Woods On/Woods Off	Basic	35.9	E	27.8	D	41	E
Woods & Telegraph	Off	36.1	E	31.5	D	37.2	E
Woods Off/Camfield On	Basic	37.2	E	29.4	D	41	E
Camfield & Telegraph	On	20.8	C	18.5	B	22.5	C
Camfield On/Camfield Off	Basic	34.7	D	26.2	D	41	E
Camfield & Telegraph	Off	36.7	E	31.1	D	39	E
South of Camfield & Telegraph Off	Basic	39.7	E	29.2	D	--*	F
Southbound							
North of Ditman Off	Basic	30.1	D	22.9	C	32.6	D
Ditman	Off	28.5	D	24.8	C	32.3	D
Ditman Off/Ditman On	Basic	26.6	D	22.5	C	32.5	D
Ditman	On	18.9	B	17	B	22.5	C
Ditman On/Boswell Off	Basic	27.1	D	23	C	32.5	D
Boswell	Off	29.4	D	26	C	33.4	D
Boswell Off/I-710 SB Off	Basic	26.6	D	22.2	C	31.6	D
I-710 SB	Major Off ²	30	D	34.3	D	25.3	C
I-710 SB Off/I-710 SB On	Basic	26.5	D	21.3	C	32.6	D
I-710 SB	On ³	N/A	N/A	N/A	N/A	N/A	N/A
I-710 SB On/Triggs Off	Basic	28.4	D	26.8	D	30.8	D
Triggs	Off	30.2	D	28.9	D	31.8	D
Triggs Off/Triggs On	Basic	27.8	D	26.4	D	30.8	D
Triggs	On	19	B	18.5	B	20	C
Triggs On/Stevens Off	Basic	29.3	D	27.8	D	31.2	D

Table 3.5-29 I-5 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Northbound																			
North of Dennison On	Basic	35.2	E	24.9	C	--*	F	35.4	E	24.5	C	--*	F	35.3	E	24.7	C	--*	F
Dennison	On	24.6	C	18.3	B	28.1	D	24.7	C	18.1	B	28.2	D	24.6	C	18.2	B	28.1	D
Dennison On/Ditman Off	Basic	34.6	D	24.1	C	44	E	34.7	D	23.8	C	44.2	E	34.6	D	23.9	C	44	E
Ditman & Dennison	Off	35	D	27.4	C	36.9	E	35	E	27.1	C	37	E	34.9	D	27.3	C	36.9	E
Ditman Off/Telegraph On	Basic	36	E	24.9	C	44	E	36.2	E	24.6	C	44.2	E	36	E	24.8	C	44	E
Telegraph & Downey	On	22.3	C	17.4	B	23.8	C	22.3	C	17.2	B	23.8	C	22.3	C	17.3	B	23.8	C
Telegraph On/I-710 NB On	Basic	34	D	23.9	C	39.1	E	34.1	D	23.5	C	39.2	E	34	D	23.7	C	39.1	E
I-710 NB	On ³	N/A	N/A																
I-710 NB On/I-710 NB Off	Basic	25.9	C	18.9	C	28.8	D	25.9	C	18.6	C	28.3	D	25.9	C	18.8	C	28.5	D
I-710 NB	Off ³	N/A	N/A																
I-710 NB Off/McBride Off	Basic	26.5	D	23	C	28.5	D	26.5	D	23	C	28.4	D	26.5	D	23	C	28.5	D
McBride & Telegraph	Off	29.5	D	26.2	C	31.2	D	29.5	D	26	C	31.2	D	29.5	D	26.2	C	31.1	D
McBride Off/Woods On	Basic	27.1	D	23.4	C	29.1	D	27.1	D	23.2	C	29.1	D	27.1	D	23.4	C	29.1	D
Lane Drop	Basic	37.7	E	30.3	D	43.1	E	37.7	E	29.9	D	42.9	E	37.7	E	30.3	D	42.9	E
Woods & Telegraph	On	22.4	C	20.1	C	23.6	C	22.4	C	20	B	23.6	C	22.4	C	20.1	C	23.6	C
Woods On/Woods Off	Basic	36	E	28.9	D	41.2	E	36	E	28.5	D	41	E	36	E	28.9	D	41.1	E
Woods & Telegraph	Off	37	E	33.9	D	37.3	E	37	E	33.6	D	37.2	E	37	E	33.9	D	37.2	E
Woods Off/Camfield On	Basic	37.9	E	30.9	D	41.2	E	37.9	E	30.5	D	41	E	37.9	E	30.9	D	41.1	E
Camfield & Telegraph	On	21	C	18.8	B	22.5	C	21	C	18.7	B	22.5	C	21	C	18.8	B	22.5	C
Camfield On/Camfield Off	Basic	35.3	E	27.1	D	41	E	35.3	E	26.8	D	40.8	E	35.3	E	27.1	D	41	E
Camfield & Telegraph	Off	39.1	E	33.7	D	--*	F	39.1	E	33.4	D	--*	F	39.1	E	33.6	D	--*	F
South of Camfield & Telegraph Off	Basic	40.3	E	29.9	D	--*	F	40.3	E	29.5	D	--*	F	40.3	E	29.9	D	--*	F
Southbound																			
North of Ditman Off	Basic	26	D	21.8	C	35.7	E	26.3	D	21.6	C	36.2	E	26	D	21.8	C	35.7	E
Ditman	Off	28.1	D	24.1	C	34	D	28.3	D	24.1	C	34.2	D	28.1	D	24.1	C	34	D
Ditman Off/Ditman On	Basic	25.8	C	21.4	C	35.6	E	25.8	C	21.2	C	36.1	E	25.5	C	21.4	C	35.6	E
Ditman	On	18.6	B	16.5	B	24	C	18.6	B	16.3	B	24.2	C	18.4	B	16.5	B	24	C
Ditman On/Boswell Off	Basic	26	C	22.1	C	36.2	E	26	C	21.9	C	36.8	E	26	C	22.1	C	36.2	E
Boswell	Off	29	D	25.4	C	35.2	E	29	D	25.4	C	35.5	E	29	D	25.4	C	35.2	E
Boswell Off/I-710 SB Off	Basic	25.4	C	21.5	C	35.9	E	25.7	C	21.3	C	36.5	E	25.4	C	21.6	C	36	E
I-710 SB	Major Off ²	28.8	D	24.5	C	37.1	E	29.1	D	24.3	C	37.4	E	28.8	D	24.5	C	37.1	E
I-710 SB Off/I-710 SB On	Basic	20.6	B	17.1	B	32.9	D	20.9	C	17.1	B	32.2	D	16.7	B	14.5	B	27.7	D
I-710 SB	On ³	N/A	N/A																
I-710 SB On/Triggs Off	Basic	23.8	C	22.4	C	29.7	D	24	C	22.3	C	30.1	D	18.6	C	19.9	C	25.1	C
Triggs	Off	26.8	C	25.2	C	31.1	D	26.9	C	25.2	C	31.4	D	21.7	C	22.7	C	27.4	C
Triggs Off/Triggs On	Basic	23.4	B	22.1	C	29.7	D	23.6	C	22	C	30.1	D	18.1	C	19.5	C	25.1	C
Triggs	On	17.3	B	16.8	B	19.7	B	17.3	B	16.8	B	19.8	B	14.9	B	15.7	B	17.8	B
Triggs On/Stevens Off	Basic	24.8	C	23.7	C	30.5	D	25	C	23.4	C	30.9	D	19.6	C	21.2	C	25.7	C

Table 3.5-29 I-5 2035 Alternatives 6A/B/C Levels of Service

Location Description	Freeway Type	Alternative 6A						Alternative 6B						Alternative 6C					
		AM		PM		Midday		AM		PM		Midday		AM		PM		Midday	
		Density/ V/C ¹	LOS																
Stevens & Eastern	Off	29.8	D	27.1	C	31.5	D	30.1	D	26.8	C	31.8	D	24.8	C	24.6	C	27.8	C
South of Stevens & Eastern Off	Basic	22.1	C	22.5	C	30	D	22.3	C	22.2	C	30.3	D	16.9	B	20	C	25.3	C

Source: I-710 Corridor Project Traffic Operations Analysis Report, URS Corporation, 2012.

Note: **Bolded** and *italicized* cells indicate LOS E or F.

* = Demand exceeds capacity, no density is predicted.

N/A = not applicable. LOS and/or density information are not shown for major merge areas, single-lane addition/drop, and merge/diverge operations within a weaving segment.

¹ Density = passenger car/mile/lane; v/c = volume-to-capacity ratio.

² Major diverge area; HCM methodology applied for analysis.

³ Single-lane addition/drop; HCM methodology applied for analysis.

EB = eastbound

HCM = Highway Capacity Manual

I-710 = Interstate 710

LOS = level(s) of service

N/A = not available

NB = northbound

SB = southbound

WB = westbound

- Similar to Alternatives 1 and 5A, the northbound lanes show heavy congestion in the morning and midday peak hours under Alternatives 6A/B/C. In the southbound direction, segments just north of the I-710/I-5 interchange operate at near capacity conditions during the midday peak hour. Overall LOS improvement is observed when comparing Alternatives 6A/B/C conditions to Alternative 1 conditions.
- Compared to Alternative 6B, tolling on I-710 freight corridor under Alternative 6C conditions imposes a marginal increase in overall traffic volume on the sections of I-5 downstream of the I-710 interchange area in both the northbound and southbound directions during the morning and evening peak hours. In addition, a minor increase in truck percentages on southbound I-5 mainline traffic is observed under the tolling alternative. In general, delay and LOS remain consistent between the tolling and nontolling alternatives.

ROADWAY SEGMENTS. The roadway segment analysis is provided in the *Intersection Traffic Impact Analysis Report*. This section provides a summary of the roadway segments that experience V/C ratios approaching or exceeding the available capacity and operating at LOS E or F with the project build alternatives.

With the No Build conditions under Alternative 1, 74 of the Study Area roadway segments are forecast to operate at LOS E or F. Under Alternative 5A, 72 roadway segments would operate at LOS E or F. Under Alternatives 6A/B/C, 57 roadway segments would operate at LOS E or F. As a result, all of the I-710 Corridor Project build alternatives would improve roadway operations within the Study Area. These improvements result in part from not as much I-710 traffic diverting onto local arterials under the I-710 Corridor Project build alternatives as compared to Alternative 1.

As discussed in Section 2.4.1.9 of this EIR/EIS, peak period parking restrictions will be implemented as part of Alternatives 5A and 6A/B/C to improve traffic operations on some of the congested arterial roadway segments within the Study Area. More specifically, parking restrictions during peak periods (7:00 a.m.–9:00 a.m. and 4:00 p.m.–7:00 p.m.) will be implemented on four arterial roadways shown below:

- Atlantic Blvd., between Pacific Coast Hwy. and State Route 60 (SR-60)
- Cherry Ave./Garfield Ave., between Pacific Coast Hwy. and SR-60
- Eastern Ave., between Cherry Ave. and Atlantic Blvd.
- Long Beach Blvd., between San Antonio Dr. and Firestone Blvd.

INTERSECTIONS. The *Intersection Traffic Impact Analysis Report* also provides an analysis of the Study Area intersections. The following summary compares the No Build conditions under Alternative 1 LOS E or F intersection operations with those of the I-710 Corridor Project build alternatives.

- 64 of the 142 intersections analyzed for Alternative 1
- 33 of the 152 intersections analyzed for Alternative 5A
- 42 of the 163 intersections analyzed for Alternative 6A
- 47 of the 163 intersections analyzed for Alternative 6B
- 42 of the 163 intersections analyzed for Alternatives 6C

Alternatives 5A and 6A/B/C include congestion relief improvements to arterial intersections within the Study Area. These improvements generally consist of (1) Transportation Systems Management/Transportation Demand Management (TSM/TDM) improvements, including optimizing the traffic signal timing or changing the signal phases, and (2) capacity improvements, including lane restriping or minimal widening to provide additional intersection turn lanes. These improvements are intended to reduce congestion and delay along the local arterial roadways and intersections within the Study Area to augment the proposed improvements to I-710 in each build alternative.

TSM/TDM improvements were identified for 33 out of 64 intersections operating at LOS E or F under Alternative 1 (No Build). The average delay for all 33 intersections will improve with some intersections showing substantial reductions in delay with the improvements identified (see *Intersection Traffic Impact Analysis Report* for specific TSM/TDM improvements at each location). The following six intersections will improve to LOS D or better with the TSM/TDM improvements:

- **Ocean Blvd./Magnolia Ave.:** Change phasing for eastbound and westbound left-turn from permitted to permitted plus protected. Change northbound and southbound right-turn phasing from permitted to permitted plus overlap;
- **Alameda St./Sepulveda Blvd. Ramp:** Optimize signal timing, change phasing for westbound right-turn from permitted to permitted plus overlap;
- **Willow St./Pacific Ave.:** Optimize signal timing, change phasing for northbound left-turn from permitted to permitted plus protected;

- **Alondra Blvd./Long Beach Blvd.:** Optimize signal timing to improve PM LOS;
- **Alondra Blvd./Atlantic Ave.:** Optimize signal timing; and
- **Alameda St. Ramp/223rd St.:** Optimize signal timing to improve PM LOS.

Intersections projected to operate at LOS E or F after applying the above TSM/TDM improvements were further considered to identify additional improvements such as adding left- or right-turn lanes and minor widening. Based on the analysis, improvements were identified for 42 intersections to be incorporated into Alternatives 5A and 6A/B/C. While average delay for all 42 intersections will be reduced substantially, the LOS for 27 intersections will improve to LOS D or better.

The capacity improvements identified for the 42 intersections under the Arterial Highway Congestion Relief strategies of the build alternatives are summarized in Table 3.5-30.

The LOS and/or intersection delay on the Study Area intersections would generally be maintained or improved during the peak hours in 2035 under the build alternatives compared to Alternative 1. However, there would be degradation in LOS with the project build alternatives at some locations.

The criteria for determining which intersections are adversely impacted when comparing any of the I-710 Corridor Project build alternatives to the No Build conditions under Alternative 1 include:

- Degraded LOS E or F in the build alternatives (with I-710 Project); and
- Increase in intersection delay over Alternative 1 conditions.

Several intersections that are projected to experience poor LOS and heavy intersection delay under Alternative 1 conditions are not identified as adversely impacted intersections since they do not have an increase in delay in the Build Alternative. These locations did not require project mitigation measures because there is no impact from the I-710 Corridor Project.

Based on the arterial intersection LOS analysis, along with the impact criteria listed above, 21 Study Area intersections have been identified as being adversely impacted by the project under the proposed build alternatives. Intersections impacted by each of the build alternatives are summarized in Table 3.5-31. As this table shows, 13 intersections are projected to be impacted under Alternative 5A, 18 impacted under Alternative 6A, and 19

Table 3.5-30 Summary of Arterial Highway Congestion Relief Intersection Improvements

Intersection (No.)	NBL	SBL	EBL	WBL	NBR	SBR	EBR	WBR
Anaheim St./Magnolia Ave. (No. 13)	✓							
Anaheim St./Pacific Ave. (No. 14)	✓	✓					✓	✓
Anaheim St./Cherry Ave. (No. 16)							✓	
Alameda St./O St. (No. 18)								✓
Pacific Coast Hwy./Pacific Ave. (No. 20)							✓	✓
Pacific Coast Hwy./Long Beach Blvd. (No. 21)			✓	✓				
Sepulveda Blvd./Alameda St. Ramp (No. 25)		✓						✓
Willow St./Long Beach Blvd. (No. 28)			✓	✓				
Willow St./Atlantic Ave. (No. 29)	✓	✓			✓	✓		
Willow St./Cherry Ave. (No. 30)	✓						✓	✓
Del Amo Blvd./Long Beach Blvd. (No. 35)	✓	✓						
Del Amo Blvd./Atlantic Ave. (No. 36)	✓	✓						
Del Amo Blvd./Cherry Ave. (No. 37)		✓	✓	✓				
Del Amo Blvd./Lakewood Blvd. (No. 38)	✓	✓	✓	✓				
Artesia Blvd./Long Beach Blvd. (No. 39)				✓				
Alondra Blvd./Santa Fe Ave. (No. 41)					✓			
Alondra Blvd./Garfield Ave. (No. 44)	✓	✓						
Alondra Blvd./Paramount Blvd. (No. 45)				✓				
Rosecrans Ave./Santa Fe Ave. (No. 48)				✓				
Rosecrans Ave./Long Beach Blvd. (No. 49)	✓	✓					✓	✓
Rosecrans Ave./Atlantic Ave. (No. 50)	✓	✓	✓	✓	✓	✓	✓	✓
Rosecrans Ave./Garfield Ave. (No. 51)	✓	✓	✓					
Rosecrans Ave./Paramount Blvd. (No. 52)					✓			
Imperial Hwy./Long Beach Blvd. (No. 54)				✓				
Imperial Hwy./Atlantic Ave. (No. 55)	✓	✓						
Imperial Hwy./Paramount Blvd. (No. 57)		✓		✓				
Firestone Blvd./California Ave. (No. 59)	✓	✓			✓	✓		
Firestone Blvd./Atlantic Ave. (No. 60)	✓			✓			✓	
Firestone Blvd./Garfield Ave. (No. 61)			✓		✓			
Firestone Blvd./Paramount Blvd. (No. 62)	✓	✓	✓	✓				
Florence Ave./Alameda St. (No. 63)				✓	✓	✓		✓
Florence Ave./Atlantic Ave. (No. 64)	✓					✓		

Table 3.5-30 Summary of Arterial Highway Congestion Relief Intersection Improvements

Intersection (No.)	NBL	SBL	EBL	WBL	NBR	SBR	EBR	WBR
Slauson Ave./Alameda St. (No. 68)						✓		
Slauson Ave./Soto St. (No. 69)					✓	✓		
Slauson Ave./Eastern Ave. (No. 71)	✓	✓						
Slauson Ave./Garfield Ave. (No. 73)					✓	✓		
Humphreys Ave./Cesar Chavez Ave. (No. 106)	Re-stripe to provide a two-way left-turn lane on EB & WB							
Santa Fe Ave./223rd St. (No. 146)				✓		✓		
Slauson Ave./Santa Fe Ave. (No. 151)			✓	✓	✓	✓		
Pacific Ave./Gage St. (No. 152)					✓			
Santa Fe Ave./Gage St. (No. 153)	✓	✓					✓	✓
Del Amo Blvd./Susana Rd. (No. 161)		✓			✓			

Source: I-710 Corridor Project Intersection Traffic Impact Analysis Report, URS Corporation, 2012.

Note: ✓ = Additional turn lane

NBL = northbound lane
 SBL = southbound lane
 EBL = eastbound lane
 WBL = westbound lane

NBR = northbound road
 SBR = southbound road
 EBR = eastbound road
 WBR = westbound road

Table 3.5-31 Project-Related Impacted Intersections

ID	Intersection Name	Project-Related Impacts			
		Alt 5A	Alt 6A	Alt 6B	Alt 6C
10*	Pico Ave./9th St.		•	•	•
12	Anaheim St./Santa Fe Ave.	•	•	•	•
22*	Pacific Coast Hwy/Atlantic Ave.	•	•	•	•
26	Willow St./Santa Fe Ave.	•			
34	Del Amo Blvd./Santa Fe Ave.	•	•	•	•
41	Alondra Blvd./Santa Fe Ave.	•	•	•	•
42	Alondra Blvd./Long Beach Blvd.	•	•	•	•
43	Alondra Blvd./Atlantic Ave.	•	•	•	•
44	Alondra Blvd./Garfield Ave.	•	•	•	•
45	Alondra Blvd./Paramount Blvd.	•	•	•	•
56	Imperial Hwy/Garfield Ave.		•	•	
70	Slauson Ave./Atlantic Blvd.		•	•	•
71	Slauson Ave./Eastern Ave.	•	•	•	•
73	Garfield Ave./Slauson Ave.		•	•	•
98	Beverly Blvd./3rd St.	•	•	•	•
112*	I-710 NB Ramps/Long Beach Blvd.				•
138	Eastern Ave-Ramona Blvd./I-10 Ramps		•	•	•
148	Wardlow/Cherry Ave.	•	•	•	•
155*	Wilmington Ave./223rd St.			•	•
157	Garfield Ave./Gage Ave.	•	•	•	•
159	38th St./Santa Fe Ave.		•	•	•
Total		13	18	19	19

Source: I-710 Corridor Project Intersection Traffic Impact Analysis Report, URS Corporation 2012.

Note: • = Project-related impact

* = Unmitigable adverse impact

intersections are projected to be impacted under both Alternatives 6B and 6C. Twelve of these intersections will be impacted by all four build alternatives.

Mitigation measures to improve these impacted locations are described later in this section. Mitigation measures have not been recommended for the following impacted intersections due to right-of-way constraints and other limitations identified during coordination meetings with the staff of the affected cities:

- Pico Ave./9th St.
- Pacific Coast Hwy./Atlantic Ave.
- I-710 northbound ramps/Long Beach Blvd.
- Wilmington Ave./223rd St.

VEHICLE MILES TRAVELED/VEHICLE HOURS TRAVELED/VEHICLE HOURS OF DELAY. An analysis of 2035 daily vehicle miles traveled (VMT), vehicles hours traveled (VHT), and vehicle hours of delay (VHD) within the Study Area was prepared for the I-710 Corridor Project. Table 3.5-32 compares the VMT, the VHT, and the VHD for Alternative 1 and the I-710 Corridor Project build alternatives.

Table 3.5-32 2035 Daily Vehicle Miles Traveled, Vehicle Hours Traveled, and Vehicle Hours of Delay Comparison

Alternative	VMT	VHT	VHD
No Build	84,045,700	3,462,300	1,528,500
5A	+280,400	-9,300	-5,800
6A	+555,500	-60,300	-59,500
6B	+563,300	-61,600	-61,000
6C	+105,900	-66,500	-59,300

Source: Cambridge Systematics, Inc.
 VMT = Vehicle Miles Traveled
 VHT = Vehicle Hours Traveled
 VHD = Vehicle Hours of Delay

As shown in the table, with the project build alternatives, the VMT would increase throughout the Study Area compared to the No Build condition, most likely due to the increase in capacity associated with the I-710 Corridor improvements. As capacity is added, additional drivers may choose to use the I-710 Corridor. It should be noted that although the VMT would increase, the VHT and the VHD are forecast to decrease throughout the Study

Area compared to Alternative 1, which is also likely due to the capacity improvements proposed as part of Alternatives 5A and 6A/B/C.

BICYCLE AND PEDESTRIAN FACILITIES. The project description includes changes to arterial interchanges and intersections which may affect sidewalks and bicycle lanes. The I-710 Corridor Project will provide facilities for bicycles and pedestrians in locations where local streets are affected by the construction of the build alternatives. These facilities will be designed consistent with the local General Plan Circulation Element and will comply with ADA requirements. The project will improve pedestrian facilities (sidewalks) by replacing the old ones that will be removed as part of the project. Bike travel would also be improved by providing new pavement on the arterial bridges that will be replaced over I-710 and the Los Angeles River. Class I Bikeways within the Study Area will be maintained with the proposed build alternatives. Because bicycle and pedestrian facilities will be maintained or improved, the effect of the I-710 Corridor Project is that travel by walking and bicycling will not substantially change as a result of the implementation of the build alternatives.

NO BUILD ALTERNATIVE. Alternative 1 would not provide any mobility improvements within the I-710 Corridor. As a result, traffic congestion would continue to increase within the I-710 Corridor and LOS would continue to deteriorate due to forecast increases in traffic volumes between the existing (2008) and Design Year (2035) conditions. Additionally, because no improvements would be made to the I-710 Corridor under Alternative 1, the public health benefits of reduced congestion, improved conditions for pedestrian or bicycle travel, and reduction in the number of total and fatal accidents described in Section 3.5.3.3 would not be realized.

3.5.3.2 PUBLIC HEALTH CONSIDERATIONS – CONGESTION/MOBILITY

PUBLIC HEALTH STATEMENT. Increased access to transit is associated with increased biking and walking as modes of transportation. Increases in congestion and corresponding decreases in bicycle or pedestrian safety are associated with decreased biking and walking. Increases in walking and biking are positively associated with improvements in health, including decreased obesity, chronic disease, and stress (P. Simon et al. 2009).

I-710 CORRIDOR PROJECT. Table 3.5-32 shows the change in VMT, VHT, and VHD associated with the build alternatives. As shown in the table, the VHT and the VHD are forecast to be less with the build alternatives than under Alternative 1. The slight reduction in VHT and VHD that would be experienced by residents in the Study Area would have nominal benefits to public health considerations related to congestion and mobility.

Changes to local arterial interchanges are also included in the project description. In some cases, these improvements may require modification to local arterial intersections. Where

sidewalks are affected by these improvements, existing sidewalks will be replaced with sidewalks that comply with ADA requirements. Bikeways and trails along the Los Angeles River will be maintained with the I-710 Corridor Project. Because sidewalks will be improved and bikeways and trails will be maintained, the I-710 Corridor Project would improve conditions for pedestrian or bicycle travel, thereby resulting in a beneficial effect to public health considerations related to congestion and mobility.

The I-710 Corridor Project would modernize existing design elements of the I-710 freeway, such as the curves of on- and off-ramps that do not meet current design standards and the weaving sections between interchanges that are of insufficient length. Modernization of the I-710 design is expected to improve safety, resulting in accident rates on the I-710 Corridor that are more reflective of the statewide average for a similar facility. This expected reduction in accidents would reduce public health risks related to traffic safety.

3.5.4 AVOIDANCE, MINIMIZATION, AND/OR MITIGATION MEASURES

The I-710 Corridor Project will provide additional capacity to address projected traffic volumes, will improve traffic safety by modernizing corridor design, and will provide infrastructure to address projected growth in population, employment, and activities related to goods movement. As discussed previously in this section, the build alternatives would result in improved traffic operations on the I-710 mainline, freight movement corridor, and ramp facilities. However, implementation of the project would cause permanent adverse impacts at 21 arterial intersections. The following measure is proposed to address these impacts.

TR-1 Implementation of the Interstate 710 (I-710) Corridor Project is forecast to result in adverse impacts to 21 intersections in the project Study Area. No feasible mitigation measures were identified at four intersections. The levels of service (LOS) and average intersection delay for the remaining impacted study intersections will improve intersection operations back to the projected Alternative 1 (2035 No Build) operating conditions or better with implementation of the recommended mitigation measures. To mitigate the impact of the project on these intersections, this mitigation measure will be implemented by the California Department of Transportation (Caltrans) in coordination with the local jurisdictions listed below before completion of construction of the I-710 mainline improvements. The improvements listed below apply to the Alternatives 5A and 6A/B/C, unless noted otherwise.

CITY OF LONG BEACH.

- **Anaheim St./Santa Fe Ave.:** Add one eastbound and one southbound left-turn lane (change from single to dual left-turn lanes).

- **Willow St./Santa Fe Ave.:** Add one eastbound and one northbound left turn lane (change from single to dual left-turn lanes). Add separate eastbound and westbound right-turn lanes. The improvements at this intersection pertain to Alternative 5A only.
- **Wardlow Rd./Cherry Ave.:** Restripe eastbound and westbound through-left lane to through lane only. Add one northbound, one eastbound, and one westbound left-turn lane (change from single to dual left-turn lanes).

CITY OF CARSON.

- **Del Amo Blvd./Santa Fe Ave.:** Add one eastbound, one northbound, and one southbound left-turn lane (change from single to dual left-turn lanes). Add separate eastbound right-turn lane.

CITY OF COMPTON.

- **Alondra Blvd./Santa Fe Ave.:** Add one eastbound and one westbound shared through-right-turn lane (3rd lane). Add one southbound left-turn lane (change from single to dual left-turn lane).
- **Alondra Blvd./Long Beach Blvd.:** Add one eastbound and one westbound shared through-right-turn lane (3rd lane). Add one northbound, one southbound, one eastbound, and one westbound left-turn lane (change from single to dual left-turn lanes).
- **Alondra Blvd./Atlantic Ave.:** Add one eastbound and one westbound shared through-right-turn lane (3rd lane). Add one southbound left-turn lane (change from single to dual left-turn lane).
- **Alondra Blvd./Garfield Ave.:** Add one eastbound and one westbound shared through-right-turn lane (3rd lane). Add one westbound left-turn lane (change from single to dual left-turn lane).
- **Alondra Blvd./Paramount Blvd.:** Add one eastbound and one westbound shared through-right-turn lane (3rd lane). Add one eastbound left-turn lane (change from single to dual left-turn lane).

CITY OF SOUTH GATE.

- **Imperial Hwy./Garfield Ave.:** Add one separate westbound right-turn lane. The improvement at this intersection pertains to Alternatives 6A and 6B only.

CITY OF MAYWOOD.

- **Slauson Ave./Atlantic Blvd.:** Add one eastbound left-turn lane (change from single to dual left-turn lane). The improvement at this intersection pertains to Alternatives 6A/B/C only.

CITY OF COMMERCE.

- **Slauson Ave./Eastern Ave.:** Add one eastbound left-turn lane (change from single to dual left-turn lane). Add one separate eastbound right-turn lane.
- **Slauson Ave./Garfield Ave.:** Add one westbound left-turn lane (change from single to dual left-turn lane). The improvement at this intersection pertains to Alternatives 6A/B/C only.

CITY OF COMMERCE/CITY OF BELL GARDENS.

- **Garfield Ave./Gage Ave.:** Add one northbound, one southbound, one eastbound, and one westbound left-turn lane (change from single to dual left-turn lanes). Add separate eastbound and westbound right-turn lanes.

COUNTY OF LOS ANGELES (UNINCORPORATED EAST LOS ANGELES).

- **Beverly Blvd./3rd St.:** Add one separate eastbound right-turn lane.
- **Eastern Ave./Interstate 10 (I-10) Ramps:** Restripe eastbound through lane to eastbound left-turn lane. The improvement at this intersection pertains to Alternatives 6A/B/C only.

CITY OF VERNON.

- **38th St./Santa Fe Ave.:** Add one southbound left-turn lane (change from single to dual left-turn lanes). Add one northbound, one southbound, and

one eastbound separate right-turn lane. The improvements at this intersection pertain to Alternatives 6A/B/C only.