MARRIOTT AC/RESIDENCE INN & CREATIVE OFFICE AT THE HISTORIC FIRE STATION
TRAFFIC IMPACT ANALYSIS
CITY OF RIVERSIDE, CALIFORNIA

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(0232-0003-03)

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AC MARRIOTT/RESIDENCE INN & CREATIVE OFFICE AT THE HISTORIC FIRE STATION
TRAFFIC IMPACT ANALYSIS
CITY OF RIVERSIDE, CALIFORNIA

1.0 INTRODUCTION

A. Purpose of the TIA and Study Objectives

The purpose of this traffic impact analysis (TIA) is to evaluate the traffic impacts of the proposed AC Marriott/Residence Inn & Creative Office at the Historic Fire Station (AC Marriott/Residence Inn) development. The project is proposed to be developed with a 219 room business hotel and 12,000 sf of office space. The site is located south of Mission Inn Avenue between Lemon Street and Lime Street in the City of Riverside.

Study objectives include the following:

Existing (2020) Traffic. Existing traffic will be counted to determine current conditions. This constitutes the environmental setting for a CEQA analysis at the time that the hearing body reviews the project. Traffic count data shall be new or recent. In some cases, data up to one year old may be acceptable with the approval of the City of Riverside Engineering Department. Any exception to this must be requested prior to approval of the scoping agreement

Existing (2020) Plus Project Traffic. Traffic generated by the proposed project will be added to existing traffic counts to identify and analyze impacts on the circulation system. This analysis has been conducted based on the CEQA requirements for evaluating direct project related impacts.

Existing + Ambient + Cumulative (EAC 2021). Traffic generated by other approved projects (or projects that are proposed and in the review process, but not yet fully approved) in the study area shall be identified and added to the baseline future conditions without the traffic due to the proposed project. This "no project" scenario will be analyzed, and a determination made if improvements funded through an approved funding mechanism (TUMF, DIF, CFD, RBBD etc.) can accommodate the cumulative traffic at the target Level of Service (LOS) identified in the General Plan. If the "funded" improvements can provide the target LOS, payment into the fee program will be considered as cumulative mitigation through the conditions of approval. Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF facilities) should be identified as such.

Existing + Ambient + Cumulative + Project (EACP 2021). Traffic generated by the proposed project shall be added to the EAC or "no project" condition identified above. Impacts identified beyond those required to address the "no project" conditions shall be considered direct impacts by the project and shall be the responsibility of the project.

B. Site Location and Study Area

The project site is generally located south of Mission Inn Avenue between Lemon Street and Lime Street in the City of Riverside. Figure 1-A illustrates the site location and the traffic analysis study area.

In general, the study area shall include any intersection of Collector or higher classification street with another Collector roadway or higher classification street, at which the proposed project will add 50 or more peak hour trips. Pursuant to the attached scoping agreement (see Appendix "A") and discussions with City of Riverside staff, the study area include the following existing and future intersections:

STUDY AREA INTERSECTIONS
1. Lemon St./Mission Inn Ave.
2. Lemon St./University Ave.
3. Lime St./Mission Inn Ave.
4. Lime St./University Ave.
5. Lime St./Alleyway
6. Lemon St./Alleyway
7. Lemon St./Project Driveway

C. Development Project Identification

1. Project Size and Description

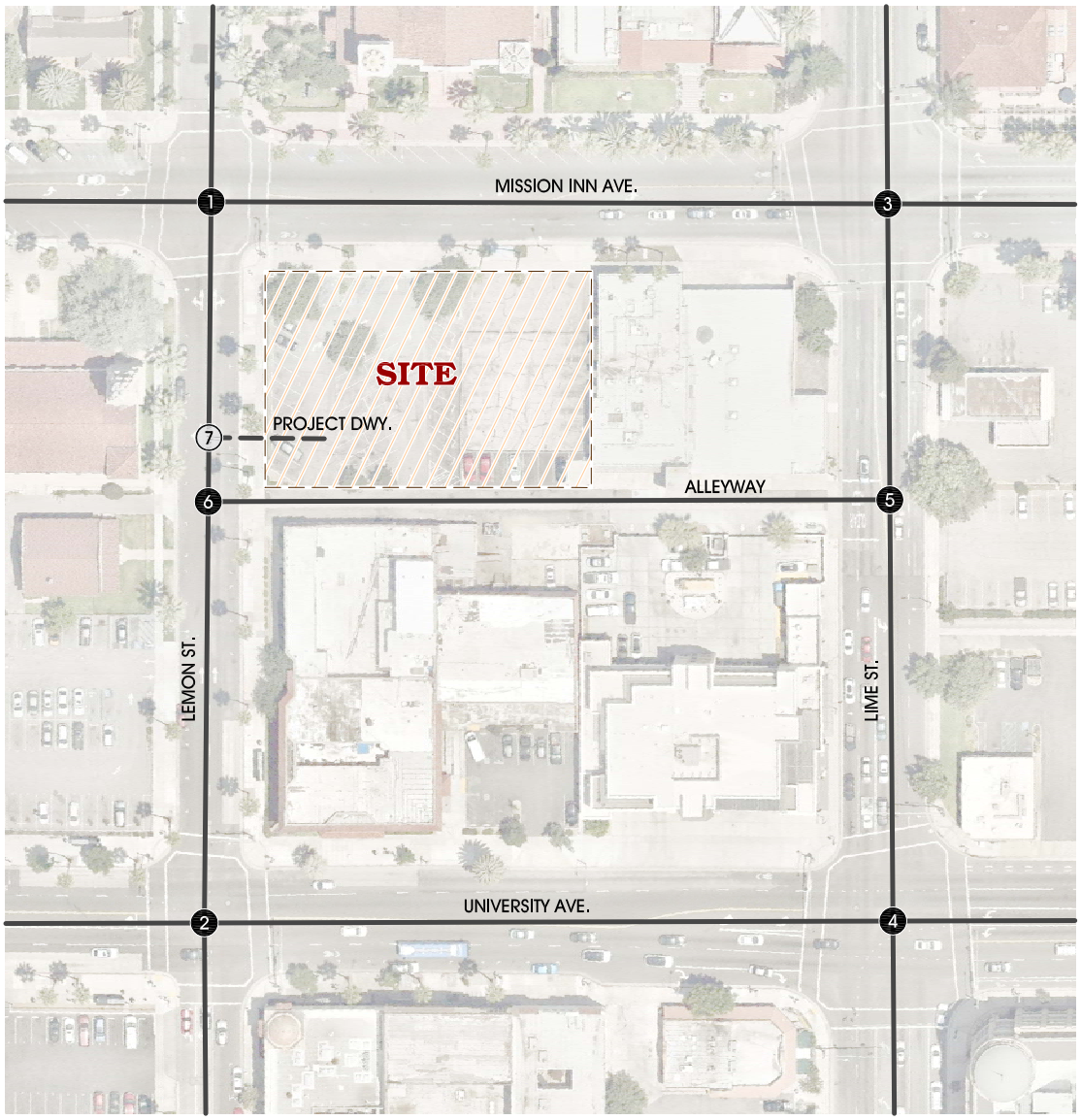
The AC Marriott/Residence Inn development is proposed to be developed with a 219 room business hotel and 12,000 sf of office space. It is anticipated that the project will be built by 2021.

2. Existing Land Use

The project site is currently occupied by a parking lot. Adjacent uses include the following:

- North – Commercial
- South –Commercial
- East –Commercial
- West – Church

FIGURE 1-A
STUDY AREA



LEGEND:

(#) = EXISTING INTERSECTION ANALYSIS LOCATION

(#) = FUTURE INTERSECTION ANALYSIS LOCATION

= FUTURE DRIVEWAY

3. Proposed Land Use

Proposed Land Use: Business Hotel and Office

4. Site Plan of Proposed Project

Figure 1-B illustrates the conceptual site plan. The project will take access off of one driveway along Lemon St.

5. Proposed Project Opening Year

The proposed project is anticipated to be completed in 2021. Future traffic analysis has been based upon one year of background (ambient) growth, at 2% per year, along with traffic generated by other future developments in the surrounding area.

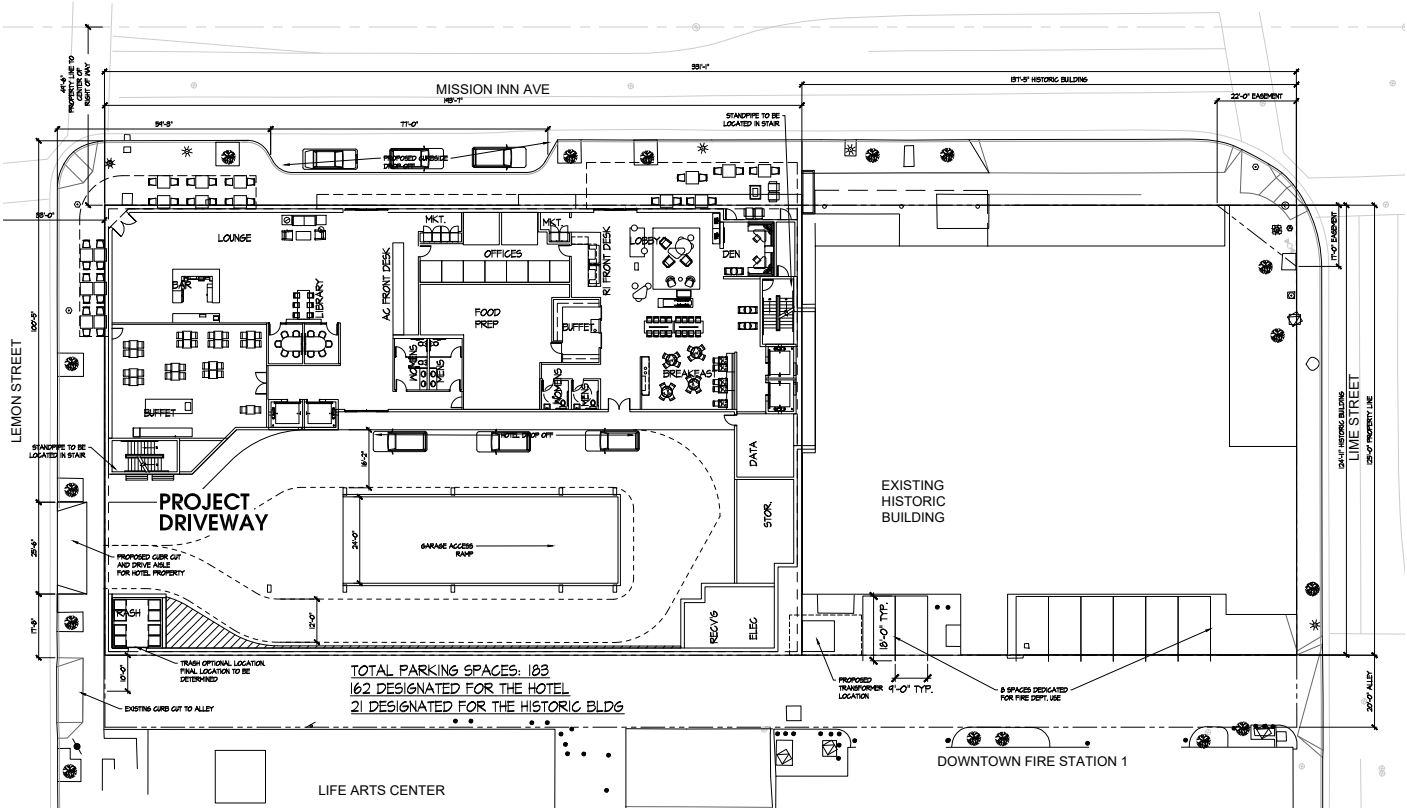
6. Proposed Project Phasing

The project is expected to be completed in a single phase. Therefore, all traffic recommendations included in this report have not been separated into different development phases.

7 Sphere of Influence

The project is located within the Sphere of Influence of both Caltrans and Riverside County. The project is anticipated to mainly serve the adjacent community.

FIGURE 1-B
SITE PLAN



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2.0 AREA CONDITIONS

A. Study Area and Intersections

In general, the minimum area to be studied shall include any intersection of "Collector" or higher classification street, with "Collector" or higher classification streets, at which the proposed project will add 50 or more peak hour trips. The City of Riverside Engineering Department may require deviation from these requirements based on area conditions. The study area includes the following existing intersections (shown previously on Figure 1-A):

STUDY AREA INTERSECTIONS
1. Lemon St./Mission Inn Ave.
2. Lemon St./University Ave.
3. Lime St./Mission Inn Ave.
4. Lime St./University Ave.
5. Lime St./Alleyway
6. Lemon St./Alleyway
7. Lemon St./Project Driveway

B. Area Roadway System

Figure 2-A identifies the existing roadway conditions for study area roadways. The existing intersection traffic controls and geometrics are identified.

C. General Plan Circulation Element

The City of Riverside Master Plan of Roadways is depicted on Figure 2-B. Figure 2-B also illustrates the City of Riverside Roadway Cross-Sections.

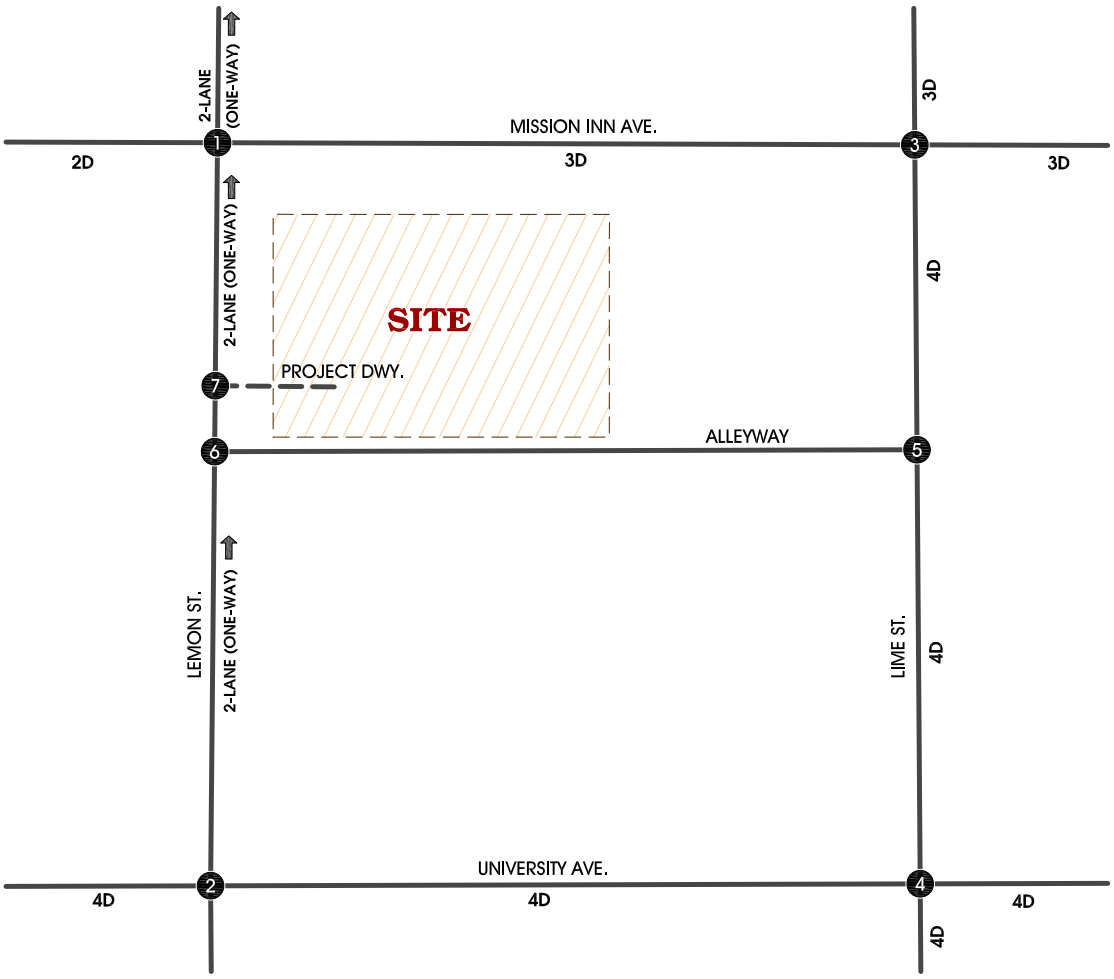
D. Existing (2020) Traffic Volumes

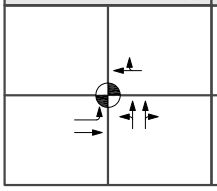
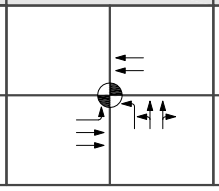
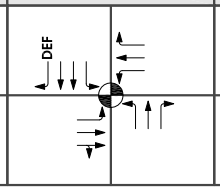
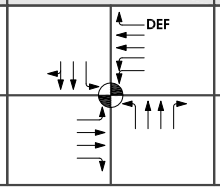
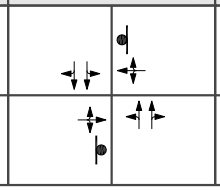
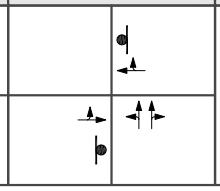
Existing intersection level of service calculations are based upon manual AM and PM peak hour turning movement counts conducted in January 2020 while schools were back in session. Existing AM and PM peak hour intersection turning movements are shown on Figure 2-C. Average daily traffic (ADT) volumes have been estimated. The traffic count worksheets are included in Appendix "B".

E. Existing Delay and Level of Service

The City of Riverside has established a Level of Service (LOS) "D" as the maximum acceptable threshold for the study intersections and roadways of Collector or higher

FIGURE 2-A
EXISTING TRAFFIC CONTROLS AND INTERSECTION GEOMETRICS



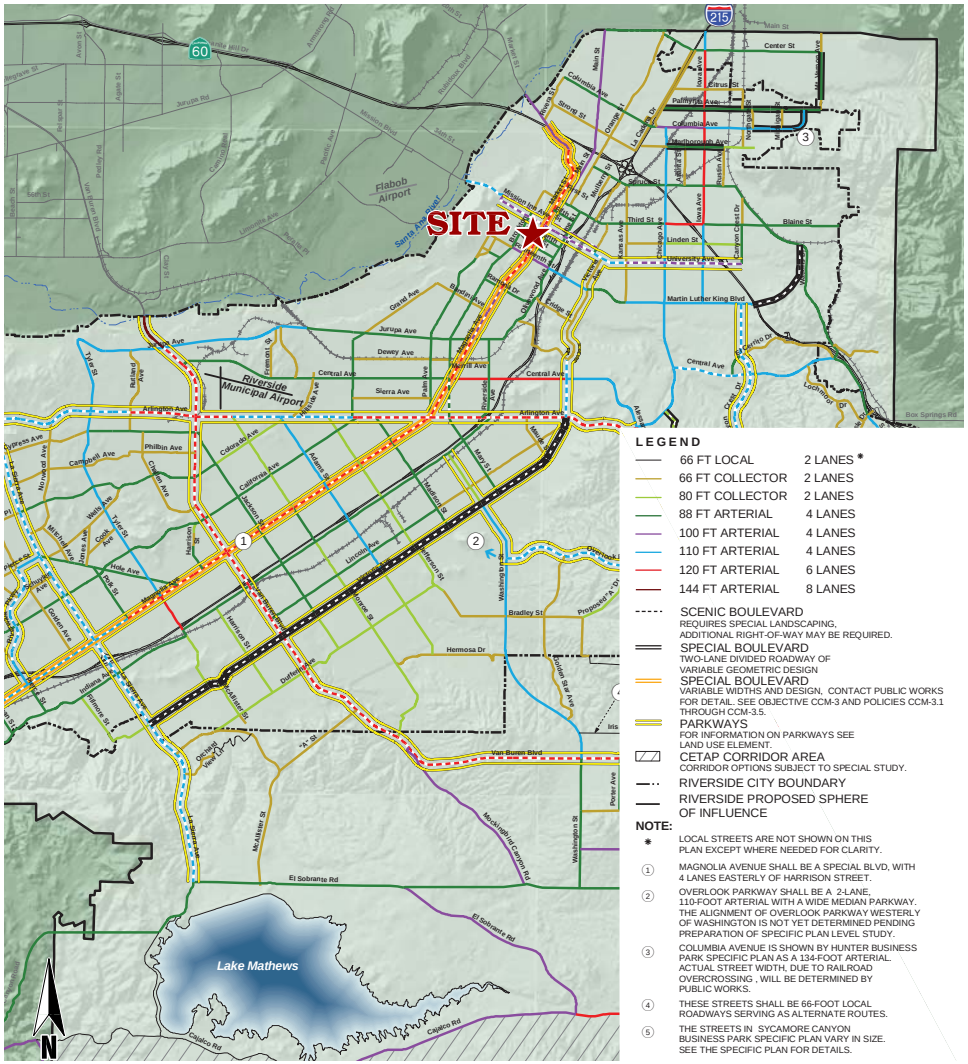
1. Lemon St. / Mission Inn Av.	2. Lemon St. / University Av.	3. Lime St. / Mission Inn Av.	4. Lime St. / University Av.	5. Lime St. / Alleyway	6. Lemon St. / Alleyway	7. Lemon St. / Project Dwy.
						FUTURE INTERSECTION

LEGEND:

1	= INTERSECTION ID	4	= NUMBER OF LANES
	= TRAFFIC SIGNAL	D	= DIVIDED
	= STOP SIGN	U	= UNDIVIDED
DEF	= DEFACTO RIGHT TURN LANE		
	= PROJECT DRIVEWAY		

FIGURE 2-B
CITY OF RIVERSIDE MASTER PLAN OF ROADWAYS AND STANDARD ROADWAY CROSS-SECTIONS

MASTER PLAN OF ROADWAYS



SOURCE: CITY OF RIVERSIDE

STANDARD ROADWAY CROSS-SECTIONS

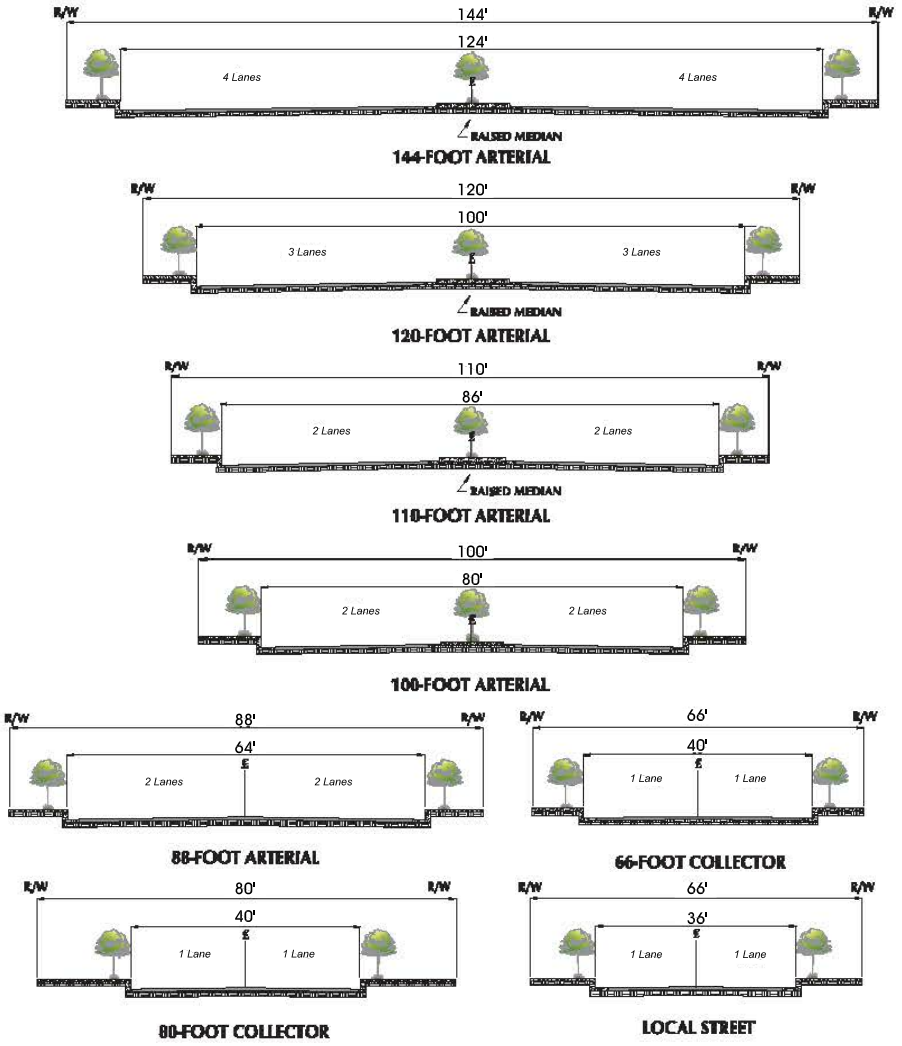
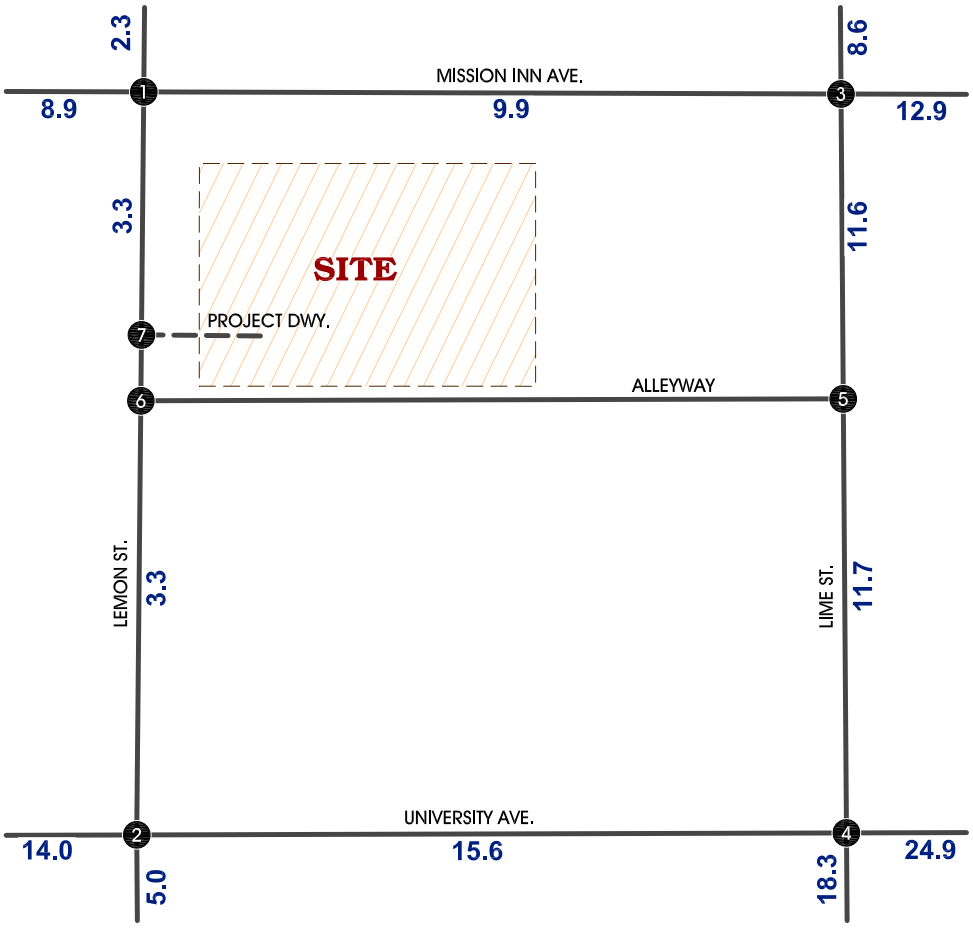


FIGURE 2-C
EXISTING (2020) TRAFFIC VOLUMES



LEGEND:

7 = INTERSECTION ID

= PROJECT DRIVEWAY

1.0 = VEHICLES PER DAY (1000's)

AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	←23 ←517		←25 ←548	12 ↓ 182 ←56 ←88 ←487 ←423		31 ↓ 624 ←76 ←93 ←503 ←313		3 ↓ 661 ←2 ←1 ←1 ←1			←1 ←1	FUTURE INTERSECTION
1 → 212 →	13 ↑ 29 ↑ 18 →	9 → 362 →	13 ↑ 37 ↑ 52 →	3 → 190 → 43 →	23 ↑ 131 ↑ 7 →	3 → 314 → 87 →	18 ↑ 101 ↑ 149 →	1 → 1 → 4 →	2 ↑ 181 ↑ 2 →	1 → 1 →	1 ↑ 63 ↑ 4 →	

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	←14 ←384		←26 ←434	18 ↓ 285 ←38 ←89 ←375 ←209		30 ↓ 377 ←144 ←78 ←419 ←244		2 ↓ 583 ←1 ←2 ←1 ←1			←3 ←1	FUTURE INTERSECTION
14 → 322 →	22 ↑ 160 ↑ 92 →	18 → 663 →	48 ↑ 233 ↑ 134 →	15 → 306 → 87 →	21 ↑ 273 ↑ 60 →	5 → 721 → 89 →	33 ↑ 312 ↑ 473 →	1 → 1 → 7 →	1 ↑ 375 ↑ 4 →	1 → 1 →	1 ↑ 267 ↑ 6 →	

classification. LOS "C" is to be maintained on all street intersections. For projects in conformance with the General Plan, a significant impact occurs at a study intersection when the peak hour LOS falls below "C", or "D" per CCM-2.3 as noted below. For projects that propose uses or intensities above that contained in the General Plan, a significant impact at a study intersection is when the addition of project related trips causes either peak hour LOS to degrade from acceptable (LOS "A" thru "D") to unacceptable levels ("E" or "F") or the peak hour delay to increase as follows:

LOS A/B = By 10.0 seconds
LOS C = By 8.0 seconds
LOS D = By 5.0 seconds
LOS E = By 2.0 seconds
LOS F = By 1.0 seconds

Policy CCM-2.3

Maintain LOS "D" or better on Arterial Streets whenever possible. At key locations, such as City Arterials that are used by regional freeway bypass traffic and at heavily traveled freeway interchanges, allow LOS "E" at peak hours as the acceptable standard on a case-by-case basis.

Operations Analysis Methodology

The City of Riverside Engineering Department requires the use of the Transportation Research Board - Highway Capacity Manual (HCM), 6th Edition. The levels of service for the HCM delay methodology, for signalized and unsignalized intersections, are summarized below:

LEVEL OF SERVICE	AVERAGE TOTAL DELAY PER VEHICLE (SECONDS)	
	SIGNALIZED	UNSIGNALIZED
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

The results of the existing conditions intersection analysis are summarized in Table 2-1. The existing condition operations analysis worksheets are provided in Appendix "C". As shown in Table 2-1, the study area intersections are operating at an acceptable level of service (LOS "D" or better during the peak hours with the existing geometry and traffic controls.

TABLE 2-1

INTERSECTION ANALYSIS FOR EXISTING CONDITIONS

ID	Intersection	Traffic Control [1]	Intersection Approach Lanes [2]												Delay [3] (secs.)		Level of Service [3]	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Lemon St. / Mission Inn Av.	TS	0.5	1	0.5	0	0	0	1	1	0	0	1	0	5.9	13.6	A	B
2	Lemon St. / University Av.	TS	1.5	1.5	0	0	0	0	1	2	0	0	2	0	6.9	15.2	A	B
3	Lime St. / Mission Inn Av.	TS	1	1	1	1	2	d	1	2	0	1	1	1	41.1	34.4	D	C
4	Lime St. / University Av.	TS	1	2	1	1	2	0	1	2	1	2	2	1	36.1	33.0	D	C
5	Lime St. / Alleyway	CSS	0	2	0	0	2	0	0	1!	0	0	1!	0	13.7	14.2	B	B
6	Lemon St. / Alleyway	CSS	0.5	1.5	0	0	0	0	0.5	0.5	0	0	1	0	9.2	10.7	A	B
7	Lemon St. / Project Dwy.	-	Future Intersection												-	-	-	-

[1] TS = Traffic Signal; CSS = Cross Street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto right turn lane; 0.5 = Shared Lane; 1! = Shared Left/Through/Right Lane

[3] Delay and level of service calculated using the following analysis software: Synchro 10 HCM6

F. Traffic Signal Warrant Analysis

The key study area intersections are all controlled with a traffic signal. Therefore, warrants were not conducted for the off-site locations. The proposed driveway and existing alleyway are too close to the intersections of Lemon St./Mission Inn Ave. and Lime St./Mission Inn Ave. to allow the construction of a traffic signal.

G. Transit Service

The Riverside Transit Agency (RTA) Routes 1, 10, 14, 22, 29, 49, 200, 208, and 210 currently services the study area.

H. VMT Evaluation

Due to the passage of Senate Bill 743 (SB 743), CEQA Guidelines (Section 15064.3) require the use of vehicle miles traveled (VMT) as the metric for transportation analysis rather than level of service (LOS). This approach will take effect on July 1, 2020. The City of Riverside has developed draft guidelines for screening projects within transit priority areas (TPA). This project falls within a TPA as shown on Figure 2-D. Projects located with a TPA may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may NOT be appropriate if the project:

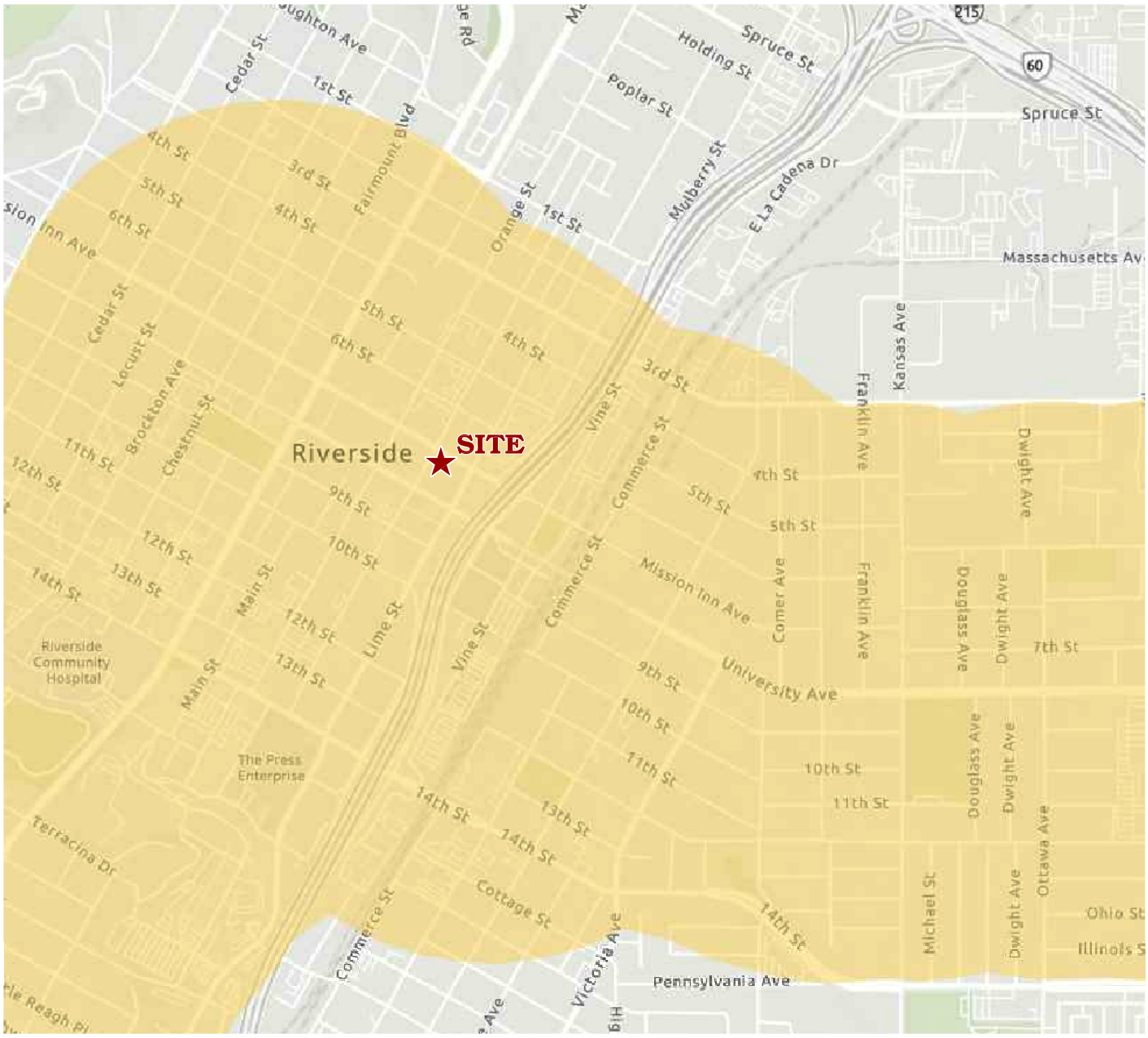
1. Has a Floor Area Ratio (FAR) of less than 0.75
2. Includes more parking for use by residents, customers, or employees of the project than required by the jurisdiction (if the jurisdiction requires the project to supply parking);
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the City), with input from the Metropolitan Planning Organization); or
4. Replaces affordable residential units with a smaller number of moderate or high-income residential units.

The project meets the four requirements as follows:

1. The project will have an FAR of 1.04 (18,172/17,424) for the fire station parcel and a 2.95 FAR (122,122/41,382) for the merged parcels. Since the project will exceed the 0.75 FAR, this meets the first requirement.
2. The project will provide 191 parking spaces (183 in the structure and 8 along the alley). The City's parking code requires 254 spaces. Since the project will provide less parking spaces than required by the code, this meets the second requirement.

FIGURE 2-D

TRANSIT PRIORITY AREA (TPA)



LEGEND:

= TRANSIT PRIORITY AREA

N

3. The project will remain consistent with the General Plan and Zoning designations are therefore consistent with the Sustainable Communities Strategy (as determined by the City), with input from the Metropolitan Planning Organization). This meets the third requirement.
4. The project is not replacing any affordable housing. This meets the fourth requirement.

Since the project meets the four requirements as described above, a less than significant impact can be determined from a vehicle miles perspective.

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3.0 PROJECTED FUTURE TRAFFIC

This section of the report quantifies the number of trips generated by the proposed project and other known developments in the area.

A. Project Traffic

1. Ambient Growth Rate

Some traffic volume increases on roadways can be attributed to vehicles originating outside of the study area. These types of trips either end up within the study area or pass-through onto an outside destination. Therefore, to account for these trips (termed "ambient growth"), a growth rate can be applied to existing traffic volumes.

An annual ambient growth rate of 2% per year has been used in this study to account for traffic not attributed to the project or other planned developments within the study area. The City of Riverside Transportation Department staff has previously reviewed and approved this rate.

2. Project Trip Generation

Trip generation represents the amount of traffic which is attracted and produced by a development. The trip generation for the project is based upon the specific land use which has been planned for this development. For the purpose of this analysis, the following land use assumption is evaluated:

- 219 room business hotel
- 12,000 sf office

Trip generation rates for the proposed development are shown in Table 3-1. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE).

TABLE 3-1

PROJECT TRIP GENERATION RATES

Land Use	ITE Code	Quantity[2]	Peak Hour Trip Rates[1]						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
Business Hotel	312	219 Room	0.16	0.23	0.39	0.18	0.14	0.32	4.02
General Office[3]	710	12 TSF	2.71	0.44	3.15	0.20	1.06	1.26	11.31

[1] Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition, 2017.

[2] TSF =Thousand Square Feet

[3] Fitted Curve Equation

The daily and peak hour trip generations for the proposed project are shown on Table 3-2. The proposed development is projected to generate a total of approximately 1,016 trip-ends per day with 123 vehicles per hour during the AM peak hour and 85 vehicles per hour during the PM peak hour.

TABLE 3-2

PROJECT TRIP GENERATION SUMMARY

LAND USE	QUANTITY[1]	PEAK HOUR						DAILY
		AM			PM			
		IN	OUT	TOTAL	IN	OUT	TOTAL	
Business Hotel	219 Rooms	35	50	85	39	31	70	880
General Office	12 TSF	33	5	38	2	13	15	136
TOTAL PROJECT TRIPS		68	55	123	41	44	85	1016

[1] TSF = Thousand Square Feet

3. Project Trip Distribution and Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. The project's trip distribution patterns are based on the proximity of the residential units to the proposed driveway locations, the surrounding trip attractors (employment bases, commercial opportunities, schools, recreation centers, etc.).

The proposed project will consist of a business hotel for those patrons that have meetings, conferences, and other events in the nearby surrounding areas. Therefore, the use of freeways is anticipated to be minimal during the peak hours. Some of the destinations include the following:

UCR – Events, classes, seminars and conferences. Route - Straight up University Ave.

Riverside Community Hospital – Professional medical staff and specialist doctors, support family and friends for those staying in hospital. Route - Mission Inn Avenue to Market Street

Riverside Community College District – District meetings, events, conferences and consultants to the district offices. Route - Mission Inn Avenue to Market Street

Federal, State and local judicial facilities - Access to jails, courthouses, sheriff, PD, County Prosecutor and District Attorney. Route - Mission Inn to Orange Street into court district.

Convention Center – Conferences and Gala events. Route - Lemon Street to Fifth Street.

The trip distribution pattern for the project is illustrated on Figure 3-A.

4. Other Trip Generation Factors

The project consists of commercial uses that do not generate a significant amount of pass-by trips. Pass-by trips are not new trips but those that are already on the roadway system but are anticipated to "pass-by" the project on their way to a primary destination.

5. Project Peak Hour Turning Movement Traffic

The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution, proposed arterial highway and local street systems, which would be in place by the time of initial occupancy of the site. Based on the identified project traffic generation and distribution, project peak hour intersection traffic volumes and average daily traffic (ADT) volumes are shown on Figure 3-B.

B. Existing Plus Project Traffic Conditions

Existing plus Project (EP) AM and PM peak hour intersection turning movement volumes are shown on Figure 3-C .

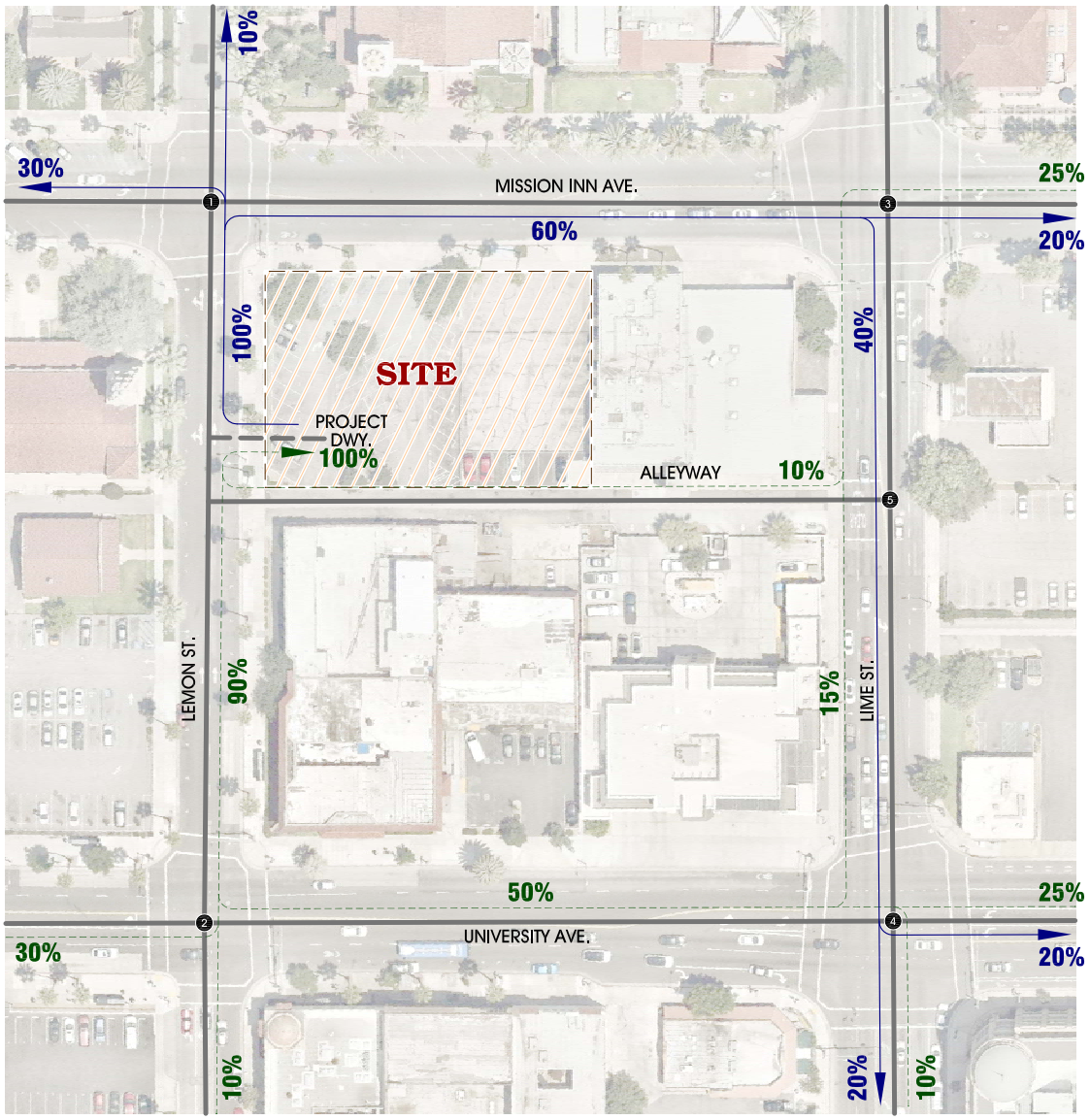
For access purposes, the intersection of Lemon Street/Project Driveway has been evaluated as a stop controlled intersection and restricted to a right-in/right-out only access.

The results of the EP conditions intersection are summarized in Table 3-3. The EP condition operations analysis worksheets are provided in Appendix "D". As shown on Table 3-3, the study area intersections are anticipated to continue to operate at an acceptable LOS (LOS "D" or better) during the peak hours with the existing geometry and traffic controls.

C. Cumulative Traffic (Background)

To assess existing plus ambient plus cumulative plus project traffic conditions, project traffic is combined with existing traffic, area-wide growth and other future developments which are approved or being processed concurrently in the study area. Developments which are being processed concurrently in the study area have been provided by City staff.

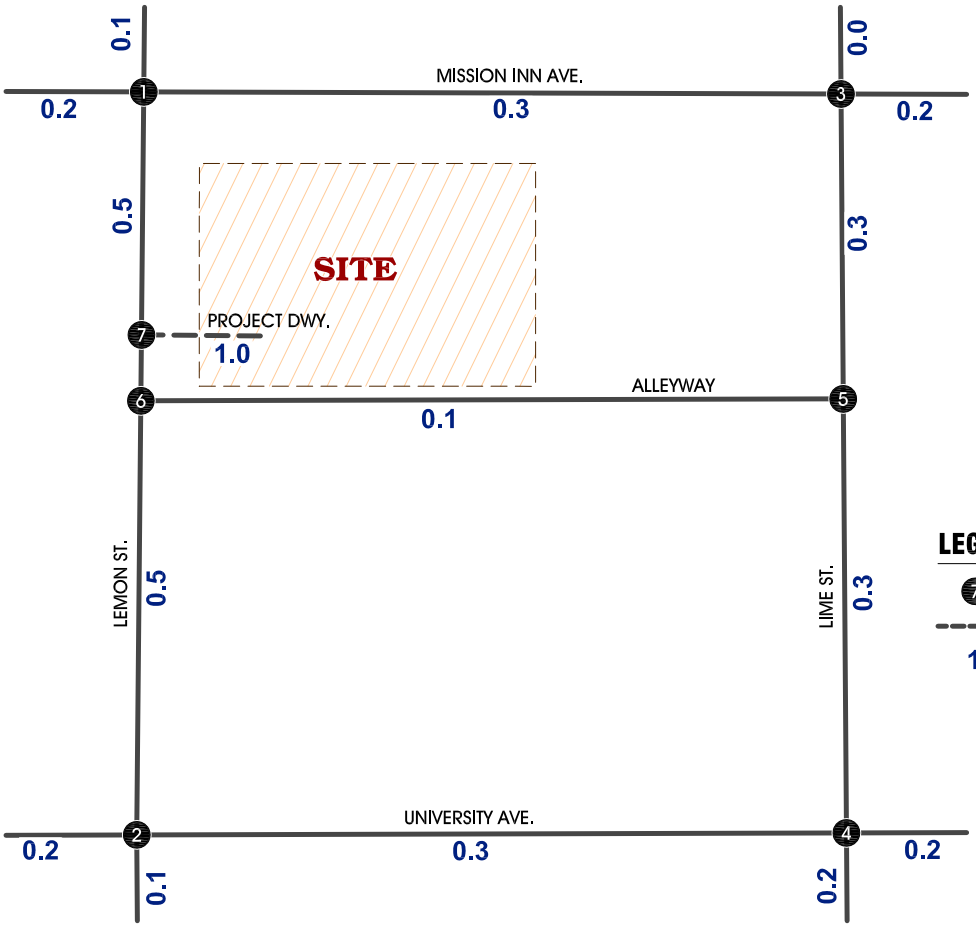
FIGURE 3-A
PROJECT TRIP DISTRIBUTION



LEGEND:

- (#) = INTERSECTION ID
- = FUTURE DRIVEWAY
- 10% = PERCENT FROM PROJECT (OUTBOUND)
- 10% = PERCENT TO PROJECT (INBOUND)

FIGURE 3-B
PROJECT ONLY TRAFFIC VOLUMES



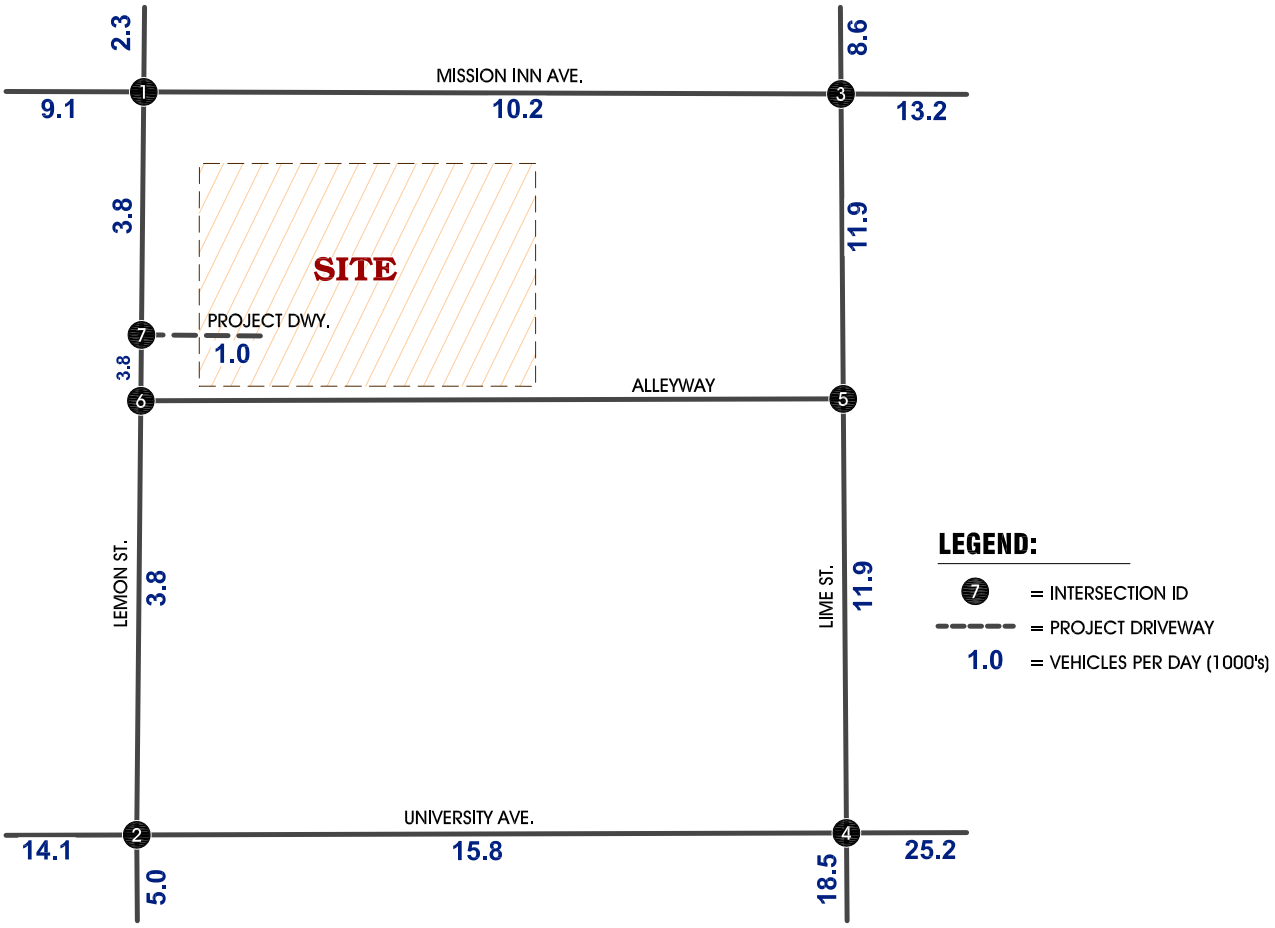
AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	L 0 T 0		L 34 T 0	L 0 T 0 R 17		L 0 T 17 R 0		L 0 T 0 R 0		L 7 T 0		L 55	
0 0	17 6 33	20 0	0 7 0	0 11 22	0 0 0	0 0 0	7 0 0	0 0 0	0 0 0	0 0	0 61 0	0 68	

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	L 0 T 0		L 21 T 0	L 0 T 0 R 10		L 0 T 10 R 0		L 0 T 0 R 0		L 4 T 0		L 44	
0 0	13 4 26	12 0	0 4 0	0 9 18	0 0 0	0 0 0	4 0 0	0 0 0	0 0 0	0 0	0 37 0	0 41	

FIGURE 3-C
EXISTING PLUS PROJECT TRAFFIC VOLUMES



AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	←23 ←517		←59 ←548	12 ↓ 182 ←56	←88 ←487 ←440	41 ↓ 635 ←87	←93 ←520 ←313	10 ↓ 693 ←2	←1 ←1 ←1		←8 ←1		←55
1 → 212 →	30 ↑ 35 ↑ 51 ↑	29 → 362 →	13 ↑ 44 ↑ 52 ↑	3 → 201 → 65 →	23 ↑ 131 ↑ 7 ↑	3 → 314 → 87 →	25 ↑ 101 ↑ 149 ↑	1 → 1 → 4 →	2 ↑ 181 ↑ 2 ↑	1 → 1 →	1 ↑ 124 ↑ 4 ↑		63 ↑ 68 ↑

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	←14 ←384		←47 ←434	18 ↓ 285 ←38	←89 ←375 ←219	36 ↓ 386 ←153	←78 ←429 ←244	6 ↓ 607 ←1	←2 ←1 ←1		←7 ←1		←44
14 → 322 →	35 ↑ 164 ↑ 118 ↑	30 → 663 →	48 ↑ 237 ↑ 134 ↑	15 → 315 → 105 →	21 ↑ 273 ↑ 60 ↑	5 → 721 → 89 →	37 ↑ 312 ↑ 473 ↑	1 → 1 → 7 →	1 ↑ 375 ↑ 4 ↑	1 → 1 →	1 ↑ 304 ↑ 6 ↑		270 ↑ 41 ↑

TABLE 3-3

INTERSECTION ANALYSIS FOR EXISTING PLUS PROJECT CONDITIONS

ID	Intersection	Traffic Control [1]	Intersection Approach Lanes [2]												Delay [3] (secs.)		Level of Service [3]	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Lemon St. / Mission Inn Av.	TS	0.5	1	0.5	0	0	0	1	1	0	0	1	0	7.8	14.5	A	B
2	Lemon St. / University Av.	TS	1.5	1.5	0	0	0	0	1	2	0	0	2	0	7.0	15.3	A	B
3	Lime St. / Mission Inn Av.	TS	1	1	1	1	2	d	1	2	0	1	1	1	44.0	35.0	D	C
4	Lime St. / University Av.	TS	1	2	1	1	2	0	1	2	1	2	2	1	36.3	33.1	D	C
5	Lime St. / Alleyway	CSS	0	2	0	0	2	0	0	1!	0	0	1!	0	14.0	14.4	B	B
6	Lemon St. / Alleyway	CSS	0.5	1.5	0	0	0	0	0.5	0.5	0	0	1	0	9.6	11.1	A	B
7	Lemon St. / Project Dwy.	CSS	0	2	0	0	0	0	0	0	0	0	0	1	8.9	9.5	A	A

[1] TS = Traffic Signal; CSS = Cross Street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto right turn lane; 0.5 = Shared Lane; 1! = Shared Left/Through/Right Lane; 1 = Improvement

[3] Delay and level of service calculated using the following analysis software: Synchro 10 HCM6

1. Ambient Growth Rate

An ambient growth rate (2% growth per year) has been used in this study to account for traffic not attributed to the project or other planned developments within the study area. The City of Riverside Transportation Department staff has previously reviewed and approved this rate.

2. Other Approved or Proposed Development Projects

The cumulative developments have been included along with the land use associated with each project. The location of the cumulative projects provided by the county and nearby jurisdictions are shown on Figure 3-D.

3. Other Approved Projects Trip Generation

For cumulative projects, ITE Trip Generation Rates (10th Edition) were used. Table 3-4 presents the cumulative development land uses and trip generation summary. As presented in Table 3-4 Cumulative developments are projected to generate a total of approximately 20,269 trip-ends per day with 1,404 vehicles per hour during the AM peak hour and 1,731 vehicles per hour during the PM peak hour.

4. Total Background Peak Hour Turning Movement Volumes

Cumulative development peak hour intersection turning movement volumes and average daily traffic (ADT) volumes are shown on Figure 3-E.

Existing plus Ambient plus Cumulative (EAC 2021) AM and PM peak hour intersection turning movement volumes are shown on Figure 3-F .

Existing plus Ambient plus Cumulative plus Project (EACP 2021) AM and PM peak hour intersection turning movement volumes are shown on Figure 3-G .

FIGURE 3-D
CUMULATIVE DEVELOPMENTS LOCATION MAP

LEGEND:

- 7 = INTERSECTION ID
- = FUTURE PROJECT DRIVEWAY
- 13 = CUMULATIVE DEVELOPMENT ID (SEE TABLE 3-4 FOR REFERENCE)

N

TABLE 3-4

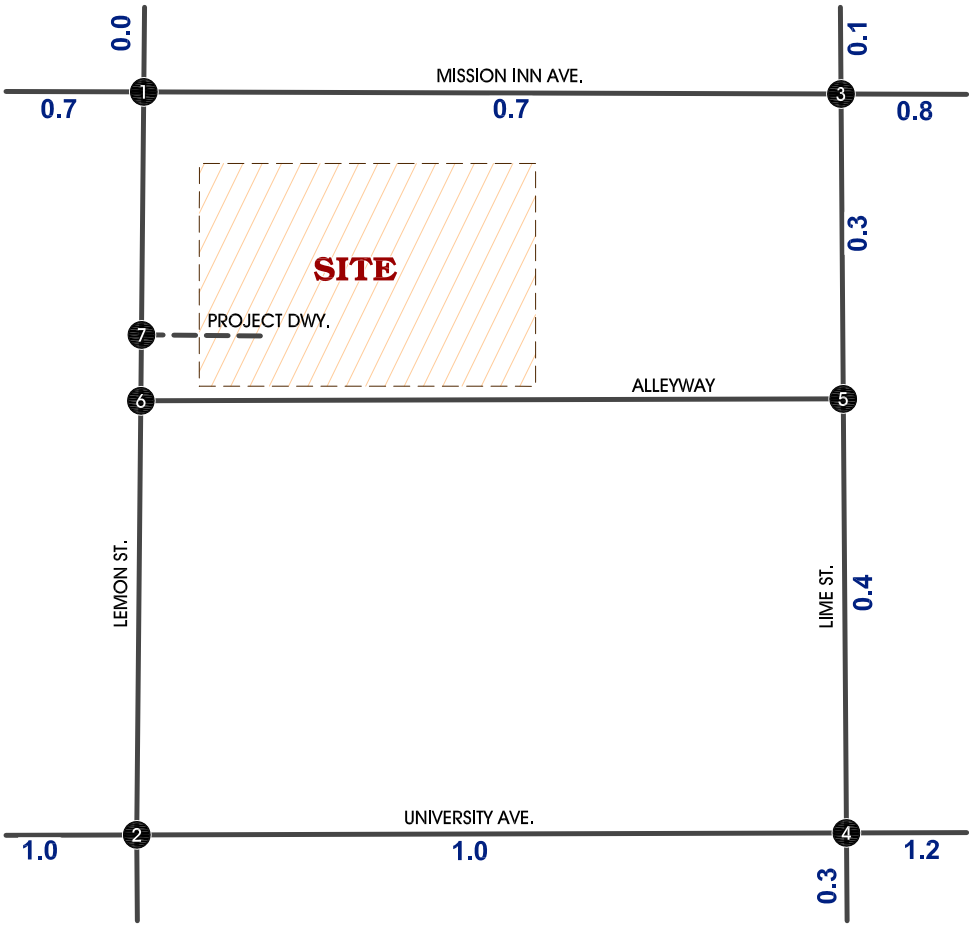
CUMULATIVE DEVELOPMENT PROJECTS TRIP GENERATION SUMMARY

ID	PROJECT LOCATION	Land Use	ITE Code	Quantity[1]	Peak Hour						Daily
					AM			PM			
					In	Out	Total	In	Out	Total	
1	3393 Mission Inn	General Office Building	710	9.1 TSF	30	5	35	2	10	12	104
		Multifamily Housing (Low-Rise 1-2 floors)	220	72 DU	8	25	33	25	15	40	527
	Subtotal				38	30	68	27	25	52	631
2	3870 Main St	Shopping Center	820	8.197 TSF	5	3	8	15	16	31	309
		Multifamily Housing (Low-Rise 1-2 floors)	220	36 DU	4	13	17	13	8	21	264
	Subtotal				9	16	25	28	24	52	573
3	3558 Fairmount	Business Hotel	312	239 RM	38	55	93	43	33	76	961
4	3650 Market Street	Shopping Center	820	22 TSF	13	8	21	40	44	84	831
		Multifamily Housing (Low-Rise 1-2 floors)	220	165 DU	18	58	76	58	35	93	1,208
	Subtotal				69	121	190	141	112	253	3,000
5	3102 Main Street	Multifamily Housing (Low-Rise 1-2 floors)	220	116 DU	13	41	54	41	24	65	849
6	3105 Market St	Multifamily Housing (Low-Rise 1-2 floors)	220	146 DU	16	51	67	51	31	82	1,069
7	2941 Market Street	Multifamily Housing (Low-Rise 1-2 floors)	220	17 DU	2	6	8	6	4	10	124
	Subtotal				31	98	129	98	59	157	2,042
8	2719 Eleventh Street	Multifamily Housing (Low-Rise 1-2 floors)	220	8 DU	1	3	4	3	2	5	59
9	4445 Magnolia Ave	Hospital	610	251.5 TSF	153	70	223	78	166	244	2,696
10	4399 Main	High Turnover (Sit-Down) Restaurant	932	4.525 TSF	25	20	45	27	17	44	508
	Subtotal				178	90	268	105	183	288	3,204
11	2450 Market Street	Senior Adult Housing - Attached	252	67 DU	5	9	14	9	8	17	248
12	1606 Orange Street	Single Fam. Detached	210	7 DU	1	4	5	4	3	7	66
13	NEC Orange Street and Vista Avenue[3]	Mixed-Use			385	316	701	507	393	900	10,446
	Subtotal				391	329	720	520	404	924	10,760
TOTAL CUMULATIVE TRIPS					717	687	1,404	922	809	1,731	20,269

[1] RM = Room; TSF = Thousand Square Feet

[2] Source: Northgate Center TIA (November 30, 2018). Prepared by Urban Crossroads, Inc.

FIGURE 3-E
CUMULATIVE DEVELOPMENT ONLY TRAFFIC VOLUMES



LEGEND:

7 = INTERSECTION ID

= PROJECT DRIVEWAY

1.0 = VEHICLES PER DAY (1000's)

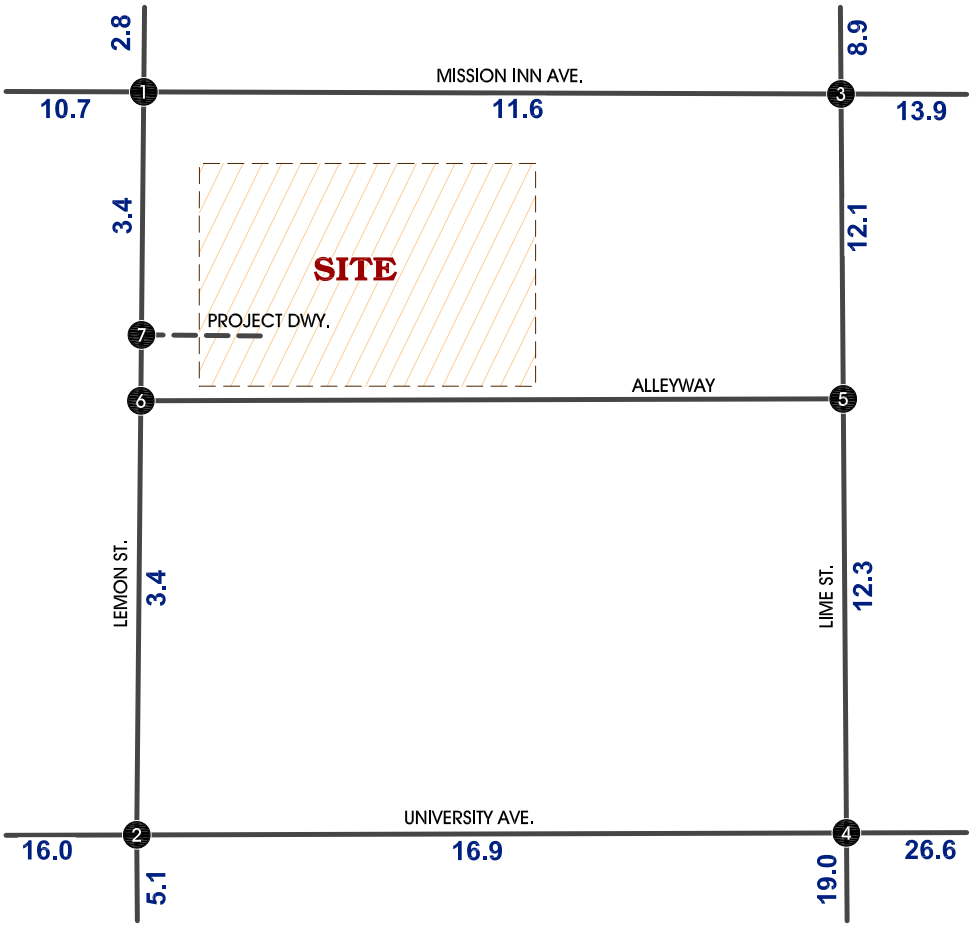
AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	L 0 T 31		L 0 T 33	L 0 T 4 R 0	L 0 T 22 R 9	L 0 T 7 R 6	L 8 T 33 R 2	L 0 T 13 R 0	L 0 T 0 R 0		L 0 T 0	FUTURE INTERSECTION
L 0 T 20	R 0 T 0 L 0	L 0 T 45	R 0 T 0 L 0	L 0 T 20 R 0	R 9 T 3 L 8	L 11 T 34 R 0	R 0 T 9 L 3	L 0 T 0 R 0	R 0 T 28 L 0	L 0 T 0	R 0 T 0 L 0	

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	L 0 T 31		L 0 T 39	L 0 T 3 R 0	L 0 T 23 R 8	L 0 T 8 R 5	L 5 T 39 R 6	L 0 T 13 R 0	L 0 T 0 R 0		L 0 T 0	FUTURE INTERSECTION
L 0 T 27	R 0 T 0 L 0	L 0 T 50	R 0 T 0 L 0	L 0 T 27 R 0	R 8 T 3 L 7	L 8 T 42 R 0	R 0 T 8 L 5	L 0 T 0 R 0	R 0 T 21 L 0	L 0 T 0	R 0 T 0 L 0	

FIGURE 3-F
EAC (2021) TRAFFIC VOLUMES



LEGEND:

7 = INTERSECTION ID

= PROJECT DRIVEWAY

1.0 = VEHICLES PER DAY (1000's)

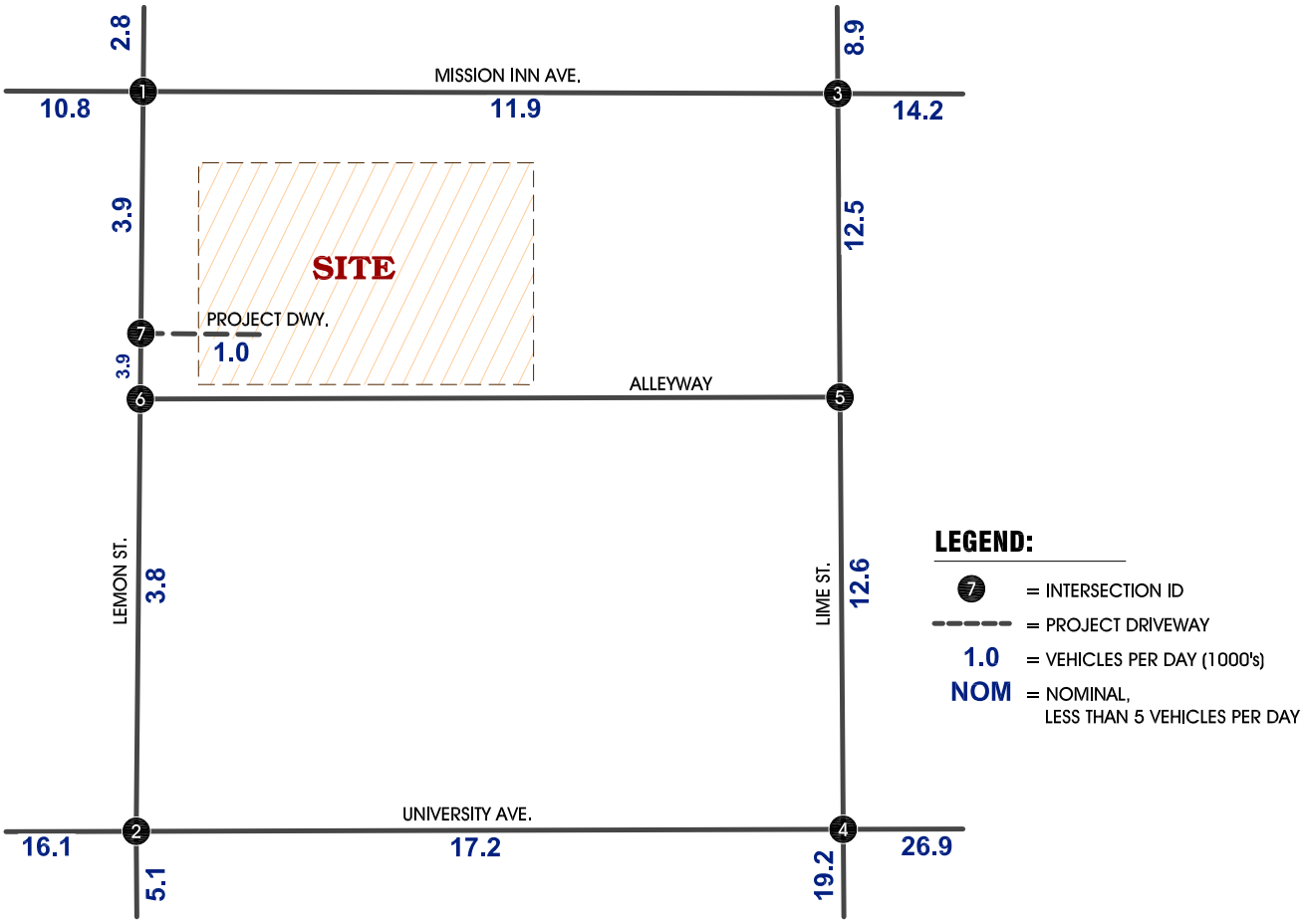
AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	←24 ←569		←26 ←603	12 ↓ 193 58	←92 ←528 ←449	32 ↓ 656 85	←105 ←556 ←328	3 ↓ 700 2	←1 ←1 ←1		←1 ←1	FUTURE INTERSECTION
1 → 240 →	14 ↑ 30 ↑ 19 →	9 → 421 →	14 ↑ 38 ↑ 54 →	3 → 218 → 45 →	33 ↑ 139 ↑ 15 →	14 → 361 → 90 →	19 ↑ 114 ↑ 158 →	1 → 1 → 4 →	2 ↑ 216 ↑ 2 →	1 → 1 →	1 ↑ 66 ↑ 4 →	

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.
	←15 ←430		←27 ←490	19 ↓ 299 40	←93 ←413 ←225	31 ↓ 400 155	←86 ←475 ←260	2 ↓ 619 1	←2 ←1 ←1		←3 ←1	FUTURE INTERSECTION
15 → 362 →	23 ↑ 166 ↑ 96 →	19 → 740 →	50 ↑ 242 ↑ 139 →	16 → 345 → 90 →	30 ↑ 287 ↑ 69 →	13 → 792 → 93 →	34 ↑ 332 ↑ 497 →	1 → 1 → 7 →	1 ↑ 411 ↑ 4 →	1 → 1 →	1 ↑ 278 ↑ 6 →	

FIGURE 3-G
EACP (2021) TRAFFIC VOLUMES



AM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	24 569		60 603	12 193 58	92 528 466	42 667 96	105 573 328	10 732 2	1 1 1		8 1		55
1 240	31 36 52	29 421	14 45 54	3 229 67	33 139 15	14 361 90	26 114 158	1 1 4	2 216 2	1 1	1 127 4		66 68

PM PEAK HOUR

1. Lemon St. / Mission Inn Av.		2. Lemon St. / University Av.		3. Lime St. / Mission Inn Av.		4. Lime St. / University Av.		5. Lime St. / Alleyway		6. Lemon St. / Alleyway		7. Lemon St. / Project Dwy.	
	15 430		48 490	19 299 40	93 413 235	37 409 164	86 485 260	6 643 1	2 1 1		7 1		44
15 362	36 170 122	31 740	50 246 139	16 354 108	30 287 69	13 792 93	38 332 497	1 1 7	1 411 4	1 1	1 315 6		281 41

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4.0 FUTURE TRAFFIC ANALYSIS

Peak hour intersection analysis has been performed at the study area intersections for each of the project scenarios and for projected future conditions. Improvements are recommended to satisfy the level of service requirements of the City of Riverside and if the following impacts are identified:

1) When existing traffic conditions (Analysis Scenario 1) exceed the General Plan target LOS.

2) When project traffic, when added to existing traffic (Analysis Scenario 2), will deteriorate the LOS to below the target LOS, and impacts cannot be mitigated through project conditions of approval.

3) When cumulative traffic (Analysis Scenario 3) exceeds the target LOS, and impacts cannot be mitigated through existing infrastructure funding mechanisms.

A. Delay and Level of Service Analysis Under Existing plus Ambient plus Cumulative (EAC 2021) Conditions

Intersection levels of service for the EAC traffic conditions are shown in Table 4-1. Table 4-1 shows HCM calculations based on the geometrics at the study area intersections. The operation analysis worksheets for EAC traffic conditions are provided in Appendix "E".

For EAC traffic conditions, the study area intersections are anticipated to continue to operate at an acceptable level of service (LOS "D" or better) with existing geometry and traffic controls.

B. Delay and Level of Service Analysis Under Existing plus Ambient plus Cumulative plus Project (EACP 2021) Conditions

Intersection levels of service for the EACP traffic conditions are shown in Table 4-2. Table 4-2 shows HCM calculations based on the geometrics at the study area intersections and for conditions without and with intersection improvements. The operation analysis worksheets for EACP traffic conditions are provided in Appendix "F".

For EACP traffic conditions, the study area intersections are projected to operate at an acceptable level of service in addition to the intersections previously identified under EAC conditions.

TABLE 4-1

INTERSECTION ANALYSIS FOR EAC (2021) CONDITIONS

ID	Intersection	Traffic Control [1]	Intersection Approach Lanes [2]												Delay [3] (secs.)		Level of Service [3]	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Lemon St. / Mission Inn Av.	TS	0.5	1	0.5	0	0	0	1	1	0	0	1	0	6.0	13.6	A	B
2	Lemon St. / University Av.	TS	1.5	1.5	0	0	0	0	1	2	0	0	2	0	7.0	15.3	A	B
3	Lime St. / Mission Inn Av.	TS	1	1	1	1	2	d	1	2	0	1	1	1	45.0	35.2	D	D
4	Lime St. / University Av.	TS	1	2	1	1	2	0	1	2	1	2	2	1	36.9	34.9	D	C
5	Lime St. / Alleyway	CSS	0	2	0	0	2	0	0	1!	0	0	1!	0	14.5	15.0	B	B
6	Lemon St. / Alleyway	CSS	0.5	1.5	0	0	0	0	0.5	0.5	0	0	1	0	9.2	10.8	A	B
7	Lemon St. / Project Dwy.	-	Future Intersection														-	-

[1] TS = Traffic Signal; CSS = Cross Street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto right turn lane; 0.5 = Shared Lane; 1! = Shared Left/Through/Right Lane

[3] Delay and level of service calculated using the following analysis software: Synchro 10 HCM6

TABLE 4-2

INTERSECTION ANALYSIS FOR EACP (2021) CONDITIONS

ID	Intersection	Traffic Control [1]	Intersection Approach Lanes [2]												Delay [3] (secs.)		Level of Service [3]	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Lemon St. / Mission Inn Av.	TS	0.5	1	0.5	0	0	0	1	1	0	0	1	0	7.8	14.5	A	B
2	Lemon St. / University Av.	TS	1.5	1.5	0	0	0	0	1	2	0	0	2	0	7.1	15.4	A	B
3	Lime St. / Mission Inn Av.	TS	1	1	1	1	2	d	1	2	0	1	1	1	48.2	35.8	D	D
4	Lime St. / University Av.	TS	1	2	1	1	2	0	1	2	1	2	2	1	37.3	35.6	D	D
5	Lime St. / Alleyway	CSS	0	2	0	0	2	0	0	1!	0	0	1!	0	14.9	15.3	B	C
6	Lemon St. / Alleyway	CSS	0.5	1.5	0	0	0	0	0.5	0.5	0	0	1	0	9.6	11.2	A	B
7	Lemon St. / Project Dwy.	CSS	0	2	0	0	0	0	0	0	0	0	0	1	8.9	9.5	A	A

[1] TS = Traffic Signal; CSS = Cross Street Stop

[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = Defacto right turn lane; 0.5 = Shared Lane; 1! = Shared Left/Through/Right Lane; 1 = Improvement

[3] Delay and level of service calculated using the following analysis software: Synchro 10 HCM6

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5.0 FINDINGS AND RECOMMENDATIONS

A. Traffic Impacts, Level of Service Analysis, and Site Access Recommendations

For Existing (2020) and Existing plus Project (EP), EAC, and EACP traffic conditions, the study area intersections operate at an acceptable level of service (LOS "D" or better) during the peak hours with the existing geometry and traffic controls.

Site Access Recommendations

The following driveway configurations are recommended for site access purposes.

Lemon Street/ Project Driveway [#7]

- Install a stop sign control on the westbound approach.
- Restrict to right-in/right-out only access.
- Provide a westbound right turn lane.

Lemon Street/Alleyway [#6]

- Maintain a stop sign control on the westbound approach.
- Maintain a shared westbound through/right lane.

Lime Street/Alleyway [#5]

- Maintain a stop sign control on the eastbound approach.
- Maintain a shared eastbound left/through/right turn lane.

B. Funding Mechanisms

In order to address the cumulative traffic impacts from the proposed project and other developments in the area, the City has the following funding mechanisms available.

Transportation Uniform Mitigation Fee (TUMF)

The Transportation Uniform Mitigation Fee (TUMF) Program was established to assist in funding the Regional System of Highways and Arterials throughout Riverside County. TUMF allows developers to contribute toward sustaining the regional transportation system on a "fair share" basis. Managed by the Western Riverside Council of Governments (WRCOG), the program is not designed to be the only source of revenue but would complement funds generated by Measure A, local transportation fee programs, etc.

Development Impact Fees (DIF)

The development impact fee (DIF) is intended to construct or acquire needed facilities, preserve open space, and habitat needed to serve new developments. The transportation facilities include roads, bridges, and traffic signals.

C. Circulation Recommendations

1. On-Site

Figure 5-A illustrates the on-site recommended roadway and intersection lane improvements. Construction of on-site improvements shall occur in conjunction with adjacent project development activity or as needed for project access purposes.

The recommended on-site roadway improvements are described below.

- Provide stop sign control at the project driveway.
- On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.
- Verify that minimum sight distance is provided at the project access points.

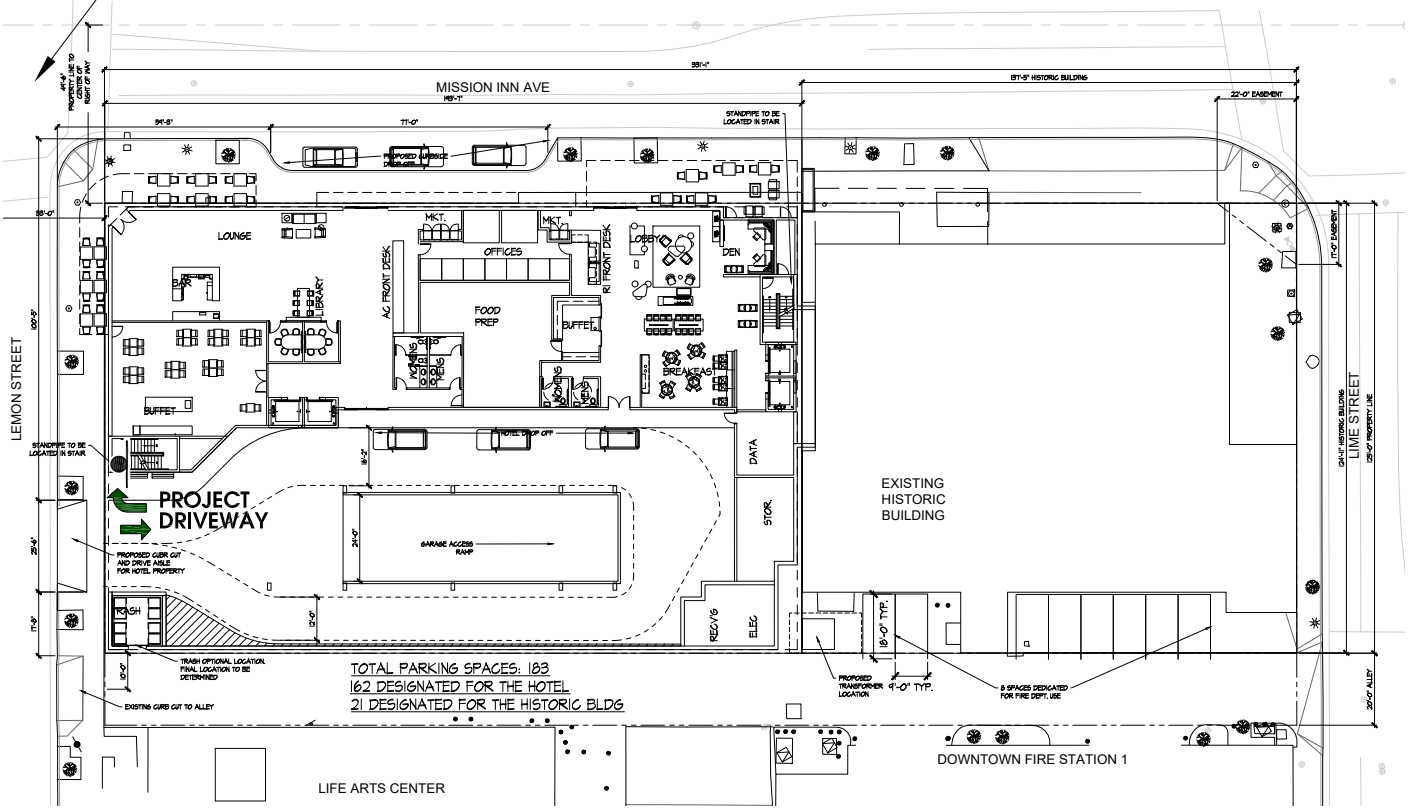
2. Off-Site

The project shall install a diagonal crosswalk at the intersection of Mission Inn Ave./Lemon St. The crosswalk will allow patrons of the proposed hotel to efficiently cross Mission Inn Avenue while heading towards destinations such as the Convention Center.

During the City festivals, Mission Inn Ave. and Lemon St. will be closed and project traffic will be circulated through the project's secondary driveway at the alleyway. The rolling gates shall be opened for hotel traffic. Additionally, the hotel should provide circulation information in the lobby area to inform guests of the appropriate detours.

FIGURE 5-A
CIRCULATION RECOMMENDATIONS

THE PROJECT SHALL INSTALL A DIAGONAL CROSSWALK AT THE INTERSECTION OF MISSION INN AVE./LEMON ST.



DURING THE FESTIVALS, MISSION INN AVE. AND LEMON ST. WILL BE CLOSED AND PROJECT TRAFFIC WILL BE CIRCULATED THROUGH THE PROJECT'S SECONDARY DRIVEWAY AT THE ALLEYWAY.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT.

PROVIDE STOP SIGN CONTROL AT THE PROJECT DRIVEWAY.

VERIFY THAT MINIMUM SIGHT DISTANCE IS PROVIDED AT THE PROJECT ACCESS POINT.

LEGEND:

= STOP SIGN

= LANE IMPROVEMENT (PROJECT ACCESS)

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