

Central Avenue Commercial Retail Traffic Impact Analysis

Prepared for:

Western States Engineering
4887 E. La Palma, Suite 707
Anaheim, CA 92807

Prepared by:



INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING AND ENGINEERING

23905 Clinton Keith Road 114-280
Wildomar, CA 92595

EXECUTIVE SUMMARY

Purpose of the Report

The purpose of this traffic impact analysis (TIA) report is to identify and document potential traffic deficiencies related to the proposed Central Avenue Commercial Retail in the County of Riverside. This technical report will also recommend transportation improvements to address potential project deficiencies to local and regional transportation facilities.

Project Overview

The project will be developed on a vacant site located at the west side of State Highway 74 (SH-74)/Central Avenue and Allan Street intersection. Access to the project site will be provided via a newly constructed western leg to the existing SH-74/Central Avenue and Allan Street T-intersection, which will operate as a right in/right out access only driveway through the installation of a raised median.

The following land uses are proposed as part of the commercial retail project:

- Shopping Center – 10,490 sf
- Fast Food Restaurant with Drive Through – 1,510 sf

The project trip generation was calculated using the ITE Trip Generation Manual (10th Edition). It is estimated that the project will generate 1,212 total daily trips, 188 AM peak hour trips and 92 PM peak hour trips. Project trip distribution and assignment were developed, in coordination with County of Riverside staff, based on the land use characteristics of the proposed project and surrounding area, existing travel patterns within the study area, anticipated travel patterns to and from the project site, and approved projects located in the vicinity of the project site. Project scenarios and study area were then established in coordination with County staff to determine the potential project deficiencies on the transportation network. Refer to **Appendix A** for approved scoping agreement.

Project Scenarios:

- Existing Conditions (2020)
- Existing Plus Project (EP) Conditions
- Existing Plus Ambient Plus Project (EAP) Conditions
- Existing Plus Ambient Plus Cumulative Plus Project (EACP) Conditions

Study Area Intersections:

1. SH-74/Central Avenue and Conard Avenue
2. SH-74/Central Avenue and Allan Street/Project Driveway
3. SH-74/Central Avenue and Ardenwood Way
4. SH-74/Central Avenue and Rosetta Canyon Drive
5. SH-74/Central Avenue and Crater Drive



Analysis Results and Recommendations

Existing Conditions (2020) Scenario

All study area intersections operate at acceptable level of service (LOS) under Existing Conditions 2020 and Existing Plus Project Conditions scenarios except for SH-74/Central Avenue at Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound SH-74/Central Avenue. This project will not add traffic to this movement; therefore, no improvements are required by this project. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS.

Existing Plus Ambient Plus Project Scenario

With the construction of the project and the incorporation of the additional western leg to the existing T-intersection at SH-74/Central Avenue and Allan Street, the project will be conditioned to construct a raised median along the property frontage to restrict access to right in/right out vehicular movements at the new driveway and Allan Street. With this improvement, all study area intersections operate at acceptable LOS under Existing Plus Ambient Plus Project Conditions except for SH-74/Central Avenue at Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound SH-74/Central Avenue. This project will not add traffic to this movement; therefore no additional improvements are required by this project. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS.

Existing Plus Ambient Plus Cumulative Plus Project Scenario

With the construction of the project and the incorporation of the additional western leg to the existing T-intersection at SH-74/Central Avenue and Allan Street, the project will be conditioned to construct a raised median along the property frontage to restrict access to right in/right out vehicular movements at the new driveway and Allan Street. With this improvement, all study area intersections operate at acceptable LOS under Existing Plus Ambient Plus Cumulative Plus Project Conditions except for SH-74/Central Avenue at Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound SH-74/Central Avenue. This project will not add traffic to this movement. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS. Additionally, the project driveway at SH-74/Central Avenue and Allan Street is expected to operate at an acceptable level of service throughout the day except during the AM peak hour, where the operation of the driveway is expected to operate at LOS E.

Additionally, the project will be conditioned to widen SH-74/Central Avenue to its ultimate classification, per the City of Lake Elsinore General Plan, along the property frontage to an 8-lane augmented urban arterial. Improvement plans including ultimate roadway alignment, striping and



signage will be submitted to the City of Lake Elsinore for staff review and approval. All proposed improvements shall be constructed per City Standards satisfactory to the City Engineer.



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1.0 PROJECT INTRODUCTION

This traffic impact analysis (TIA) report has been prepared for Central Avenue Commercial Retail project. The project will be developed on a vacant site located at the west side of State Highway 74 (SH-74)/Central Avenue and Allan Street intersection.

PROJECT DESCRIPTION

The following land uses are proposed as part of the commercial retail project:

- Shopping Center – 10,490 sf
- Fast Food Restaurant with Drive Through – 1,510 sf

Figure 1-1 shows the project site plan.

STUDY AREA

The study area for this project was developed consistent with the Riverside County TIA Preparation Guide, including all intersections of “Collector” or higher classification streets with “Collector” or higher classification streets, at which the proposed project will add 50 or more peak hour trips. IEG prepared a project traffic study scoping agreement defining the study area, which was reviewed and approved by City of Lake Elsinore staff prior to the preparation of this technical report. Refer to **Appendix A** for approved scoping agreement.

Figure 1-2 presents the study area that includes the following key intersection locations:

1. SH-74/Central Avenue and Conard Avenue
2. SH-74/Central Avenue and Allan Street/Project Driveway
3. SH-74/Central Avenue and Ardenwood Way
4. SH-74/Central Avenue and Rosetta Canyon Drive
5. SH-74/Central Avenue and Crater Drive

Turning movement counts were conducted for one weekday during the morning and evening peak hours on October 22, 2020. Due to the COVID-19 pandemic, traffic patterns are currently disrupted and not typical. Therefore, IEG, in coordination with City of Lake Elsinore staff used the Central Plaza Traffic Impact Study (February 2017) and the Dexter/Central Chick-fil-A Traffic Impact Analysis (July 2018) to calculate an adjustment factor based on the AM and PM peak hour relationship between like intersection counts. The adjustment factor was applied to the turning movement counts from this project to develop Existing Conditions 2020 baseline volumes. The turning movement counts, adjustment factor calculation, and adjusted volumes are provided in **Appendix B**. These baseline volumes will be utilized in Synchro 10 software to determine LOS at all study intersections. The Existing Plus Ambient without Project Conditions traffic volumes will be developed by adding a 2% annual growth for two years to the Existing Year 2020 baseline volumes.

PROJECT TRIP GENERATION

The trip generation is a measure or forecast of the number of trips that begin or end at the project site. These trips will result in some traffic increases on the streets where they occur. The rates used in this analysis were determined using *Trip Generation, 10th Edition*, published by the Institute of



Transportation Engineers (ITE) that is widely used in Southern California. Project ITE average trip generation rates are presented in **Table 1-1**.

Table 1-1
Project Trip Generation Rate

Land Use ¹	Units ¹	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Shopping Center	TSF	820	9.28	5.69	14.97	4.69	5.08	9.77	124
Fast Food Restaurant w/ Drive Through	TSF	934	20.50	19.69	40.19	16.99	15.68	32.67	471

Source: Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition (2017)

¹ TSF = Thousand Square Feet

Tables 1-2 summarizes the calculated trip generation based on the floor areas associated with the proposed Project. As shown on Table 1-2, the proposed development is anticipated to generate approximately 1,212 total daily trips, 188 AM peak hour trips and 92 PM peak hour trips.

Table 1-2
Project Trip Generation

Land Use	Intensity	Units ¹	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Shopping Center	10.49	TSF	97	60	157	49	53	102	1,298
Pass-by Reduction (34% PM Peak Hour Only) ²			-	-	-	17	18	35	441
<i>Subtotal</i>			97	60	157	32	35	67	857
Fast Food Restaurant W/ Drive Through	1.51	TSF	31	30	61	26	24	50	711
Pass-by Reduction (49% AM Peak Hour, 50% PM Peak Hour) ²			15	15	30	13	12	25	356
<i>Subtotal</i>			16	15	31	13	12	25	355
Total			113	75	188	45	47	92	1,212

Source: Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 10th Edition (2017)

¹ TSF = Thousand Square Feet

² Pass-by reduction percentage is based on the ITE methodology per Table E of ITE Trip Generation Handbook (3rd Edition, 2017)

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the probable destinations, directions and traffic routes that project related traffic will affect. Once the proposed development's trips have been estimated, they are assigned to the study area network. For this development, the project trip distribution and assignment were developed, in coordination with City staff, based on the land use characteristics of the proposed project and surrounding area, existing travel patterns within the study area, anticipated travel patterns to and from the project site, and approved projects located in the vicinity of the project site.

Figures 1-1 through 1-4 show project site plan, study area, trip distribution/assignment and intersection turning movement volumes.



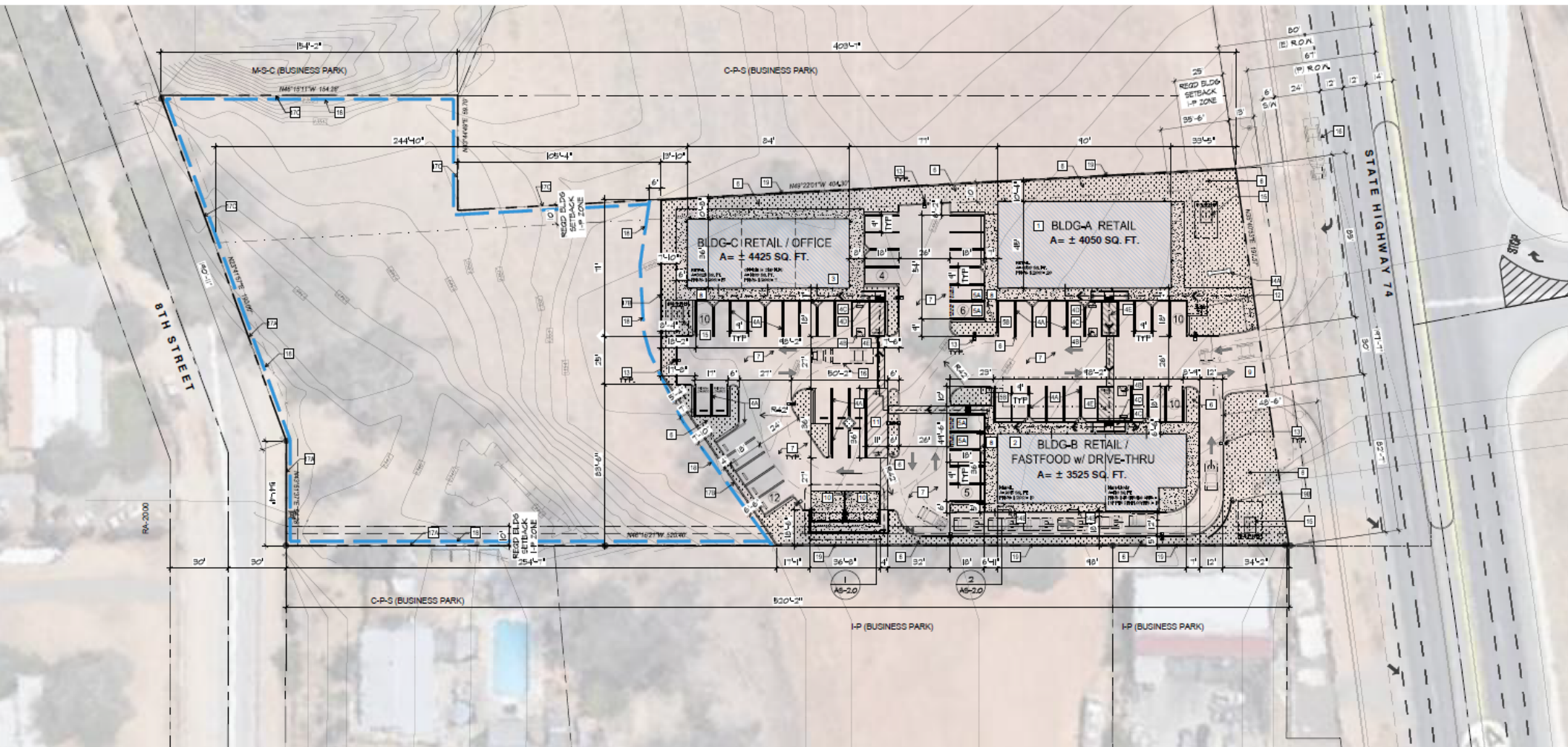
PROJECT ACCESS

Access to the project site will be provided via a newly constructed western leg to the existing SH-74/Central Avenue and Allan Street T-intersection, which will operate as a right in/right out access only driveway through the installation of a raised median.

PARKING

The proposed development will be required to provide on-site parking spaces consistent with County of Riverside parking requirements.



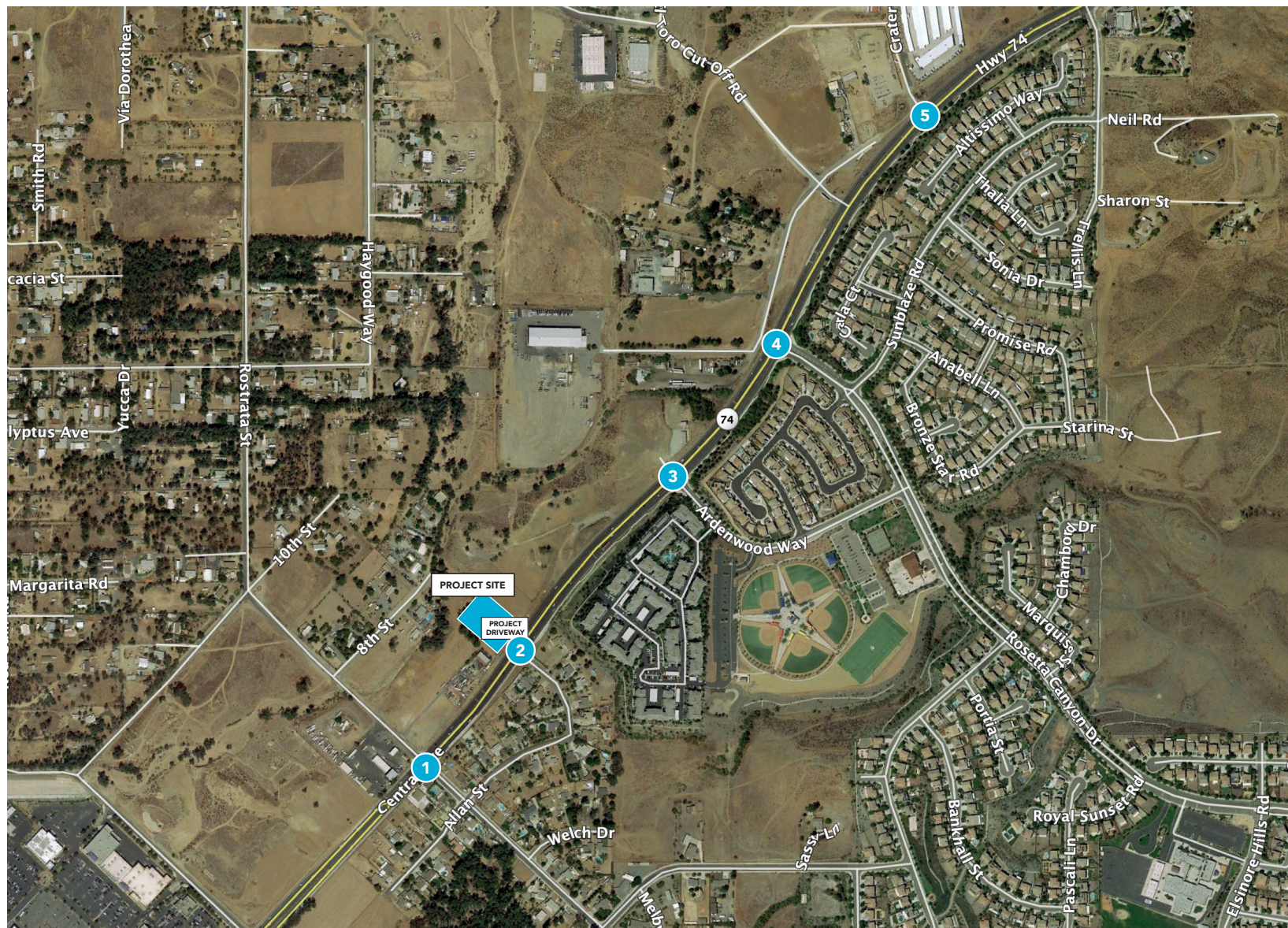


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Central Avenue Commercial Retails

Project Site Plan

Figure 1-1



LEGEND

Intersection

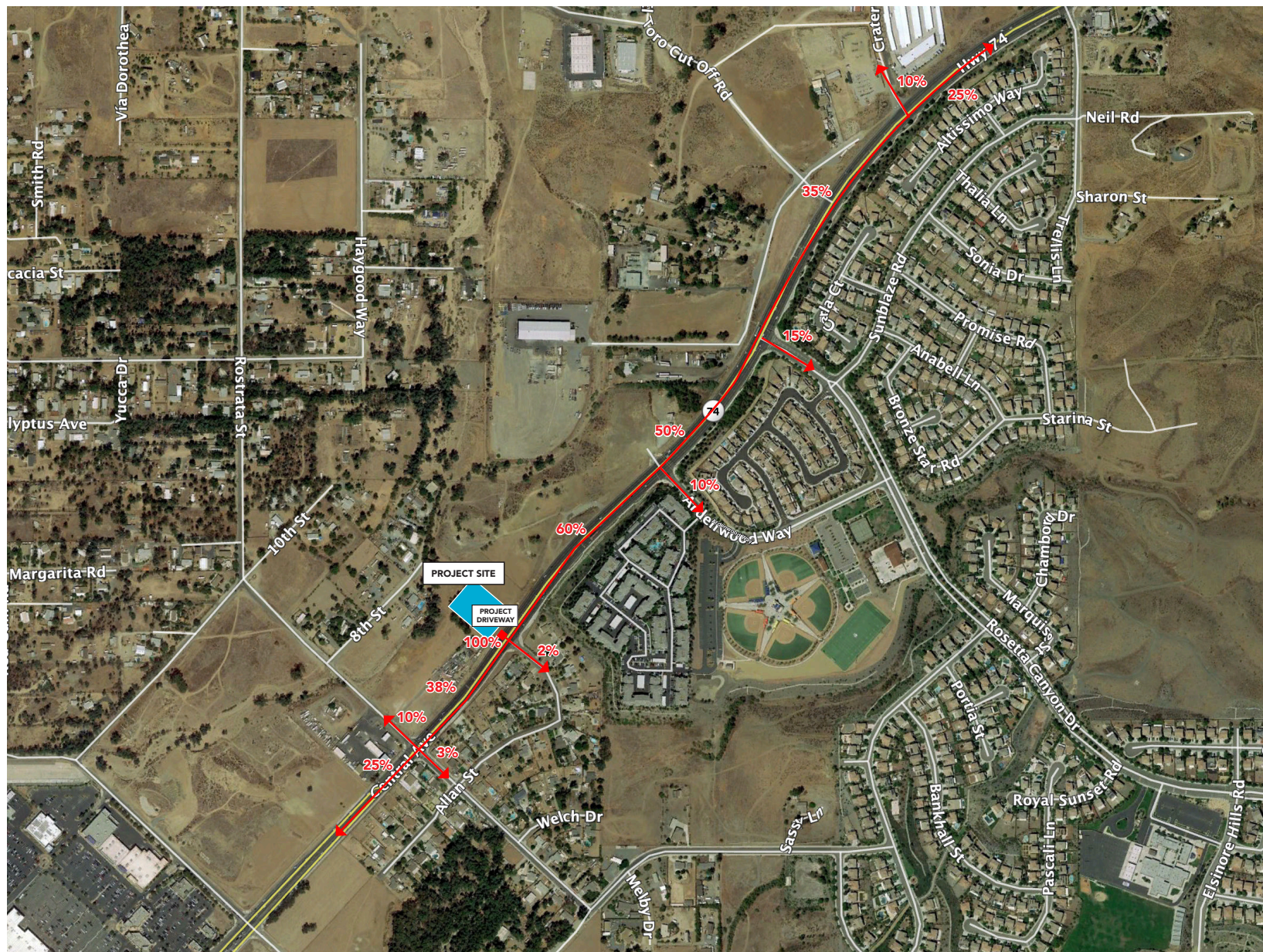


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Central Avenue Commercial Retails

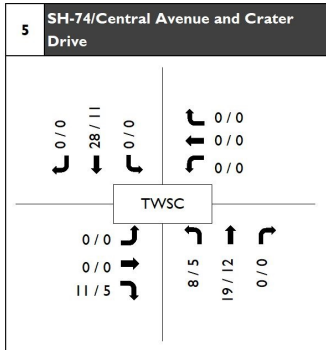
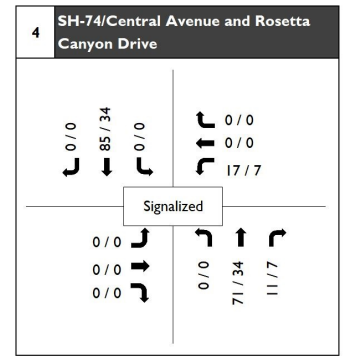
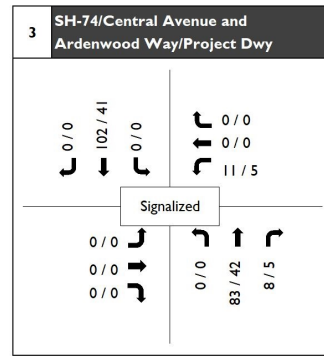
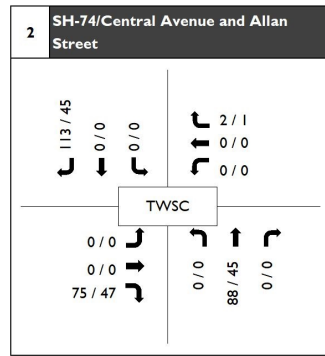
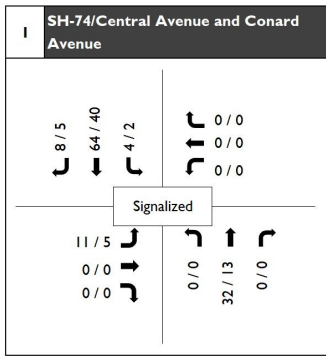
Project Study Area

Figure 1-2



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Central Avenue Commercial Retails
Project Trip Distribution
Figure 1-3



LEGEND

(AM/PM) Peak Hour Volumes



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Central Avenue Commercial Retails
Project Peak Hour Intersection Volumes
Figure 1-4

2.0 METHODOLOGIES

This section documents the methodologies and assumptions used to conduct the circulation impact analysis for the proposed project. This section contains the following background information:

- Study scenarios
- Study time periods
- Analysis methodologies

Refer to **Appendix A** for approved scoping agreement.

STUDY SCENARIOS

This report presents an analysis of the intersections which were selected for the following anticipated timeframe scenarios:

- Existing Conditions (2020)
- Existing Plus Project (EP) Conditions
- Existing Plus Ambient Plus Project (EAP) Conditions
- Existing Plus Ambient Plus Cumulative Plus Project (EACP) Conditions

STUDY TIME PERIODS

The City of Lake Elsinore selected the following peak hours for analysis:

- Weekday AM (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM (peak hour between 4:00 PM and 6:00 PM)

ANALYSIS METHODOLOGIES

Street system operating conditions are typically described in terms of “level of service.” Level of service is a report-card scale used to indicate the quality of traffic flow on roadway segments and at intersections. Level of service (LOS) ranges from LOS A (free flow, little congestion) to LOS F (forced flow, extreme congestion). **Table 2-1** describes generalized definitions of auto LOS A through F.



Table 2-1
Vehicular Level of Service Definitions

LOS	Characteristics
A	Primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Controlled delay at the boundary intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B	Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C	Stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	Less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E	Unstable operation and significant delay. Such operations may be due to some combination of adverse signal progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	Flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. Also, LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections have a volume-to-capacity ratio greater than 1.0.

Source: Highway Capacity Manual, Transportation Research Board (2010)

Intersection Capacity Analysis

The analysis of peak hour intersection performance was conducted using the Synchro 10 software program, which uses methodologies defined in the Highway Capacity Manual (HCM) 6th Edition to calculate LOS. Level of service (LOS) for intersections is determined by control delay. Control delay is defined as the total elapsed time from when a vehicle stops at the end of a queue to the time the vehicle departs from the stop line. The total elapsed time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

Signalized Intersections

The HCM analysis methodology for evaluating signalized intersections is based on the “operational analysis” procedure. This technique uses 1,900 passenger cars per hour of green per lane (pcphpl) as the maximum saturation flow of a single lane at an intersection. Average control delay is calculated by taking a volume-weighted average of all the delays for all vehicles entering the intersection. **Table 2-2** summarizes the level of service criteria for signalized intersections.



Table 2-2
Signalized Intersection Level of Service HCM Operational Analysis Method

Average Control Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
≤ 10.0	<i>LOS A</i> occurs when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
10.1 – 20.0	<i>LOS B</i> occurs when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with <i>LOS A</i> .
20.1 – 35.0	<i>LOS C</i> occurs when progression is favorable or the cycle length is moderate. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
35.1 – 55.0	<i>LOS D</i> occurs when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
55.1 – 80.0	<i>LOS E</i> occurs when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
> 80.0	<i>LOS F</i> occurs when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, Transportation Research Board (2010)

All-way Stop-controlled (AWSC) Intersections

The HCM analysis methodology for evaluating all-way Stop-controlled intersections is based on the degree of conflict for each independent approach created by the opposing approach and each conflicting approach. Level of Service for AWSC intersections is also based on the average control delay. However, AWSC intersections have different threshold values than those applied to signalized intersections. This is based on the rationale that drivers expect AWSC intersections to carry lower traffic volumes than at signalized intersections. Therefore, a higher level of delay is acceptable at a signalized intersection for the same LOS.

Two-way Stop-controlled (TWSC) Intersections

The HCM analysis methodology for evaluating two-way Stop-controlled (TWSC) intersections is based on gap acceptance and conflicting traffic for vehicles stopped on the minor-street approaches. The critical gap (minimum gap that would be acceptable) is defined as the minimum time interval in the major-street traffic stream that allows intersection entry for one minor-street vehicle. Average control delay and LOS for the “worst approach” are reported. Level of service is not defined for the intersection as a whole. **Table 2-3** summarizes the level of service criteria for unsignalized intersections.



Table 2-3
Level of Service Criteria for Stop Controlled Unsignalized Intersections

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
>50.0	F

Source: Highway Capacity Manual, Transportation Research Board (2010)

City of Lake Elsinore General Plan Compliance

In coordination with City staff, the traffic impact analysis will identify LOS deficiencies for compliance with City of Lake Elsinore General Plan goals. The City of Lake Elsinore has established LOS “D” as the minimum allowable level of service at intersections. Therefore, any intersection operating at LOS “E” or worse will be considered deficient for the purposes of this analysis.



3.0 EXISTING CONDITIONS (2020) SCENARIO

This section documents the circulation system conditions within the study area of the project under Existing Conditions 2020 without and Plus Project (EP) scenarios. This section also documents operational deficiencies on the existing local and regional circulation networks. The following network improvement is assumed under EP scenario:

- SH-74/Central Avenue and Allan Street/Project Driveway – With the construction of the project and the incorporation of the additional western leg to the existing T-intersection, the project will be conditioned to construct a raised median along the property frontage to restrict access to right in/right out vehicular movements at the new driveway and Allan Street.

ROADWAY NETWORK

Locally significant roadway located within the study area of the proposed project is discussed below.

SH-74/Central Avenue from Conard Avenue to Rosetta Canyon Drive functions as a 4-lane arterial highway between Conard Avenue and Allan Street and as a 5-lane arterial highway between Allan Street and Rosetta Canyon Drive. The posted speed limit on SH-74/Central Avenue is 55 miles per hour (mph). Per the City of Lake Elsinore General Plan Circulation Element, the buildout classification for this segment of SH-74/Central Avenue is an 8-lane augmented urban arterial – state highway, as shown in **Figure 3-1**.

Figures 3-1 and **3-2** show the City of Lake Elsinore General Plan Circulation Network and Recommended Roadway Cross Sections, respectively.

TRANSIT SYSTEM

The Riverside Transit Agency (RTA) is the main transit agency servicing the County of Riverside. Currently, RTA operates Route 9 within the vicinity of the project. Route 9 operates seven days a week and connects to the Lake Elsinore Outlet Center south of the site and Perris Station Transit Center north of the site. Weekday and weekend service frequency is 60 to 90 minutes. Bus stops for Route 9 are currently located at the intersection of SH-74/Central Avenue and Allan Street for northbound service and at the intersection of SH-74/Central Avenue and Conard Avenue for southbound service. Pedestrian accessibility and connectivity from the project site to these bus stops is provided along the south side of SH-74/Central Avenue with signalized crossings at intersections where the bus stops are located. Route information is included in **Appendix H**.

ACTIVE TRANSPORTATION SYSTEM

Active transportation facilities including pedestrian and bicycle facilities within the study area of the project are provided. Pedestrian crosswalks are generally provided at signalized intersections along SH-74/Central Avenue with sidewalks on the south side. Class II bike lanes in both directions are provided along SH-74/Central Avenue. Project is proposing to provide half width right-of-way improvements along the property frontage including vehicular travel lane, bike lanes, curb, gutter and sidewalk.



TRAFFIC VOLUMES

The Existing Year 2020 peak hour intersection turning movement volumes were counted on Thursday October 22, 2020. Due to the COVID-19 pandemic, traffic patterns are currently disrupted and not typical. Therefore, IEG, in coordination with City of Lake Elsinore staff used the Central Plaza Traffic Impact Study (February 2017) and the Dexter/Central Chick-fil-A Traffic Impact Analysis (July 2018) to calculate an adjustment factor based on the AM and PM peak hour relationship between like intersection counts. The adjustment factor was applied to the turning movement counts from this project to develop Existing Conditions 2020 baseline volumes. The turning movement counts, adjustment factor calculation, and adjusted volumes are provided in **Appendix B**. The counts provided interpreted SH-74/Central Avenue as a north-south corridor. Therefore, intersection configurations for Synchro analysis were input consistent with the counts with the SH-74/Central Avenue movements as north and south at all intersections.

ANALYSIS RESULTS

Table 3-1 shows Existing Conditions intersection operation analysis results.

Figures 3-3 and 3-4 show intersection turning movement volumes under Existing Year 2020 and Existing Plus Project scenarios, respectively.

Table 3-1
Existing Conditions 2020 Scenario Intersection Operation Analysis

Intersection	Existing Conditions		Existing Conditions Plus Project	
	Delay (a)	LOS (b)	Delay (a)	LOS (b)
AM Peak/PM Peak				
1. SH-74/Central Avenue and Conard Avenue	11.1/13.7	B/B	13.5/15.0	B/B
2. SH-74/Central Avenue and Allan Street/Project Driveway ^(c)	32.1/22.5	D/C	31.2/15.5	D/C
3. SH-74/Central Avenue and Ardenwood Way	9.7/6.8	A/A	10.9/6.9	B/A
4. SH-74/Central Avenue and Rosetta Canyon Drive	8.7/8.0	A/A	9.5/8.1	A/A
5. SH-74/Central Avenue and Crater Drive	100.1/55.9	F/F	139.2/64.4	F/F

Notes:

Bold indicates LOS E or F

(a) Delay refers to the average control delay for the entire intersection, measured in seconds/vehicle. At unsignalized intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the Highway Capacity Manual 6th Edition and performed using Synchro 10

(c) Existing Plus Project conditions includes addition of western leg to existing T-intersection with right in/right out access only driveway through installation of a raised median.

Per the analysis results shown in **Table 3-1**, all analyzed intersections are operating at an acceptable LOS under Existing Year 2020 and Existing Plus Project Conditions except for SH-74/Central Avenue at Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound SH-74/Central Avenue. This project will not add traffic to this movement; therefore, no additional improvements are required. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS.

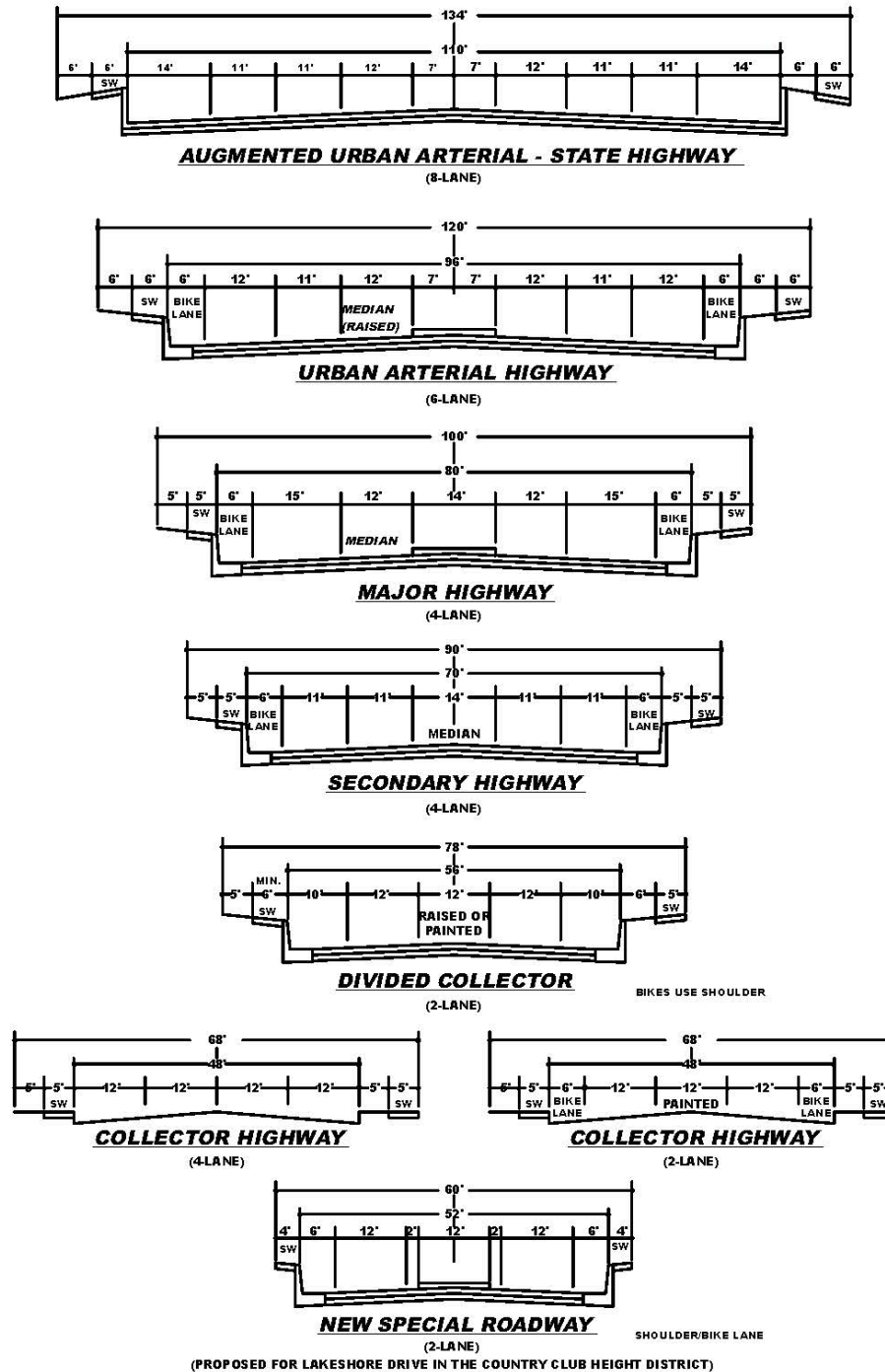
Existing Conditions and Existing Plus Project Conditions peak hour analysis worksheets are provided in **Appendices C** and **D**, respectively.



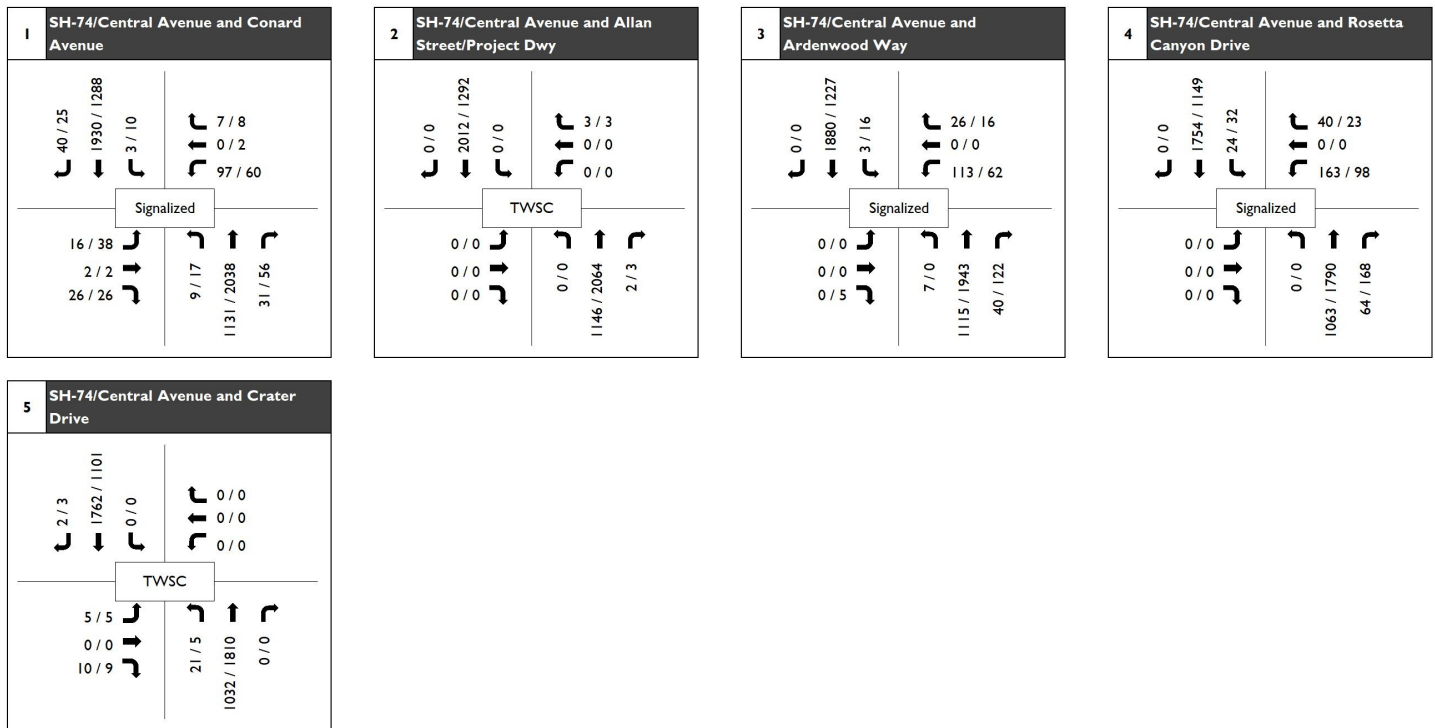


CITY OF LAKE ELSINORE PROPOSED LAND USE PLAN SCENARIO

RECOMMENDED ROADWAY CROSS-SECTIONS



* BIKE LANES ARE NOT MANDATORY UNLESS SHOWN ON THE BIKEWAY CIRCULATION ELEMENT PLAN
 PRECISE SIDEWALK LOCATION SUBJECT TO CITY ENGINEER APPROVAL
 NOTE: CHECK THE DISTRICT PLAN OF YOUR AREA FOR ANY REQUIRED SPECIAL ROADWAY CROSS-SECTION,
 ESPECIALLY THE LAKE EDGE AND COUNTRY CLUB HEIGHTS DISTRICT PLANS.
 STRIPPING OF COLLECTOR HIGHWAY AS DIRECTED BY CITY ENGINEER.



LEGEND

(AM/PM) Peak Hour Volumes



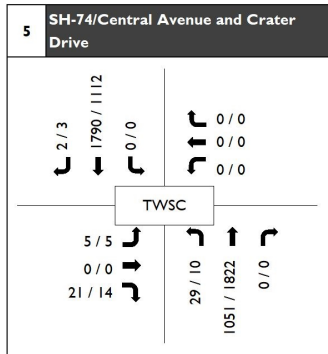
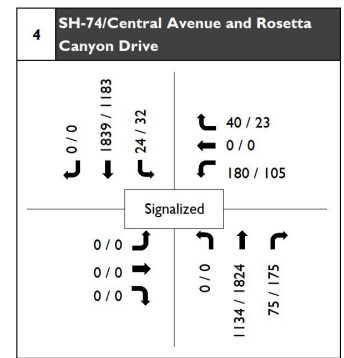
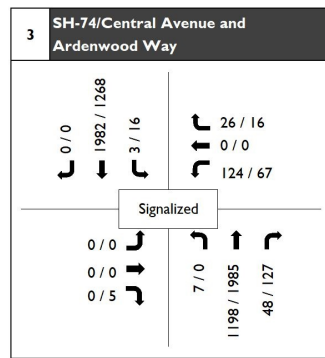
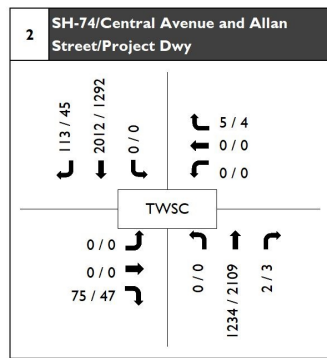
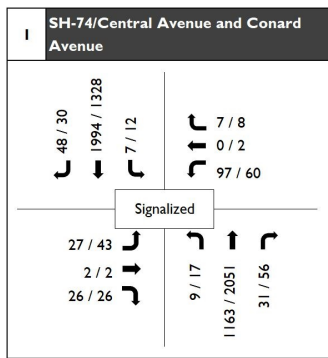
INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING AND ENGINEERING

Central Avenue Commercial Retails

Existing Year (2020)

Peak Hour Intersection Volumes

Figure 3-3



LEGEND

(AM/PM) Peak Hour Volumes



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Central Avenue Commercial Retails
Existing Year (2020) With Project
Peak Hour Intersection Volumes
Figure 3-4

4.0 EXISTING PLUS AMBIENT PLUS PROJECT CONDITIONS

This section documents the circulation system conditions within the study area of the project under Existing Plus Ambient Plus Project (EAP) Conditions. Since the project is expected to be built and operational in 2022, a 2% annual growth factor for two years was applied to the adjusted Existing Year 2020 baseline volumes. Project traffic volumes are then added to these volumes to develop EAP Conditions traffic volumes. This section also documents potential operational deficiencies on the existing local and regional circulation networks. The following network improvement is assumed under EAP conditions:

- SH-74/Central Avenue and Allan Street/Project Driveway – With the construction of the project and the incorporation of the additional western leg to the existing T-intersection, the project will be conditioned to construct a raised median along the property frontage to restrict access to right in/right out vehicular movements at the new driveway and Allan Street.

ANALYSIS RESULTS

Table 4-1 shows EAP Conditions intersection operation and queue analysis results.

Figures 4-1 shows intersection turning movement volumes under EAP Conditions.

Table 4-1
Existing Plus Ambient Plus Project Scenario Intersection Operation Analysis

Intersection	Existing Conditions		EAP Conditions	
	Delay (a)	LOS (b)	Delay (a)	LOS (b)
AM Peak/PM Peak				
1. SH-74/Central Avenue and Conard Avenue	11.1/13.7	B/B	15.5/17.8	B/C
2. SH-74/Central Avenue and Allan Street/Project Driveway	32.1/22.5	D/C	34.2/16.0	D/C
3. SH-74/Central Avenue and Ardenwood Way	9.7/6.8	A/A	12.2/7.0	B/A
4. SH-74/Central Avenue and Rosetta Canyon Drive	8.7/8.0	A/A	10.2/8.3	A/A
5. SH-74/Central Avenue and Crater Drive	100.1/55.9	F/F	148.7/66.3	F/F

Notes:

Bold indicates LOS E or F

(a) Delay refers to the average control delay for the entire intersection, measured in seconds/vehicle. At unsignalized intersection, delay refers to the worst movement.

(b) LOS calculations are based on the methodology outlined in the Highway Capacity Manual 6th Edition and performed using Synchro 10

(c) EAP conditions includes addition of western leg to existing T-intersection with right in/right out access only driveway through installation of a raised median.

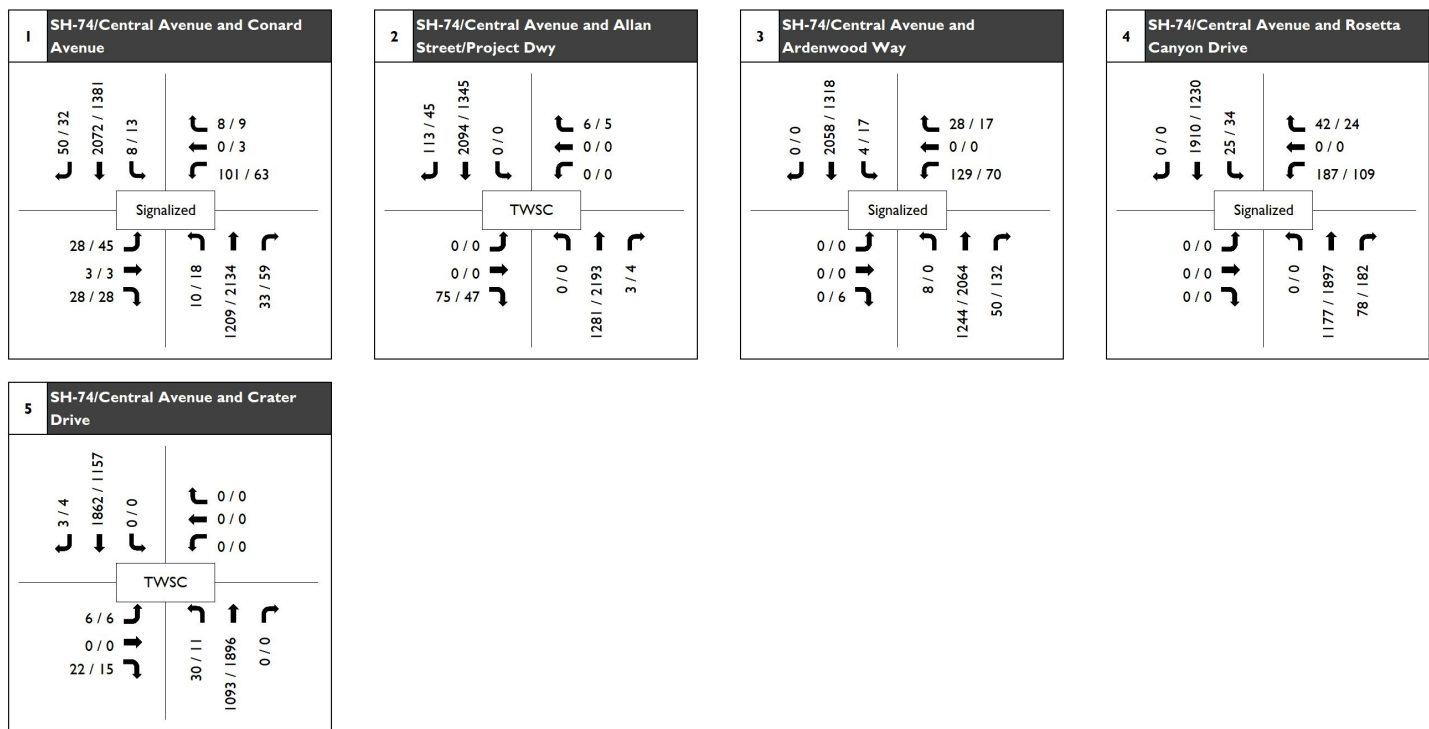
Per the analysis results shown in **Table 4-1**, all analyzed intersections are operating at an acceptable LOS under EAP Conditions except for SH-74/Central Avenue at Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound



SH-74/Central Avenue. This project will not add traffic to this movement; therefore, no additional improvements are required. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS.

EAP Conditions peak hour analysis worksheets are provided in **Appendix E**.





LEGEND

(AM/PM) Peak Hour Volumes



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Central Avenue Commercial Retails
 Existing Plus Ambient Plus Project
 Peak Hour Intersection Volumes
 Figure 4-1

5.0 EXISTING PLUS AMBIENT PLUS CUMULATIVE PLUS PROJECT CONDITIONS

This section documents the circulation system conditions within the study area of the Project under Existing Plus Ambient Plus Cumulative Plus Project (EACP) Conditions. The EACP Conditions traffic volumes were developed by adding cumulative project trips to the EAP Conditions traffic volumes. These cumulative projects are shown in **Table 5-1** below. The locations are shown in **Figure 5-1** and the Cumulative project trip volumes assigned to the study intersections are shown in **Figure 5-2**. This section also documents potential Cumulative Project impacts to the circulation network. The following network improvement is assumed under EACP conditions:

- SH-74/Central Avenue and Allan Street/Project Driveway – With the construction of the project and the incorporation of the additional western leg to the existing T-intersection, the project will be conditioned to construct a raised median along the property frontage to restrict access to right in/right out vehicular movements at the new driveway and Allan Street.

Table 5-1
Cumulative Projects

#	Project/Location	Land Use	Quantity	Units ¹
City of Lake Elsinore				
1	Lake Elsinore Walmart	Retail	151.397	TSF
		Specialty Retail	5.300	TSF
		Fast-Food without Drive-Thru	5.300	TSF
		Fast-Food with Drive-Thru	6.800	TSF
2	Tige Watersports	Boat Dealership	34.5	TSF
3	Kassab Travel Center	Gas Station w/ Convenience Market	18	VFP
		Fast-Food with Drive-Thru	2.54	TSF
4	Nichols Ranch (Phases I and II)	Single Family Residential	168	DU
		Park	8.3	AC
5	Central Avenue Gas Station	Super Convenience Market/Gas Station	12	VFP

¹DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Position; AC = Acres

*See **Appendix F** for Cumulative Traffic Volumes

ANALYSIS RESULTS

Table 5-2 shows Existing Plus Ambient Plus Cumulative Plus Project Conditions intersection operation analysis results.

Figures 5-1 and **5-2** show intersection turning movement volumes for the cumulative projects in **Table 5-1** and under Existing Plus Ambient Plus Cumulative Plus Project Conditions.

Table 5-2
Existing Plus Ambient Plus Cumulative Plus Project Condition Intersection Operation Analysis

Intersection	Existing Conditions		EACP Conditions	
	Delay (a)	LOS (b)	Delay (a)	LOS (b)
1. SH-74/Central Avenue and Conard Avenue	11.1/13.7	B/B	19.6/22.7	B/C
2. SH-74/Central Avenue and Allan Street/Project Driveway	32.1/22.5	D/C	36.0/17.0	E/C
3. SH-74/Central Avenue and Ardenwood Way	9.7/6.8	A/A	20.6/9.6	C/A
4. SH-74/Central Avenue and Rosetta Canyon Drive	8.7/8.0	A/A	11.7/9.1	B/A
5. SH-74/Central Avenue and Crater Drive	100.1/55.9	F/F	192.1/83.6	F/F

Notes:

Bold indicates LOS E or F

(a) Delay refers to the average control delay for the entire intersection, measured in seconds/vehicle. At unsignalized intersection, delay refers to the worst movement.

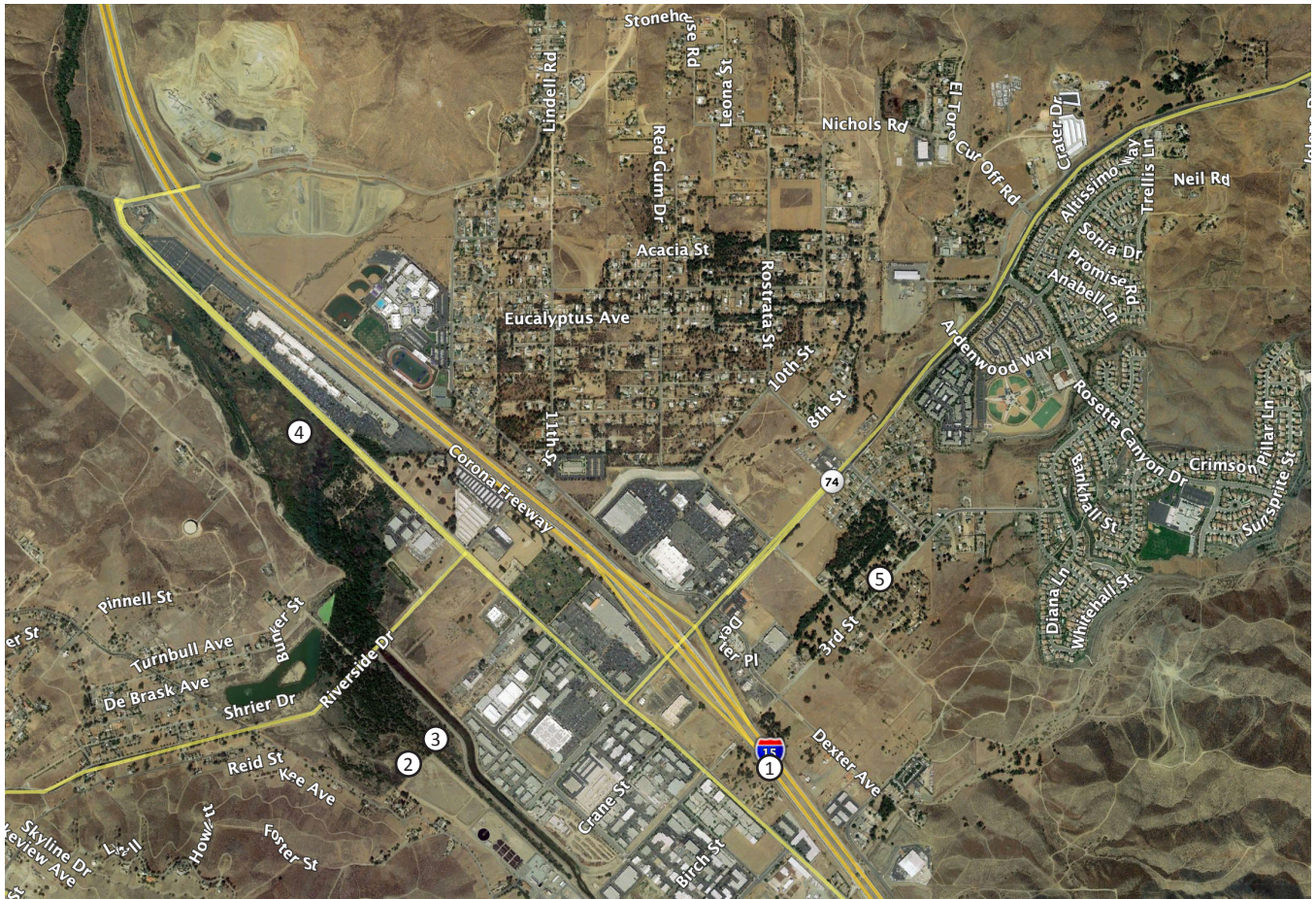
(b) LOS calculations are based on the methodology outlined in the Highway Capacity Manual 6th Edition and performed using Synchro 10

(c) EACP conditions includes addition of western leg to existing T-intersection with right in/right out access only driveway through installation of a raised median.

Per the analysis results shown in **Table 5-2**, all analyzed intersections are operating at an acceptable LOS under EACP Conditions except for SH-74/Central Avenue and Crater Drive. However, the movement with the worst delay at this intersection is eastbound left turns from Crater Drive onto northbound SH-74/Central Avenue. This project will not add traffic to this movement; therefore, no additional improvements are required. Ultimately when SH-74/Central Avenue is widened to its ultimate configuration, including the construction of a raised median, the intersection of SH-74/Central Avenue and Crater Drive will be limited to right-in right-out which will improve the intersection operation an acceptable LOS. Additionally, the project driveway at SH-74/Central Avenue and Allan Street is expected to operate at an acceptable level of service throughout the day except during the AM peak hour, where the operation of the driveway is expected to operate at LOS E.

Additionally, the project will be conditioned to widen SH-74/Central Avenue to its ultimate classification, per the City of Lake Elsinore General Plan, along the property frontage to an 8-lane augmented urban arterial. Improvement plans including ultimate roadway alignment, striping and signage will be submitted to the City of Lake Elsinore for staff review and approval. All proposed improvements shall be constructed per City Standards satisfactory to the City Engineer.

EACP peak hour analysis worksheets are provided in **Appendix G**.

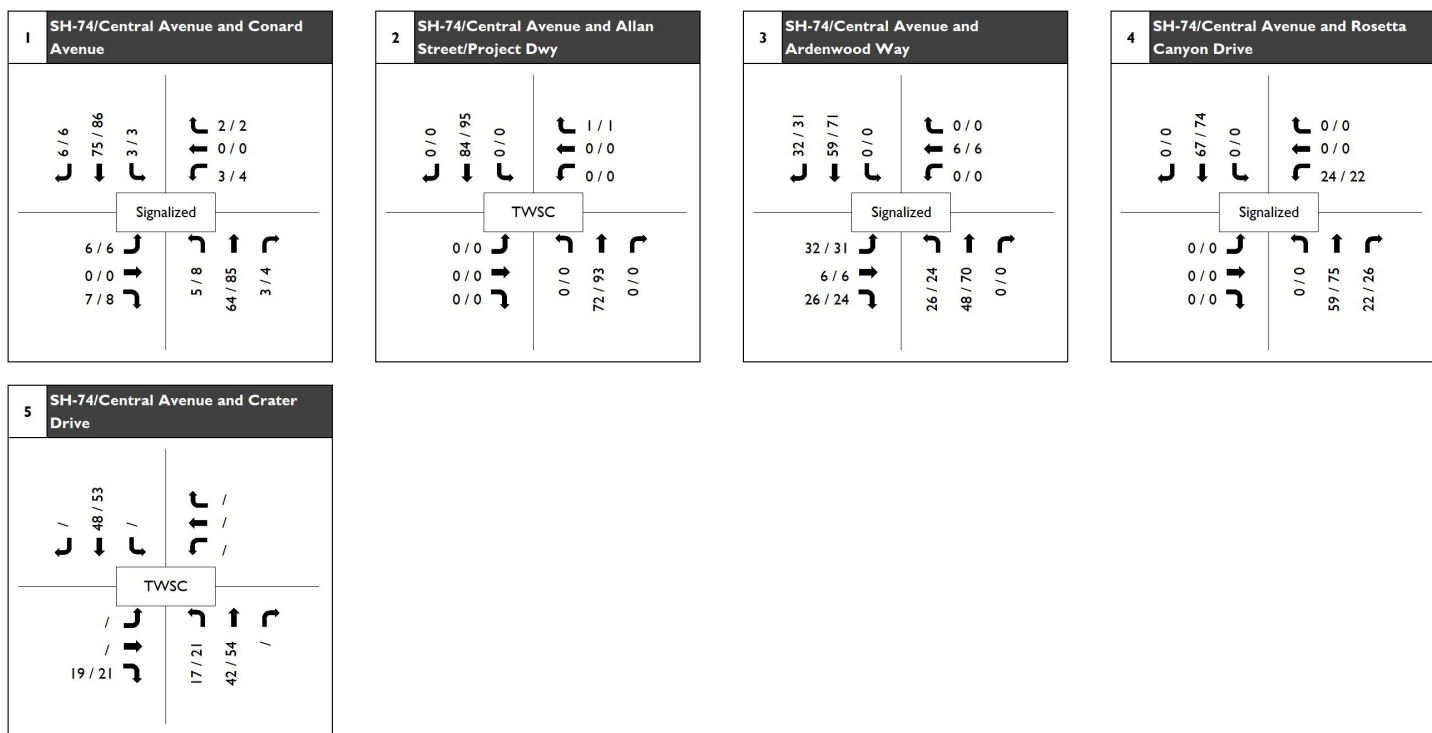


- ① Lake Elsinore Walmart
- ② Tige Watersports
- ③ Kassab Travel Center
- ④ Nichols Ranch
- ⑤ Central Avenue Retail Center



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Central Avenue Gas Station
Cumulative Projects Locations and
Peak Hour Volumes
Figure 5-1



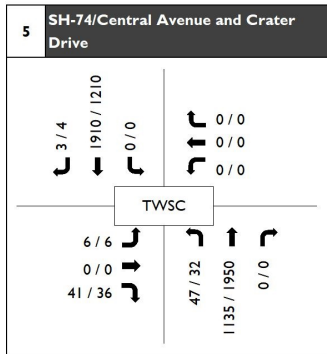
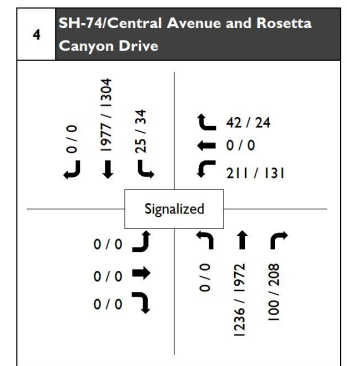
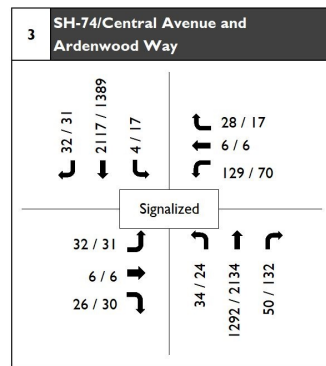
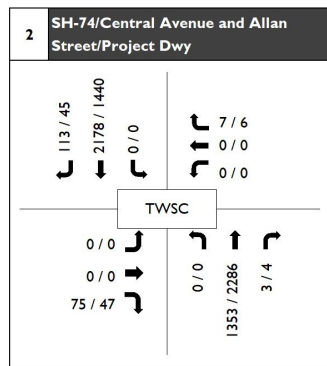
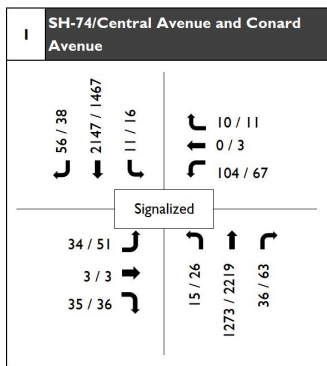
LEGEND

(AM/PM) Peak Hour Volumes



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Central Avenue Commercial Retails
 Cumulative Projects
 Peak Hour Intersection Volumes
 Figure 5-2



LEGEND

(AM/PM) Peak Hour Volumes



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Central Avenue Commercial Retails
Existing Plus Ambient Plus Cumulative Plus Project
AM/PM Peak Hour Intersection Volumes
Figure 5-3

APPENDIX A -

SCOPING AGREEMENT



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INTEGRATED ENGINEERING GROUP
TRANSPORTATION PLANNING & ENGINEERING CONSULTING

Exhibit B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated February 2005.

Case No. CUP# 20006

Related Cases -

SP No. _____

EIR No. _____

GPA No. _____

CZ No. _____

Project Name: Central Avenue Commercial Retails

Project Address: Central Avenue and Allan Street

Project Description: Project is proposing the construction of 12,000 sf of retail center

Consultant
Name: Integrated Engineering Group
Address: 23905 Clinton Keith Road 114-280
Wildomar CA 92562
Telephone: 951-833-3105
Fax: _____

Developer
Name: Western States Engineering
Address: 4887 E. La Palma, ste. 707
Anaheim CA, 92807
Telephone: 714-695-9300
Fax: _____

A. Trip Generation Source: (ITE 10th Edition)

Current GP Land Use Provide General Plan Land
Use Designation (e.g.: MDR,
CR, etc)

Current Zoning C-P-S

Proposed Land Use _____

Proposed Zoning I-P

Current Trip Generation

	In	Out	Total
AM Trips	<u>0</u>	<u>0</u>	<u>0</u>
PM Trips	<u>0</u>	<u>0</u>	<u>0</u>

Proposed Trip Generation

	In	Out	Total
AM Trips	<u>98</u>	<u>60</u>	<u>158</u>
PM Trips	<u>36</u>	<u>39</u>	<u>75</u>

Internal Trip Allowance

☐

Yes

☐

No

Trip Allowance

☐

Yes

☐

No

(34 % PM Trip Discount) Pass-By p

(0 % Trip Discount)

A passby trip discount of 25% is allowed for appropriate land uses. The passby trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution: N 10 % S 30 % E 35 % W 25 % (attach exhibit for detailed assignment)

C. Background Traffic

Project Build-out Year: 2021

Annual Ambient Growth Rate: 2 %

Phase Year(s) N/A

Other area projects to be analyzed: _____

Model/Forecast methodology No buildout analysis

Exhibit B – Scoping Agreement – Page 2

D. Study intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

- | | |
|--|-----------|
| 1. SH-74/Central Avenue and Ardenwood Way | 6. _____ |
| 2. SH-74/Central Avenue and Conrad Avenue | 7. _____ |
| 3. SH-74/Central Avenue and Allan Street | 8. _____ |
| 4. SH-74/Central Avenue and Rosetta Canyon Dr. | 9. _____ |
| 5. Highway 74/Crater Drive | 10. _____ |

E. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

E. Other Jurisdictional Impacts

Is this project within a City's Sphere of Influence or one-mile radius of City boundaries? ☐ Yes ☐ No

If so, name of City Jurisdiction: Lake Elsinore

F. Site Plan (please attach reduced copy)

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Transportation Department)

(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)

H. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.

Date of counts _____

Due to the current ongoing COVID-19 pandemic, County staff will provide historic traffic counts (collected in 2019 or earlier) that were collected when local schools were in session and operating on normal bell schedules would be utilized in conjunction with an annual 2% adjustment factor to develop baseline conditions.

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to receipt of the fee.**

George Ghossain 8/5/20
Consultant's Representative Date

Revised on 9/8/20

Riverside County Transportation
Department

Trip Generation Calculation:

Project Trip Generation Rate

Land Use ¹	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Fast Food Restaurant W/Drive Through	TSF	934	20.50	19.69	40.19	16.99	15.68	32.67	471
Shopping Center ³	TSF	820	9.28	5.69	14.97	4.69	5.08	9.77	123.7

¹ Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition.

² TSF = Thousand Square Feet

³ Trip generation rates based on the regression equation for ITE Land Use 820.

Project Trip Generation

Land Use	Intensity	Units ¹	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Shopping Center	10.49	TSF	97	60	157	49	53	102	1,298
Pass-by Reduction (34% - PM Peak Hour Only) ²			-	-	-	17	18	35	441
<i>Subtotal</i>			97	60	157	32	35	67	856
Fast Food Restaurant W/Drive Through	1.51	TSF	31	30	61	26	24	50	711
Pass-by Reduction (49% AM Peak Hour, 50% - PM Peak Hour) ²			15	15	30	13	12	25	356
<i>Subtotal</i>			16	15	31	13	12	25	355
TOTAL			113	75	188	45	47	92	1,212

¹ TSF = Thousand Square Feet

² Pass-by reduction percentage is based on the ITE methodology per Table E of ITE Trip Generation Handbook (3rd Edition, 2017).



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Central Avenue Commercial Retails
Project Trip Distribution

APPENDIX B -

TRAFFIC COUNT DATA

Appendix B - Developed 2020 Volumes

Intersection	Project Source	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	AM Adj	PM Adj
Central Ave/Cambern Ave	Chick-fil-A TIA	115	1017	0	2	1600	92	126	3	80	1	0	1	257	1722	3	4	1101	153	240	3	93	0	3	3	4%	3%
Central Ave/Cambern Ave	Central Plaza TIA	113	987	0	0	1486	114	144	2	78	0	2	0	287	1663	6	1	999	159	252	2	110	4	1	1		
Central Ave/Rosseta Canyon Drive		0	909	299	174	1179	0	0	0	0	315	0	118	0	1547	207	35	949	0	0	0	0	315	0	118		
Central Ave/Rosseta Canyon Drive	Applied growth of 4% AM/3% PM	0	943	310	181	1224	0	0	0	0	327	0	122	0	1590	213	36	975	0	0	0	0	324	0	121	73%	7%
Central Ave/Rosseta Canyon Drive	Central Ave Retail Count	0	614	37	14	1013	0	0	0	0	94	0	23	0	1666	156	30	1070	0	0	0	0	91	0	21		

Intersection	Intersection Name	Scenario	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	SH-74/Central Avenue and Conard Avenue	Existing 2020 Counts	5	653	18	0	1115	23	9	1	15	55	0	4	16	1897	52	4	1199	23	35	2	24	56	2	7
2	SH-74/Central Avenue and Allan Street/Project Driveway		0	662	1	2	1160	0	0	0	0	1	0	2	0	1921	3	5	1198	0	0	0	0	0	0	3
3	SH-74/Central Avenue and Ardenwood Way		4	644	23	2	1086	0	0	0	0	65	0	15	0	1809	114	15	1142	0	0	0	5	58	0	15
4	SH-74/Central Avenue and Rosetta Canyon Drive		0	614	37	14	1013	0	0	0	0	94	0	23	0	1666	156	30	1070	0	0	0	0	91	0	21
1	SH-74/Central Avenue and Conard Avenue	Existing 2020 (Applied growth of 73% AM/7% PM)	9	1131	31	0	1930	40	16	2	26	95	0	7	17	2038	56	4	1288	25	38	2	26	60	2	8
2	SH-74/Central Avenue and Allan Street/Project Driveway		0	1146	2	3	2008	0	0	0	0	2	0	3	0	2064	3	5	1287	0	0	0	0	0	0	3
3	SH-74/Central Avenue and Ardenwood Way		7	1115	40	3	1880	0	0	0	0	113	0	26	0	1943	122	16	1227	0	0	0	5	62	0	16
4	SH-74/Central Avenue and Rosetta Canyon Drive		0	1063	64	24	1754	0	0	0	0	163	0	40	0	1790	168	32	1149	0	0	0	0	98	0	23

APPENDIX C -

EXISTING CONDITIONS PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail

02/14/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	2	26	95	0	7	9	1131	31	0	1930	40
Future Volume (veh/h)	16	2	26	95	0	7	9	1131	31	0	1930	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	2	27	99	0	7	9	1178	32	0	2010	42
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	28	89	0	0	152	29	2634	72	3	2339	49
Arrive On Green	0.10	0.10	0.10	0.00	0.00	0.10	0.02	0.75	0.75	0.00	0.66	0.66
Sat Flow, veh/h	365	289	929	0	0	1585	1781	3534	96	1781	3560	74
Grp Volume(v), veh/h	46	0	0	0	0	7	9	592	618	0	1000	1052
Grp Sat Flow(s),veh/h/ln	1583	0	0	0	0	1585	1781	1777	1853	1781	1777	1857
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.3	0.3	8.8	8.8	0.0	30.5	31.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	0.0	0.0	0.3	0.3	8.8	8.8	0.0	30.5	31.0
Prop In Lane	0.37		0.59	0.00		1.00	1.00		0.05	1.00		0.04
Lane Grp Cap(c), veh/h	223	0	0	0	0	152	29	1324	1381	3	1167	1220
V/C Ratio(X)	0.21	0.00	0.00	0.00	0.00	0.05	0.31	0.45	0.45	0.00	0.86	0.86
Avail Cap(c_a), veh/h	606	0	0	0	0	1077	180	1324	1381	180	1284	1342
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	0.0	0.0	28.4	33.7	3.4	3.4	0.0	9.3	9.4
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.1	6.1	0.2	0.2	0.0	5.5	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	0.0	0.0	0.1	0.2	0.9	0.9	0.0	7.7	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	0.0	0.0	28.5	39.8	3.6	3.6	0.0	14.8	15.0
LnGrp LOS	C	A	A	A	A	C	D	A	A	A	B	B
Approach Vol, veh/h	46		7				1219				2052	
Approach Delay, s/veh	29.5		28.5				3.9				14.9	
Approach LOS	C		C				A				B	
Timer - Assigned Phs	2		3		4		5		6		7	
Phs Duration (G+Y+Rc), s	11.6		0.0		57.6		0.0		11.6		6.1	
Change Period (Y+Rc), s	5.0		5.0		6.0		5.0		5.0		5.0	
Max Green Setting (Gmax), s	47.0		7.0		50.0		18.0		24.0		7.0	
Max Q Clear Time (g_c+I1), s	2.3		0.0		10.8		0.0		3.7		2.3	
Green Ext Time (p_c), s	0.0		0.0		8.4		0.0		0.2		0.0	
Intersection Summary												
HCM 6th Ctrl Delay	11.1											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	3	1146	2	3	2008
Future Vol, veh/h	2	3	1146	2	3	2008
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	3	1219	2	3	2136
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2296	613	0	0	1223	0
Stage 1	1222	-	-	-	-	-
Stage 2	1074	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	33	435	-	-	566	-
Stage 1	241	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	33	434	-	-	565	-
Mov Cap-2 Maneuver	135	-	-	-	-	-
Stage 1	241	-	-	-	-	-
Stage 2	288	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	20.9	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 135 434	565	-		
HCM Lane V/C Ratio	-	- 0.016 0.007	0.006	-		
HCM Control Delay (s)	-	- 32.1 13.4	11.4	-		
HCM Lane LOS	-	- D B	B	-		
HCM 95th %tile Q(veh)	-	- 0 0	0	-		

HCM 6th Signalized Intersection Summary

3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

02/14/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	113	0	26	7	1115	40	3	1880	0
Future Volume (veh/h)	0	0	0	113	0	26	7	1115	40	3	1880	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	122	0	28	8	1199	43	3	2022	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	175	0	259	0	149	25	3526	126	10	2446	0
Arrive On Green	0.00	0.00	0.00	0.09	0.00	0.09	0.01	0.70	0.70	0.01	0.69	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	5060	181	1781	3647	0
Grp Volume(v), veh/h	0	0	0	122	0	28	8	806	436	3	2022	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1702	1838	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	5.2	0.0	1.3	0.3	7.4	7.4	0.1	32.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.2	0.0	1.3	0.3	7.4	7.4	0.1	32.3	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		0.10	1.00		0.00
Lane Grp Cap(c), veh/h	0	175	0	259	0	149	25	2372	1281	10	2446	0
V/C Ratio(X)	0.00	0.00	0.00	0.47	0.00	0.19	0.31	0.34	0.34	0.30	0.83	0.00
Avail Cap(c_a), veh/h	0	714	0	772	0	605	159	2903	1567	159	3031	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	34.6	0.0	32.8	38.3	4.7	4.7	38.9	8.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.3	0.0	0.6	6.9	0.1	0.2	15.7	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.3	0.0	0.5	0.2	1.4	1.5	0.1	7.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	36.0	0.0	33.4	45.2	4.8	4.9	54.6	10.5	0.0
LnGrp LOS	A	A	A	D	A	C	D	A	A	D	B	A
Approach Vol, veh/h	0				150				1250			
Approach Delay, s/veh	0.0				35.5				5.1			
Approach LOS					D				A			
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	12.4		5.4	60.7		12.4		6.1	60.1			
Change Period (Y+Rc), s	5.0		5.0	6.0		5.0		5.0	6.0			
Max Green Setting (Gmax), s	30.0		7.0	67.0		30.0		7.0	67.0			
Max Q Clear Time (g_c+I1), s	7.2		2.1	9.4		0.0		2.3	34.3			
Green Ext Time (p_c), s	0.4		0.0	9.1		0.0		0.0	19.7			
Intersection Summary												
HCM 6th Ctrl Delay			9.7									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary
4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail

02/14/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	163	40	1063	64	24	1754
Future Volume (veh/h)	163	40	1063	64	24	1754
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	173	43	1131	68	26	1866
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	232	207	2871	173	72	2489
Arrive On Green	0.13	0.13	0.58	0.58	0.04	0.70
Sat Flow, veh/h	1781	1585	5093	296	1781	3647
Grp Volume(v), veh/h	173	43	782	417	26	1866
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1817	1781	1777
Q Serve(g_s), s	6.1	1.6	8.1	8.1	0.9	21.5
Cycle Q Clear(g_c), s	6.1	1.6	8.1	8.1	0.9	21.5
Prop In Lane	1.00	1.00		0.16	1.00	
Lane Grp Cap(c), veh/h	232	207	1985	1059	72	2489
V/C Ratio(X)	0.74	0.21	0.39	0.39	0.36	0.75
Avail Cap(c_a), veh/h	850	756	3457	1845	192	4265
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	25.3	7.3	7.3	30.4	6.1
Incr Delay (d2), s/veh	4.7	0.5	0.1	0.2	3.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.5	1.8	2.0	0.4	2.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.9	25.7	7.5	7.6	33.4	6.6
LnGrp LOS	C	C	A	A	C	A
Approach Vol, veh/h	216		1199			1892
Approach Delay, s/veh	30.7		7.5			7.0
Approach LOS	C		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	13.5		7.6	43.9	51.5	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	31.0		7.0	66.0	78.0	
Max Q Clear Time (g_c+I1), s	8.1		2.9	10.1	23.5	
Green Ext Time (p_c), s	0.6		0.0	8.7	22.0	
Intersection Summary						
HCM 6th Ctrl Delay			8.7			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	10	12	1032	1762	2
Future Vol, veh/h	5	10	12	1032	1762	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	225	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	11	13	1086	1855	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2316	929	1857	0	-	0
Stage 1	1856	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	45	269	322	-	-	-
Stage 1	108	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	269	322	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	104	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	46	0.2		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	322	-	43	269	-	-
HCM Lane V/C Ratio	0.039	-	0.122	0.039	-	-
HCM Control Delay (s)	16.6	-	100.1	18.9	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	0.1	-	-

HCM 6th Signalized Intersection Summary

1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail

02/14/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	2	26	60	2	8	17	2038	56	4	1288	25
Future Volume (veh/h)	38	2	26	60	2	8	17	2038	56	4	1288	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	2	27	62	2	8	18	2101	58	4	1328	26
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	145	21	56	0	30	122	53	2373	65	13	2318	45
Arrive On Green	0.09	0.09	0.09	0.00	0.09	0.09	0.03	0.67	0.67	0.01	0.65	0.65
Sat Flow, veh/h	698	224	607	0	327	1308	1781	3530	97	1781	3565	70
Grp Volume(v), veh/h	68	0	0	0	0	10	18	1052	1107	4	662	692
Grp Sat Flow(s),veh/h/ln	1530	0	0	0	0	1635	1781	1777	1850	1781	1777	1858
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.4	0.7	33.5	34.4	0.2	14.6	14.6
Cycle Q Clear(g_c), s	2.9	0.0	0.0	0.0	0.0	0.4	0.7	33.5	34.4	0.2	14.6	14.6
Prop In Lane	0.57		0.40	0.00		0.80	1.00		0.05	1.00		0.04
Lane Grp Cap(c), veh/h	223	0	0	0	0	152	53	1194	1244	13	1155	1208
V/C Ratio(X)	0.31	0.00	0.00	0.00	0.00	0.07	0.34	0.88	0.89	0.30	0.57	0.57
Avail Cap(c_a), veh/h	590	0	0	0	0	1092	177	1262	1314	177	1262	1319
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	0.0	0.0	0.0	0.0	29.1	33.5	9.3	9.4	34.7	6.9	6.9
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	0.0	0.2	3.8	7.2	7.7	12.1	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.0	0.0	0.2	0.3	8.6	9.3	0.1	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	0.0	0.0	0.0	29.3	37.3	16.5	17.1	46.8	7.4	7.4
LnGrp LOS	C	A	A	A	A	C	D	B	B	D	A	A
Approach Vol, veh/h		68			10			2177			1358	
Approach Delay, s/veh		31.0			29.3			17.0			7.5	
Approach LOS		C			C			B			A	
Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		11.5	5.5	53.3	0.0	11.5	7.1	51.8				
Change Period (Y+Rc), s		5.0	5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s		47.0	7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s		2.4	2.2	36.4	0.0	4.9	2.7	16.6				
Green Ext Time (p_c), s		0.0	0.0	10.9	0.0	0.3	0.0	9.7				
Intersection Summary												
HCM 6th Ctrl Delay			13.7									
HCM 6th LOS			B									

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	2064	3	5	1287
Future Vol, veh/h	0	3	2064	3	5	1287
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	250	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	2173	3	5	1355
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2867	1092	0	0	2180	0
Stage 1	2179	-	-	-	-	-
Stage 2	688	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	13	210	-	-	240	-
Stage 1	72	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	13	209	-	-	239	-
Mov Cap-2 Maneuver	59	-	-	-	-	-
Stage 1	72	-	-	-	-	-
Stage 2	450	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	22.5	0	0.1			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	-	209	239	-	
HCM Lane V/C Ratio	-	-	0.015	0.022	-	
HCM Control Delay (s)	-	-	0	22.5	20.4	-
HCM Lane LOS	-	-	A	C	C	-
HCM 95th %tile Q(veh)	-	-	-	0	0.1	-

HCM 6th Signalized Intersection Summary 3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

02/14/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	62	0	16	0	1943	122	16	1227	0
Future Volume (veh/h)	0	0	5	62	0	16	0	1943	122	16	1227	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	5	65	0	17	0	2045	128	17	1292	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	135	227	0	135	3	3145	196	51	2649	0
Arrive On Green	0.00	0.00	0.09	0.09	0.00	0.09	0.00	0.64	0.64	0.03	0.75	0.00
Sat Flow, veh/h	0	0	1585	1411	0	1585	1781	4913	306	1781	3647	0
Grp Volume(v), veh/h	0	0	5	65	0	17	0	1414	759	17	1292	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1411	0	1585	1781	1702	1815	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.2	2.9	0.0	0.6	0.0	16.6	16.8	0.6	9.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.2	3.1	0.0	0.6	0.0	16.6	16.8	0.6	9.5	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	135	227	0	135	3	2179	1162	51	2649	0
V/C Ratio(X)	0.00	0.00	0.04	0.29	0.00	0.13	0.00	0.65	0.65	0.34	0.49	0.00
Avail Cap(c_a), veh/h	0	0	780	801	0	780	192	3403	1814	192	3552	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	27.3	28.7	0.0	27.5	0.0	7.2	7.2	31.0	3.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.7	0.0	0.4	0.0	0.3	0.6	3.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.0	0.0	0.2	0.0	3.1	3.4	0.3	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	27.4	29.4	0.0	27.9	0.0	7.5	7.9	34.8	3.4	0.0
LnGrp LOS	A	A	C	C	A	C	A	A	A	C	A	A
Approach Vol, veh/h	5		82				2173		1309			
Approach Delay, s/veh	27.4		29.1				7.6		3.9			
Approach LOS	C		C				A		A			
Timer - Assigned Phs	2		3		4		6		7		8	
Phs Duration (G+Y+Rc), s	10.5		6.9		47.6		10.5		0.0		54.5	
Change Period (Y+Rc), s	5.0		5.0		6.0		5.0		5.0		6.0	
Max Green Setting (Gmax), s	32.0		7.0		65.0		32.0		7.0		65.0	
Max Q Clear Time (g_c+I1), s	5.1		2.6		18.8		2.2		0.0		11.5	
Green Ext Time (p_c), s	0.2		0.0		22.8		0.0		0.0		11.1	
Intersection Summary												
HCM 6th Ctrl Delay			6.8									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary
4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail

02/14/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	98	23	1790	168	32	1149
Future Volume (veh/h)	98	23	1790	168	32	1149
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	24	1884	177	34	1209
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	173	154	2885	270	88	2607
Arrive On Green	0.10	0.10	0.61	0.61	0.05	0.73
Sat Flow, veh/h	1781	1585	4918	444	1781	3647
Grp Volume(v), veh/h	103	24	1347	714	34	1209
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1790	1781	1777
Q Serve(g_s), s	3.6	0.9	16.7	16.9	1.2	8.9
Cycle Q Clear(g_c), s	3.6	0.9	16.7	16.9	1.2	8.9
Prop In Lane	1.00	1.00		0.25	1.00	
Lane Grp Cap(c), veh/h	173	154	2067	1087	88	2607
V/C Ratio(X)	0.60	0.16	0.65	0.66	0.39	0.46
Avail Cap(c_a), veh/h	933	830	3303	1737	192	4105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.1	26.9	8.3	8.3	29.9	3.5
Incr Delay (d2), s/veh	3.3	0.5	0.4	0.7	2.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.3	3.5	3.9	0.5	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	31.4	27.4	8.6	9.0	32.7	3.6
LnGrp LOS	C	C	A	A	C	A
Approach Vol, veh/h	127		2061			1243
Approach Delay, s/veh	30.6		8.8			4.4
Approach LOS	C		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	11.3		8.2	45.4	53.6	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	34.0		7.0	63.0	75.0	
Max Q Clear Time (g_c+l1), s	5.6		3.2	18.9	10.9	
Green Ext Time (p_c), s	0.3		0.0	20.5	10.1	
Intersection Summary						
HCM 6th Ctrl Delay			8.0			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	9	5	1810	1101	3
Future Vol, veh/h	5	9	5	1810	1101	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	9	5	1905	1159	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1933	581	1162	0	-	0
Stage 1	1161	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	77	457	597	-	-	-
Stage 1	254	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	76	457	597	-	-	-
Mov Cap-2 Maneuver	76	-	-	-	-	-
Stage 1	252	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	28.3	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	597	-	76	457	-	-
HCM Lane V/C Ratio	0.009	-	0.069	0.021	-	-
HCM Control Delay (s)	11.1	-	55.9	13	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-	-

APPENDIX D -

EXISTING PLUS PROJECT CONDITIONS PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	2	26	97	0	7	9	1163	31	7	1994	48
Future Volume (veh/h)	27	2	26	97	0	7	9	1163	31	7	1994	48
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1477	1870	1870
Adj Flow Rate, veh/h	28	2	27	101	0	7	9	1211	32	7	2077	50
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	26	70	0	0	150	29	2359	62	18	2353	56
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.09	0.02	0.67	0.67	0.01	0.66	0.66
Sat Flow, veh/h	548	272	738	0	0	1585	1781	3537	93	1406	3547	85
Grp Volume(v), veh/h	57	0	0	0	0	7	9	608	635	7	1036	1091
Grp Sat Flow(s),veh/h/ln	1558	0	0	0	0	1585	1781	1777	1853	1406	1777	1855
Q Serve(g_s), s	0.5	0.0	0.0	0.0	0.0	0.3	0.4	12.3	12.3	0.4	33.4	34.1
Cycle Q Clear(g_c), s	2.3	0.0	0.0	0.0	0.0	0.3	0.4	12.3	12.3	0.4	33.4	34.1
Prop In Lane	0.49		0.47	0.00		1.00	1.00		0.05	1.00		0.05
Lane Grp Cap(c), veh/h	223	0	0	0	0	150	29	1185	1236	18	1179	1231
V/C Ratio(X)	0.26	0.00	0.00	0.00	0.00	0.05	0.32	0.51	0.51	0.39	0.88	0.89
Avail Cap(c_a), veh/h	589	0	0	0	0	1050	176	1253	1307	139	1253	1308
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	0.0	0.0	0.0	0.0	29.2	34.5	6.0	6.0	34.7	9.6	9.7
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.0	0.0	0.1	6.1	0.3	0.3	13.3	7.1	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.0	0.0	0.1	0.2	2.5	2.6	0.2	8.8	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	0.0	0.0	0.0	0.0	29.3	40.7	6.3	6.3	48.1	16.8	17.1
LnGrp LOS	C	A	A	A	A	C	D	A	A	D	B	B
Approach Vol, veh/h	57					7	1252			2134		
Approach Delay, s/veh	30.6					29.3	6.6			17.1		
Approach LOS	C					C	A			B		
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7		5.9	53.3	0.0	11.7	6.1	53.1				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.3		2.4	14.3	0.0	4.3	2.4	36.1				
Green Ext Time (p_c), s	0.0		0.0	8.6	0.0	0.2	0.0	11.0				
Intersection Summary												
HCM 6th Ctrl Delay	13.5											
HCM 6th LOS	B											

HCM 6th TWSC
2: SR-74/Central Avenue & Project Driveway

Central Avenue Commercial Retail

10/16/2021

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	75	0	1234	2012	113
Future Vol, veh/h	0	75	0	1234	2012	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	94	94	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	82	0	1313	2140	123
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	1070	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	217	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	217	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	31.2	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 217		-	-		
HCM Lane V/C Ratio	- 0.376		-	-		
HCM Control Delay (s)	- 31.2		-	-		
HCM Lane LOS	- D		-	-		
HCM 95th %tile Q(veh)	- 1.6		-	-		

HCM 6th Signalized Intersection Summary

3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	124	0	26	7	1198	48	3	1982	0
Future Volume (veh/h)	0	0	0	124	0	26	7	1198	48	3	1982	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1477	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	133	0	28	8	1288	52	3	2131	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	186	0	262	0	157	20	3551	143	10	2476	0
Arrive On Green	0.00	0.00	0.00	0.10	0.00	0.10	0.01	0.71	0.71	0.01	0.70	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1406	5034	203	1781	3647	0
Grp Volume(v), veh/h	0	0	0	133	0	28	8	871	469	3	2131	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1406	1702	1834	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	6.1	0.0	1.4	0.5	8.5	8.5	0.1	38.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.1	0.0	1.4	0.5	8.5	8.5	0.1	38.3	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	0	186	0	262	0	157	20	2401	1293	10	2476	0
V/C Ratio(X)	0.00	0.00	0.00	0.51	0.00	0.18	0.40	0.36	0.36	0.30	0.86	0.00
Avail Cap(c_a), veh/h	0	665	0	719	0	564	117	2703	1456	148	2822	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	37.0	0.0	34.8	41.2	4.9	4.9	41.8	9.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.5	0.0	0.5	12.5	0.1	0.2	15.7	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.7	0.0	0.5	0.2	1.7	1.9	0.1	9.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	38.5	0.0	35.4	53.7	5.0	5.1	57.5	12.3	0.0
LnGrp LOS	A	A	A	D	A	D	D	A	A	E	B	A
Approach Vol, veh/h	0			161			1348			2134		
Approach Delay, s/veh	0.0			37.9			5.3			12.4		
Approach LOS				D			A			B		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	13.4		5.5	65.5		13.4		6.2	64.8			
Change Period (Y+Rc), s	5.0		5.0	6.0		5.0		5.0	6.0			
Max Green Setting (Gmax), s	30.0		7.0	67.0		30.0		7.0	67.0			
Max Q Clear Time (g_c+I1), s	8.1		2.1	10.5		0.0		2.5	40.3			
Green Ext Time (p_c), s	0.4		0.0	10.3		0.0		0.0	18.5			
Intersection Summary												
HCM 6th Ctrl Delay	10.9											
HCM 6th LOS	B											

HCM 6th Signalized Intersection Summary 4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail
10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	40	1134	75	24	1839
Future Volume (veh/h)	180	40	1134	75	24	1839
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	191	43	1206	80	26	1956
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	246	219	2938	195	70	2521
Arrive On Green	0.14	0.14	0.60	0.60	0.04	0.71
Sat Flow, veh/h	1781	1585	5060	324	1781	3647
Grp Volume(v), veh/h	191	43	839	447	26	1956
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1812	1781	1777
Q Serve(g_s), s	7.5	1.7	9.4	9.4	1.0	25.7
Cycle Q Clear(g_c), s	7.5	1.7	9.4	9.4	1.0	25.7
Prop In Lane	1.00	1.00		0.18	1.00	
Lane Grp Cap(c), veh/h	246	219	2045	1088	70	2521
V/C Ratio(X)	0.77	0.20	0.41	0.41	0.37	0.78
Avail Cap(c_a), veh/h	740	658	3158	1680	173	3887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	27.6	7.6	7.6	33.8	6.8
Incr Delay (d2), s/veh	5.2	0.4	0.1	0.2	3.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.6	2.3	2.4	0.5	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.2	28.0	7.8	7.9	37.0	7.3
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	234		1286			1982
Approach Delay, s/veh	33.9		7.8			7.7
Approach LOS	C		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	15.0		7.8	49.4	57.2	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	30.0		7.0	67.0	79.0	
Max Q Clear Time (g_c+I1), s	9.5		3.0	11.4	27.7	
Green Ext Time (p_c), s	0.6		0.0	9.7	23.5	
Intersection Summary						
HCM 6th Ctrl Delay			9.5			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	21	29	1051	1790	2
Future Vol, veh/h	5	21	29	1051	1790	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	225	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	23	32	1142	1946	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2468	974	1948	0	-	0
Stage 1	1947	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	36	251	297	-	-	-
Stage 1	96	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	32	251	297	-	-	-
Mov Cap-2 Maneuver	32	-	-	-	-	-
Stage 1	86	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	43.6	0.5		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	297	-	32	251	-	-
HCM Lane V/C Ratio	0.106	-	0.17	0.091	-	-
HCM Control Delay (s)	18.6	-	139.2	20.8	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.5	0.3	-	-

HCM 6th Signalized Intersection Summary

1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	2	26	60	2	8	17	2051	56	12	1328	30
Future Volume (veh/h)	43	2	26	60	2	8	17	2051	56	12	1328	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	2	27	62	2	8	18	2114	58	12	1369	31
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	149	18	52	0	30	120	52	2350	64	37	2334	53
Arrive On Green	0.09	0.09	0.09	0.00	0.09	0.09	0.03	0.67	0.67	0.02	0.66	0.66
Sat Flow, veh/h	757	200	562	0	327	1308	1781	3531	96	1781	3552	80
Grp Volume(v), veh/h	73	0	0	0	0	10	18	1058	114	12	684	716
Grp Sat Flow(s),veh/h/ln	1518	0	0	0	0	1635	1781	1777	1850	1781	1777	1856
Q Serve(g_s), s	2.2	0.0	0.0	0.0	0.0	0.4	0.7	35.5	36.5	0.5	15.5	15.5
Cycle Q Clear(g_c), s	3.2	0.0	0.0	0.0	0.0	0.4	0.7	35.5	36.5	0.5	15.5	15.5
Prop In Lane	0.60		0.37	0.00		0.80	1.00		0.05	1.00		0.04
Lane Grp Cap(c), veh/h	219	0	0	0	0	150	52	1183	1232	37	1167	1219
V/C Ratio(X)	0.33	0.00	0.00	0.00	0.00	0.07	0.34	0.89	0.90	0.32	0.59	0.59
Avail Cap(c_a), veh/h	575	0	0	0	0	1066	173	1232	1283	173	1232	1287
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	0.0	0.0	0.0	29.9	34.3	10.0	10.1	34.8	6.9	6.9
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.0	0.0	0.2	3.8	8.5	9.1	5.0	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.0	0.0	0.2	0.3	9.9	10.7	0.2	3.4	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	0.0	0.0	0.0	0.0	30.1	38.2	18.5	19.2	39.8	7.6	7.5
LnGrp LOS	C	A	A	A	A	C	D	B	B	D	A	A
Approach Vol, veh/h	73			10			2190			1412		
Approach Delay, s/veh	32.0			30.1			19.0			7.8		
Approach LOS	C			C			B			A		
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6		6.5	54.0	0.0	11.6	7.1	53.4				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.4		2.5	38.5	0.0	5.2	2.7	17.5				
Green Ext Time (p_c), s	0.0		0.0	9.5	0.0	0.3	0.0	10.2				
Intersection Summary												
HCM 6th Ctrl Delay	15.0											
HCM 6th LOS	B											

HCM 6th TWSC
2: SR-74/Central Avenue & Project Driveway

Central Avenue Commercial Retail
10/16/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	47	0	2109	1292	45
Future Vol, veh/h	0	47	0	2109	1292	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	95	95	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	51	0	2220	1360	49
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	680	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	393	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	393	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	15.5	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	393	-	-		
HCM Lane V/C Ratio	-	0.13	-	-		
HCM Control Delay (s)	-	15.5	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.4	-	-		

HCM 6th Signalized Intersection Summary 3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	67	0	16	0	1985	127	16	1268	0
Future Volume (veh/h)	0	0	5	67	0	16	0	1985	127	16	1268	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	5	71	0	17	0	2089	134	17	1335	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	136	225	0	136	3	3170	202	50	2663	0
Arrive On Green	0.00	0.00	0.09	0.09	0.00	0.09	0.00	0.65	0.65	0.03	0.75	0.00
Sat Flow, veh/h	0	0	1585	1411	0	1585	1781	4905	313	1781	3647	0
Grp Volume(v), veh/h	0	0	5	71	0	17	0	1446	777	17	1335	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1411	0	1585	1781	1702	1814	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.2	3.2	0.0	0.7	0.0	17.5	17.7	0.6	10.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.2	3.4	0.0	0.7	0.0	17.5	17.7	0.6	10.1	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	136	225	0	136	3	2200	1172	50	2663	0
V/C Ratio(X)	0.00	0.00	0.04	0.32	0.00	0.12	0.00	0.66	0.66	0.34	0.50	0.00
Avail Cap(c_a), veh/h	0	0	759	779	0	759	187	3310	1764	187	3455	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	28.0	29.6	0.0	28.2	0.0	7.3	7.3	31.9	3.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.8	0.0	0.4	0.0	0.3	0.6	3.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.1	0.0	0.3	0.0	3.3	3.7	0.3	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	28.1	30.4	0.0	28.6	0.0	7.6	8.0	35.7	3.5	0.0
LnGrp LOS	A	A	C	C	A	C	A	A	A	D	A	A
Approach Vol, veh/h	5		88			2223			1352			
Approach Delay, s/veh	28.1		30.0			7.7			3.9			
Approach LOS	C		C			A			A			
Timer - Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	10.8		6.9	49.2	10.8		0.0	56.1				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0		5.0	6.0				
Max Green Setting (Gmax), s	32.0		7.0	65.0	32.0		7.0	65.0				
Max Q Clear Time (g_c+I1), s	5.4		2.6	19.7	2.2		0.0	12.1				
Green Ext Time (p_c), s	0.2		0.0	23.5	0.0		0.0	11.7				
Intersection Summary												
HCM 6th Ctrl Delay			6.9									
HCM 6th LOS			A									

HCM 6th Signalized Intersection Summary

4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail

10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	105	23	1824	175	32	1183
Future Volume (veh/h)	105	23	1824	175	32	1183
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	111	24	1920	184	34	1245
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	172	153	2908	277	87	2622
Arrive On Green	0.10	0.10	0.61	0.61	0.05	0.74
Sat Flow, veh/h	1781	1585	4909	452	1781	3647
Grp Volume(v), veh/h	111	24	1375	729	34	1245
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1789	1781	1777
Q Serve(g_s), s	4.0	0.9	17.4	17.7	1.2	9.4
Cycle Q Clear(g_c), s	4.0	0.9	17.4	17.7	1.2	9.4
Prop In Lane	1.00	1.00		0.25	1.00	
Lane Grp Cap(c), veh/h	172	153	2088	1097	87	2622
V/C Ratio(X)	0.64	0.16	0.66	0.66	0.39	0.47
Avail Cap(c_a), veh/h	912	811	3228	1696	188	4012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.9	27.5	8.3	8.4	30.6	3.5
Incr Delay (d2), s/veh	4.0	0.5	0.4	0.7	2.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.3	3.7	4.0	0.5	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.9	28.0	8.7	9.1	33.4	3.6
LnGrp LOS	C	C	A	A	C	A
Approach Vol, veh/h	135		2104			1279
Approach Delay, s/veh	32.0		8.8			4.4
Approach LOS	C		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	11.4		8.3	46.7	55.0	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	34.0		7.0	63.0	75.0	
Max Q Clear Time (g_c+I1), s	6.0		3.2	19.7	11.4	
Green Ext Time (p_c), s	0.3		0.0	21.1	10.6	
Intersection Summary						
HCM 6th Ctrl Delay			8.1			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	14	10	1822	1112	3
Future Vol, veh/h	5	14	10	1822	1112	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	15	11	1980	1209	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2025	606	1212	0	-	0
Stage 1	1211	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	67	440	571	-	-	-
Stage 1	239	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	66	440	571	-	-	-
Mov Cap-2 Maneuver	66	-	-	-	-	-
Stage 1	234	-	-	-	-	-
Stage 2	368	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.9	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	571	-	66	440	-	-
HCM Lane V/C Ratio	0.019	-	0.082	0.035	-	-
HCM Control Delay (s)	11.4	-	64.4	13.5	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.1	-	-

APPENDIX E -

EXISTING PLUS AMBIENT PLUS PROJECT PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	3	28	101	0	8	10	1209	33	8	2072	50
Future Volume (veh/h)	28	3	28	101	0	8	10	1209	33	8	2072	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1477	1870	1870
Adj Flow Rate, veh/h	29	3	29	105	0	8	10	1259	34	8	2158	52
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	26	69	0	0	148	31	2373	64	20	2370	57
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.09	0.02	0.67	0.67	0.01	0.67	0.67
Sat Flow, veh/h	539	279	741	0	0	1585	1781	3535	95	1406	3547	85
Grp Volume(v), veh/h	61	0	0	0	0	8	10	633	660	8	1077	1133
Grp Sat Flow(s),veh/h/ln	1560	0	0	0	0	1585	1781	1777	1853	1406	1777	1855
Q Serve(g_s), s	0.8	0.0	0.0	0.0	0.0	0.3	0.4	13.2	13.2	0.4	37.0	37.8
Cycle Q Clear(g_c), s	2.5	0.0	0.0	0.0	0.0	0.3	0.4	13.2	13.2	0.4	37.0	37.8
Prop In Lane	0.48		0.48	0.00		1.00	1.00		0.05	1.00		0.05
Lane Grp Cap(c), veh/h	219	0	0	0	0	148	31	1193	1244	20	1187	1239
V/C Ratio(X)	0.28	0.00	0.00	0.00	0.00	0.05	0.32	0.53	0.53	0.40	0.91	0.91
Avail Cap(c_a), veh/h	577	0	0	0	0	1027	172	1225	1278	136	1225	1279
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	0.0	0.0	0.0	0.0	29.9	35.2	6.1	6.1	35.4	10.1	10.3
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.0	0.0	0.1	5.7	0.4	0.4	12.1	9.7	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.0	0.0	0.0	0.1	0.2	2.7	2.8	0.2	10.5	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.6	0.0	0.0	0.0	0.0	30.1	40.9	6.5	6.5	47.5	19.8	20.4
LnGrp LOS	C	A	A	A	A	C	D	A	A	D	B	C
Approach Vol, veh/h	61		8				1303		2218			
Approach Delay, s/veh	31.6		30.1				6.7		20.2			
Approach LOS	C		C				A		C			
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8		6.0	54.7	0.0	11.8	6.3	54.5				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.3		2.4	15.2	0.0	4.5	2.4	39.8				
Green Ext Time (p_c), s	0.0		0.0	9.1	0.0	0.2	0.0	8.7				
Intersection Summary												
HCM 6th Ctrl Delay	15.5											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	75	0	1281	2094	113
Future Vol, veh/h	0	75	0	1281	2094	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	94	94	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	82	0	1363	2228	123
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	1114	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	203	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	203	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	34.2	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 203		-	-		
HCM Lane V/C Ratio	- 0.402		-	-		
HCM Control Delay (s)	- 34.2		-	-		
HCM Lane LOS	- D		-	-		
HCM 95th %tile Q(veh)	- 1.8		-	-		

HCM 6th Signalized Intersection Summary 3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	129	0	28	8	1244	50	4	2058	0
Future Volume (veh/h)	0	0	0	129	0	28	8	1244	50	4	2058	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1477	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	139	0	30	9	1338	54	4	2213	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	191	0	264	0	162	22	3570	144	13	2490	0
Arrive On Green	0.00	0.00	0.00	0.10	0.00	0.10	0.02	0.71	0.71	0.01	0.70	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1406	5034	203	1781	3647	0
Grp Volume(v), veh/h	0	0	0	139	0	30	9	905	487	4	2213	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1406	1702	1834	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	6.7	0.0	1.5	0.6	9.3	9.3	0.2	43.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.7	0.0	1.5	0.6	9.3	9.3	0.2	43.6	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		0.11	1.00		0.00
Lane Grp Cap(c), veh/h	0	191	0	264	0	162	22	2414	1300	13	2490	0
V/C Ratio(X)	0.00	0.00	0.00	0.53	0.00	0.18	0.41	0.37	0.37	0.30	0.89	0.00
Avail Cap(c_a), veh/h	0	635	0	687	0	538	111	2583	1391	141	2696	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	38.6	0.0	36.3	43.1	5.1	5.1	43.6	10.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.6	0.0	0.5	11.6	0.1	0.2	12.3	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	3.0	0.0	0.6	0.3	1.9	2.1	0.1	11.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	40.2	0.0	36.8	54.7	5.2	5.3	55.9	14.3	0.0
LnGrp LOS	A	A	A	D	A	D	D	A	A	E	B	A
Approach Vol, veh/h	0			169			1401			2217		
Approach Delay, s/veh	0.0			39.6			5.5			14.4		
Approach LOS				D			A			B		
Timer - Assigned Phs	2		3	4	6		7	8				
Phs Duration (G+Y+Rc), s	14.0		5.7	68.6	14.0		6.4	67.9				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0		5.0	6.0				
Max Green Setting (Gmax), s	30.0		7.0	67.0	30.0		7.0	67.0				
Max Q Clear Time (g_c+I1), s	8.7		2.2	11.3	0.0		2.6	45.6				
Green Ext Time (p_c), s	0.5		0.0	10.9	0.0		0.0	16.3				
Intersection Summary												
HCM 6th Ctrl Delay				12.2								
HCM 6th LOS				B								

HCM 6th Signalized Intersection Summary 4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail
10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			  			 
Traffic Volume (veh/h)	187	42	1177	78	25	1910
Future Volume (veh/h)	187	42	1177	78	25	1910
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	199	45	1252	83	27	2032
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	251	224	3000	199	71	2549
Arrive On Green	0.14	0.14	0.61	0.61	0.04	0.72
Sat Flow, veh/h	1781	1585	5060	324	1781	3647
Grp Volume(v), veh/h	199	45	871	464	27	2032
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1812	1781	1777
Q Serve(g_s), s	8.4	2.0	10.3	10.3	1.1	29.3
Cycle Q Clear(g_c), s	8.4	2.0	10.3	10.3	1.1	29.3
Prop In Lane	1.00	1.00		0.18	1.00	
Lane Grp Cap(c), veh/h	251	224	2088	1111	71	2549
V/C Ratio(X)	0.79	0.20	0.42	0.42	0.38	0.80
Avail Cap(c_a), veh/h	687	612	2933	1561	160	3611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	29.5	7.8	7.8	36.4	7.3
Incr Delay (d2), s/veh	5.5	0.4	0.1	0.3	3.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.7	2.6	2.8	0.5	5.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	37.8	29.9	7.9	8.1	39.7	8.1
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	244		1335			2059
Approach Delay, s/veh	36.4		8.0			8.5
Approach LOS	D		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	16.0		8.1	53.7	61.8	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	30.0		7.0	67.0	79.0	
Max Q Clear Time (g_c+I1), s	10.4		3.1	12.3	31.3	
Green Ext Time (p_c), s	0.6		0.0	10.2	24.4	
Intersection Summary						
HCM 6th Ctrl Delay			10.2			
HCM 6th LOS			B			

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰	↱	↰	↑↑↑	↑↑	
Traffic Vol, veh/h	6	22	30	1093	1862	3
Future Vol, veh/h	6	22	30	1093	1862	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	23	32	1151	1960	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2486	982	1963	0	-	0
Stage 1	1962	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	35	248	293	-	-	-
Stage 1	94	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	31	248	293	-	-	-
Mov Cap-2 Maneuver	31	-	-	-	-	-
Stage 1	84	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	48.4	0.5		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	293	-	31	248	-	-
HCM Lane V/C Ratio	0.108	-	0.204	0.093	-	-
HCM Control Delay (s)	18.8	-	148.7	21	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.6	0.3	-	-

HCM 6th Signalized Intersection Summary

1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	3	28	63	3	9	18	2134	59	13	1381	32
Future Volume (veh/h)	45	3	28	63	3	9	18	2134	59	13	1381	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1477	1870	1870
Adj Flow Rate, veh/h	46	3	29	65	3	9	19	2200	61	13	1424	33
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	146	18	51	0	38	113	55	2362	65	31	2345	54
Arrive On Green	0.09	0.09	0.09	0.00	0.09	0.09	0.03	0.67	0.67	0.02	0.66	0.66
Sat Flow, veh/h	751	202	564	0	412	1236	1781	3530	97	1406	3550	82
Grp Volume(v), veh/h	78	0	0	0	0	12	19	1102	1159	13	712	745
Grp Sat Flow(s),veh/h/ln	1518	0	0	0	0	1648	1781	1777	1850	1406	1777	1855
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.5	0.8	39.7	40.9	0.7	16.7	16.7
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	0.0	0.5	0.8	39.7	40.9	0.7	16.7	16.7
Prop In Lane	0.59		0.37	0.00		0.75	1.00		0.05	1.00		0.04
Lane Grp Cap(c), veh/h	216	0	0	0	0	150	55	1189	1238	31	1174	1226
V/C Ratio(X)	0.36	0.00	0.00	0.00	0.00	0.08	0.35	0.93	0.94	0.42	0.61	0.61
Avail Cap(c_a), veh/h	564	0	0	0	0	1053	170	1208	1258	134	1208	1261
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	0.0	0.0	0.0	30.6	34.9	10.6	10.8	35.5	7.1	7.1
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.2	3.8	12.1	13.0	8.6	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.0	0.0	0.2	0.4	12.0	13.0	0.3	3.7	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	0.0	0.0	0.0	0.0	30.8	38.7	22.7	23.8	44.1	7.9	7.9
LnGrp LOS	C	A	A	A	A	C	D	C	C	D	A	A
Approach Vol, veh/h	78			12			2280			1470		
Approach Delay, s/veh	32.9			30.8			23.4			8.2		
Approach LOS	C			C			C			A		
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.7		6.6	55.2	0.0	11.7	7.3	54.6				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.5		2.7	42.9	0.0	5.5	2.8	18.7				
Green Ext Time (p_c), s	0.0		0.0	6.3	0.0	0.3	0.0	10.8				
Intersection Summary												
HCM 6th Ctrl Delay	17.8											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	47	0	2193	1345	45
Future Vol, veh/h	0	47	0	2193	1345	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	95	95	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	51	0	2308	1416	49
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	708	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	377	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	377	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 377		-	-		
HCM Lane V/C Ratio	- 0.136		-	-		
HCM Control Delay (s)	- 16		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.5		-	-		

HCM 6th Signalized Intersection Summary

3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	6	70	0	17	0	2064	132	17	1318	0
Future Volume (veh/h)	0	0	6	70	0	17	0	2064	132	17	1318	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1477	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	6	74	0	18	0	2173	139	18	1387	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	135	217	0	135	2	3228	205	53	2695	0
Arrive On Green	0.00	0.00	0.08	0.08	0.00	0.08	0.00	0.66	0.66	0.03	0.76	0.00
Sat Flow, veh/h	0	0	1585	1410	0	1585	1406	4906	312	1781	3647	0
Grp Volume(v), veh/h	0	0	6	74	0	18	0	1503	809	18	1387	0
Grp Sat Flow(s),veh/h/ln	0	0	1585	1410	0	1585	1406	1702	1814	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.2	3.6	0.0	0.7	0.0	19.0	19.4	0.7	10.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.2	3.8	0.0	0.7	0.0	19.0	19.4	0.7	10.9	0.0
Prop In Lane	0.00		1.00	1.00		1.00	1.00		0.17	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	135	217	0	135	2	2239	1193	53	2695	0
V/C Ratio(X)	0.00	0.00	0.04	0.34	0.00	0.13	0.00	0.67	0.68	0.34	0.51	0.00
Avail Cap(c_a), veh/h	0	0	699	720	0	699	140	3198	1704	177	3339	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	29.5	31.3	0.0	29.8	0.0	7.4	7.4	33.4	3.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	0.9	0.0	0.4	0.0	0.4	0.7	3.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1	1.2	0.0	0.3	0.0	3.7	4.1	0.3	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	29.7	32.2	0.0	30.2	0.0	7.7	8.1	37.2	3.5	0.0
LnGrp LOS	A	A	C	C	A	C	A	A	A	D	A	A
Approach Vol, veh/h	6			92			2312			1405		
Approach Delay, s/veh	29.7			31.8			7.9			3.9		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2		3	4		6		7	8			
Phs Duration (G+Y+Rc), s	11.0		7.1	52.2		11.0		0.0	59.3			
Change Period (Y+Rc), s	5.0		5.0	6.0		5.0		5.0	6.0			
Max Green Setting (Gmax), s	31.0		7.0	66.0		31.0		7.0	66.0			
Max Q Clear Time (g_c+I1), s	5.8		2.7	21.4		2.2		0.0	12.9			
Green Ext Time (p_c), s	0.2		0.0	24.9		0.0		0.0	12.5			
Intersection Summary												
HCM 6th Ctrl Delay	7.0											
HCM 6th LOS	A											

HCM 6th Signalized Intersection Summary 4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail
10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	109	24	1897	182	34	1230
Future Volume (veh/h)	109	24	1897	182	34	1230
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	25	1997	192	36	1295
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	167	148	2973	284	90	2662
Arrive On Green	0.09	0.09	0.63	0.63	0.05	0.75
Sat Flow, veh/h	1781	1585	4909	452	1781	3647
Grp Volume(v), veh/h	115	25	1430	759	36	1295
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1789	1781	1777
Q Serve(g_s), s	4.4	1.0	18.9	19.2	1.4	10.1
Cycle Q Clear(g_c), s	4.4	1.0	18.9	19.2	1.4	10.1
Prop In Lane	1.00	1.00		0.25	1.00	
Lane Grp Cap(c), veh/h	167	148	2135	1122	90	2662
V/C Ratio(X)	0.69	0.17	0.67	0.68	0.40	0.49
Avail Cap(c_a), veh/h	815	726	3165	1663	178	3915
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.7	29.2	8.4	8.4	32.2	3.5
Incr Delay (d2), s/veh	5.0	0.5	0.4	0.7	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.4	4.1	4.5	0.6	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.7	29.7	8.7	9.2	35.0	3.6
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	140		2189			1331
Approach Delay, s/veh	34.6		8.9			4.5
Approach LOS	C		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	11.5		8.5	49.8	58.4	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	32.0		7.0	65.0	77.0	
Max Q Clear Time (g_c+I1), s	6.4		3.4	21.2	12.1	
Green Ext Time (p_c), s	0.4		0.0	22.6	11.3	
Intersection Summary						
HCM 6th Ctrl Delay			8.3			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	15	11	1896	1157	4
Future Vol, veh/h	6	15	11	1896	1157	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	16	12	1996	1218	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2042	611	1222	0	-	0
Stage 1	1220	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	66	437	566	-	-	-
Stage 1	237	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	65	437	566	-	-	-
Mov Cap-2 Maneuver	65	-	-	-	-	-
Stage 1	232	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	28.6	0.1		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	566	-	65	437	-	-
HCM Lane V/C Ratio	0.02	-	0.097	0.036	-	-
HCM Control Delay (s)	11.5	-	66.3	13.5	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	0.1	-	-

APPENDIX F -

CUMULATIVE PROJECT TRIP DISTRIBUTION



1 Lakeshore Dr. & Riverside Dr. (SR-74) 	2 Graham Av. & Main St. 	3 Lakeshore Dr./ Mission Bl. & Diamond Dr. 	4 Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	5 Collier Av. & Riverside Dr. (SR-74) 	6 Collier Av. & Central Av. (SR-74) 	7 Auto Center Dr. & Diamond Dr.
8 I-15 SB Ramps & Nichols Rd. 	9 I-15 SB Ramps & Central Av. (SR-74) 	10 I-15 SB Ramps & Main St. 	11 I-15 SB Ramps & Railroad Canyon Rd. 	12 I-15 NB Ramps & Nichols Rd. 	13 I-15 NB Ramps & Central Av. (SR-74) 	14 I-15 NB Ramps & Main St.
15 I-15 NB Ramps & Railroad Canyon Rd. 	16 Dexter Av. & 11th St. 	17 Dexter Av. & Central Av. (SR-74) 	18 Dexter Av. & Allan St. 	19 Dexter Av. & Crane St. 	20 Dexter Av. & 3rd St. 	21 Dexter Av. & 2nd St.
22 Camino Del Norte & Main St. 	23 Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	24 Driveway 1 & Central Av. (SR-74) 	25 Cambern Av. & Central Av. (SR-74) 	26 Cambern Av. & Driveway 2 	27 Cambern Av. & Driveway 3 	28 Cambern Av. & 3rd St.
29 Conard Av. & Central Av. (SR-74) 	30 Rosetta Cyn. Dr. & Central Av. (SR-74) 	31 Riverside St. & Central Av. (SR-74) 	32 Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			

WEEKDAY PM PEAK HOUR INTERSECTION VOLUMES



1 Lakeshore Dr. & Riverside Dr. (SR-74) 	2 Graham Av. & Main St. 	3 Lakeshore Dr./ Mission Bl. & Diamond Dr. 	4 Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	5 Collier Av. & Riverside Dr. (SR-74) 	6 Collier Av. & Central Av. (SR-74) 	7 Auto Center Dr. & Diamond Dr.
8 I-15 SB Ramps & Nichols Rd. 	9 I-15 SB Ramps & Central Av. (SR-74) 	10 I-15 SB Ramps & Main St. 	11 I-15 SB Ramps & Railroad Canyon Rd. 	12 I-15 NB Ramps & Nichols Rd. 	13 I-15 NB Ramps & Central Av. (SR-74) 	14 I-15 NB Ramps & Main St.
15 I-15 NB Ramps & Railroad Canyon Rd. 	16 Dexter Av. & 11th St. 	17 Dexter Av. & Central Av. (SR-74) 	18 Dexter Av. & Allan St. 	19 Dexter Av. & Crane St. 	20 Dexter Av. & 3rd St. 	21 Dexter Av. & 2nd St.
22 Camino Del Norte & Main St. 	23 Summerhill Dr./ Grape St. & Railroad Canyon Rd. 	24 Driveway 1 & Central Av. (SR-74) 	25 Cambern Av. & Central Av. (SR-74) 	26 Cambern Av. & Driveway 2 	27 Cambern Av. & Driveway 3 	28 Cambern Av. & 3rd St.
29 Conard Av. & Central Av. (SR-74) 	30 Rosetta Cyn. Dr. & Central Av. (SR-74) 	31 Riverside St. & Central Av. (SR-74) 	32 Meadowbrook Av./ Greenwald Av. & Central Av. (SR-74) 			



SCOPING AGREEMENT
FOR
PROPOSED BOAT SALE AND MANUFACTURING FACILITY ON RIVERSIDE
DRIVE (APN: 378-030-006)
CITY OF LAKE ELSINORE CA.

Revised June 30, 2017



TABLE 1:

PROJECT TRIP GENERATION- Boat Manufacturing/Sales Facility

LAND USE	UNITS	A.M. PEAK HOUR			P.M. PEAK HOUR			DAILY		
		IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
PHASE 1: Land Use 140- Manufacturing	25.682 TSF									
Trips/Unit		0.57	0.16	0.73	0.26	0.47	0.73	1.91	1.91	3.82
Trips		15	4	19	7	12	19	49	49	98
PHASE 2: Land Use 140- Manufacturing	9.8 TSF	0.57	0.16	0.73	0.26	0.47	0.73	1.91	1.91	3.82
		6	2	8	3	5	8	19	19	38
Total New Trips		21	6	27	10	17	27	68	68	136

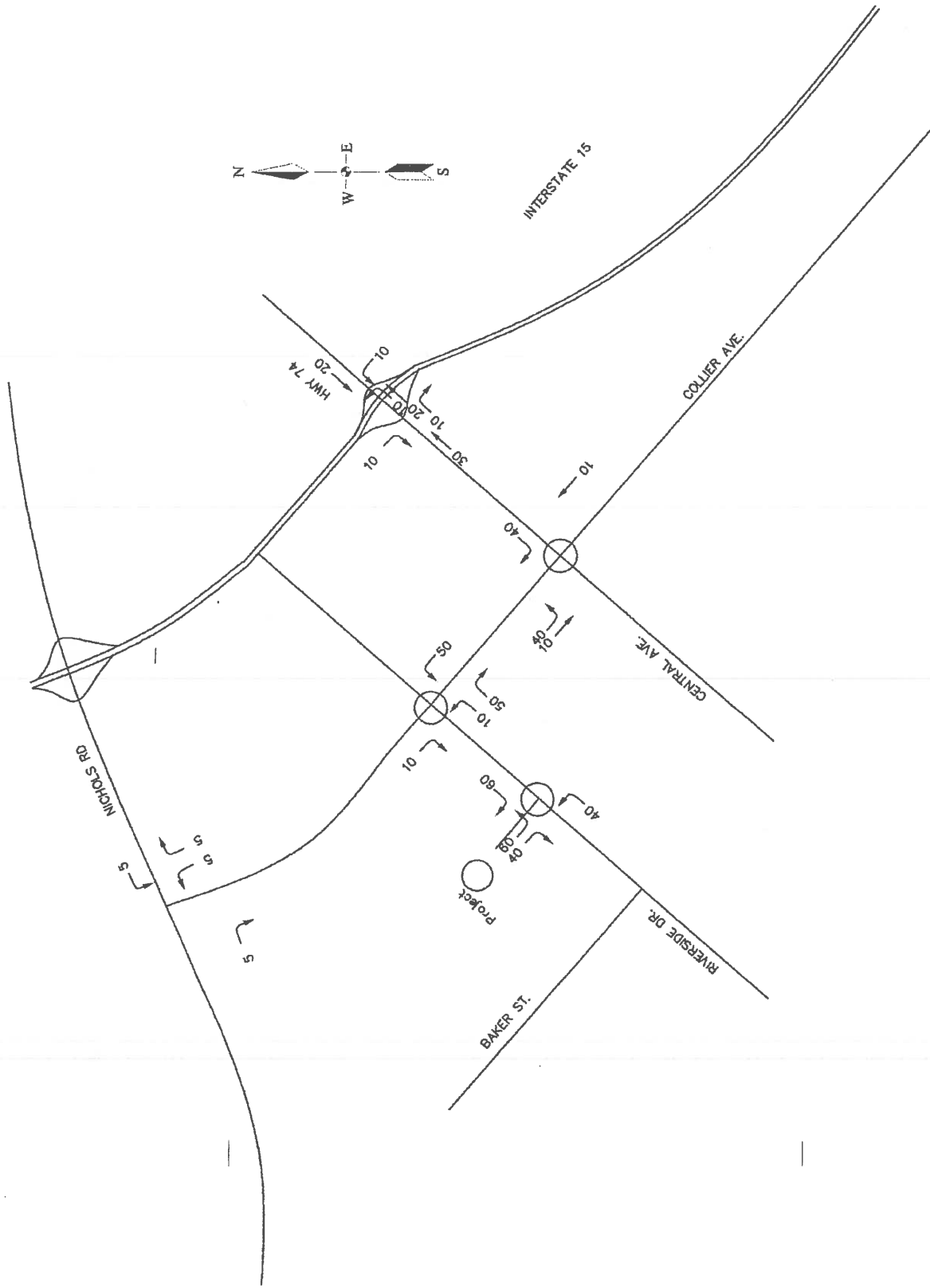
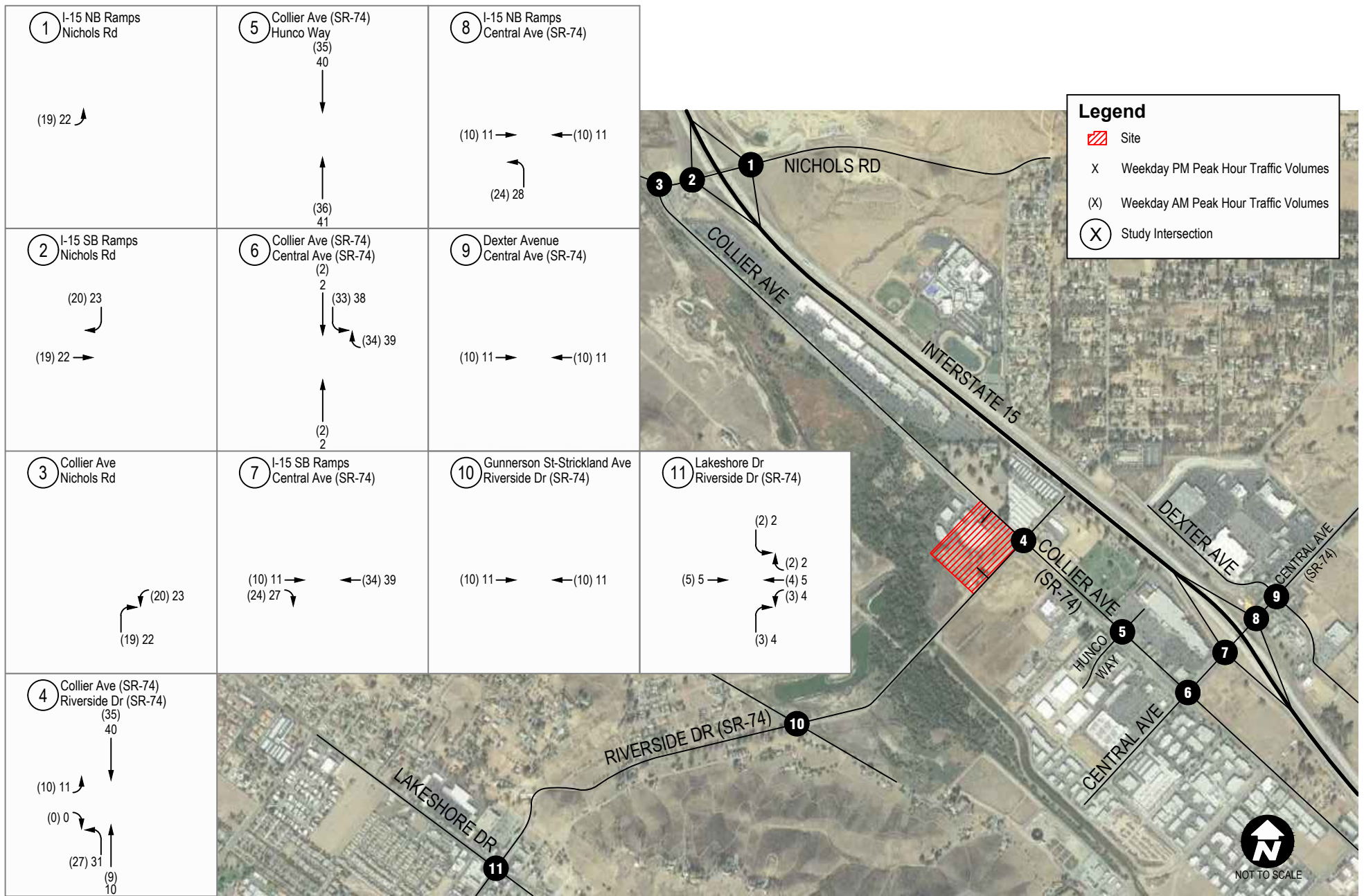


EXHIBIT 2: PROJECT TRIP DISTRIBUTION %



Source: Google Maps, 10/2016

Project Net Total Trip Assignment

Kassab Travel Center TIA

FIGURE

5

1 INTRODUCTION

This report presents the results of the traffic impact analysis (TIA) for the proposed Nichols Ranch (referred to as “Project”) located south of Nichols Road and east of the I-15 Freeway in the City of Lake Elsinore as shown on Exhibit 1-1.

The purpose of this traffic impact analysis is to evaluate the potential circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to achieve acceptable circulation system operational conditions. As directed by City of Lake Elsinore staff, this traffic study has been prepared in accordance with the County of Riverside’s Traffic Impact Analysis Preparation Guide (April 2008), the California Department of Transportation (Caltrans) Guide for the Preparation of Traffic Impact Studies (December 2002), and consultation with City of Lake Elsinore staff during the scoping process. (1) (2) The approved Project Traffic Study Scoping agreement is provided in Appendix 1.1 of this TIA.

1.1 PROJECT OVERVIEW

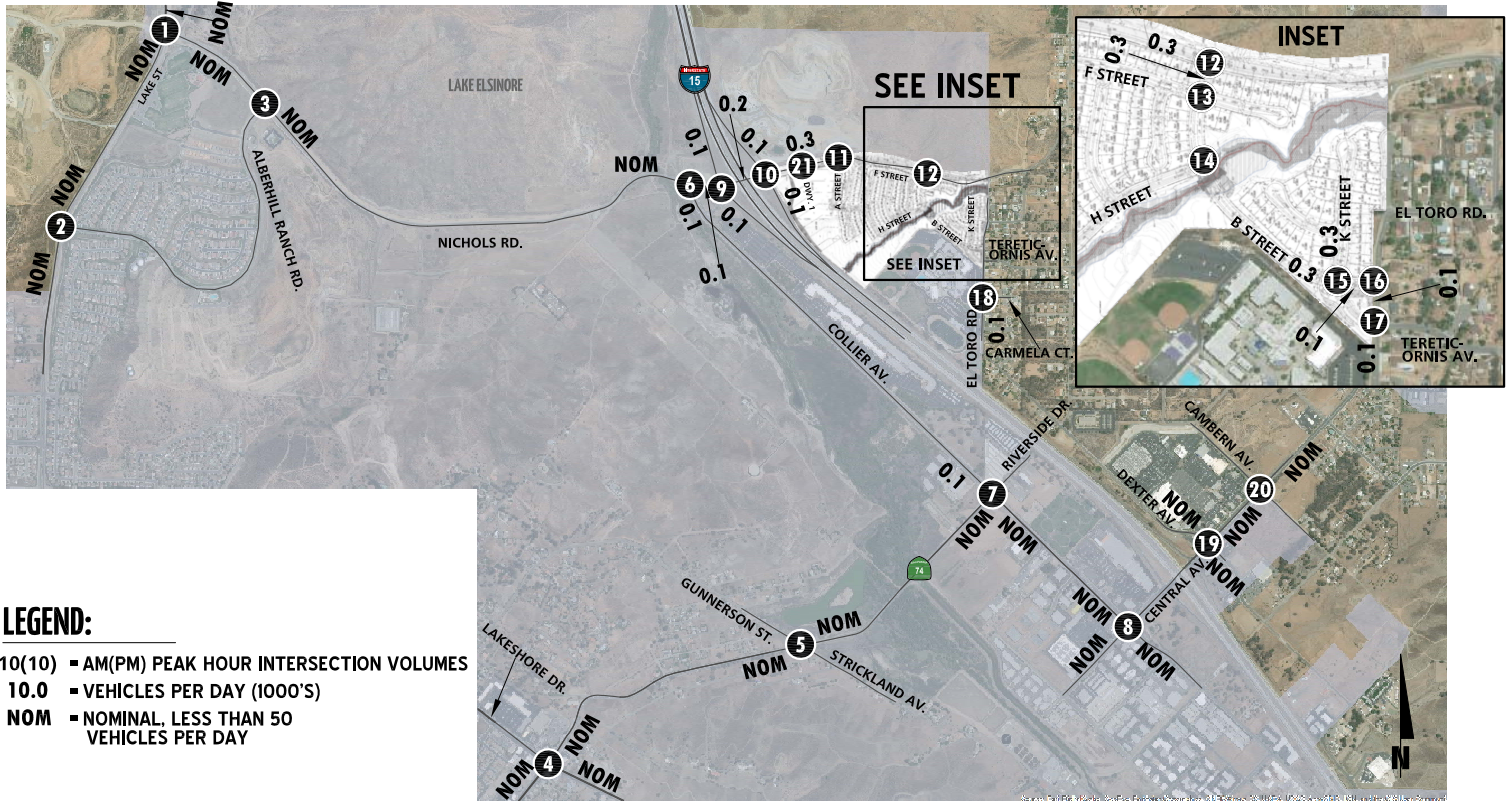
The proposed Project is located within the Alberhill Ranch Specific Plan and a portion (southern parcel) lies outside of the Specific Plan. For purposes of the traffic analysis it is anticipated that the Project will be evaluated in 3 phases, with Phase 1 having a projected Opening Year of 2020, Phase 2 having a project Opening Year of 2021, and Project Buildout anticipated to occur in 2024.

- Phase 1 (2020): 34 low-medium density residential dwelling units
- Phase 2 (2021): Phase 1 (2020) development plus 134 additional low-medium density residential dwelling units (buildout of residential) and an 8.3-acre park
- Phase 3 (2024): Phase 1 (2020) and Phase 2 (2021) development plus 6,000 square feet (sf) of fast-food restaurant with drive-through window use, 9,400 sf of high turnover (sit-down) restaurant use, 8,000 sf of health and fitness club use, 43,000 sf of office use, 5,500 sf of fast food without drive-through, a 16-vehicle fueling position gas station with convenience store and car wash, and 130 room hotel

As indicated on Exhibit 1-1, access to the Project site is proposed to be provided by Nichols Road via A Street and B Street and El Toro Road via B Street. The Project will construct B Street between El Toro Road and Nichols Road in Phase 1 (2020). Regional access to the Project site is provided via the I-15 Freeway at Nichols Road interchange.

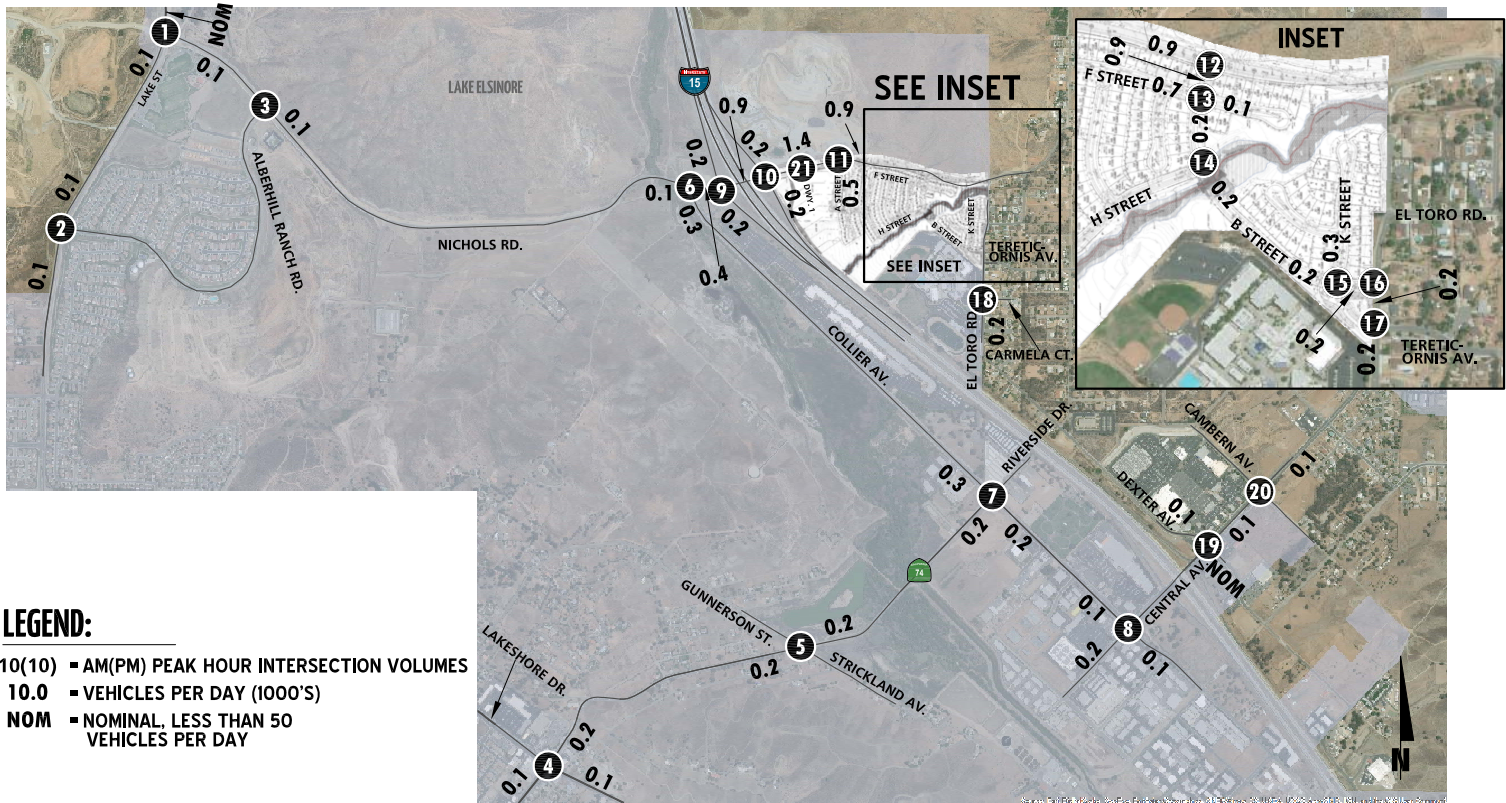
Trips generated by the Project’s proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017. (3) The Project is estimated to generate a net total of 6,900 trip-ends per day on a typical weekday with approximately 734 AM peak hour trips, and 622 PM peak hour trips. The assumptions and methods used to estimate the Project’s trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 4-4: PROJECT ONLY (PHASE 1) TRAFFIC VOLUMES



1 Lake St. & Nichols Rd. 	2 Lake St. & Alberhill Ranch Rd. 	3 Alberhill Ranch Rd. & Nichols Rd. 	4 Lakeshore Dr. & Riverside Dr. (SR-74) 	5 Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	6 Collier Av. & Nichols Rd. 	7 Collier Av. & Riverside Dr. (SR-74)
8 Collier Av. & Central Av. (SR-74) 	9 I-15 SB Ramps & Nichols Rd. 	10 I-15 NB Ramps & Nichols Rd. 	11 A Street & Nichols Rd. Future Intersection	12 B Street & Nichols Rd. 	13 B Street & F Street Future Intersection	14 B Street & H Street Future Intersection
15 K Street & B Street 	16 El Toro Rd. & B Street 	17 El Toro Rd. & Tereticornis Av. 	18 El Toro Rd. & Carmela Ct. 	19 Dexter Av. & Central Av. (SR-74) 	20 Cambern Av. & Central Av. (SR-74) 	21 Driveway 1 & Nichols Rd. Future Intersection

EXHIBIT 4-5: PROJECT ONLY (PHASE 2) TRAFFIC VOLUMES



1 Lake St. & Nichols Rd. 	2 Lake St. & Alberhill Ranch Rd. 	3 Alberhill Ranch Rd. & Nichols Rd. 	4 Lakeshore Dr. & Riverside Dr. (SR-74) 	5 Gunnerson St./ Strickland Av. & Riverside Dr. (SR-74) 	6 Collier Av. & Nichols Rd. 	7 Collier Av. & Riverside Dr. (SR-74)
8 Collier Av. & Central Av. (SR-74) 	9 I-15 SB Ramps & Nichols Rd. 	10 I-15 NB Ramps & Nichols Rd. 	11 A Street & Nichols Rd. 	12 B Street & Nichols Rd. 	13 B Street & F Street 	14 B Street & H Street Future Intersection
15 K Street & B Street 	16 El Toro Rd. & B Street 	17 El Toro Rd. & Tereticornis Av. 	18 El Toro Rd. & Carmela Ct. 	19 Dexter Av. & Central Av. (SR-74) 	20 Cambern Av. & Central Av. (SR-74) 	21 Driveway 1 & Nichols Rd. Future Intersection

APPENDIX G -

EXISTING PLUS AMBIENT PLUS CUMULATIVE PLUS PROJECT PEAK HOUR INTERSECTION

ANALYSIS WORKSHEETS

HCM 6th Signalized Intersection Summary
1: SR-74/Central Avenue/0 & Conard Avenue

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	3	35	104	0	10	15	1273	36	11	2147	56
Future Volume (veh/h)	34	3	35	104	0	10	15	1273	36	11	2147	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1477	1870	1870
Adj Flow Rate, veh/h	35	3	36	108	0	10	16	1326	38	11	2236	58
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	21	69	0	0	146	47	2376	68	27	2358	61
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.09	0.03	0.67	0.67	0.02	0.67	0.67
Sat Flow, veh/h	566	229	753	0	0	1585	1781	3528	101	1406	3539	91
Grp Volume(v), veh/h	74	0	0	0	0	10	16	667	697	11	1118	1176
Grp Sat Flow(s),veh/h/ln	1547	0	0	0	0	1585	1781	1777	1852	1406	1777	1854
Q Serve(g_s), s	1.9	0.0	0.0	0.0	0.0	0.4	0.7	14.6	14.6	0.6	42.1	43.1
Cycle Q Clear(g_c), s	3.3	0.0	0.0	0.0	0.0	0.4	0.7	14.6	14.6	0.6	42.1	43.1
Prop In Lane	0.47		0.49	0.00		1.00	1.00		0.05	1.00		0.05
Lane Grp Cap(c), veh/h	214	0	0	0	0	146	47	1197	1248	27	1184	1235
V/C Ratio(X)	0.35	0.00	0.00	0.00	0.00	0.07	0.34	0.56	0.56	0.41	0.94	0.95
Avail Cap(c_a), veh/h	560	0	0	0	0	1001	168	1197	1248	132	1194	1245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	0.0	0.0	0.0	30.9	35.6	6.3	6.4	36.1	11.2	11.3
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.2	4.2	0.6	0.6	9.6	14.6	15.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.0	0.0	0.2	0.3	3.1	3.2	0.3	13.6	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	0.0	0.0	0.0	0.0	31.1	39.8	6.9	6.9	45.7	25.8	26.8
LnGrp LOS	C	A	A	A	A	C	D	A	A	D	C	C
Approach Vol, veh/h	74			10			1380			2305		
Approach Delay, s/veh	33.1			31.1			7.3			26.4		
Approach LOS	C			C			A			C		
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.9		6.4	56.1	0.0	11.9	7.0	55.6				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.4		2.6	16.6	0.0	5.3	2.7	45.1				
Green Ext Time (p_c), s	0.0		0.0	9.8	0.0	0.3	0.0	4.4				
Intersection Summary												
HCM 6th Ctrl Delay	19.6											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	75	0	1353	2178	113
Future Vol, veh/h	0	75	0	1353	2178	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	150
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	0	1424	2293	119
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	1147	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	193	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	193	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	36	0		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 193		-	-		
HCM Lane V/C Ratio	- 0.409		-	-		
HCM Control Delay (s)	- 36		-	-		
HCM Lane LOS	- E		-	-		
HCM 95th %tile Q(veh)	- 1.8		-	-		

HCM 6th Signalized Intersection Summary

3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			 	
Traffic Volume (veh/h)	32	6	26	129	6	28	34	1292	50	4	2117	32
Future Volume (veh/h)	32	6	26	129	6	28	34	1292	50	4	2117	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1477	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	34	6	28	139	6	30	37	1389	54	4	2276	34
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	125	33	71	245	31	153	64	3606	140	13	2427	36
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.05	0.72	0.72	0.01	0.68	0.68
Sat Flow, veh/h	612	291	632	1375	271	1355	1406	5043	196	1781	3584	53
Grp Volume(v), veh/h	68	0	0	139	0	36	37	938	505	4	1125	1185
Grp Sat Flow(s),veh/h/ln	1535	0	0	1375	0	1626	1406	1702	1835	1781	1777	1861
Q Serve(g_s), s	1.8	0.0	0.0	4.7	0.0	2.0	2.5	10.5	10.5	0.2	54.2	55.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	8.5	0.0	2.0	2.5	10.5	10.5	0.2	54.2	55.0
Prop In Lane	0.50		0.41	1.00		0.83	1.00		0.11	1.00		0.03
Lane Grp Cap(c), veh/h	229	0	0	245	0	183	64	2434	1312	13	1203	1260
V/C Ratio(X)	0.30	0.00	0.00	0.57	0.00	0.20	0.58	0.39	0.39	0.30	0.94	0.94
Avail Cap(c_a), veh/h	521	0	0	515	0	502	101	2434	1312	128	1226	1284
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	0.0	41.7	0.0	39.1	45.4	5.4	5.4	48.0	13.8	13.9
Incr Delay (d2), s/veh	0.7	0.0	0.0	2.1	0.0	0.5	8.0	0.1	0.2	12.5	13.1	13.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	0.0	3.3	0.0	0.8	1.0	2.4	2.6	0.1	18.8	20.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.6	0.0	0.0	43.8	0.0	39.6	53.4	5.5	5.6	60.4	26.9	27.2
LnGrp LOS	D	A	A	D	A	D	D	A	A	E	C	C
Approach Vol, veh/h	68			175			1480			2314		
Approach Delay, s/veh	40.6			42.9			6.8			27.1		
Approach LOS	D			D			A			C		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	15.9		5.7	75.5		15.9	9.4	71.8				
Change Period (Y+Rc), s	5.0		5.0	6.0		5.0	5.0	6.0				
Max Green Setting (Gmax), s	30.0		7.0	67.0		30.0	7.0	67.0				
Max Q Clear Time (g_c+I1), s	10.5		2.2	12.5		5.8	4.5	57.0				
Green Ext Time (p_c), s	0.5		0.0	11.6		0.3	0.0	8.8				
Intersection Summary												
HCM 6th Ctrl Delay	20.6											
HCM 6th LOS	C											

HCM 6th Signalized Intersection Summary

4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail

10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	211	42	1236	100	25	1977
Future Volume (veh/h)	211	42	1236	100	25	1977
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	224	45	1315	106	27	2103
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	273	243	2987	241	69	2551
Arrive On Green	0.15	0.15	0.62	0.62	0.04	0.72
Sat Flow, veh/h	1781	1585	4984	388	1781	3647
Grp Volume(v), veh/h	224	45	929	492	27	2103
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1800	1781	1777
Q Serve(g_s), s	10.4	2.1	12.2	12.2	1.3	34.9
Cycle Q Clear(g_c), s	10.4	2.1	12.2	12.2	1.3	34.9
Prop In Lane	1.00	1.00		0.22	1.00	
Lane Grp Cap(c), veh/h	273	243	2111	1117	69	2551
V/C Ratio(X)	0.82	0.19	0.44	0.44	0.39	0.82
Avail Cap(c_a), veh/h	627	558	2677	1416	146	3295
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	31.4	8.4	8.4	40.0	8.3
Incr Delay (d2), s/veh	6.1	0.4	0.1	0.3	3.6	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	0.8	3.2	3.5	0.6	7.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.0	31.8	8.6	8.7	43.5	9.7
LnGrp LOS	D	C	A	A	D	A
Approach Vol, veh/h	269		1421			2130
Approach Delay, s/veh	39.5		8.6			10.2
Approach LOS	D		A			B
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	18.0		8.3	58.8	67.1	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	30.0		7.0	67.0	79.0	
Max Q Clear Time (g_c+I1), s	12.4		3.3	14.2	36.9	
Green Ext Time (p_c), s	0.7		0.0	11.3	24.3	
Intersection Summary						
HCM 6th Ctrl Delay			11.7			
HCM 6th LOS			B			

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	41	47	1135	1910	3
Future Vol, veh/h	6	41	47	1135	1910	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	43	49	1195	2011	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2589	1007	2014	0	-	0
Stage 1	2013	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	30	239	279	-	-	-
Stage 1	88	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	25	239	279	-	-	-
Mov Cap-2 Maneuver	25	-	-	-	-	-
Stage 1	73	-	-	-	-	-
Stage 2	493	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	44.9	0.8		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	279	-	25	239	-	-
HCM Lane V/C Ratio	0.177	-	0.253	0.181	-	-
HCM Control Delay (s)	20.7	-	192.1	23.4	-	-
HCM Lane LOS	C	-	F	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.8	0.6	-	-

HCM 6th Signalized Intersection Summary
1: SR-74/Central Avenue & Conard Avenue

Central Avenue Commercial Retail
10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	3	36	67	3	11	26	2219	63	16	1467	38
Future Volume (veh/h)	51	3	36	67	3	11	26	2219	63	16	1467	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1477	1870	1870
Adj Flow Rate, veh/h	53	3	37	69	3	11	27	2288	65	16	1512	39
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	14	55	0	32	117	72	2356	67	37	2316	60
Arrive On Green	0.09	0.09	0.09	0.00	0.09	0.09	0.04	0.67	0.67	0.03	0.65	0.65
Sat Flow, veh/h	753	156	600	0	351	1287	1781	3527	100	1406	3539	91
Grp Volume(v), veh/h	93	0	0	0	0	14	27	1146	1207	16	758	793
Grp Sat Flow(s),veh/h/ln	1509	0	0	0	0	1639	1781	1777	1850	1406	1777	1854
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.6	1.1	45.1	46.5	0.8	19.2	19.3
Cycle Q Clear(g_c), s	4.4	0.0	0.0	0.0	0.0	0.6	1.1	45.1	46.5	0.8	19.2	19.3
Prop In Lane	0.57		0.40	0.00		0.79	1.00		0.05	1.00		0.05
Lane Grp Cap(c), veh/h	213	0	0	0	0	150	72	1187	1236	37	1163	1213
V/C Ratio(X)	0.44	0.00	0.00	0.00	0.00	0.09	0.38	0.97	0.98	0.43	0.65	0.65
Avail Cap(c_a), veh/h	554	0	0	0	0	1031	167	1189	1238	132	1189	1240
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	0.0	0.0	0.0	0.0	31.1	34.9	11.6	11.8	35.8	7.8	7.8
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.0	0.0	0.3	3.3	18.4	20.0	7.6	1.2	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.0	0.0	0.2	0.5	15.4	16.9	0.3	4.6	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	0.0	0.0	0.0	0.0	31.4	38.2	30.0	31.9	43.5	9.0	9.0
LnGrp LOS	C	A	A	A	A	C	D	C	C	D	A	A
Approach Vol, veh/h	93			14			2380			1567		
Approach Delay, s/veh	34.2			31.4			31.0			9.4		
Approach LOS	C			C			C			A		
Timer - Assigned Phs	2		3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.8		7.0	55.9	0.0	11.8	8.0	54.9				
Change Period (Y+Rc), s	5.0		5.0	6.0	5.0	5.0	5.0	6.0				
Max Green Setting (Gmax), s	47.0		7.0	50.0	18.0	24.0	7.0	50.0				
Max Q Clear Time (g_c+I1), s	2.6		2.8	48.5	0.0	6.4	3.1	21.3				
Green Ext Time (p_c), s	0.0		0.0	1.4	0.0	0.4	0.0	11.5				
Intersection Summary												
HCM 6th Ctrl Delay	22.7											
HCM 6th LOS	C											

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	47	0	2286	1440	45
Future Vol, veh/h	0	47	0	2286	1440	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	49	0	2406	1516	47
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	758	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	350	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	350	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 350		-	-		
HCM Lane V/C Ratio	- 0.141		-	-		
HCM Control Delay (s)	- 17		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.5		-	-		

HCM 6th Signalized Intersection Summary

3: SR-74/Central Avenue & Ardenwood Way

Central Avenue Commercial Retail

10/16/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			 	
Traffic Volume (veh/h)	31	6	30	70	6	17	24	2134	132	17	1389	31
Future Volume (veh/h)	31	6	30	70	6	17	24	2134	132	17	1389	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	984	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	6	32	74	6	18	25	2246	139	18	1462	33
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	122	28	64	240	38	113	36	3261	200	52	2324	52
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.04	0.66	0.66	0.03	0.65	0.65
Sat Flow, veh/h	549	304	700	1370	412	1236	938	4918	302	1781	3553	80
Grp Volume(v), veh/h	71	0	0	74	0	24	25	1549	836	18	730	765
Grp Sat Flow(s),veh/h/ln	1553	0	0	1370	0	1648	938	1702	1816	1781	1777	1856
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	1.0	2.0	20.8	21.3	0.7	17.9	17.9
Cycle Q Clear(g_c), s	3.1	0.0	0.0	2.9	0.0	1.0	2.0	20.8	21.3	0.7	17.9	17.9
Prop In Lane	0.46		0.45	1.00		0.75	1.00		0.17	1.00		0.04
Lane Grp Cap(c), veh/h	214	0	0	240	0	151	36	2257	1204	52	1163	1214
V/C Ratio(X)	0.33	0.00	0.00	0.31	0.00	0.16	0.70	0.69	0.69	0.35	0.63	0.63
Avail Cap(c_a), veh/h	685	0	0	670	0	668	127	3081	1643	168	1536	1604
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.9	0.0	0.0	31.9	0.0	31.0	35.2	7.7	7.8	35.2	7.5	7.5
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.7	0.0	0.5	22.0	0.4	0.8	3.9	0.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	1.3	0.0	0.4	0.6	4.3	4.8	0.3	4.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	0.0	0.0	32.6	0.0	31.5	57.2	8.1	8.6	39.1	8.1	8.1
LnGrp LOS	C	A	A	C	A	C	E	A	A	D	A	A
Approach Vol, veh/h	71			98			2410			1513		
Approach Delay, s/veh	32.8			32.3			8.8			8.4		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2		3	4		6	7	8				
Phs Duration (G+Y+Rc), s	11.8		7.2	55.1		11.8	7.8	54.4				
Change Period (Y+Rc), s	5.0		5.0	6.0		5.0	5.0	6.0				
Max Green Setting (Gmax), s	30.0		7.0	67.0		30.0	10.0	64.0				
Max Q Clear Time (g_c+I1), s	4.9		2.7	23.3		5.1	4.0	19.9				
Green Ext Time (p_c), s	0.3		0.0	25.8		0.3	0.0	12.3				
Intersection Summary												
HCM 6th Ctrl Delay	9.6											
HCM 6th LOS	A											

HCM 6th Signalized Intersection Summary

4: SR-74/Central Avenue & Rosetta Canyon Road

Central Avenue Commercial Retail

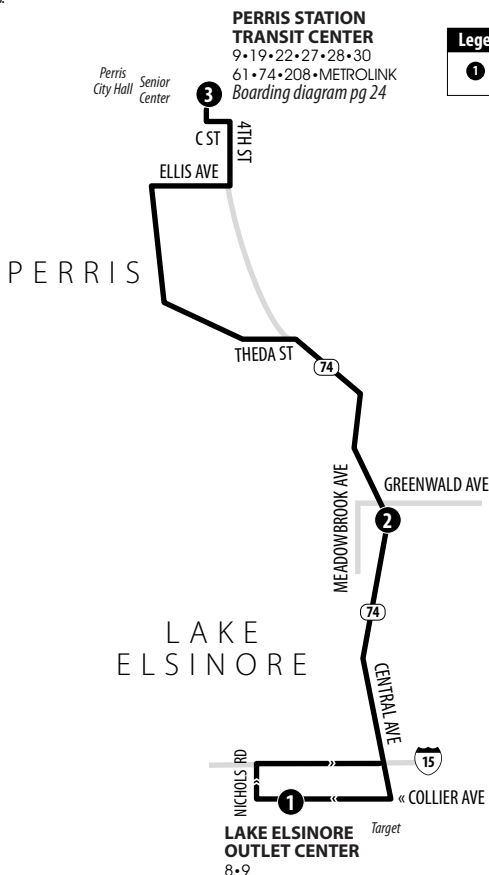
10/16/2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	131	24	1972	208	34	1304
Future Volume (veh/h)	131	24	1972	208	34	1304
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	138	25	2076	219	36	1373
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	185	165	2979	311	88	2665
Arrive On Green	0.10	0.10	0.63	0.63	0.05	0.75
Sat Flow, veh/h	1781	1585	4864	490	1781	3647
Grp Volume(v), veh/h	138	25	1498	797	36	1373
Grp Sat Flow(s),veh/h/ln	1781	1585	1702	1782	1781	1777
Q Serve(g_s), s	5.7	1.1	21.6	22.3	1.5	11.8
Cycle Q Clear(g_c), s	5.7	1.1	21.6	22.3	1.5	11.8
Prop In Lane	1.00	1.00		0.27	1.00	
Lane Grp Cap(c), veh/h	185	165	2160	1130	88	2665
V/C Ratio(X)	0.75	0.15	0.69	0.70	0.41	0.52
Avail Cap(c_a), veh/h	757	674	2940	1539	166	3636
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	30.7	9.0	9.1	34.7	3.8
Incr Delay (d2), s/veh	5.9	0.4	0.4	0.9	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.4	5.0	5.5	0.7	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.6	31.1	9.4	10.0	37.8	4.0
LnGrp LOS	D	C	A	B	D	A
Approach Vol, veh/h	163		2295			1409
Approach Delay, s/veh	37.5		9.6			4.9
Approach LOS	D		A			A
Timer - Assigned Phs	2		3	4	8	
Phs Duration (G+Y+Rc), s	12.8		8.7	53.7	62.4	
Change Period (Y+Rc), s	5.0		5.0	6.0	6.0	
Max Green Setting (Gmax), s	32.0		7.0	65.0	77.0	
Max Q Clear Time (g_c+l1), s	7.7		3.5	24.3	13.8	
Green Ext Time (p_c), s	0.4		0.0	23.5	12.5	
Intersection Summary						
HCM 6th Ctrl Delay			9.1			
HCM 6th LOS			A			

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	36	32	1950	1210	4
Future Vol, veh/h	6	36	32	1950	1210	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	235	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	38	34	2053	1274	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2165	639	1278	0	-	0
Stage 1	1276	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Critical Hdwy	6.29	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	6.04	-	-	-	-	-
Follow-up Hdwy	3.67	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	55	419	539	-	-	-
Stage 1	221	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	52	419	539	-	-	-
Mov Cap-2 Maneuver	52	-	-	-	-	-
Stage 1	207	-	-	-	-	-
Stage 2	336	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	24.3	0.2		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	539	-	52	419	-	-
HCM Lane V/C Ratio	0.062	-	0.121	0.09	-	-
HCM Control Delay (s)	12.1	-	83.6	14.4	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	0.3	-	-

APPENDIX H -
TRANSIT ROUTE INFORMATION

Routing and timetables
subject to change.
Rutas y horarios son
sujetos a cambios.


Legend | Map not to scale

1 Time and/or Transfer Point

9

Northbound to Perris Station Transit Center | Weekdays & Weekends

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate

Lake Elsinore Outlet Center	Hwy. 74 & Meadowbrook	Perris Station Transit Center
1	2	3
6:38	6:48	7:03
7:50	8:00	8:15
9:26	9:37	9:52
10:36	10:47	11:02
11:45	11:56	12:13
12:46	12:59	1:16
1:59	2:12	2:29
3:11	3:24	3:41
4:21	4:34	4:51
5:36	5:48	6:05
6:37	6:49	7:04

9

Southbound to Lake Elsinore Outlet Center | Weekdays & Weekends

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate

Perris Station Transit Center	Hwy. 74 & Meadowbrook	Lake Elsinore Outlet Center
3	2	1
6:50	7:02	7:13
7:50	8:02	8:13
8:45	8:57	9:08
10:07	10:19	10:31
11:15	11:28	11:40
12:25	12:38	12:50
1:34	1:47	1:59
2:37	2:50	3:02
3:59	4:12	4:24
5:02	5:15	5:27
6:14	6:27	6:39