

3.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

3.5.1 Regulatory Setting

The Department, as assigned by the Federal Highway Administration (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 Code of Federal Regulations [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 United States Code [USC] 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (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

This section is based on the *Traffic Analysis Report* (July 2015) and the *Traffic Analysis Report Errata Sheet* (July 2016) prepared for the Proposed Project.

The Study Area for traffic includes SR-91 from west of the Weir Canyon Road interchange in Anaheim Hills to east of the Serfas Club Drive/Auto Center Drive interchange in the City of Corona. The Study Area also includes SR-241 from north of the Santiago Canyon Road interchange to SR-91 and State Route 71 (SR-71) south of the Butterfield Ranch Road interchange to SR-91.

Pedestrian and bicycle facilities are shown previously on Figure 3.1.3, in Section 3.1, Land Use. As shown on that figure, within a 0.5-mile radius of the project limits, there are fire trails in the Weir Canyon Nature Preserve, the Fremont Canyon Nature Preserve, the Gypsum Canyon Nature Preserve, and the Chino Hills State Park that are

used by hikers and bicyclists. In addition, the Santa Ana River Trail/Bike Lane, a paved Class I bicycle path, parallels the Santa Ana River. In the vicinity of the SR--241/SR-91 interchange, the Santa Ana River Trail/Bike Lane is a two-lane off-street asphalt path that accommodates bicyclists, rollerbladers, joggers, and pedestrians.

3.5.2.1 Existing (2013) Volume Served

Traffic volumes represent the number of vehicles on the roadway. Vehicle throughput on a freeway is the number (volume) of vehicles that travel through the system over a given period such as an hour. It is important to note that freeway traffic volumes are different than freeway traffic demands. Vehicle demand is the number of vehicles wanting to enter the system over a given period of time. With congestion, not all traffic can be served; therefore, traffic demands are invariably higher than traffic volumes and queuing will occur. Along a congested corridor such as SR-91, this issue affects all freeway traffic in the corridor, during both peak periods. The peak periods are defined as the entire morning and evening commute periods: 6:00 AM to 9:00 AM and 3:00 PM to 7:00 PM, respectively.

Table 3.5.1 shows the existing traffic demand, throughput, and percent of unserved traffic in the traffic Study Area for the peak periods. As shown in Table 3.5.1, demand is higher than throughput in the westbound direction in the AM peak period and in the eastbound direction in the PM peak period. This is indicative of a congested freeway system, with all vehicle demand not being served by the facility. In the existing conditions shown in Table 3.5.1, the percent of unserved traffic is up to 3.3 percent in the westbound direction during the AM peak period and up to 6.1 percent in the eastbound direction in the PM peak period.

3.5.2.2 Existing (2013) Vehicle Speed and Travel Times

In existing (2013) conditions, heavy peak period flows occur in the westbound direction in the morning and in the eastbound direction in the evening. Table 3.5.2 shows speeds and travel times during peak hours.

As shown in Table 3.5.2, during the AM peak hours (between 6:00 AM and 9:00 AM), westbound traffic traveling on SR-91 is congested, with speeds at 24 to 31 miles per hour (mph) between SR-71 and the County Line¹ and at 37 to 38 mph between east of Serfas Club Drive/Auto Center Drive and the County Line.

¹ The boundary between the County of Orange and the County of Riverside lies between SR-241 and Green River Road.

Table 3.5.1 Existing (2013) Peak Period Vehicle Throughput Comparison

Location	Demand Volume			Throughput Volume			Percent Unserviced		
	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall
Westbound AM (6:00 AM to 9:00 AM)									
East of Serfas Club/Auto Center Drive	22038	5454	27492	21162	5436	26598	4.0%	0.3%	3.3%
Between Serfas Club/Auto Center Drive and SR-71	24026	5454	29480	23672	5436	29108	1.5%	0.3%	1.3%
Between SR-71 and Green River Road	24334	5454	29788	23999	5436	29435	1.4%	0.3%	1.2%
Between Green River Road and SR-241 Ramp (WB to SB)	27008	5454	32462	27927	5436	33363	-3.4%	0.3%	-2.8%
Between SR-241 GP Ramp (WB to SB) and Gypsum Canyon Road	20984	6888	27872	21231	6209	27440	-1.8%	9.9%	1.6%
Between Gypsum Canyon Road and SR-241 Ramp (NB to WB)	20438	6888	27326	20788	6209	26997	-1.7%	9.9%	1.2%
Between SR-241 Ramp (NB to WB) and Weir Canyon Road	21297	6888	28185	21632	6209	27841	-1.6%	9.9%	1.2%
West of Weir Canyon Road	21847	6888	28735	22043	6209	28252	-0.9%	9.9%	-1.7%
Eastbound PM (3:00 PM to 7:00 PM)									
West of Weir Canyon Road	30649	11017	41666	30099	10978	41077	1.8%	0.4%	1.4%
Between Weir Canyon Road and SR-241 Ramp (EB to SB)	27226	11017	38243	27118	10978	38096	0.4%	0.4%	0.4%
Between SR-241 Ramp (EB to SB) and Gypsum Canyon Road	26357	11017	37374	25755	10978	36733	2.3%	0.4%	1.7%
Between Gypsum Canyon Road and SR-241 Ramp (NB to EB)	28281	11017	39298	27432	10978	38410	3.0%	0.4%	2.3%
Between SR-241 Ramp (NB to EB) and Green River Road	37661	11017	48678	34718	10978	45696	7.8%	0.4%	6.1%
Between Green River Road and SR-71	35018	11017	46035	34177	10978	45155	2.4%	0.4%	1.9%
Between SR-71 and Serfas Club/Auto Center Drive	33432	5835	39267	33319	5662	38981	0.3%	3.0%	0.7%
East of Serfas Club/Auto Center Drive	33628	5835	39463	33628	5662	39290	0%	3.0%	0.4%

Source: *Traffic Analysis Report* (July 2015).

EB = eastbound

GP = general purpose

NB = northbound

SB = southbound

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

WB = westbound

Table 3.5.2 Existing (2013) AM and PM Peak Hour Travel Speeds and Travel Times

Segment Description		AM Peak Hours						PM Peak Hours							
		6:00–7:00		7:00–8:00		8:00–9:00		3:00–4:00		4:00–5:00		5:00–6:00		6:00–7:00	
		Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)	Speed (mph)	Time (mins)
Westbound	SR-91 east of Serfas Club Drive/Auto Center Drive to SR-91 County Line	38	4.9	37	5.1	45	4.2	68	2.8	67	2.8	67	2.8	68	2.7
	SR-91 County Line to SR-91 NB SR-241 merge	57	2.7	52	3.0	58	2.7	62	2.5	62	2.5	61	2.5	61	2.5
	SR-91 NB SR-241 merge to SR-91 west of Weir Canyon Road	67	3.5	67	3.5	68	3.5	64	3.7	65	3.7	65	3.7	64	3.7
	SR-71 north of SR-91 to SR-91 County Line	24	10.9	31	8.5	56	4.8	53	5.0	45	5.9	37	7.1	46	5.7
	SR-241 Windy Ridge to SR-91 west of Weir Canyon Road	64	7.2	64	7.2	64	7.2	64	7.2	60	7.7	48	9.7	36	12.9
Eastbound	SR-91 west of Weir Canyon Road to NB SR-241 merge	68	3.5	67	3.5	67	3.5	28	8.5	16	15.0	13	18.6	13	18.0
	SR-91 NB SR-241 merge to SR-91 County Line	68	2.3	67	2.3	67	2.3	18	8.7	21	7.5	20	7.9	22	7.0
	SR-91 County Line to SR-91 east of Serfas Club Drive/Auto Center Drive	67	2.8	65	2.8	65	2.8	18	10.5	21	8.8	20	9.1	29	6.4
	SR-241 Windy Ridge to SR-91 NB SR-241 merge	63	5.8	63	5.8	63	5.8	29	12.8	20	17.9	16	22.5	14	26.7
	SR-71 north of SR-91 to SR-91 east of Serfas Club Drive/Auto Center Drive	30	10.9	38	8.6	59	5.5	29	11.3	27	12.1	24	13.6	34	9.4
	SR-91 west of Weir Canyon Road to SR-241 Windy Ridge	64	7.1	64	7.2	64	7.2	56	8.1	30	15.4	25	18.4	26	17.6
	SR-91 County Line to SR-71 north of SR-91	61	5.0	60	5.1	60	5.1	29	10.7	34	9.0	32	9.5	31	9.8

Source: *Traffic Analysis Report* (July 2015).
 mins = minutes
 mph= miles per hour
 NB = northbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241

Therefore, travel times in these areas are almost two times longer than non-peak hours with free-flowing traffic. This congestion results in a bottleneck on the westbound SR-91 mainline between the Green River Road interchange and the *91 Express Lanes* ingress near the Riverside/Orange County line in the AM peak period.

During the PM peak hours, eastbound speeds range from 13 to 24 mph for the majority of the Study Area freeway segments. There is a bottleneck for vehicles traveling from northbound SR-241 to eastbound SR-91 in the PM peak period. Between SR-241 at Windy Ridge to the SR-91 northbound SR-241 merge, speeds are as low as 14 to 16 mph between 5:00 PM and 7:00 PM. Eastbound SR-91 between west of Weir Canyon Road to the northbound SR-241 merge is also congested in the PM peak hours, with speeds at 13 to 16 mph between 4:00 PM and 7:00 PM. Therefore, travel times in these areas are almost four times longer than non-peak hours with free-flowing traffic traveling at the posted speed limit of 65 mph.

3.5.3 Environmental Consequences

3.5.3.1 Temporary Impacts

Build Alternative (Two-Lane Express Lanes Connector) (Preferred Alternative)

Traffic delays are expected during construction of the Build Alternative. Temporary detours and weekend or night time closures would be required at the Gypsum Canyon Road on- and off-ramps and at the northbound SR-241 to the eastbound SR-91 connector. These detours and closures are expected to result in some delay to the traveling public.

Pedestrians and bicyclists are not allowed to travel on the SR-241 or SR-91 mainline. The temporary detours and closures on those freeways would not affect the existing fire trails or the Santa Ana River Trail/Bike Lane and would, therefore, not impact pedestrians and bicyclists or pedestrian and bicycle facilities.

A Transportation Management Plan (TMP) with traffic control plans and related specifications during project construction is necessary to minimize circulation and delay impacts. With implementation of Measure TR-1, provided later in Section 3.5.4, temporary transportation-related construction impacts of the Build Alternative would not be substantial.

No Build Alternative

The No Build Alternative does not include any improvements to the interchange or local roads in the Project Area. Therefore, the No Build Alternative would not result in temporary impacts related to traffic, transportation, or bicycle and pedestrian facilities.

3.5.3.2 Permanent Impacts

Build Alternative (Two-Lane Express Lanes Connector) (Preferred Alternative)

The Proposed Project was originally planned for opening in 2017 and was evaluated as such in the *Traffic Analysis Report* (July 2015). However, due to design modifications and the need to avoid conflicts with the SR-91 Corridor Improvement Project (CIP), the revised planned opening year is 2020. As discussed in the *Traffic Analysis Report* (July 2015) and the *Traffic Analysis Report Errata Sheet* (July 2016), the difference in traffic operations between 2017 and 2020 in the Study Area would be nominal in the peak hours due to over-saturated conditions that would remain on the general purpose lanes. Although the revised opening year is 2020, all of the tables and analysis for the Opening Year still refer to 2017, as this is the year for which the modeling was completed. The Proposed Project is planned to open in 2020. The year 2040 was chosen to represent the long-term horizon year.

Volume Served

2017 Conditions (Opening Year)

AM Peak Period. Table 3.5.3 compares volume throughput and percent demand unserved between the No Build Alternative and the Build Alternative in the AM peak period (6:00 AM to 9:00 AM) in 2017. As shown in Table 3.5.3, in the AM peak period, the No Build Alternative and the Build Alternative would have similar combined demand (general purpose and express lane trips) in the westbound direction of travel west of the SR-241/SR-91 interchange (between the Serfas Club/Auto Center Drive interchange and the SR-241 Ramp [westbound SR-91 to southbound SR-241]); however, the Build Alternative would have approximately 7 percent lower combined demand (or 2,400 vehicles) west of the SR-241/SR-91 interchange (between the SR-241 Ramp [westbound SR-91 to southbound SR-241] and Gypsum Canyon Road to west of Weir Canyon Road) due to a shift of travel patterns that increases demand southbound on SR-241. Five percent of the 2,400 vehicles (120 vehicles) that shift to southbound SR-241 in the AM peak period are projected to be trucks.

Table 3.5.3 2017 Data Vehicle Throughput Comparison

Screenline Location	No Build Alternative									Build Alternative									Throughput Volume Difference	
	Demand Volume			Throughput Volume			Percent Unserved			Demand Volume			Throughput Volume			Percent Unserved				
	GP Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	Change	% Change
Westbound SR-91 and Express Lanes, AM Peak Period (6:00 AM to 9:00 AM)																				
East of Serfas Club/Auto Center Drive	22367	9185	31552	21575	9143	30718	3.5%	0.5%	2.6%	22349	9184	31533	21866	9143	31009	2.2%	0.4%	1.7%	291	0.9%
Between Serfas Club/Auto Center Drive and SR-71	25820	9185	35005	24038	9143	33180	6.9%	0.5%	5.2%	25794	9184	34978	25261	9143	34405	2.1%	0.4%	1.6%	1225	3.7%
Between SR-71 and Green River Road	26530	9185	35715	21917	9143	31059	17.4%	0.5%	13.0%	26511	9184	35695	24077	9143	33220	9.2%	0.4%	6.9%	2161	7.0%
Between Green River Road and SR-241 Ramp (WB to SB)	33680	9185	42865	26256	9143	35398	22.0%	0.5%	17.4%	33659	9184	42843	29011	9143	38154	13.8%	0.4%	10.9%	2756	7.8%
Between SR-241 GP Ramp (WB to SB) and Gypsum Canyon Road	26790	8040	34830	21368	7421	28789	20.2%	7.7%	17.3%	24334	8033	32367	21119	7605	28724	13.2%	5.3%	11.3%	-66	-0.2%
Between Gypsum Canyon Road and SR-241 Ramp (NB to WB)	25631	8040	33671	20951	7421	28372	18.3%	7.7%	15.7%	23187	8033	31220	20641	7605	28245	11.0%	5.3%	9.5%	-127	-0.4%
Between SR-241 Ramp (NB to WB) and Weir Canyon Road	26493	8040	34533	21738	7421	29159	17.9%	7.7%	15.6%	24049	8033	32082	21456	7605	29061	10.8%	5.3%	9.4%	-99	-0.3%
West of Weir Canyon Road	26041	8040	34081	22091	7421	29512	15.2%	7.7%	13.4%	23598	8033	31631	21513	7605	29117	8.8%	5.3%	7.9%	-395	-1.3%
Average =																			2.1%	
Eastbound SR-91 General Purpose and Express Lanes, PM Peak Period (3:00 PM to 7:00 PM)																				
West of Weir Canyon Road	44952	12164	57116	23492	12079	35570	47.7%	0.7%	37.7%	44278	12160	56438	22231	12147	34379	49.8%	0.1%	39.1%	-1192	-3.4%
Between Weir Canyon Road and SR-241 Ramp (EB to SB)	43963	12164	56127	25622	12079	37701	41.7%	0.7%	32.8%	43288	12160	55448	24469	12147	36616	43.5%	0.1%	34.0%	-1085	-2.9%
Between SR-241 Ramp (EB to SB) and Gypsum Canyon Road	42981	12164	55145	25006	12079	37084	41.8%	0.7%	32.8%	42303	12160	54463	23997	12147	36144	43.3%	0.1%	33.6%	-940	-2.5%
Between Gypsum Canyon Road and SR-241 Ramp (NB to EB)	46765	12164	58929	28490	12079	40569	39.1%	0.7%	31.2%	46080	12160	58240	27876	12147	40023	39.5%	0.1%	31.3%	-546	-1.3%
Between SR-241 Ramp (NB to EB) and Green River Road	56264	12160	68424	37201	10845	48046	33.9%	10.8%	29.8%	58075	12160	70235	38555	10804	49359	33.6%	11.2%	29.7%	1313	2.7%
Between Green River Road and SR-71	47246	12160	59406	33517	10845	44363	29.1%	10.8%	25.3%	49097	12160	61257	34409	10804	45213	29.9%	11.2%	26.2%	850	1.9%
Between SR-71 and Serfas Club/Auto Center Drive	46179	12160	58339	35152	10845	45997	23.9%	10.8%	21.2%	48034	12160	60194	36088	10804	46892	24.9%	11.2%	22.1%	895	1.9%
East of Serfas Club/Auto Center Drive	41019	12160	53179	32247	10845	43092	21.4%	10.8%	19.0%	42816	12160	54976	32876	10804	43680	23.2%	11.2%	20.5%	588	1.4%
Average =																			-0.3%	

Source: Traffic Analysis Report (July 2015).

EB = eastbound
 GP = general purpose
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

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For the Build Alternative, the volume served on SR-91 westbound east of the SR-241/SR-91 interchange would be 5 percent greater on average than the No Build Alternative. Also, the Build Alternative would have similar throughput volume compared to the No Build Alternative west of the SR-241/SR-91 interchange, while the percent unserved would be approximately 6 percent lower for the Build Alternative than the No Build Alternative. The SR-91 westbound-to-SR-241 southbound ramps would serve approximately 2,800 more vehicles in the AM peak period for the Build Alternative compared to the No Build Alternative, due to the addition of the direct-connector ramp.

In the 2017 AM peak period, the Build Alternative would allow the corridor to serve additional vehicles (about 2 percent) and more vehicles would be able to enter the Study Area. This represents a considerable improvement in the overall efficiency of the system compared to the No Build Alternative.

PM Peak Period. Table 3.5.3 compares volume throughput and percent demand unserved between the No Build and the Build Alternative in 2017 in the PM peak period (3:00 PM to 7:00 PM). As shown in Table 3.5.3, in the PM peak period, the Build Alternative would have slightly less combined demand (general purpose and express lane trips) in the eastbound direction of travel on SR-91 west of the SR-241/SR-91 interchange (west of Weir Canyon Road to between Gypsum Canyon Road and the SR-241 Ramp [northbound SR-241 to eastbound SR-91]) when compared to the No Build Alternative (approximately 700 less vehicles) due to a shift of travel patterns that increases demand northbound on SR-241. Five percent of the 700 vehicles (35 vehicles) that shift to northbound SR-241 in the PM peak period are projected to be trucks.

However, the Build Alternative would have slightly higher combined demand east of the SR-241/SR-91 interchange (approximately 1,800 more vehicles). This is due to an increase in demand at the SR-241 northbound-to-SR-91 eastbound movement for the Build Alternative caused by the addition of the direct-connector ramp. The Build Alternative would attract trips to SR-241 from the regional freeway system (e.g., State Route 55 [SR-55]) and local arterials. For the Build Alternative, the changes in volume served compared to the No Build Alternative are:

- West of the SR-241/SR-91 interchange, the volume served is slightly lower (approximately 940 total fewer vehicles during the PM peak period) than the

No Build Alternative along the peak direction of travel (eastbound). This change is due to the heavy general purpose lane demand on SR-91 eastbound just downstream of the *91 Express Lanes* egress/ingress.¹

- East of the SR-241/SR-91 interchange, the volume served is slightly higher (approximately 900 total more vehicles during the PM peak period) than the No Build Alternative along the peak direction of travel (eastbound). This change is due to the increase in demand through the *91 Express Lanes*.

Table 3.5.3 shows that in the 2017 PM peak period, the overall average difference in volume served between the No Build Alternative and Build Alternative would be 0.3 percent in the eastbound direction for the reasons listed in the bullet points above. This overall eastbound corridor difference is considered nominal and the Build Alternative is not projected to have a noticeable effect on the general purpose travel lanes in comparison to the No Build Alternative in the PM peak period.

2040 Conditions (Design Year)

AM Peak Period. Table 3.5.4 compares volume throughput and percent demand unserved between the No Build Alternative and Build Alternative in 2040 in the AM peak period (6:00 AM to 9:00 AM). During the AM peak period, the Build Alternative would have slightly higher combined demand on SR-91 westbound east of the SR-241/SR-91 interchange when compared to the No Build Alternative (approximately 440 more vehicles), but the Build Alternative would have approximately 9 percent lower demand west of the SR-241/SR-91 interchange (approximately 3,700 less vehicles). This is due to a shift of travel patterns that would increase demand southbound on SR-241. Five percent of the 3,700 vehicles (185 vehicles) that shift to southbound SR-241 in the AM peak period are projected to be trucks.

The Build Alternative would serve slightly more vehicles east of the SR-241/SR-91 interchange than the No Build Alternative (approximately 430 more vehicles or 1 percent), but approximately 3,500 fewer vehicles west of the SR-241/SR-91 interchange.

¹ The *91 Express Lanes* egress/ingress are located near the boundary of the County of Orange and the County of Riverside Line between SR-241 and Green River Road.

Table 3.5.4 2040 Vehicle Throughput Comparison

Screenline Location	No Build Alternative									Build Alternative									Throughput Volume Difference	
	Demand Volume			Throughput Volume			Percent Unserved			Demand Volume			Throughput Volume			Percent Unserved			Change	% Change
	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall	General Purpose Lanes	Express Lanes	Overall		
Westbound SR-91 General Purpose and Express Lanes, AM Peak Period (6:00 AM to 9:00 AM)																				
East of Serfas Club/Auto Center Drive	27218	9185	36403	25992	9135	35127	4.5%	0.5%	3.5%	27744	9184	36928	27121	9136	36257	2.2%	0.5%	1.8%	1129	3.2%
Between Serfas Club/Auto Center Drive and SR-71	31564	9185	40749	30055	9135	39191	4.8%	0.5%	3.8%	31983	9184	41167	30821	9136	39956	3.6%	0.5%	2.9%	766	2.0%
Between SR-71 and Green River Road	32331	9185	41516	28451	9135	37586	12.0%	0.5%	9.5%	32744	9184	41928	28684	9136	37820	12.4%	0.5%	9.8%	234	0.6%
Between Green River Road and SR-241 Ramp (WB to SB)	41137	9185	50322	33034	9135	42169	19.7%	0.5%	16.2%	41540	9184	50724	32613	9136	41749	21.5%	0.5%	17.7%	-421	-1.0%
Between SR-241 GP Ramp (WB to SB) and Gypsum Canyon Road	33614	8040	41654	27200	7518	34718	19.1%	6.5%	16.7%	29804	8033	37837	23724	7364	31088	20.4%	8.3%	17.8%	-3630	-10.5%
Between Gypsum Canyon Road and SR-241 Ramp (NB to WB)	32124	8040	40164	27028	7518	34546	15.9%	6.5%	14.0%	28388	8033	36421	23641	7364	31005	16.7%	8.3%	14.9%	-3541	-10.3%
Between SR-241 Ramp (NB to WB) and Weir Canyon Road	33188	8040	41228	28005	7518	35523	15.6%	6.5%	13.8%	29444	8033	37477	24662	7364	32026	16.2%	8.3%	14.5%	-3497	-9.8%
West of Weir Canyon Road	32492	8040	40532	28228	7518	35746	13.1%	6.5%	11.8%	28894	8033	36927	25081	7364	32445	13.2%	8.3%	12.1%	-3301	-9.2%
Average =																			-4.4%	
Eastbound SR-91 General Purpose and Express Lanes, PM Peak Period (3:00 PM to 7:00 PM)																				
West of Weir Canyon Road	55164	12164	67328	28247	12079	40326	48.8%	0.7%	40.1%	55162	12160	67322	28476	12121	40597	48.4%	0.3%	39.7%	270	0.7%
Between Weir Canyon Road and SR-241 Ramp (EB to SB)	54771	12164	66935	31232	12079	43311	43.0%	0.7%	35.3%	54614	12160	66774	31362	12121	43483	42.6%	0.3%	34.9%	172	0.4%
Between SR-241 Ramp (EB to SB) and Gypsum Canyon Road	53563	12164	65727	30457	12079	42536	43.1%	0.7%	35.3%	53382	12160	65542	30548	12121	42669	42.8%	0.3%	34.9%	134	0.3%
Between Gypsum Canyon Road and SR-241 Ramp (NB to EB)	58054	12164	70218	34548	12079	46627	40.5%	0.7%	33.6%	58009	12160	70169	35202	12121	47323	39.3%	0.3%	32.6%	696	1.5%
Between SR-241 Ramp (NB to EB) and Green River Road	68537	12160	80697	45851	10863	56714	33.1%	10.7%	29.7%	68157	12097	80254	46653	10539	57192	31.6%	12.9%	28.7%	478	0.8%
Between Green River Road and SR-71	35516	12160	47676	24751	10863	35614	30.3%	10.7%	25.3%	35662	12097	47759	25022	10539	35561	29.8%	12.9%	25.5%	-53	-0.1%
Between SR-71 and Serfas Club/Auto Center Drive	46089	12160	58249	35080	10863	45943	23.9%	10.7%	21.1%	46576	12097	58673	35683	10539	46223	23.4%	12.9%	21.2%	280	0.6%
East of Serfas Club/Auto Center Drive	39790	12160	51950	31361	10863	42224	21.2%	10.7%	18.7%	40044	12097	52141	31858	10539	42398	20.4%	12.9%	18.7%	174	0.4%
Average =																			0.6%	

Source: Traffic Analysis Report (July 2015).

EB = eastbound
GP = general purpose
NB = northbound
SB = southbound
SR-71 = State Route 71
SR-91 = State Route 91
SR-241 = State Route 241
WB = westbound

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However, the SR-91 westbound to SR-241 southbound movement would serve approximately 3,300 more vehicles for the Build Alternative compared to the No Build Alternative due to the addition of the direct connector ramp, offsetting this difference. Furthermore, the average percent of unserved traffic along the entire length of SR-91 would be the same for both the Build Alternative and the No Build Alternative.

In the 2040 AM peak period, the Build Alternative would be able to serve the same or slightly more vehicles in the westbound direction of SR-91 upstream of the *91 Express Lanes* ingress/egress area, and more vehicles along SR-241 southbound. Due to a shift in travel patterns, the Build Alternative would serve more vehicles along southbound SR-241 and less vehicles along westbound SR-91 downstream of the *91 Express Lanes* ingress/egress area. This represents a slight improvement in the overall efficiency of the system compared to the No Build Alternative.

PM Peak Period. Table 3.5.4 compares volume throughput and percent demand unserved between the No Build and Build Alternatives in 2040 in the PM peak period (3:00 PM to 7:00 PM). As shown in Table 3.5.4, in the PM peak period, the Build Alternative would have the same combined demand (general purpose and express lane trips) in the peak eastbound direction of travel when compared to the No Build Alternative. Under the Build Alternative, the volume served would be slightly greater (about 300 vehicles during the PM peak period) than the No Build Alternative in the eastbound direction of travel. This change would occur due to the shift of approximately 800 peak hour trips from the SR-241 northbound to the SR-91 eastbound general purpose ramp over to the Express Lane ramp, which would slightly lower demand in the general purpose lanes. In the 2040 PM peak period, the Build Alternative would allow the corridor to serve slightly more vehicles, and more vehicles would be able to enter the Study Area. This represents an improvement in the overall efficiency of the system compared to the No Build Alternative.

Vehicle Speed

2017 Conditions (Opening Year)

AM Peak Period. In 2017, in the AM peak period, both the No Build Alternative and the Build Alternative would have a similar congestion pattern upstream (or east) of the weaving segment between the SR-241 and the Green River Road interchange (the *91 Express Lanes* ingress/egress area). The No Build Alternative queue would extend almost 1 mile further upstream (or east) than the Build Alternative.

The Build Alternative would provide some congestion relief in the 2017 AM peak period by reducing the extent of the westbound bottleneck by approximately 1 mile compared to the No Build Alternative.

In the 2017 AM peak period (7:00 AM to 8:00 AM, the worst hour of the peak period), the Build Alternative is expected to increase speed by approximately 13 mph on the westbound SR-91 general purpose lanes east of the SR-241 interchange in the AM peak period compared to the No Build Alternative (from 15 mph in the No Build Alternative up to 28 mph in the Build Alternative).

PM Peak Period. In the 2017 PM peak period, the SR-91 eastbound mainline would have the same congestion pattern for the No Build Alternative and the Build Alternative. For the Build Alternative, a slight decrease in speed is expected on the SR-91 general purpose lanes east of the SR-241/SR-91 interchange between SR-241 and the Green River Road interchange. This slight decrease in speeds would be a result of the additional friction in the ingress/egress area between the *91 Express Lanes* and the slow-moving general purpose lanes.

In the 2017 peak hour (4:00 PM to 5:00 PM, the worst hour of the peak period), the Build Alternative is expected to slightly decrease speed on the eastbound SR-91 general purpose lanes upstream (or west) of the *91 Express Lanes* ingress/egress locations in the PM peak period compared to the No Build Alternative. This decrease would occur due to the increased demand on the general purpose lanes downstream of the *91 Express Lanes* ingress/egress caused by the Build Alternative. This slight decrease in speeds (1–6 mph) on the eastbound general purpose lanes (west of the *91 Express Lanes* ingress/egress locations) is considered nominal given the increase in combined throughput (general purpose and *91 Express Lanes*) in the Build Alternative compared to the No Build Alternative.

2040 Conditions (Design Year)

AM Peak Period. In 2040, in the AM peak period, the Build Alternative is expected to increase speeds on the westbound SR-91 general purpose lanes between the *91 Express Lanes* ingress and Gypsum Canyon Road between 6:45 AM and 8:30 AM compared to the No Build Alternative (from 30–40 mph to 60 mph). This increase would result from an increase in the throughput volume in the ingress/egress area between the Green River Road interchange and SR-241. Speeds would also be higher for the Build Alternative east of the Serfas Club Drive/Auto Center Drive interchange

during the 6:00 AM to 7:00 AM hour compared to the No Build Alternative (from approximately 30 to 60 mph).

In the 2040 AM peak hour (7:00 AM to 8:00 AM, the worst hour of the peak period), the Build Alternative is expected to increase speed by approximately 30 mph (from 33 to 63 mph) on the SR-91 general purpose lanes west of SR-241 interchange compared to the No Build Alternative. Therefore, in the 2040 AM peak period, the Build Alternative would provide some congestion relief by reducing the limits and duration of the westbound bottleneck compared to the No Build Alternative.

PM Peak Period. In the 2040 PM peak period, speeds along eastbound SR-91 would generally be the same for the Build Alternative and the No Build Alternative in most segments of the corridor, with the exception of the segment between the SR-241 on-ramp and the SR-71 collector-distributor off-ramp. At this location, speeds would be approximately 5 mph higher for the Build Alternative compared to the No Build Alternative. In the *91 Express Lanes*, the speeds are projected to remain near free-flow in the ingress/egress area. Therefore, the Build Alternative provides benefit in terms of increased speeds in the eastbound general purpose lanes in the Build Alternative compared to the No Build Alternative in 2040.

In the PM peak hour (4:00 PM to 5:00 PM, the worst hour of the peak period), the speeds in the eastbound SR-91 general purpose lanes would generally be the same between the No Build Alternative and the Build Alternative, with the exception of the area between the SR-241 general purpose on-ramp and the Green River Road interchange. At this location, speeds would be approximately 5 mph higher for the Build Alternative (60 to 65 mph) compared to the No Build Alternative (55 to 60 mph). The improvements associated with the Ultimate SR-91 CIP improvements were found to provide enough capacity in 2040 to accommodate the friction between the *91 Express Lanes* and the general purpose lanes in the eastbound ingress/egress area.

Travel Time

2017 Conditions (Opening Year)

AM Peak Period. Table 3.5.5 compares travel times between the No Build Alternative and the Build Alternative in 2017 in the AM peak period (6:00 AM to 9:00 AM). In the 2017 AM peak period, travel times in the Study Area segments would either decrease (between 3.3 and 4.5 minutes) or stay the same in the westbound direction on SR-91 for the Build Alternative compared to the No Build

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Table 3.5.5 Travel Time Comparisons - No Build and Build Alternatives in 2017 Data, AM Peak Period (6:00 AM to 9:00 AM)

#	Origin	Destination	No Build Alternative Travel Time (Minutes)			Build Alternative Travel Time (Minutes)			Change (Minutes)		
			6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM	6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM	6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM
1	SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.6	8.7	8.6	8.7	8.7	8.6	0.1	0.0	0.0
		SR-91 EB Express Lanes east of Serfas Club Road	8.6	8.6	8.6	8.6	8.6	8.6	0.0	0.0	0.0
		SR-241 SB south of SR-91	7.1	7.2	7.2	7.2	7.2	7.2	0.1	0.0	0.0
		SR-71 NB north of SR-91	11.0	11.1	11.0	11.1	11.1	11.0	0.1	0.0	0.0
2	SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.5	8.5	8.5	8.5	8.5	8.5	0.0	0.0	0.0
		SR-91 EB Express Lanes east of Serfas Club Road	8.4	8.4	8.4	8.4	8.4	8.4	0.0	0.0	0.0
		SR-71 NB north of SR-91	10.9	10.9	10.9	10.9	11.0	10.9	0.0	0.1	0.0
3	SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	23.1	24.8	24.1	18.7	20.4	19.5	-4.4	-4.4	-4.6
		SR-91 WB Express Lanes west of Weir Canyon Road	23.0	24.7	24.0	18.6	20.3	19.5	-4.4	-4.4	-4.5
		SR-241 SB south of SR-91 (via GP Ramp)	25.4	27.1	26.5	21.1	22.8	22.0	-4.3	-4.3	-4.5
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	21.0	22.7	21.9	-4.4	-4.4	-4.6
		SR-71 NB north of SR-91	12.4	13.3	12.0	9.0	10.1	7.7	-3.4	-3.2	-4.3
4	SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	12.0	12.4	12.6	11.1	11.4	11.9	-0.9	-1.0	-0.7
		SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.5	8.5	8.4	0.1	0.1	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	14.4	14.8	15.0	13.6	13.9	14.4	-0.8	-0.9	-0.6
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	10.8	10.9	10.8	-3.6	-3.9	-4.2
5	SR-241 NB south of SR-91 (via GP Ramp)	SR-91 WB GP Lanes west of Weir Canyon Road	7.2	7.2	7.2	7.2	7.2	7.2	0.0	0.0	0.0
		SR-91 EB GP Lanes east of Serfas Club Road	11.0	11.0	11.0	11.0	11.0	10.9	0.0	0.0	-0.1
		SR-91 EB Express Lanes east of Serfas Club Road	10.9	10.9	10.9	10.9	10.9	10.9	0.0	0.0	0.0
		SR-71 NB north of SR-91	13.4	13.4	13.4	13.4	13.4	13.3	0.0	0.0	-0.1
6	SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	10.9	10.9	10.9	-0.1	-0.1	-0.1
		SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	10.8	10.8	10.8	-0.1	-0.1	-0.1
		SR-71 NB north of SR-91	N/A	N/A	N/A	13.3	13.4	13.3	-0.1	0.0	0.0
7	SR-71 SB north of SR-91	SR-91 WB GP Lanes west of Weir Canyon Road	43.0	54.1	55.9	32.0	39.5	40.5	-11.0	-14.6	-15.4
		SR-91 WB Express Lanes west of Weir Canyon Road	42.9	54.0	55.8	31.9	39.4	40.5	-11.0	-14.6	-15.3
		SR-91 EB GP Lanes east of Serfas Club Road	28.7	37.2	38.3	20.5	26.7	27.0	-8.2	-10.5	-11.3
		SR-241 SB south of SR-91 (via GP Ramp)	45.3	56.4	58.3	34.4	42.0	43.1	-10.9	-14.4	-15.2
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	34.3	41.8	42.9	-11.0	-14.6	-15.4

Source: *Traffic Analysis Report* (July 2015).
 EB = eastbound
 GP = general purpose
 N/A = not applicable
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

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Alternative. In addition, the travel time on SR-91 between SR-71 southbound to the SR-91 eastbound would also decrease (between 8.2 to 11.2 minutes) in the Build Alternative, due to improvements on the SR-91 westbound (peak direction) that would reduce the queue spillback onto the SR-71 southbound direction that occurs in the No Build Alternative.

PM Peak Period. Table 3.5.6 compares travel times between the No Build Alternative and the Build Alternative in 2017 in the PM peak period (3:00 PM to 7:00 PM). In the 2017 PM peak period, the travel time for the SR-91 eastbound general purpose lanes would slightly increase in the Build Alternative (between 1 to 2.5 minutes) compared to the No Build Alternative. The travel time for the SR-241 northbound to the SR-91 eastbound via the general purpose lane ramp would also increase in the Build Alternative by approximately 1.5 minutes; however, the travel time for the SR-241 northbound to the SR-91 eastbound via the new Express Lane ramp would decrease by 2.5 minutes. The increases in travel times for the SR-91 eastbound general purpose lanes in the Build Alternative are considered nominal given the increase in combined throughput that would be experienced in the same area.

2040 Conditions (Design Year)

AM Peak Period. Table 3.5.7 compares travel times between the No Build Alternative and the Build Alternative in 2040 in the AM peak period (6:00 AM to 9:00 AM). In the 2040 AM peak period, travel times for most of the segments in the Study Area would either stay the same or decrease in the westbound direction on SR-91 for the Build Alternative compared to the No Build Alternative due to project improvements. Travel times on eastbound SR-91 are also expected to improve for the Build Alternative compared to the No Build Alternative. This change would result from the shifts in regional travel patterns that cause lower general purpose lane demand on SR-91 eastbound west of the SR-241 interchange in the Build Alternative.

PM Peak Period. Table 3.5.8 compares travel times between the No Build Alternative and the Build Alternative in 2040 in the PM peak period (3:00 PM to 7:00 PM). In the 2040 PM peak period, travel times for most of the segments would either stay the same or decrease for the Build Alternative compared to the No Build Alternative. The decrease in travel time is due to the shift of trips from the SR-241 northbound to the SR-91 eastbound general purpose ramp over to the *91 Express Lanes* ramp, which lowers the general purpose lane demand in the *91 Express Lanes* ingress/egress area.

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Table 3.5.6 Travel Time Comparisons - No Build and Build Alternatives in 2017 Data, PM Peak Period (3:00 PM to 7:00 PM)

#	Origin	Destination	No Build Alternative Travel Time (Minutes)				Build Alternative Travel Time (Minutes)				Change (Minutes)			
			3:00–4:00 PM	4:00–5:00 PM	5:00–6:00 PM	6:00–7:00 PM	3:00–4:00 PM	4:00–5:00 PM	5:00–6:00 PM	6:00–7:00 PM	3:00–4:00 PM	4:00–5:00 PM	5:00–6:00 PM	6:00–7:00 PM
1	SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	28.3	29.6	29.4	27.6	30.3	31.9	32.0	29.4	2.0	2.3	2.6	1.8
		SR-91 EB Express Lanes east of Serfas Club Road	28.3	29.5	29.4	27.6	30.3	31.9	31.9	29.4	2.0	2.4	2.5	1.8
		SR-241 SB south of SR-91	18.4	19.1	19.0	17.7	19.3	20.8	20.6	18.7	0.9	1.7	1.6	1.0
		SR-71 NB north of SR-91	30.6	31.9	31.8	30.0	32.7	34.3	34.3	31.7	2.1	2.4	2.5	1.7
2	SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	10.4	10.5	10.5	10.5	11.2	11.3	11.3	11.2	0.8	0.8	0.8	0.7
		SR-91 EB Express Lanes east of Serfas Club Road	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.4	0.1	0.1	0.1	0.0
		SR-71 NB north of SR-91	12.7	12.8	12.9	12.9	13.6	13.6	13.7	13.5	0.9	0.8	0.8	0.6
3	SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0.0	0.0	0.0	0.0
		SR-91 WB Express Lanes west of Weir Canyon Road	8.5	8.5	8.5	8.4	8.5	8.5	8.5	8.4	0.0	0.0	0.0	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	10.9	11.0	10.9	10.9	10.9	10.9	10.9	10.9	0.0	-0.1	0.0	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	10.9	10.8	10.8	10.8	0.0	-0.2	-0.1	-0.1
		SR-71 NB north of SR-91	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.0	0.0	0.0	0.0
4	SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.4	0.0	0.0	0.0	-0.1
		SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	0.0	0.0	0.0	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0.0	0.0	0.0	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	10.8	10.8	10.8	10.7	-0.1	-0.1	-0.1	-0.2
5	SR-241 NB south of SR-91 (via GP Ramp)	SR-91 WB GP Lanes west of Weir Canyon Road	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	0.0	0.0	0.0	0.0
		SR-91 EB GP Lanes east of Serfas Club Road	13.4	13.5	13.6	13.6	15.0	15.2	15.1	14.9	1.6	1.7	1.5	1.3
		SR-91 EB Express Lanes east of Serfas Club Road	13.4	13.4	13.5	13.5	15.0	15.2	15.1	14.8	1.6	1.8	1.6	1.3
		SR-71 NB north of SR-91	15.7	15.8	15.9	15.9	17.3	17.5	17.5	17.2	1.6	1.7	1.6	1.3
6	SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	13.6	13.7	13.7	13.6	0.2	0.2	0.1	0.0
		SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	10.8	10.8	10.8	10.8	-2.6	-2.6	-2.7	-2.7
		SR-71 NB north of SR-91	N/A	N/A	N/A	N/A	15.9	16.0	16.0	15.9	0.2	0.2	0.1	0.0
7	SR-71 SB north of SR-91	SR-91 WB GP Lanes west of Weir Canyon Road	10.2	10.2	10.1	9.9	10.2	10.2	10.1	9.9	0.0	0.0	0.0	0.0
		SR-91 WB Express Lanes west of Weir Canyon Road	10.2	10.2	10.0	9.9	10.2	10.2	10.0	9.8	0.0	0.0	0.0	-0.1
		SR-91 EB GP Lanes east of Serfas Club Road	6.4	6.7	6.2	5.8	6.5	6.6	6.2	5.8	0.1	-0.1	0.0	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	12.6	12.7	12.5	12.3	12.7	12.6	12.5	12.3	0.1	-0.1	0.0	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	12.6	12.6	12.4	12.2	0.0	-0.1	-0.1	-0.1

Source: Traffic Analysis Report (July 2015).
 EB = eastbound
 GP = general purpose
 N/A = not applicable
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

Table 3.5.7 Travel Time Comparisons - No Build and Build Alternatives in 2040, AM Peak Period (6:00 AM to 9:00 AM)

#	Origin	Destination	No Build Alternative Travel Time (Minutes)			Build Alternative Travel Time (Minutes)			Change Travel Time (Minutes)		
			6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM	6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM	6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM
1	SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	9.7	12.6	13.7	8.9	9.5	9.4	-0.8	-3.1	-4.3
		SR-91 EB Express Lanes east of Serfas Club Road	9.5	12.4	13.5	8.8	9.4	9.3	-0.7	-3.0	-4.2
		SR-241 SB south of SR-91	7.9	10.7	12.0	7.3	7.7	7.9	-0.6	-3.0	-4.1
		SR-71 NB north of SR-91	11.0	13.9	15.0	10.2	10.8	10.7	-0.8	-3.1	-4.3
2	SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.7	8.7	8.6	8.6	8.6	8.5	-0.1	-0.1	-0.1
		SR-91 EB Express Lanes east of Serfas Club Road	8.3	8.3	8.3	8.4	8.4	8.4	0.1	0.1	0.1
		SR-71 NB north of SR-91	10.0	10.0	9.9	9.9	9.9	9.9	-0.1	-0.1	0.0
3	SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	22.8	21.2	16.3	18.1	19.4	20.0	-4.7	-1.8	3.7
		SR-91 WB Express Lanes west of Weir Canyon Road	20.8	19.3	15.4	16.4	19.2	19.9	-4.4	-0.1	4.5
		SR-241 SB south of SR-91 (via GP Ramp)	23.2	21.8	17.8	18.9	21.7	22.4	-4.3	-0.1	4.6
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	18.8	21.6	22.3	-4.4	-0.2	4.5
		SR-71 NB north of SR-91	8.5	8.0	5.7	6.2	8.2	7.8	-2.3	0.2	2.1
4	SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	15.0	14.5	13.2	14.1	12.9	13.5	-0.9	-1.6	0.3
		SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.4	8.4	8.4	0.0	0.0	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	15.5	15.0	14.7	14.8	15.2	15.9	-0.7	0.2	1.2
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	10.8	10.8	10.8	-4.7	-4.2	-3.9
		SR-91 WB GP Lanes west of Weir Canyon Road	7.3	7.3	7.3	7.3	7.3	7.2	0.0	0.0	-0.1
5	SR-241 NB south of SR-91 (via GP Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	11.1	11.1	11.1	11.0	11.0	11.0	-0.1	-0.1	-0.1
		SR-91 EB Express Lanes east of Serfas Club Road	10.9	10.9	10.9	10.9	10.9	10.9	0.0	0.0	0.0
		SR-71 NB north of SR-91	12.4	12.4	12.4	12.3	12.3	12.3	-0.1	-0.1	-0.1
		SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	11.0	11.0	11.0	-0.1	-0.1	-0.1
6	SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	10.8	10.8	10.8	-0.1	-0.1	-0.1
		SR-71 NB north of SR-91	N/A	N/A	N/A	12.3	12.3	12.3	-0.1	-0.1	-0.1
		SR-91 WB GP Lanes west of Weir Canyon Road	39.6	56.0	59.3	29.5	44.1	54.6	-10.1	-11.9	-4.7
7	SR-71 SB north of SR-91	SR-91 WB Express Lanes west of Weir Canyon Road	37.6	54.2	58.4	27.8	44.0	54.5	-9.8	-10.2	-3.9
		SR-91 EB GP Lanes east of Serfas Club Road	23.5	38.6	44.5	15.2	28.8	35.5	-8.3	-9.8	-9.0
		SR-241 SB south of SR-91 (via GP Ramp)	40.1	56.6	60.9	30.2	46.4	57.0	-9.9	-10.2	-3.9
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	30.2	46.3	56.9	-9.9	-10.3	-4.0
		SR-91 WB GP Lanes west of Weir Canyon Road	39.6	56.0	59.3	29.5	44.1	54.6	-10.1	-11.9	-4.7

Source: Traffic Analysis Report (July 2015).
 EB = eastbound
 GP = general purpose
 N/A = not applicable
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

Table 3.5.8 Travel Time Comparisons - No Build and Build Alternatives in 2040, PM Peak Period (3:00 PM to 7:00 PM)

#	Origin	Destination	No Build Alternative Travel Time (Minutes)				Build Alternative Travel Time (Minutes)				Change Travel Time (Minutes)			
			3:00– 4:00 PM	4:00– 5:00 PM	5:00– 6:00 PM	6:00– 7:00 PM	3:00– 4:00 PM	4:00– 5:00 PM	5:00– 6:00 PM	6:00– 7:00 PM	3:00– 4:00 PM	4:00– 5:00 PM	5:00– 6:00 PM	6:00– 7:00 PM
1	SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	19.8	20.3	20.9	20.5	19.6	19.7	19.6	18.7	-0.2	-0.6	-1.3	-1.8
		SR-91 EB Express Lanes east of Serfas Club Road	19.7	20.3	20.8	20.5	19.5	19.7	19.6	18.7	-0.2	-0.6	-1.2	-1.8
		SR-241 SB south of SR-91	14.7	14.7	14.6	14.3	14.5	14.7	14.6	14.0	-0.2	0.0	0.0	-0.3
		SR-71 NB north of SR-91	21.2	21.8	22.3	22.0	21.0	21.2	21.1	20.2	-0.2	-0.6	-1.2	-1.8
2	SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.8	9.2	9.7	9.9	8.7	8.7	8.7	8.6	-0.1	-0.5	-1.0	-1.3
		SR-91 EB Express Lanes east of Serfas Club Road	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.4	0.1	0.1	0.1	0.0
		SR-71 NB north of SR-91	10.2	10.6	11.2	11.4	10.1	10.2	10.2	10.1	-0.1	-0.4	-1.0	-1.3
3	SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	8.7	8.7	8.7	8.5	8.5	8.5	8.5	8.5	-0.2	-0.2	-0.2	0.0
		SR-91 WB Express Lanes west of Weir Canyon Road	8.6	8.6	8.6	8.5	8.5	8.5	8.5	8.4	-0.1	-0.1	-0.1	-0.1
		SR-241 SB south of SR-91 (via GP Ramp)	11.0	11.1	11.0	10.9	10.9	11.0	10.9	10.9	-0.1	-0.1	-0.1	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	10.9	10.9	10.8	10.8	-0.1	-0.2	-0.2	-0.1
		SR-71 NB north of SR-91	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0.0	0.0	0.0	0.0
4	SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	8.6	8.7	8.6	8.5	8.5	8.5	8.5	8.5	-0.1	-0.2	-0.1	0.0
		SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.3	8.4	8.4	8.4	8.4	0.0	0.0	0.0	0.1
		SR-241 SB south of SR-91 (via GP Ramp)	11.0	11.0	11.0	10.9	10.9	10.9	10.9	10.9	-0.1	-0.1	-0.1	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	10.8	10.8	10.7	10.7	-0.2	-0.2	-0.3	-0.2
5	SR-241 NB south of SR-91 (via GP Ramp)	SR-91 WB GP Lanes west of Weir Canyon Road	7.2	7.2	7.5	7.3	7.2	7.2	7.3	7.2	0.0	0.0	-0.2	-0.1
		SR-91 EB GP Lanes east of Serfas Club Road	11.2	11.6	12.7	12.6	11.0	11.1	11.1	11.0	-0.2	-0.5	-1.6	-1.6
		SR-91 EB Express Lanes east of Serfas Club Road	11.2	11.6	12.7	12.5	11.0	11.0	11.0	11.0	-0.2	-0.6	-1.7	-1.5
		SR-71 NB north of SR-91	12.6	13.1	14.2	14.0	12.5	12.5	12.5	12.5	-0.1	-0.6	-1.7	-1.5
6	SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	11.0	11.0	11.1	11.0	-0.2	-0.6	-1.6	-1.6
		SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	10.8	10.8	10.8	10.8	-0.4	-0.8	-1.9	-1.7
		SR-71 NB north of SR-91	N/A	N/A	N/A	N/A	12.5	12.5	12.5	12.5	-0.1	-0.6	-1.7	-1.5
7	SR-71 SB north of SR-91	SR-91 WB GP Lanes west of Weir Canyon Road	10.0	10.1	10.0	9.8	9.9	9.9	9.9	9.8	-0.1	-0.2	-0.1	0.0
		SR-91 WB Express Lanes west of Weir Canyon Road	9.9	10.0	9.9	9.8	9.8	9.8	9.8	9.7	-0.1	-0.2	-0.1	-0.1
		SR-91 EB GP Lanes east of Serfas Club Road	5.7	5.7	5.6	5.4	5.8	5.9	5.6	5.4	0.1	0.2	0.0	0.0
		SR-241 SB south of SR-91 (via GP Ramp)	12.4	12.5	12.4	12.2	12.3	12.3	12.3	12.2	-0.1	-0.2	-0.1	0.0
		SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	12.2	12.2	12.2	12.1	-0.2	-0.3	-0.2	-0.1

Source: Traffic Analysis Report (July 2015).
 EB = eastbound
 GP = general purpose
 N/A = not applicable
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

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Density and LOS

2017 Conditions (Opening Year)

AM Peak Hour. Freeway traffic flow can be defined in terms of level of service (LOS). For freeways, there are six defined levels of service, ranging from LOS A to LOS F. LOS A represents free traffic flow with low traffic volumes and high speeds, and LOS F represents traffic volumes that exceed the facility capacity and result in forced flow operations at low speeds. In the 2017 AM peak hour (7:00 AM to 8:00 AM), the westbound SR-91 general purpose lanes would operate at the same or better LOS for the Build Alternative compared to the No Build Alternative. For the Build Alternative in 2017, a slight decrease in density is expected on the westbound general purpose lanes already operating at LOS F in the No Build Alternative (east of SR-241).

The Build Alternative would slightly improve density/LOS in the 2017 AM peak period on the westbound SR-91 general purpose lanes between the *91 Express Lanes* ingress/egress area and the eastern limits of the Study Area (Serfas Club Drive/Auto Center Drive).

PM Peak Hour. In the 2017 PM peak hour (4:00 PM to 5:00 PM), the eastbound SR-91 general purpose lanes west of the *91 Express Lanes* ingress/egress would operate at the same LOS for the No Build Alternative and the Build Alternative. Compared to the No Build Alternative, the Build Alternative is expected to increase density on the segments of the general purpose lane operating in LOS F (west of the Green River Road interchange) due to an increase in demand in the general purpose lanes downstream of the *91 Express Lanes* ingress/egress area between SR-241 and the Green River Road interchange.

The Build Alternative would slightly worsen density/LOS in the 2017 PM peak period on the SR-91 general purpose lanes in the eastbound direction between the *91 Express Lanes* ingress/egress area and the western limits of the Study Area (Weir Canyon Road). However, the change in density/LOS is considered nominal given the increase in combined throughput (general purpose lane and *91 Express Lanes*) experienced in the same area with the Build Alternative.

2040 Conditions (Design Year)

AM Peak Hour. In the 2040 AM peak period, the westbound SR-91 general purpose lanes would operate at the same LOS for the No Build Alternative and the Build Alternative except in the area between the Green River Road interchange and the

SR-241 interchange. The general purpose lane segment between the Green River Road and SR-241 interchanges is expected to operate at LOS D or better for the Build Alternative, compared to LOS F for the No Build Alternative. This improvement in LOS would occur due to the higher demand in the general purpose lanes of this segment of SR-91 for the No Build Alternative compared to the Build Alternative.

The Build Alternative would provide substantial improvements in density/LOS on the westbound SR-91 general purpose lanes in the 2040 AM peak period between the *91 Express Lanes* ingress/egress area and the SR-241 interchange.

PM Peak Hour. For the Build Alternative in 2040, a decrease in density is expected in the SR-91 general purpose lanes in the vicinity of the *91 Express Lanes* ingress/egress area compared to the No Build Alternative. SR-91 between the SR-241 and Green River Road interchanges is expected to operate at LOS E for the No Build Alternative compared to LOS D or better for the Build Alternative. The decrease in density in the SR-91 general purpose lanes would occur due to the slightly lower demand for the Build Alternative caused by the shift of approximately 800 trips from the SR-241 northbound to SR-91 eastbound general purpose ramp over to the Express Lane ramp.

The Build Alternative would slightly worsen the density/LOS in the 2040 PM peak period on the eastbound SR-91 general purpose lanes between the *91 Express Lanes* ingress/egress area and the western limits of the Study Area (Weir Canyon Road). However, the change in density/LOS is considered nominal given the increase in combined throughput (general purpose and *91 Express Lanes*) experienced in the same area with the Build Alternative.

Express Lane Operations

Express lane operations were studied as part of the 2017 and 2040 peak period analyses for the No Build Alternative and the Build Alternative. Operational conditions such as volume served, speed, queues, and LOS for the No Build and Build Alternative are summarized in Tables 3.5.9 and 3.5.10. In the AM peak period, the westbound *91 Express Lanes* throughout the Study Area are projected to operate the same with and without the Proposed Project in 2017 and 2040. In the PM peak period, the eastbound *91 Express Lanes* throughout the Study Area are also projected to operate the same with and without the Proposed Project in 2017 and 2040. Tables 3.5.9 and 3.5.10 show that there are no appreciable differences in volumes served, speeds, or LOS in the westbound *91 Express Lanes* in the AM peak period

Table 3.5.9 Summary of 2017 Data Express Lane Operations

Operational Metric	Alternative	Between SR-71 and Green River Road	Study Segment between Green River Road and the SR-241 Express Lane Connector	Study Segment between the SR-241 Express Lane Connector and Weir Canyon Road
Westbound AM Peak Period (6:00 AM to 9:00 AM)				
Volume Served (percent of demand served)	No Build	99.5%	99.5%	92.3%
	Build	99.6%	99.6%	94.7%
Speed (miles per hour)	No Build	68	69	69
	Build	68	68	69
Queues in the Express Lanes?	No Build	No	No	No
	Build	No	No	No
Level of Service	No Build	C	B	B
	Build	C	B	B
Eastbound PM Peak Period (3:00 PM to 7:00 PM)				
Volume Served (percent of demand served)	No Build	89.2%	99.3%	99.3%
	Build	88.8%	99.9%	99.9%
Speed (miles per hour)	No Build	68	69	68
	Build	68	69	68
Queues in the Express Lanes?	No Build	No	No	No
	Build	No	No	No
Level of Service	No Build	C	B	C
	Build	C	B	C

Source: *Traffic Analysis Report* (July 2015).

SR-71 = State Route 71

SR-241 = State Route 241

Table 3.5.10 Summary of 2040 Express Lane Operations

Operational Metric	Alternative	Between SR-71 and Green River Road	Study Segment between Green River Road and the SR-241 Express Lane Connector	Study Segment between the SR-241 Express Lane Connector and Weir Canyon Road
Westbound AM Peak Period (6:00 AM to 9:00 AM)				
Volume Served (percent of demand served)	No Build	99.5%	99.5%	93.5%
	Build	99.5%	99.5%	91.7%
Speed (miles per hour)	No Build	68	69	68
	Build	68	68	69
Queues in the Express Lanes?	No Build	No	No	No
	Build	No	No	No
Level of Service	No Build	C	B	B
	Build	C	B	B
Eastbound PM Peak Period (3:00 PM to 7:00 PM)				
Volume Served (percent of demand served)	No Build	89.3%	99.3%	99.3%
	Build	87.1%	99.7%	99.7%
Speed (miles per hour)	No Build	68	69	68
	Build	68	69	68
Queues in the Express Lanes?	No Build	No	No	No
	Build	No	No	No
Level of Service	No Build	C	B	C
	Build	C	B	C

Source: *Traffic Analysis Report* (July 2015).

SR-71 = State Route 71

SR-241 = State Route 241

and in the eastbound 91 Express Lanes in the PM peak period between the No Build Alternative and the Build Alternative.

Analysis of Network Performance

2017 Conditions (Opening Year)

AM Peak Period. Table 3.5.11 compares the network performance for the No Build Alternative and Build Alternative in the 2017 AM peak period. The following points highlight the comparison of the network performance between the No Build Alternative and the Build Alternative in the 2017 AM peak period:

Table 3.5.11 2017 Data Summary of Network Performance for the No Build and Build Alternatives

Performance Measure (all vehicle types)	No Build Alternative	Build Alternative	Net Change With Project
AM Peak Period (6:00 AM to 9:00 AM)			
Total vehicle demand (vehicles)	100,741	101,682	941
Total number of vehicles that did not reach their destination (vehicles)	9,016	5,420	-3,596
Total number of vehicles that have reached their destination (vehicles)	91,725	96,262	4,537
Total vehicle miles traveled	796,551	845,966	49,415
Total vehicle hours traveled	23,068	21,012	-2,056
Average speed (miles per hour)	34.5	40.3	5.8
Average delay time per vehicle (minutes/vehicle)	6.8	4.9	-1.9
PM Peak Period (3:00 PM to 7:00 PM)			
Total vehicle demand (vehicles)	141,937	144,727	2,790
Total number of vehicles that did not reach their destination (vehicles)	20,812	22,405	1,593
Total number of vehicles that have reached their destination (vehicles)	121,125	122,322	1,197
Total vehicle -miles traveled- VMT (miles)	1,014,001	1,036,967	22,966
Total travel time- VHT (hours)	26,278	27,608	1,330
Average speed (miles per hour)	38.6	37.6	-1.0
Average delay time per vehicle (minutes/vehicle)	5.3	5.7	0.4

Source: *Traffic Analysis Report* (July 2015).

VHT = vehicle hours traveled

VMT = vehicle miles traveled

- The Build Alternative would slightly increase demand in the Study Area compared to the No Build Alternative (by an additional 940 vehicles or less than percent) by attracting vehicles from surrounding roadways to SR-241.

- The Build Alternative would increase vehicle throughput (by 4,500 vehicles or 5 percent) and decrease the percent of unserved traffic compared to the Build Alternative (from 9 percent for the No Build Alternative to 5 percent for the Build Alternative).
- Vehicle miles traveled (VMT) would increase by 6 percent for the Build Alternative compared to the No Build Alternative because vehicle throughput would increase.
- The average speed per vehicle would increase by approximately 6 mph (from 34 to 40 mph) for the Build Alternative compared to the No Build Alternative.
- The average delay per vehicle would decrease by approximately 28 percent (from 6.8 to 4.9 minutes per vehicle) for the Build Alternative compared to the No Build Alternative.

PM Peak Period. Table 3.5.11 compares the network performance for the No Build Alternative and the Build Alternative in the 2017 PM peak period. The following summarizes the comparison of the network performance between the No Build Alternative and the Build Alternative in the 2017 PM peak period shown in Table 3.5.11:

- The Build Alternative would increase demand in the Study Area (by an additional 2,800 vehicles or 2 percent) compared to the No Build Alternative by attracting additional vehicles from surrounding roadways to SR-241.
- The Build Alternative would increase vehicle throughput (by 1,200 vehicles or 1 percent) compared to the No Build Alternative. Although the amount of unserved vehicles would increase for the Build Alternative (by 1,600 vehicles), the percent of unserved vehicles would remain at 15 percent for both the No Build Alternative and the Build Alternative.
- Vehicle miles traveled would increase by 2 percent for the Build Alternative compared to the No Build Alternative because vehicle throughput would increase.
- The average speed per vehicle would decrease by 1 mph (from 39 to 38 mph) for the Build Alternative compared to the No Build Alternative due to the additional demand in the general purpose lanes downstream of the *91 Express Lanes* ingress/ egress.
- The average delay per vehicle would increase by approximately 0.4 minute (from 5.3 to 5.7 minutes) for the Build Alternative compared to the No Build Alternative.

- The decrease in speed (-1.0 mph) and increase in travel time (+0.4 minute/ vehicle) for the Build Alternative compared to the No Build Alternative would be considered nominal given the increase in vehicle throughput (+1,200 vehicles or 1 percent).

2040 Conditions (Design Year)

AM Peak Period. Table 3.5.12 compares the network performance for the No Build Alternative and the Build Alternative in the 2040 AM peak period. The following summarizes the comparison of the network performance between the No Build Alternative and the Build Alternative in the 2040 AM peak period:

Table 3.5.12 2040 Summary of Network Performance for the No Build and Build Alternatives

Performance Measure (all vehicle types)	No Build Alternative	Build Alternative	Net Change With Project
AM Peak Period (6:00 AM to 9:00 AM)			
Total vehicle demand (vehicles)	119,605	120,167	562
Total number of vehicles that did not reach their destination (vehicles)	10,264	9,895	-369
Total number of vehicles that have reached their destination (vehicles)	109,342	110,273	931
Total vehicle miles traveled	939,671	953,732	14,061
Total vehicle hours traveled	27,641	25,219	-2,422
Average speed (miles per hour)	34.0	37.8	3.8
Average delay time per vehicle (minutes/vehicle)	7.0	5.6	-1.4
PM Peak Period (3:00 PM to 7:00 PM)			
Total vehicle demand (vehicles)	168,494	168,944	450
Total number of vehicles that did not reach their destination (vehicles)	26,918	25,914	-1,004
Total number of vehicles that have reached their destination (vehicles)	141,576	143,030	1,454
Total vehicle -miles traveled- VMT (miles)	1,173,727	1,193,635	19,908
Total travel time- VHT (hours)	26,063	25,477	-586
Average speed (miles per hour)	45.1	46.9	1.8
Average delay time per vehicle (minutes/vehicle)	3.4	3.1	-0.3

Source: *Traffic Analysis Report* (July 2015).

VHT = vehicle hours traveled

VMT = vehicle miles traveled

- The No Build Alternative and the Build Alternative would have generally the same demand.
- The Build Alternative would increase vehicle throughput (by an additional 930 vehicles or 1 percent) and decrease the percent unserved (from 9 percent to 8 percent) compared to the No Build Alternative.
- Vehicle miles traveled would increase by 1 percent for the Build Alternative compared to the No Build Alternative because vehicle throughput would increase.

- The average speed per vehicle would increase by approximately 4 mph (from 34 to 38 mph) for the Build Alternative compared to the No Build Alternative.
- The average delay per vehicle would decrease by approximately 20 percent (from 7.0 to 5.6 minutes per vehicle) for the Build Alternative compared to the No Build Alternative.

PM Peak Period. Table 3.5.12 compares the network performance for the No Build Alternative and the Build Alternative in the 2040 PM peak period. The following summarizes the comparison of the network performance between the No Build Alternative and the Build Alternative in the 2040 PM peak period:

- The No Build Alternative and the Build Alternative would have generally the same demand.
- The Build Alternative would increase vehicle throughput (by 1,450 vehicles or 1 percent) while decreasing the amount of unserved vehicles (by 1,000 vehicles) compared to the No Build Alternative.
- The percent unserved would decrease from 16 percent for the No Build Alternative to 15 percent for the Build Alternative.
- Vehicle miles traveled would increase by 2 percent for the Build Alternative compared to the No Build Alternative because vehicle throughput would increase.
- The average speed per vehicle would increase by about 2 mph (from 45 to 47 mph) for the Build Alternative compared to the No Build Alternative.
- The average delay per vehicle would slightly decrease by less than half a minute (from 3.4 to 3.1 minutes) for the Build Alternative compared to the No Build Alternative.

Pedestrian and Bicycle Facilities

The Build Alternative would not modify or otherwise affect the Santa Ana River Trail/Bike Lane or the existing fire trails in the Study Area. Therefore, the Build Alternative would not impact pedestrians and bicyclists or pedestrian and bicycle facilities.

Summary

In summary, the Build Alternative would achieve the following:

- Vehicle throughput in the SR-91 corridor would improve, vehicles miles traveled would increase, and travel time would decrease. More vehicles would use the *91 Express Lanes* (i.e., the Proposed Project would bring more cars into the

- 91 Express Lanes* and, therefore, the combined general purpose lane and the *91 Express Lane* throughput would increase).
- Traffic would shift from other regional routes (SR-91, SR-55, and surface streets) to SR-241 as a result of the additional capacity of the new connector.
 - The length of the northbound SR-241 to the eastbound SR-91 queue on the general purpose ramp would shorten in the PM peak period.
 - The length of the queues would shorten at the SR-91 westbound mainline bottleneck between the Green River Road interchange and the *91 Express Lanes* ingress in the AM peak period.
 - There would be an increase in friction on eastbound SR-91 as more vehicles would exit the *91 Express Lanes* and enter the general purpose lanes, and fewer cars would be able to leave the general purpose lanes and enter the RCTC SR-91 Express Lanes due to the increase in traffic volumes on the express lanes connector.
 - There would be a reduction in friction due to fewer vehicles weaving from the northbound SR-241 to eastbound SR-91 general purpose ramp to the Riverside County Transportation Commission (RCTC) Express Lanes (i.e., most of these vehicles would now use the SR-241 to SR-91 Express Lanes Connector) with the Proposed Project.

No Build Alternative

Volume Served

2017 Conditions (Opening Year)

Table 3.5.13 presents the volume throughput and the percent demand unserved for the No Build Alternative in 2017 in the AM and PM peak periods. Throughput volume and percent of demand unserved are both measured by combining the general purpose and express lanes along SR-91 between Weir Canyon Road and Serfas Club/Auto Center Drive in the AM and PM peak periods. As seen in Table 3.5.13, in 2017 for the No Build Alternative, the percent of unserved traffic is projected to increase to as high as 17.4 percent in the westbound direction in the AM peak period and as high as 37.7 percent in the eastbound direction in the PM peak period, depending on the freeway segment.

2040 Conditions (Design Year)

Table 3.5.14 presents the volume throughput and percent demand unserved for the No Build Alternative in 2040 in the AM and PM peak periods. As shown in Table 3.5.14, by 2040, the percent of unserved traffic is projected to increase to as high as 16.7 percent in the westbound direction in the AM peak period and as

Table 3.5.13 Opening Year (2017 data) No Build Alternative Peak Period Vehicle Throughput Comparison

Location	Demand Volume			Throughput Volume			Percent Unserved		
	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall
Westbound AM (6:00 AM to 9:00 AM)									
East of Serfas Club/Auto Center Drive	22367	9185	31552	21575	9143	30718	3.5%	0.5%	2.6%
Between Serfas Club/Auto Center Drive	25820	9185	35005	24038	9143	33180	6.9%	0.5%	5.2%
Between SR-71 and Green River Road	26530	9185	35715	21917	9143	31059	17.4%	0.5%	13.0%
Between Green River Road and SR-241 Ramp (WB to SB)	33680	9185	42865	26256	9143	35398	22.0%	0.5%	17.4%
Between SR-241 GP Ramp (WB to SB) and Gypsum Canyon Road	26790	8040	34830	21368	7421	28789	20.2%	7.7%	17.3%
Between Gypsum Canyon Road and SR-241 Ramp (NB to WB)	25631	8040	33671	20951	7421	28372	18.3%	7.7%	15.7%
Between SR-241 Ramp (NB to WB) and Weir Canyon Road	26493	8040	34533	21738	7421	29159	17.9%	7.7%	15.6%
West of Weir Canyon Road	26041	8040	34081	22091	7421	29512	15.2%	7.7%	13.4%
Eastbound PM (3:00 PM to 7:00 PM)									
West of Weir Canyon Road	44952	12164	57116	23492	12079	35570	47.7%	0.7%	37.7%
Between Weir Canyon Road and SR-241 Ramp (EB to SB)	43963	12164	56127	25622	12079	37701	41.7%	0.7%	32.8%
Between SR-241 Ramp (EB to SB) and Gypsum Canyon Road	42981	12164	55145	25006	12079	37084	41.8%	0.7%	32.8%
Between Gypsum Canyon Road and SR-241 Ramp (NB to EB)	46765	12164	58929	28490	12079	40569	39.1%	0.7%	31.2%
Between SR-241 Ramp (NB to EB) and Green River Road	56264	12160	684424	37201	10845	48046	33.9%	10.8%	29.8%
Between Green River Road and SR-71	47246	12160	59406	33517	10845	44363	29.1%	10.8%	25.3%
Between SR-71 and Serfas Club/Auto Center Drive	46179	12160	58339	35152	10845	45997	23.9%	10.8%	21.2%
East of Serfas Club/Auto Center Drive	41019	12160	53179	32247	10845	43092	21.4%	10.8%	19.0%

Source: *Traffic Analysis Report* (July 2015).

EB = eastbound

GP = general purpose

NB = northbound

SB = southbound

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

WB = westbound

Table 3.5.14 Design Year (2040) No Build Alternative Peak Period Vehicle Throughput Comparison

Location	Demand Volume			Throughput Volume			Percent Unserviced		
	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall	GP Lanes	Express Lanes	Overall
Westbound AM (6:00 AM to 9:00 AM)									
East of Serfas Club/Auto Center Drive	27218	9185	36403	25992	9135	35127	4.5%	0.5%	3.5%
Between Serfas Club/Auto Center Drive	31564	9185	40749	30055	9135	39191	4.8%	0.5%	3.8%
Between SR-71 and Green River Road	32331	9185	41516	28451	9135	37586	12.0%	0.5%	9.5%
Between Green River Road and SR-241 Ramp (WB to SB)	41137	9185	50322	33034	9135	42169	19.7%	0.5%	16.2%
Between SR-241 GP Ramp (WB to SB) and Gypsum Canyon Road	33614	8040	41654	27200	7518	34718	19.1%	6.5%	16.7%
Between Gypsum Canyon Road and SR-241 Ramp (NB to WB)	32124	8040	40164	27028	7518	34546	15.9%	6.5%	14.0%
Between SR-241 Ramp (NB to WB) and Weir Canyon Road	33188	8040	41228	28005	7518	35523	15.6%	6.5%	13.8%
West of Weir Canyon Road	32492	8040	40532	28228	7518	35746	13.1%	6.5%	11.8%
Eastbound PM (3:00 PM to 7:00 PM)									
West of Weir Canyon Road	55164	12164	67328	28247	12079	40326	48.8%	0.7%	40.1%
Between Weir Canyon Road and SR-241 Ramp (EB to SB)	54771	12164	66935	31232	12079	43311	43.0%	0.7%	35.3%
Between SR-241 Ramp (EB to SB) and Gypsum Canyon Road	53563	12164	65727	30457	12079	42536	43.1%	0.7%	35.3%
Between Gypsum Canyon Road and SR-241 Ramp (NB to EB)	58054	12164	70218	34548	12079	46627	40.5%	0.7%	33.6%
Between SR-241 Ramp (NB to EB) and Green River Road	68537	12160	80697	45851	10863	56714	33.1%	10.7%	29.7%
Between Green River Road and SR-71	35516	12160	47676	24751	10863	35614	30.3%	10.7%	25.3%
Between SR-71 and Serfas Club/Auto Center Drive	46089	12160	58249	35080	10863	45943	23.9%	10.7%	21.1%
East of Serfas Club/Auto Center Drive	39790	12160	51950	31361	10863	42224	21.2%	10.7%	18.7%

Source: *Traffic Analysis Report* (July 2015).

EB = eastbound

GP = general purpose

NB = northbound

SB = southbound

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

WB = westbound

high as 40.1 percent in the eastbound direction in the PM peak period, depending on the freeway segment.

Vehicle Speed and Travel Times

2017 Conditions (Opening Year)

Travel times for the No Build Alternative in 2017 are shown in Table 3.5.15. In 2017, heavy peak hour flows would occur in the westbound direction in the morning and in the eastbound direction in the evening in the traffic Study Area, due to commuters traveling between communities in the counties of Riverside and San Bernardino and work places in the counties of Los Angeles and Orange. In 2017, during the AM peak hours, vehicle speeds on the westbound SR-91 general purpose lanes would range from 10 to 26 mph between Serfas Club Drive/Auto Center Drive to the County Line. During the PM peak hours, eastbound speeds would range from 10 to 23 mph between west of Weir Canyon Road to the SR-241 merge. Therefore, travel times in these areas are almost four times longer than non-peak hours with free-flowing traffic.

In 2017, vehicle speeds on the *91 Express Lanes* would range from 65 to 70 mph throughout the Study Area in both the westbound and eastbound directions.

2040 Conditions (Design Year)

Travel times for the No Build Alternative in 2040 are shown in Table 3.5.16. In 2040, heavy peak hour flows would continue to occur in the westbound direction in the morning and in the eastbound direction in the evening within the traffic Study Area. In 2040, during the AM peak hours, vehicle speeds on the westbound SR-91 general purpose lanes would range from 15 to 33 mph between Serfas Club Drive/Auto Center Drive to the County Line. During the PM peak hours, eastbound speeds would range from 12 to 60 mph between west of Weir Canyon Road to the SR-241 merge. Between west of Weir Canyon Road to Gypsum Canyon Road, vehicle speeds would range from 12 to 24 mph. The speed increases east of Gypsum Canyon Road due to the additional general purpose lane added by the Ultimate SR-91 CIP.

In 2040, vehicle speeds on the *91 Express Lanes* would range from 65 to 70 mph throughout the Study Area in both the westbound and eastbound directions.

3.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented with the Build Alternative and would minimize impacts related to traffic and transportation. These include applicable, previously adopted measures from the ETC Final EIR and Final EIS.

Table 3.5.15 Opening Year (2017 data) No Build Alternative Travel Times

Origin	Destination	AM Peak Period Travel Time (Minutes)			PM Peak Period Travel Time (Minutes)			
		6:00– 7:00 AM	7:00– 8:00 AM	8:00– 9:00 AM	3:00– 4:00 PM	4:00– 5:00 PM	5:00– 6:00 PM	6:00– 7:00 PM
SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.6	8.7	8.6	28.3	29.6	29.4	27.6
	SR-91 EB Express Lanes east of Serfas Club Road	8.6	8.6	8.6	28.3	29.5	29.4	27.6
	SR-241 SB south of SR-91	7.1	7.2	7.2	18.4	19.1	19.0	17.7
	SR-71 NB north of SR-91	11.0	11.1	11.0	30.6	31.9	31.8	30.0
SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.5	8.5	8.5	10.4	10.5	10.5	10.5
	SR-91 EB Express Lanes east of Serfas Club Road	8.4	8.4	8.4	8.4	8.4	8.4	8.4
	SR-71 NB north of SR-91	10.9	10.9	10.9	12.7	12.8	12.9	12.9
SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	23.1	24.8	24.1	8.5	8.5	8.5	8.5
	SR-91 WB Express Lanes west of Weir Canyon Road	23.0	24.7	24.0	8.5	8.5	8.5	8.4
	SR-241 SB south of SR-91 (via GP Ramp)	25.4	27.1	26.5	10.9	11.0	10.9	10.9
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-71 NB north of SR-91	12.4	13.3	12.0	5.0	5.0	5.0	5.0
SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	12.0	12.4	12.6	8.5	8.5	8.5	8.5
	SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.4	8.4	8.4	8.4
	SR-241 SB south of SR-91 (via GP Ramp)	14.4	14.8	15.0	10.9	10.9	10.9	10.9
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-241 NB south of SR-91 (via GP Ramp)	SR-91 WB GP Lanes west of Weir Canyon Road	7.2	7.2	7.2	7.2	7.2	7.2	7.2
	SR-91 EB GP Lanes east of Serfas Club Road	11.0	11.0	11.0	13.4	13.5	13.6	13.6
	SR-91 EB Express Lanes east of Serfas Club Road	10.9	10.9	10.9	13.4	13.4	13.5	13.5
	SR-71 NB north of SR-91	13.4	13.4	13.4	15.7	15.8	15.9	15.9
SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-71 NB north of SR-91	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-71 SB north of SR-91	SR-91 WB GP Lanes west of Weir Canyon Road	43.0	54.1	55.9	10.2	10.2	10.1	9.9
	SR-91 WB Express Lanes west of Weir Canyon Road	42.9	54.0	55.8	10.2	10.2	10.0	9.9
	SR-91 EB GP Lanes east of Serfas Club Road	28.7	37.2	38.3	6.4	6.7	6.2	5.8
	SR-241 SB south of SR-91 (via GP Ramp)	45.3	56.4	58.3	12.6	12.7	12.5	12.3
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: *Traffic Analysis Report* (July 2015).

EB = eastbound

GP = general purpose

N/A = not applicable

NB = northbound

SB = southbound

SR-71 = State Route 71

SR-91 = State Route 91

SR-241 = State Route 241

WB = westbound

Table 3.5.16 Design Year (2040) No Build Alternative Travel Times

Origin	Destination	AM Peak Period Travel Time (Minutes)			PM Peak Period Travel Time (Minutes)			
		6:00–7:00 AM	7:00–8:00 AM	8:00–9:00 AM	3:00–4:00 PM	4:00–5:00 PM	5:00–6:00 PM	6:00–7:00 PM
SR-91 EB GP Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	9.7	12.6	13.7	19.8	20.3	20.9	20.5
	SR-91 EB Express Lanes east of Serfas Club Road	9.5	12.4	13.5	19.7	20.3	20.8	20.5
	SR-241 SB south of SR-91	7.9	10.7	12.0	14.7	14.7	14.6	14.3
	SR-71 NB north of SR-91	11.0	13.9	15.0	21.2	21.8	22.3	22.0
SR-91 EB Express Lanes west of Weir Canyon Road	SR-91 EB GP Lanes east of Serfas Club Road	8.7	8.7	8.6	8.8	9.2	9.7	9.9
	SR-91 EB Express Lanes east of Serfas Club Road	8.3	8.3	8.3	8.4	8.4	8.4	8.4
	SR-71 NB north of SR-91	10.0	10.0	9.9	10.2	10.6	11.2	11.4
SR-91 WB GP Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	22.8	21.2	16.3	8.7	8.7	8.7	8.5
	SR-91 WB Express Lanes west of Weir Canyon Road	20.8	19.3	15.4	8.6	8.6	8.6	8.5
	SR-241 SB south of SR-91 (via GP Ramp)	23.2	21.8	17.8	11.0	11.1	11.0	10.9
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-71 NB north of SR-91	8.5	8.0	5.7	5.0	5.0	5.0	5.0
SR-91 WB Express Lanes east of Serfas Club Road	SR-91 WB GP Lanes west of Weir Canyon Road	15.0	14.5	13.2	8.6	8.7	8.6	8.5
	SR-91 WB Express Lanes west of Weir Canyon Road	8.4	8.4	8.4	8.4	8.4	8.4	8.3
	SR-241 SB south of SR-91 (via GP Ramp)	15.5	15.0	14.7	11.0	11.0	11.0	10.9
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-241 NB south of SR-91 (via GP Ramp)	SR-91 WB GP Lanes west of Weir Canyon Road	7.3	7.3	7.3	7.2	7.2	7.5	7.3
	SR-91 EB GP Lanes east of Serfas Club Road	11.1	11.1	11.1	11.2	11.6	12.7	12.6
	SR-91 EB Express Lanes east of Serfas Club Road	10.9	10.9	10.9	11.2	11.6	12.7	12.5
	SR-71 NB north of SR-91	12.4	12.4	12.4	12.6	13.1	14.2	14.0
SR-241 NB South of SR-91 (via Express Ramp)	SR-91 EB GP Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-91 EB Express Lanes east of Serfas Club Road	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	SR-71 NB north of SR-91	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SR-71 SB north of SR-91	SR-91 WB GP Lanes west of Weir Canyon Road	39.6	56.0	59.3	10.0	10.1	10.0	9.8
	SR-91 WB Express Lanes west of Weir Canyon Road	37.6	54.2	58.4	9.9	10.0	9.9	9.8
	SR-91 EB GP Lanes east of Serfas Club Road	23.5	38.6	44.5	5.7	5.7	5.6	5.4
	SR-241 SB south of SR-91 (via GP Ramp)	40.1	56.6	60.9	12.4	12.5	12.4	12.2
	SR-241 SB south of SR-91 (via Express Ramp)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: *Traffic Analysis Report* (July 2015).

EB = eastbound
 GP = general purpose
 N/A = not applicable
 NB = northbound
 SB = southbound
 SR-71 = State Route 71
 SR-91 = State Route 91
 SR-241 = State Route 241
 WB = westbound

Measure TR-1 **Transportation Management Plan.** Ensure that a Transportation Management Plan (TMP) is completed in consultation with the California Department of Transportation and included in the Plans, Specifications, and Estimates for implementation by the contractor prior to and during construction of any project improvements. The TMP will be prepared by a qualified traffic engineer and will address traffic impacts from temporary detours and weekend or nighttime closures to reduce traveler delays and enhance traveler safety during project construction. The TMP may include the following elements:

- Public awareness campaign
- Highway advisory radio
- Portable changeable message signs
- Temporary loop sensor/signals
- Bus or shuttle service
- Construction Zone Enhanced Enforcement Program

ETC Final EIR and Final EIS

Measure T-13 *During final design, the TCA shall establish ETC bridge structure clearances to provide an absolute minimum construction false work vertical clearance of 14.0 feet over existing and planned arterial undercrossing identified in the Orange County Master Plan of Arterial Highways.*

Measure C-15 *All traffic control measures shall conform with applicable local and State Regulations.*

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