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July 29, 2019

Mr. Rod K. Oshita
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APPROVED
9/3/2019
NRL

SUBJECT: PENNINGTON INDUSTRIAL PROJECT FOCUSED TRAFFIC EVALUATION

Dear Mr. Rod K. Oshita:

Urban Crossroads, Inc. is pleased to present this letter documenting the focused traffic evaluation for the Pennington Industrial Project (referred to as "Project") in the City of Lake Elsinore. It is our understanding that the Project consists of 91,140 square feet of manufacturing use (gross floor area), located southeast of the Chaney Street/Minthorn Street intersection. The Project Traffic Study Scoping agreement is provided in Attachment 1.

PROJECT OVERVIEW

Exhibit 1 illustrates the Project site plan, which consists of three buildings south of W. Minthorn Street and east of Chaney Street. The Project encompasses the development of 91,140 square feet of manufacturing use (gross floor area).

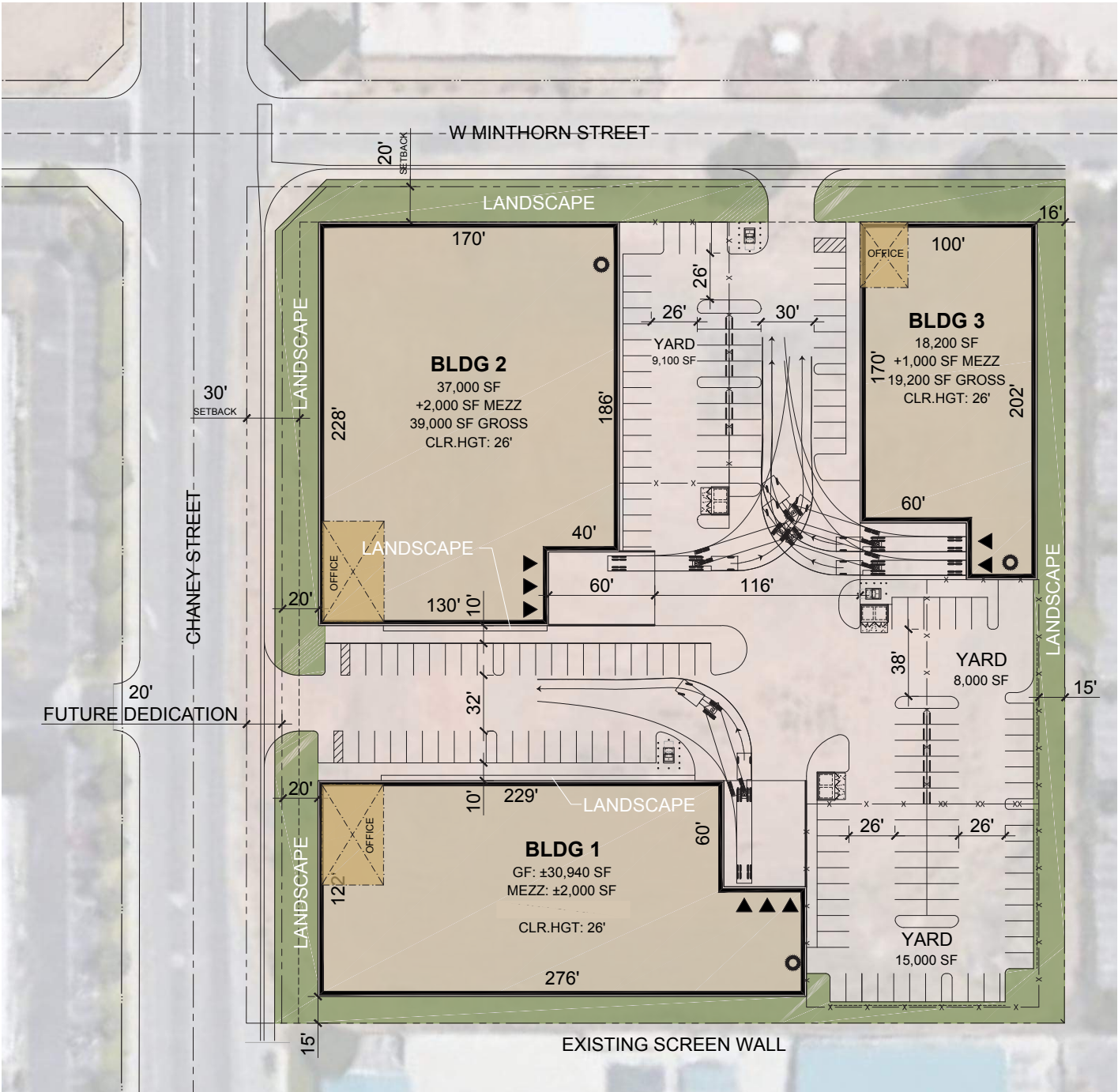
Two access driveways are proposed: (1) the northerly driveway to W. Minthorn Street, located 320 feet (curb return-to-curb return) east of Chaney Street, and (2) the westerly driveway located south of W. Minthorn Street, opposite the driveway of the adjacent property.

METHODOLOGIES

A scoping agreement was prepared on April 15, 2019. The City of Lake Elsinore responded by requesting the following focused traffic analysis:

- A focused traffic study is to be completed for this project to determine impacts at the intersection of Collier and Chaney. Existing, E+P, and EACP scenarios should be analyzed at that intersection. Include standard AM and PM peak hour analysis using new counts.
- The manufacturing trip generation should be broken up into PCE trips for the analysis. Truck splits should be per City of Fontana truck study.
- Ambient growth rate is 2%.

EXHIBIT 1: PRELIMINARY SITE PLAN



Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS "A", representing completely free-flow conditions, to LOS "F", representing breakdown in flow resulting in stop-and-go conditions. LOS "E" represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) 6 methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

Unsignalized Intersection Analysis

For unsignalized intersections, the LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see table below).

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, $V/C \leq 1.0$	Level of Service, $V/C > 1.0$
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM 6

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

Traffic Signal Warrant Analysis

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), as amended by the MUTCD 2014 California Supplement, for all study area intersections. Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

Consistent with the Riverside County General Plan Policy C 2.1, the City of Lake Elsinore requires that City roadways and intersections maintain the target level of service (LOS) of “C”. As an exception, LOS “D” may be allowed in Community Development areas at intersections of any combination of Secondary Highways, Major Highways, Arterial Highways, Urban Arterial Highways, Expressways or conventional State Highways. LOS “E” may be allowed in designated Community Centers to the extent that it would support transit-oriented development and pedestrian communities. The study area is identified as being located within a Community Development area on the Riverside County Integrated Project (RCIP) General Plan land use map. As such, LOS “D” has been considered acceptable at any intersection within the City of Lake Elsinore because all of the study area intersections are classified as Secondary Highways or a higher classification within a Community Development area.

TRAFFIC VOLUMES

Manual weekday AM and PM peak hour turning movement counts were conducted in May 2019. For the purpose of this analysis, the following peak hours were selected for analysis:

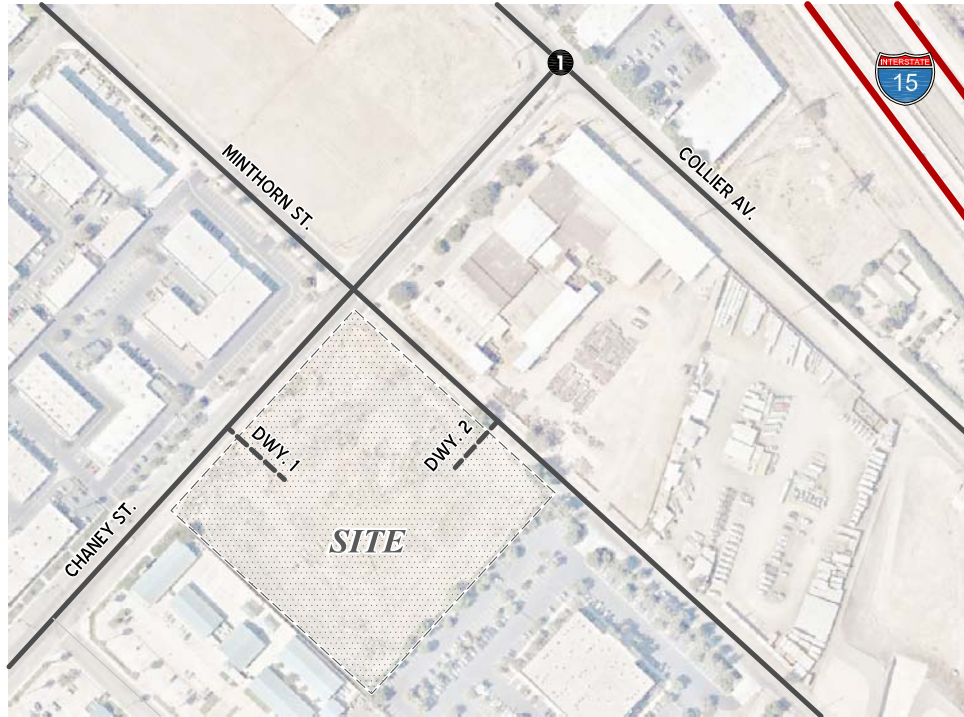
- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

Data was collected regarding type of vehicle (such as 3-axle truck) in order to determine passenger car equivalents (PCEs). The raw manual peak hour turning movement traffic count data sheets are included in Attachment 2. Existing traffic count data is summarized on Exhibit 2.

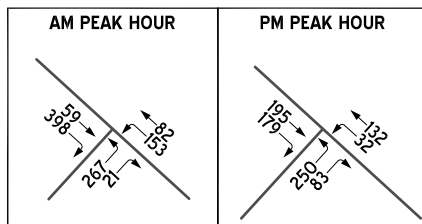
PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The trips generated by the Project have been estimated based on trip generation rates from the Institute of Transportation Engineers (ITE) publication Trip Generation (10th Edition, 2017). The trip generation rates used to estimate the proposed Project traffic are shown in Table 1. Table 1 also shows the Project trip generation, which consist of 71 trips in the AM peak hour, 78 trips in the PM peak hour, and 455 daily trips (passenger car equivalents).

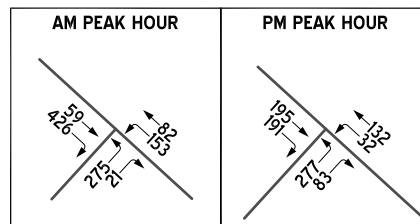
EXHIBIT 2: COLLIER AVENUE (NS) / CHANEY STREET (EW) PEAK HOUR INTERSECTION VOLUMES



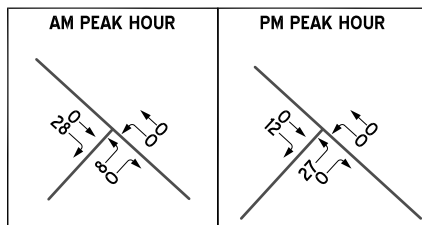
EXISTING (2019) TRAFFIC VOLUMES PASSENGER CAR EQUIVALENT (PCE)



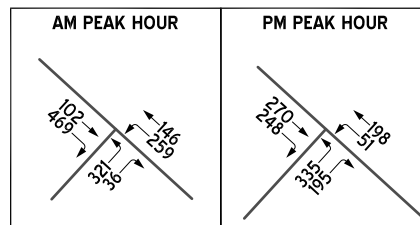
E+P TRAFFIC VOLUMES



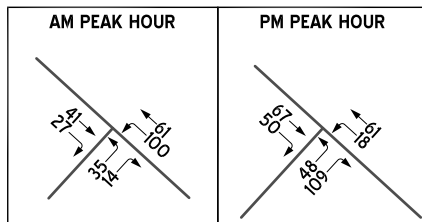
PROJECT ONLY TRAFFIC VOLUMES



EAPC (2020) TRAFFIC VOLUMES



CUMULATIVE ONLY TRAFFIC VOLUMES



LEGEND:

- ① = INTERSECTION ANALYSIS LOCATION
- = FUTURE ROADWAY



TABLE 1: PROJECT TRIP GENERATION SUMMARY (06/17/2019)

Trip Generation Rates ¹									
Land Use	ITE LU Code	Quantity ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Manufacturing	140	91.14 TSF	0.48	0.14	0.62	0.21	0.46	0.67	3.93
80.3% Passenger Cars			0.39	0.11	0.50	0.17	0.37	0.54	3.16
5.2% 2-Axle Trucks (PCE = 1.5)			0.04	0.01	0.05	0.02	0.04	0.05	0.31
4.5% 3-Axle Trucks (PCE = 2.0)			0.04	0.01	0.06	0.02	0.04	0.06	0.35
10.0% 4-Axle+ Trucks (PCE = 3.0)			0.14	0.04	0.19	0.06	0.14	0.20	1.18

Trip Generation Results									
Land Use	ITE LU Code	Quantity ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Manufacturing	140	91.14 TSF							
Passenger Cars:			35	10	45	15	34	49	288
Truck Trips:									
2-Axle Trucks			3	1	4	1	3	4	28
3-Axle Trucks			4	1	5	2	4	6	32
4-Axle Trucks			13	4	17	6	13	19	107
TOTAL			55	16	71	24	54	78	455

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

² TSF = Thousand Square Feet

³ Vehicle Mix Source: City of Fontana Truck Trip Generation Study for LU 150 (Light Warehouse), August 2003. PCE rates are per SANBAG.

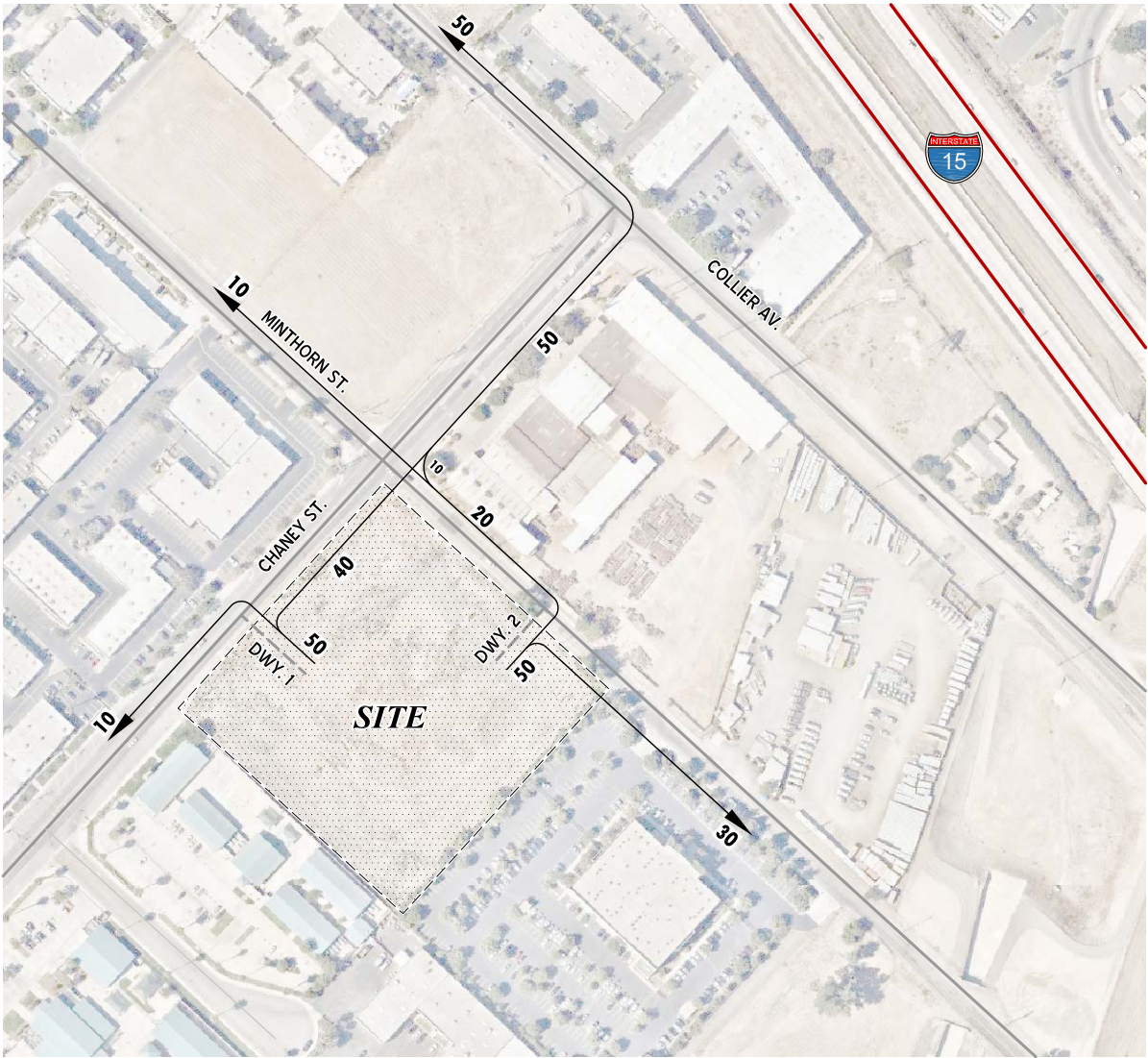
The City of Lake Elsinore follows the County of Riverside's traffic study guidelines as outlined in their Riverside County Transportation Department Traffic Impact Analysis Preparation Guide (April 2008). Per the traffic study guidelines, any intersection of "Collector" or higher classification street at which the proposed project will add 50 or more peak hour trips is to be evaluated. Table C of the City of Lake Elsinore Engineering Division Plan Preparation and Design Manual (Revised May 13, 2015) indicates that Industrial uses of more than 50,000 sf are likely to require a traffic study.

For the purposes of this analysis, it is assumed that the Project will be constructed within a single phase of development with a projected Opening Year of 2021.

PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. The trip distribution pattern is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. Exhibit 3

EXHIBIT 3: PROJECT TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT



illustrates the Project trip distribution patterns. Approximately fifty percent (50%) of the project traffic is anticipated to travel to and from the northwest, via Chaney Street to/from Collier Avenue.

PROJECT TRAFFIC ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project weekday AM and PM peak hour volumes are shown on Exhibit 2.

EXISTING PLUS PROJECT TRAFFIC VOLUMES

The E+P scenario is intended to identify the significant Project impacts associated with the proposed Project on the existing circulation system. The E+P traffic conditions include existing traffic in addition to the traffic generated by the proposed Project. Exhibit 2 also shows the weekday AM and PM peak hour intersection turning movement volumes for Existing (2019) With Project traffic conditions.

OPENING YEAR PLUS PROJECT TRAFFIC VOLUMES

To provide an assessment of the potential project-related and cumulative traffic impacts, the “buildup” method was used to develop traffic forecasts for Opening Year (2021) traffic conditions for Existing plus Ambient Projects plus Cumulative Projects plus Project (EAPC). The EAPC scenario is intended to identify near-term cumulative impacts on the planned near-term circulation system. The EAPC traffic conditions include background traffic within the study area and the traffic generated by the proposed Project.

Future year traffic forecasts have been based upon background (ambient) growth at 4.04% for 2021 traffic conditions (2% per year compounded annually). The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. The cumulative projects provided by the City of Lake Elsinore are shown Exhibit 4 and listed on Table 2. Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e. 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAPC forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project).

Any other cumulative projects that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the

EXHIBIT 4: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP

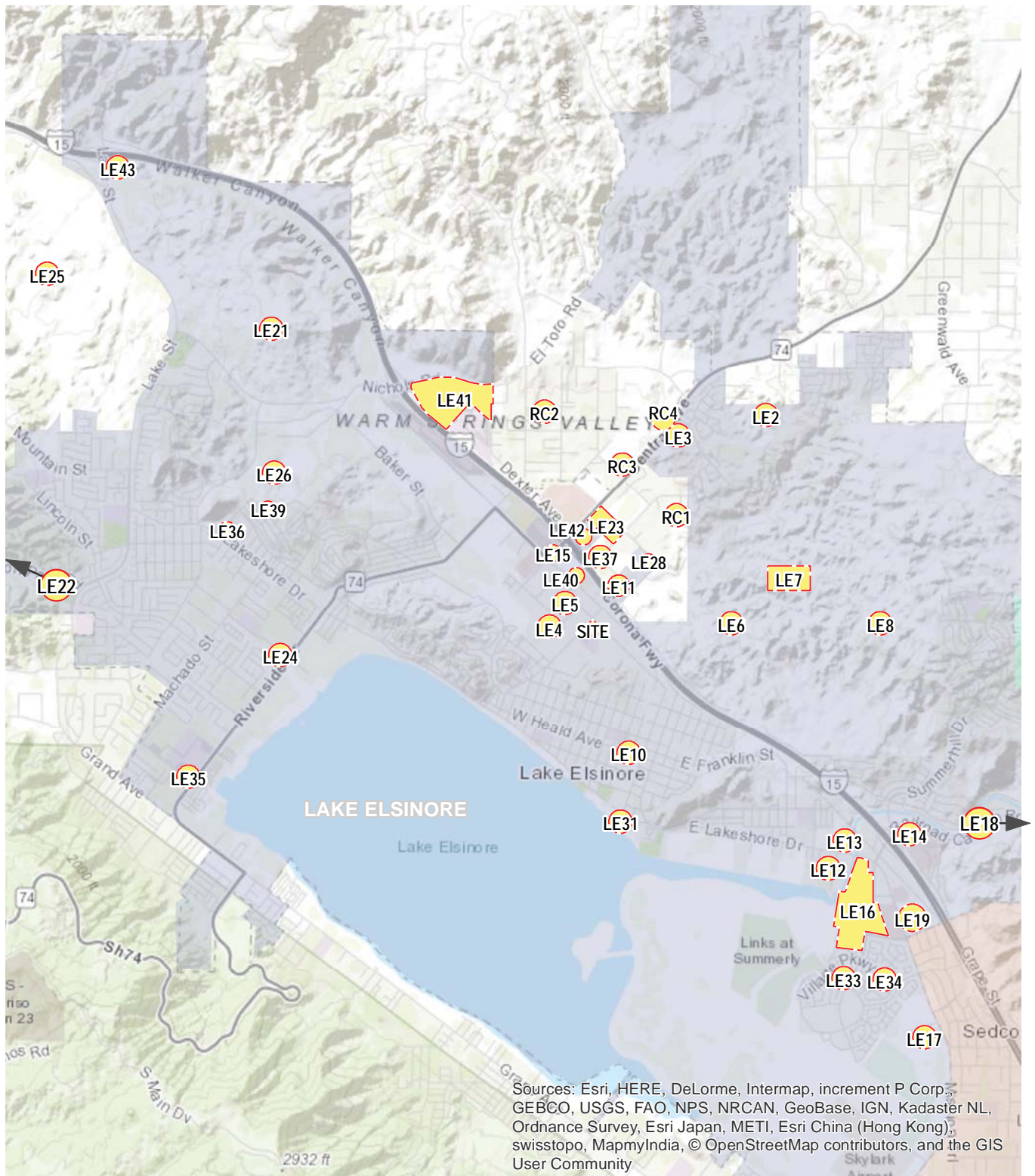


TABLE 2: SUMMARY OF CUMULATIVE DEVELOPMENT PROJECTS

No.	Project Name	Location	Land Use	Quantity ¹	
City of Lake Elsinore					
LE1	Greenwald ²	Lake Elsinore	Shopping Center	104.450	TSF
LE2	Ramsgate	Lake Elsinore	Single Family Residential	1,306	DU
			Condo/Townhomes	120	DU
LE3	Trieste Residential (Tract 36624)	Lake Elsinore	Single Family Residential	75	DU
LE4	Fairway Business Park ⁶	Lake Elsinore	Warehouse	279.445	TSF
LE5	Ness Industrial Garage	Lake Elsinore	Warehouse	12	TSF
LE6	Spyglass Ranch ³	Lake Elsinore	Single Family Residential	523	DU
			Condo/Townhomes	171	DU
			Shopping Center	145.00	TSF
LE7	South Shore I (Tract 31593)	Lake Elsinore	Single Family Residential	521	DU
	South Shore II (Tract 36567)	Lake Elsinore	Single Family Residential	147	DU
LE8	La Strada (Tract 32077)	Lake Elsinore	Single Family Residential	134	DU
LE10	Marina Village Condos (Tract 33820) ⁶	Lake Elsinore	Condo/Townhomes	94	DU
LE11	La Quinta Inn	Lake Elsinore	Hotel	64	RM
LE12	LE Sports Complex	Lake Elsinore	Recreational Community Center	525.000	TSF
LE13	TAG Property ⁴	Lake Elsinore	New Car Sales	50.000	TSF
LE14	City Center Condos ⁴	Lake Elsinore	Condo/Townhomes	144	DU
LE15	Central & Collier	Lake Elsinore	Shopping Center	75.000	TSF
LE16	Diamond Specific Plan ⁵	Lake Elsinore	Condo/Townhomes	600	DU
			Hotel	150	RM
			General Office	425.000	TSF
			Shopping Center	472.000	TSF
LE17	The Colony ⁴	Lake Elsinore	Apartments	211	DU
	Back Basin Specific Plan & East Lake Specific Plan	Lake Elsinore	Single Family Residential	2,407	DU
			Condo/Townhomes	324	DU
	John Laing Homes (Phase 2)	Lake Elsinore	Single Family Residential	506	DU
			Condo/Townhomes	1,141	DU
			Apartments	308	DU
			Shopping Center	117.000	TSF
LE18	Canyon Hills Estates (Tract 34249)	Lake Elsinore	Single Family Residential	302	DU
	Canyon Hills (Multiple Tracts)	Lake Elsinore	Single Family Residential	2,700	DU
			Apartments	1,575	DU
	Audie Murphy (Tract 36485)	Lake Elsinore	Single Family Residential	1,003	DU
LE19	Artisan Alley	Lake Elsinore	Shopping Center	95.100	TSF
LE21	Alberhill Ridge (Tract 35001)	Lake Elsinore	Single Family Residential	1,056	DU
			Apartments	345	DU
			Shopping Center	679.000	TSF
			General Office	679.000	TSF
LE22	Alberhill Ranch	Lake Elsinore	Single Family Residential	1,986	DU
LE23	Lake Elsinore Walmart	Lake Elsinore	Free-Standing Discount Superstore	154.487	TSF
			Specialty Retail	4.600	TSF
			Fast Food w/Drive Thru	6.800	TSF
			Fast Food w/o Drive Thru	4.600	TSF
LE24	Circle K	Lake Elsinore	Gas Station	4.500	TSF

TABLE 2: SUMMARY OF CUMULATIVE DEVELOPMENT PROJECTS

No.	Project Name	Location	Land Use	Quantity ¹	
LE25	Alberhill Villages	Lake Elsinore	Single Family Residential	8,244	DU
			Non-Residential	4,007	TSF
			University or similar use	6,000	STU
LE26	Terracina	Lake Elsinore	Single Family Residential	365	DU
LE28	North Peak Plaza	Lake Elsinore	Hotel	97	RM
			Commercial	37.500	TSF
LE29	Running Deer (TR 31957)		Single Family Residential	101	DU
LE31	Lakeshore Town Center	Lake Elsinore	Town Center	237.400	TSF
LE33	Summerly	Lake Elsinore	Single Family Residential	142	DU
LE34	Beazer, KB Homes, McMillin Homes, Richmond American	Lake Elsinore	Single Family Residential	395	DU
LE35	Village at Lake Elsinore SPA #1	Lake Elsinore	Single Family Residential	163	DU
LE36	Lakeview Manor	Lake Elsinore	Condo/Townhomes	104	DU
LE37	Golden Corral Restaurant	Lake Elsinore	Restaurant	7.798	TSF
LE38	Tige Watersports	Lake Elsinore	Shopping Center	34.500	TSF
LE39	Kassab Travel Center	Lake Elsinore	High Turnover (Sit-Down) Restaurant	17.200	TSF
LE40	Honda	Lake Elsinore	Automobile Sales	53.400	TSF
LE41	Nichols Ranch	Lake Elsinore	Single Family Residential	168	DU
			Hotel	130	RM
			Gas Station w/ Market	16	VFP
			Office	43.00	TSF
			Retail	4.40	TSF
			Health & Fitness Club	8.00	TSF
			Fast Food w/ Drive-Through	6.00	TSF
			Fast Food w/o Drive-Through	5.50	TSF
			High Turnover (Sit-Down) Restaurant	9.40	TSF
Park	8.30	AC			
LE42	Chick-Fil-A	Lake Elsinore	Fast-Food with Drive-Thru	4.800	TSF
LE43	Lake Street Storage	Lake Elsinore	Indoor RV &Boat Storage	13.340	AC
			Gas station, mini-mart	12	VFP
County of Riverside					
RC1	Lennar (Tract 31792)	County of Riverside	Single Family Residential	191	DU
RC2	PM33840	County of Riverside	Single Family Residential	4	DU
RC3	PP20158R1	County of Riverside	Storage Facility	103.727	TSF
RC4	CUP03651	County of Riverside	Recycling Facility	0.504	TSF

¹ TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; STU = Students; VFP = Vehicle Fueling Positions

² Source: Greenwald Avenue Commercial Center TIA, Urban Crossroads, Inc., May 2008.

³ Source: Spyglass Ranch TIA (Revised), Kunzman Associates, February 2007.

⁴ Source: Lake Elsinore TAG Property TIA (Revised), Urban Crossroads, Inc., August 2008.

⁵ Source: The Diamond Specific Plan TIA, Urban Crossroads, Inc., April 2009.

⁶ Source: Fairway Business Park Traffic Impact Analysis Trip Generation Comparison, Kunzman Associates, April 2007.

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cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at the study area intersection. Cumulative Project peak hour intersection turning movement volumes are included on Exhibit 2.

Traffic from cumulative projects in the Project vicinity has been included in the EAPC traffic volumes. Exhibit 2 also shows the weekday AM and PM peak hour intersection turning movement volumes for EAPC (2021) With Project traffic conditions.

INTERSECTION ANALYSIS

The intersection operations analysis results are summarized in Table 3 which indicates that the intersection of Collier Avenue at Chaney Street is currently operating at acceptable LOS during the peak hours. Intersection operations analysis worksheets for existing conditions are included in Attachment 3 of this letter. Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The intersection of Collier Avenue at Chaney Street currently warrants a traffic signal for Existing traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Attachment 4.

LOS calculations were conducted to evaluate operations of the intersection of Collier Avenue at Chaney Street under Existing (2019) Plus Project conditions. Intersection operations analysis worksheets for Existing Plus Project conditions are included in Attachment 5 of this letter. Table 3 contains the results of this analysis. Collier Avenue at Chaney Street is anticipated to experience acceptable operations for Existing Plus Project conditions.

LOS calculations were conducted for Collier Avenue at Chaney Street to evaluate operations under Opening Year (2021) Plus Project conditions. Intersection operations analysis worksheets for EAPC (2021) conditions are included in Attachment 6 of this letter. Table 3 contains the results of this analysis. Collier Avenue at Chaney Street is anticipated to experience deficient operations for Opening Year Plus Project conditions, and a cumulative impact is found.

Cumulative traffic impacts are deficiencies that are not directly caused by the Project, but occur as a result of regional growth combined with that or other nearby cumulative development projects or if the Project is anticipated to contribute traffic to a deficient intersection under pre-project conditions.

The recommended improvement to address the deficiency for EAPC (2021) traffic conditions is a traffic signal at the intersection of Collier Avenue at Chaney Street, combined with a separate northbound left turn lane from Collier Avenue to Chaney Street.

CITY OF LAKE ELSINORE TRAFFIC IMPACT FEE (TIF) PROGRAM

The City of Lake Elsinore has created its own local Traffic Impact Fee (TIF) program to impose and collect fees from new residential, commercial and industrial development for the purpose of funding roadways and intersections necessary to accommodate City growth as identified in the City's General Plan Circulation Element. The City's TIF program includes facilities that are not part of, or which may exceed improvements identified and covered by the TUMF program. As a result, the pairing of the regional and

**TABLE 3: COLLIER AVENUE (NS) / CHANEY STREET (EW)
INTERSECTION ANALYSIS RESULTS**

ANALYSIS SCENARIO	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (Secs)		Level of Service ²	
		Northbound			Southbound			Eastbound			Westbound						
		L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Existing (2019) Traffic Conditions	CSS	0.5	0.5	0	0	1	1	1	0	1	0	0	0	27.2	19.5	D	C
E+P Traffic Conditions	CSS	0.5	0.5	0	0	1	1	1	0	1	0	0	0	28.6	21.4	D	C
EAPC Traffic Conditions																	
- Without Improvements	CSS	0.5	0.5	0	0	1	1	1	0	1	0	0	0	>100	79.9	F	F
- With Improvements	TS	1	1	0	0	1	1	1	0	1	0	0	0	36.0	25.7	D	C

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; **1** = Improvement

² Per the Highway Capacity Manual 6th Edition (HCM6), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown. Delay and level of service is calculated using Synchro 10.1 analysis software.

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

³ CSS = Cross-street Stop; TS = Traffic Signal

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local fee programs provides a more comprehensive funding and implementation plan to ensure an adequate and interconnected transportation system. Under the City's TIF program, the City may grant to developers a credit against specific components of fees when those developers construct certain facilities and landscaped medians identified in the list of improvements funded by the TIF program.

The timing to use the TIF fees is established through periodic capital improvement programs which are overseen by the City's Public Works Department. Traffic data collection and review of volume growth, collision data, and transportation choice trends throughout the City are also periodically performed by City staff and consultants. The City uses this data to determine the timing of implementation of the improvements listed in its facilities list.

The intersection of Chaney Street / Collier Avenue, forecasted to be cumulatively impacted by the Project, has planned improvements through the City's TIF Program. The Project will be subject to the City of Lake Elsinore's TIF fee program, and will pay the requisite City of Lake Elsinore TIF fees at the rates then in effect pursuant to the City of Lake Elsinore's ordinance.

PROJECT FAIR SHARE

A project's fair share contribution at an off-site study area intersection is determined based on the following equation, which is the ratio of Project traffic to new traffic, and new traffic is total future traffic subtracts existing baseline traffic:

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{EAPC 2021 Total Traffic} - \text{Existing Baseline Traffic})$$

Detailed peak hour fair share calculations have been provided in Table 4 for the cumulatively impacted intersection for EAPC (2021) traffic conditions. The fair-share calculations for the traffic signal at Collier Avenue and Chaney Street and related northbound left turn improvement indicate that the Project contributes 10.20% in the AM peak hour and 9.15% in the PM peak hour of new vehicle trips to the cumulatively impacted intersection of Collier Avenue at Chaney Street.

A review of local and regional transportation impact fee programs as compared to the Collier Avenue at Chaney Street signal improvement and related northbound left turn lane for the impacted facility has been performed, and the signal improvement is included in the City's TIF program, as discussed above.

CONCLUSIONS

Cumulative traffic conditions with the Project have been evaluated for the intersection of Collier Avenue at Chaney Street, and a traffic signal is needed and included in the City's TIF program. Recommended cumulative improvements at this location also include a separate northbound left turn lane from Collier Avenue to Chaney Street. The project contributes up to 10.2% to cumulative peak hour volumes at the Collier Avenue / Chaney Street intersection.

Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes. On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

TABLE 4: FAIR SHARE CALCULATIONS FOR INTERSECTIONS

ID	Intersection	Existing (2019) Traffic	EAPC (2021) Traffic ³	Project Only Traffic	Total New Traffic ¹	Project Fair Share (%) ²
1	Collier Av. (NS) / Chaney St. (EW)					
	• AM Peak Hour	980	1,333	36	353	10.20%
	• PM Peak Hour	871	1,297	39	426	9.15%

¹ Total New Traffic = (EAPC - Existing Traffic)

² Project Fair Share % = (Project Only Traffic / Total New Traffic)

BOLD = Denotes highest peak hour

³ Existing Plus Ambient Plus Project Plus Cumulative (2021) Traffic Conditions

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Pennington Industrial
July 29, 2019

Sight distance at each project access point should be reviewed with respect to standard Caltrans and County of Riverside sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

If you have any questions, please contact John Kain at (949) 336-5990 or Marlie Whiteman (949) 336-5991.

Respectfully submitted,

URBAN CROSSROADS, INC.



John Kain, AICP
Principal



Marlie Whiteman, PE
Senior Associate

JN: 11745-03

ATTACHMENT 1:

TRAFFIC STUDY SCOPING AGREEMENT

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the City of Lake Elsinore requirements for traffic impact analysis of the following project.
The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated February 2008.

Case No. _____
Related Cases - _____
SP No. _____
EIR No. _____
GPA No. _____
CZ No. _____
Project Name: Pennington Industrial
Project Location: southeast corner of Chaney St. and Minthorn St. in the City of Lake Elsinore (See Exhibit 2)
Project Description: 91,140 sf manufacturing

Consultant

Developer

Name: URBAN CROSSROADS, INC. - Marlie Whiteman, P.E. Pennington Industrial LLC - Rod Oshita
Address: 1001 Dove St., Suite 260 1601 N. Sepulveda Blvd., Suite 401
Newport Beach, CA 92660 Manhattan Beach, CA 90266
Telephor: (949) 336-5991 Direct (310) 939-7102

A. Trip Generation Source: ITE Trip Generation Manual, 10th Edition (See Table 1)

Current GP Land Use: Limited Industrial Proposed Land Use: Light Industrial/Manufacturing
Current Zoning: M1 - Limited Manufacturing Proposed Zoning: Light Industrial/Manufacturing

Current Trip Generation

	In	Out	Total
AM Trips			0
PM Trips			0

Proposed Trip Generation

	In	Out	Total
	55	16	71
	24	54	78

Internal Trip Allowance ☐ YES ☒ NO
Pass-By Trip Allowance ☐ YES ☒ NO

(_____ % Trip Discount)
(_____ % Trip Discount)

B. Trip Geographic Distribution N 50% S 10% E 30% W 10% (see attached **Exhibit 3** for potential traffic distribution diagram)

C. Background Traffic:

Project Completion Year: 2021 Annual Ambient Growth Rate: 2.00%

Phase Year(s): N/A

Other area projects to be analyzed: See Exhibit 4 and Table 2

Model/Forecast methodology : Overlay of volumes on existing counts

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

1	Collier Avenue (NS) / Chaney Street (EW)	6	
2		7	
3		8	
4		9	
5		10	

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

1	N/A	6	
2		7	
3		8	
4		9	
5		10	

E. Other Jurisdictional Impacts:

Is this project within another City's Sphere of influence or one-mile radius of City boundaries? ☐ YES ☒ NO

If so, name of City jurisdiction: N/A

F. Site Plan: (please attached reduced copy)

Site plan is shown on Exhibit 1

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

(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.)

Analysis Scenarios:

Existing
Existing + Project
Existing + Ambient + Project + Cumulative

H. Existing Conditions

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

Date of Counts Traffic counts were collected on May 29, 2019

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

Recommended by:

Approved Scoping Agreement:



Consultant's Representative

7/24/2019
Date

Nicholas Lowe

City of Lake Elsinore

9/3/2019

Date

Scoping Agreement Submitted on 7/24/2019

Revised on _____

TABLE 1: PROJECT TRIP GENERATION SUMMARY (06/17/2019)

Trip Generation Rates ¹									
Land Use	ITE LU Code	Quantity ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Manufacturing	140	91.14 TSF	0.48	0.14	0.62	0.21	0.46	0.67	3.93
		80.3% Passenger Cars	0.39	0.11	0.50	0.17	0.37	0.54	3.16
		5.2% 2-Axle Trucks (PCE = 1.5)	0.04	0.01	0.05	0.02	0.04	0.05	0.31
		4.5% 3-Axle Trucks (PCE = 2.0)	0.04	0.01	0.06	0.02	0.04	0.06	0.35
		10.0% 4-Axle+ Trucks (PCE = 3.0)	0.14	0.04	0.19	0.06	0.14	0.20	1.18

Trip Generation Results									
Land Use	ITE LU Code	Quantity ²	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Manufacturing	140	91.14 TSF							
		Passenger Cars:	35	10	45	15	34	49	288
		Truck Trips:							
		2-Axle Trucks	3	1	4	1	3	4	28
		3-Axle Trucks	4	1	5	2	4	6	32
		4-Axle Trucks	13	4	17	6	13	19	107
TOTAL			55	16	71	24	54	78	455

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

² TSF = Thousand Square Feet

³ Vehicle Mix Source: City of Fontana Truck Trip Generation Study for LU 150 (Light Warehouse), August 2003. PCE rates are per SANBAG.

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EXHIBIT 1: PRELIMINARY SITE PLAN

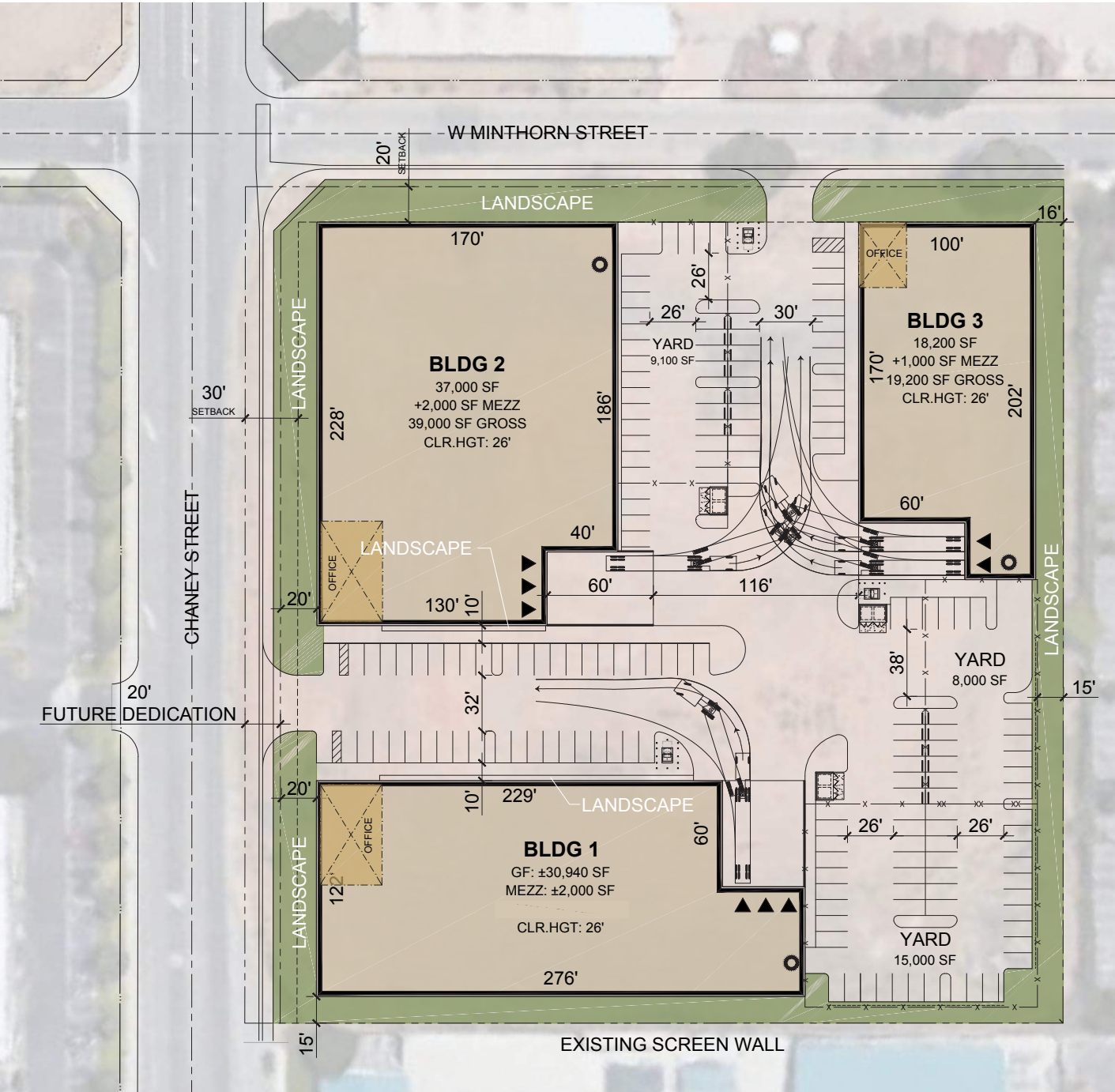
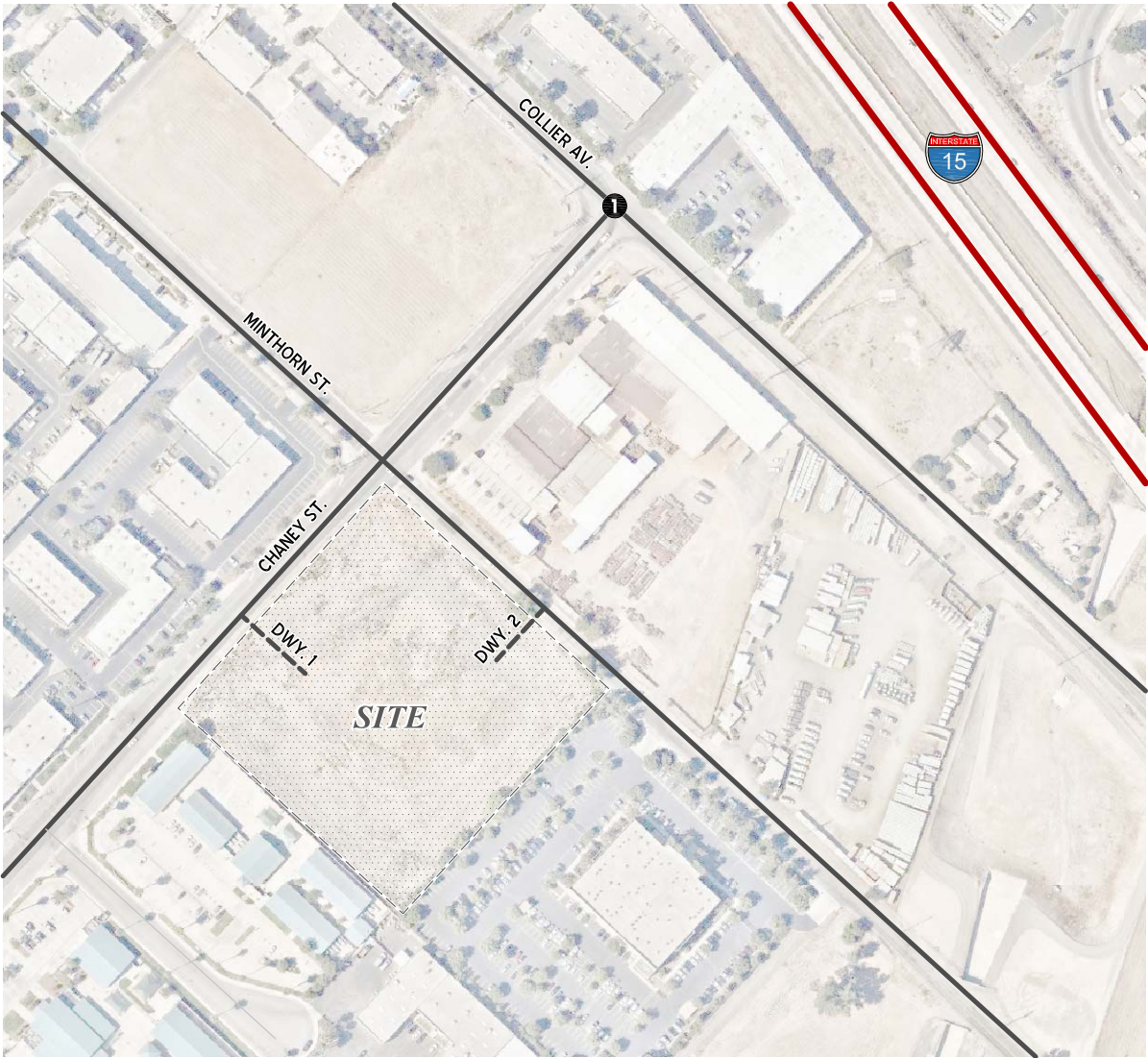


EXHIBIT 2: LOCATION MAP

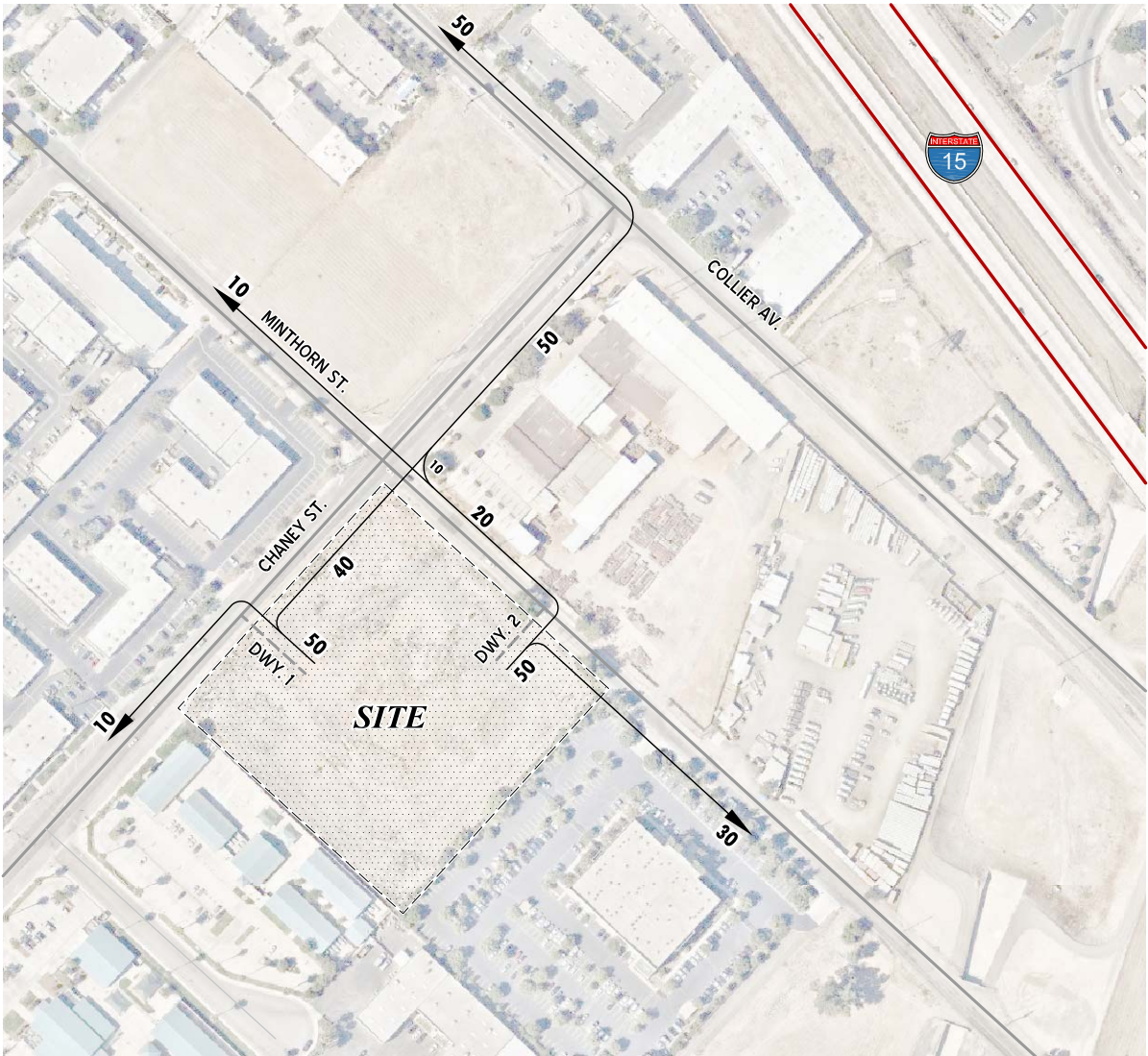


LEGEND:

- ① ■ INTERSECTION ANALYSIS LOCATION
- ■ FUTURE ROADWAY



EXHIBIT 3: PROJECT TRIP DISTRIBUTION



LEGEND:

10 ■ PERCENT TO/FROM PROJECT



EXHIBIT 4: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP

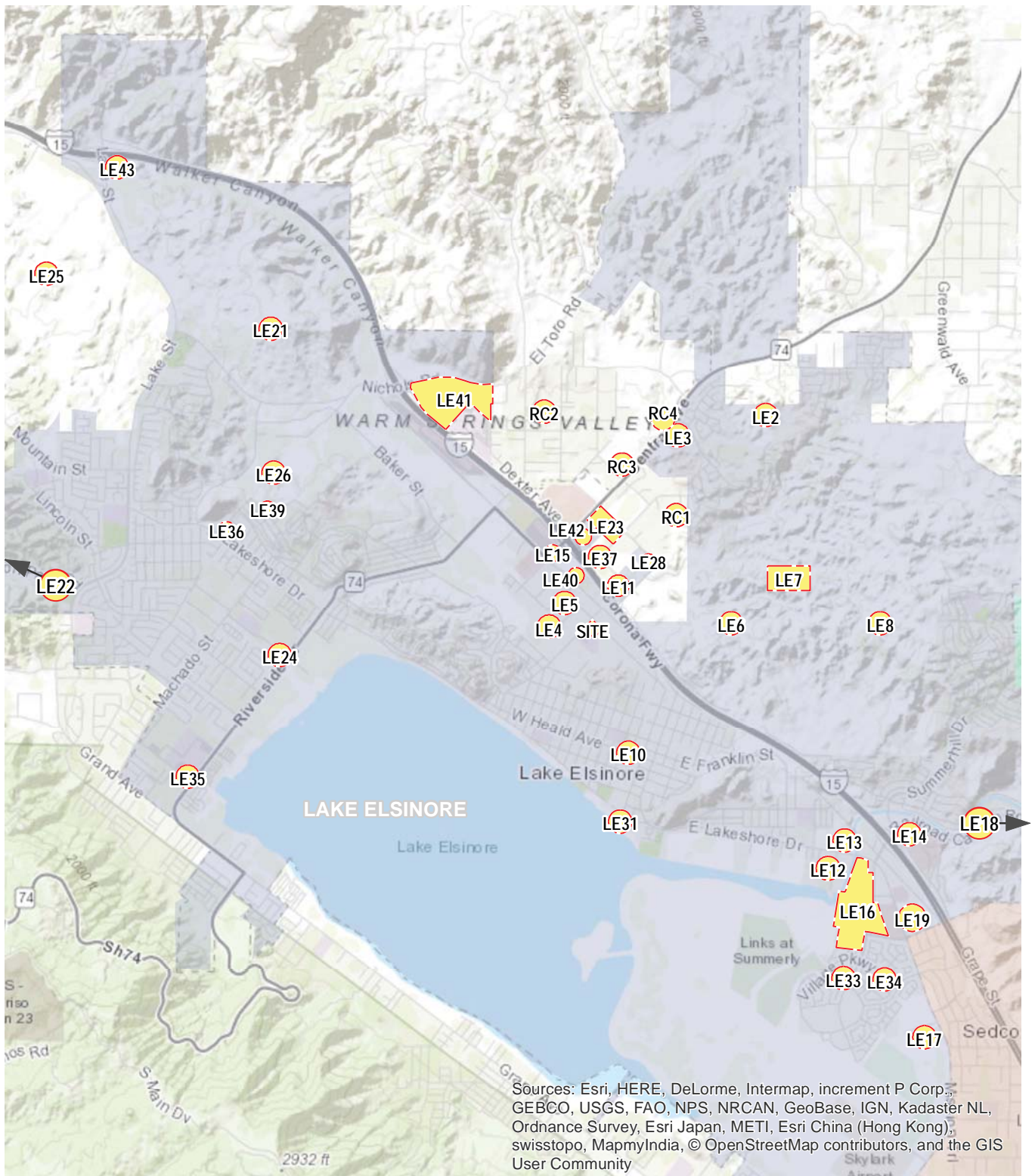


TABLE 2: SUMMARY OF CUMULATIVE DEVELOPMENT PROJECTS

No.	Project Name	Location	Land Use	Quantity ¹	Notes
City of Lake Elsinore					
LE1	Greenwald ²	Lake Elsinore	Shopping Center	104.450	TSF
LE2	Ramsgate	Lake Elsinore	Single Family Residential	1,306	DU
			Condo/Townhomes	120	DU
LE3	Trieste Residential (Tract 36624)	Lake Elsinore	Single Family Residential	75	DU
LE4	Fairway Business Park ⁶	Lake Elsinore	Warehouse	279.445	TSF
LE5	Ness Industrial Garage	Lake Elsinore	Warehouse	12	TSF
LE6	Spyglass Ranch ³	Lake Elsinore	Single Family Residential	523	DU
			Condo/Townhomes	171	DU
			Shopping Center	145.00	TSF
LE7	South Shore I (Tract 31593)	Lake Elsinore	Single Family Residential	521	DU
	South Shore II (Tract 36567)	Lake Elsinore	Single Family Residential	147	DU
LE8	La Strada (Tract 32077)	Lake Elsinore	Single Family Residential	134	DU
LE10	Marina Village Condos (Tract 33820) ⁶	Lake Elsinore	Condo/Townhomes	94	DU
LE11	La Quinta Inn	Lake Elsinore	Hotel	64	RM
LE12	LE Sports Complex	Lake Elsinore	Recreational Community Center	525.000	TSF
LE13	TAG Property ⁴	Lake Elsinore	New Car Sales	50.000	TSF
LE14	City Center Condos ⁴	Lake Elsinore	Condo/Townhomes	144	DU
LE15	Central & Collier	Lake Elsinore	Shopping Center	75.000	TSF
LE16	Diamond Specific Plan ⁵	Lake Elsinore	Condo/Townhomes	600	DU
			Hotel	150	RM
			General Office	425.000	TSF
			Shopping Center	472.000	TSF
LE17	The Colony ⁴	Lake Elsinore	Apartments	211	DU
	Back Basin Specific Plan & East Lake Specific Plan	Lake Elsinore	Single Family Residential	2,407	DU
			Condo/Townhomes	324	DU
	John Laing Homes (Phase 2)	Lake Elsinore	Single Family Residential	506	DU
			Condo/Townhomes	1,141	DU
			Apartments	308	DU
			Shopping Center	117.000	TSF
LE18	Canyon Hills Estates (Tract 34249)	Lake Elsinore	Single Family Residential	302	DU
	Canyon Hills (Multiple Tracts)	Lake Elsinore	Single Family Residential	2,700	DU
			Apartments	1,575	DU
	Audie Murphy (Tract 36485)	Lake Elsinore	Single Family Residential	1,003	DU
LE19	Artisan Alley	Lake Elsinore	Shopping Center	95.100	TSF
LE21	Alberhill Ridge (Tract 35001)	Lake Elsinore	Single Family Residential	1,056	DU
			Apartments	345	DU
			Shopping Center	679.000	TSF
			General Office	679.000	TSF
LE22	Alberhill Ranch	Lake Elsinore	Single Family Residential	1,986	DU
LE23	Lake Elsinore Walmart	Lake Elsinore	Free-Standing Discount Superstore	154.487	TSF
			Specialty Retail	4.600	TSF
			Fast Food w/Drive Thru	6.800	TSF
			Fast Food w/o Drive Thru	4.600	TSF
LE24	Circle K	Lake Elsinore	Gas Station	4.500	TSF

TABLE 2: SUMMARY OF CUMULATIVE DEVELOPMENT PROJECTS

No.	Project Name	Location	Land Use	Quantity ¹	Notes
LE25	Alberhill Villages	Lake Elsinore	Single Family Residential	8,244	DU
			Non-Residential	4,007	TSF
			University or similar use	6,000	STU
LE26	Terracina	Lake Elsinore	Single Family Residential	365	DU
LE28	North Peak Plaza	Lake Elsinore	Condo/Townhomes	92	DU
			Shopping Center	92.000	TSF
LE29	Running Deer (TR 31957)		Single Family Residential	101	DU
LE31	Lakeshore Town Center	Lake Elsinore	Town Center	237.400	TSF
LE33	Summerly	Lake Elsinore	Single Family Residential	142	DU
LE34	Beazer, KB Homes, McMillin Homes, Richmond American	Lake Elsinore	Single Family Residential	395	DU
LE35	Village at Lake Elsinore SPA #1	Lake Elsinore	Single Family Residential	163	DU
LE36	Lakeview Manor	Lake Elsinore	Condo/Townhomes	104	DU
LE37	Golden Corral Restaurant	Lake Elsinore	Restaurant	7.798	TSF
LE38	Tige Watersports	Lake Elsinore	Shopping Center	34.500	TSF
LE39	Kassab Travel Center	Lake Elsinore	High Turnover (Sit-Down) Restaurant	17.200	TSF
LE40	Honda	Lake Elsinore	Automobile Sales	53.400	TSF
LE41	Nichols Ranch	Lake Elsinore	Single Family Residential	168	DU
			Hotel	130	RM
			Gas Station w/ Market	16	VFP
			Office	43.00	TSF
			Retail	4.40	TSF
			Health & Fitness Club	8.00	TSF
			Fast Food w/ Drive-Through	6.00	TSF
			Fast Food w/o Drive-Through	5.50	TSF
			High Turnover (Sit-Down) Restaurant	9.40	TSF
			Park	8.30	AC
LE42	Chick-Fil-A	Lake Elsinore	Fast-Food with Drive-Thru	4.800	TSF
LE43	Lake Street Storage	Lake Elsinore	Indoor RV &Boat Storage	13.340	AC
			Gas station, mini-mart	12	VFP
County of Riverside					
RC1	Lennar (Tract 31792)	County of Riverside	Single Family Residential	191	DU
RC2	PM33840	County of Riverside	Single Family Residential	4	DU
RC3	PP20158R1	County of Riverside	Storage Facility	103.727	TSF
RC4	CUP03651	County of Riverside	Recycling Facility	0.504	TSF

¹ TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; STU = Students; VFP = Vehicle Fueling Positions

² Source: Greenwald Avenue Commercial Center TIA, Urban Crossroads, Inc., May 2008.

³ Source: Spyglass Ranch TIA (Revised), Kunzman Associates, February 2007.

⁴ Source: Lake Elsinore TAG Property TIA (Revised), Urban Crossroads, Inc., August 2008.

⁵ Source: The Diamond Specific Plan TIA, Urban Crossroads, Inc., April 2009.

⁶ Source: Fairway Business Park Traffic Impact Analysis Trip Generation Comparison, Kunzman Associates, April 2007.

EXHIBIT 5: CITY OF LAKE ELSINORE GENERAL PLAN ROADWAY CLASSIFICATIONS



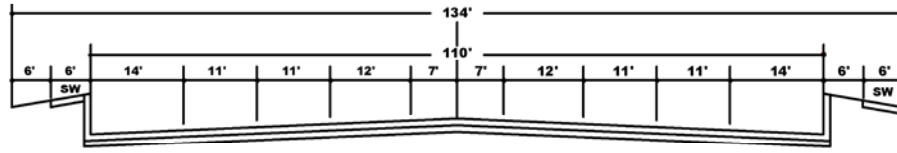
Legend

CITY CLASSIFICATION

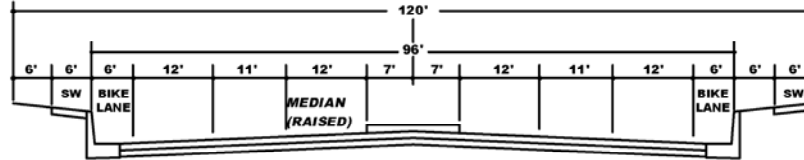
- AUGMENTED URBAN ARTERIAL (8-LANES)
- URBAN ARTERIAL (6-LANES / 120' R.O.W.)
- MAJOR (4-LANES / 100' R.O.W.)
- SECONDARY (4-LANES / 90' R.O.W.)
- DIVIDED COLLECTOR
(2-LANES W/ POTENTIAL AUGMENTED INTERSECTIONS)
- COLLECTOR (2-LANES / 68' R.O.W.)
- FREEWAY, RAMPS



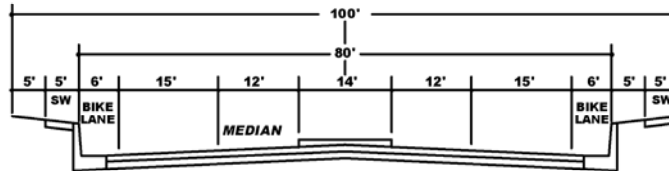
EXHIBIT 6: CITY OF LAKE ELSINORE GENERAL PLAN ROADWAY CROSS-SECTIONS



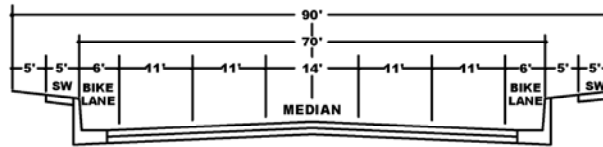
AUGMENTED URBAN ARTERIAL - STATE HIGHWAY
(8-LANE)



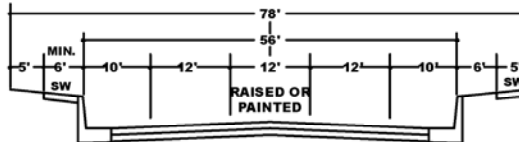
URBAN ARTERIAL HIGHWAY
(6-LANE)



MAJOR HIGHWAY
(4-LANE)

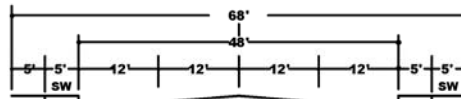


SECONDARY HIGHWAY
(4-LANE)

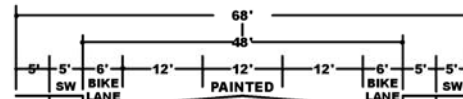


DIVIDED COLLECTOR
(2-LANE)

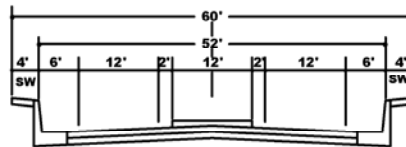
BIKES USE SHOULDER



COLLECTOR HIGHWAY
(4-LANE)



COLLECTOR HIGHWAY
(2-LANE)



NEW SPECIAL ROADWAY
(2-LANE)

SHOULDER/BIKE LANE

(PROPOSED FOR LAKESHORE DRIVE IN THE COUNTRY CLUB HEIGHT DISTRICT)

* 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.

STRIPING OF COLLECTOR HIGHWAY AS DIRECTED BY CITY ENGINEER.

SOURCE: CITY OF LAKE ELSINORE GENERAL PLAN (ADOPTED 12-13-2011)

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ATTACHMENT 2:

EXISTING TRAFFIC COUNTS

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City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 1

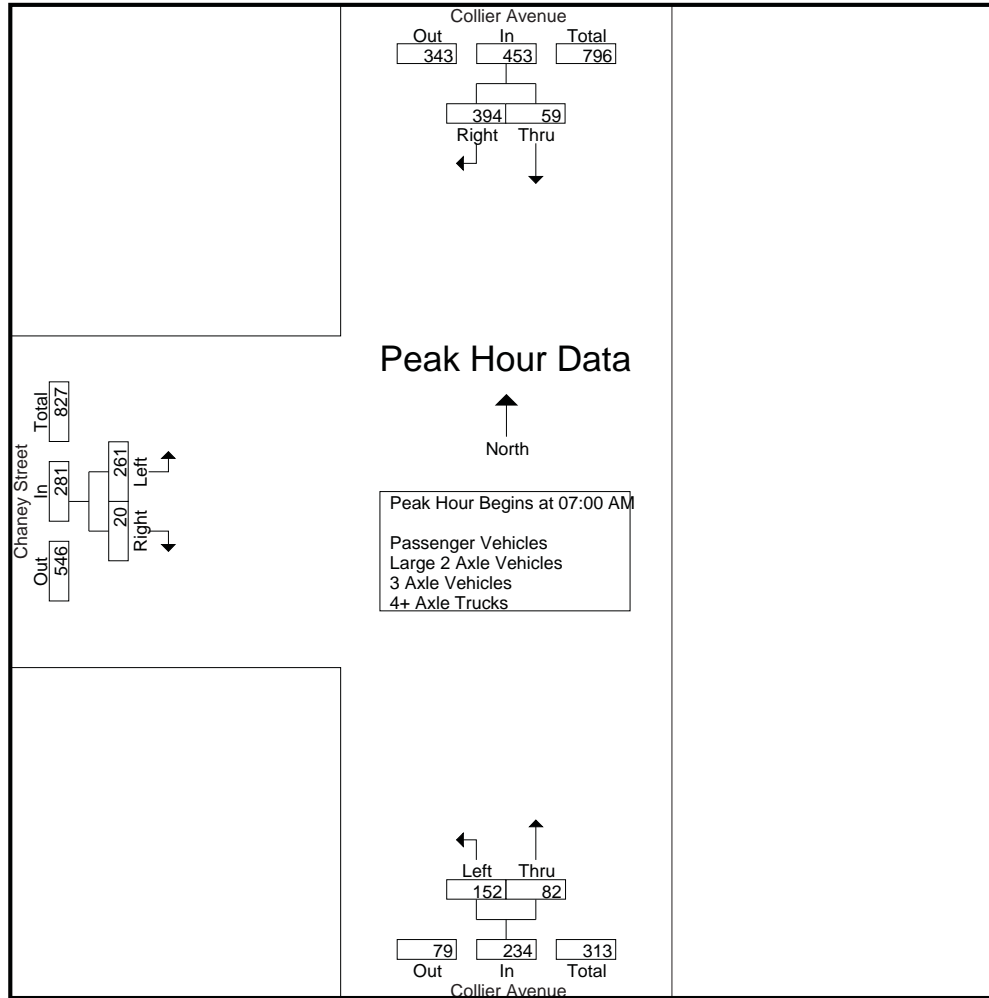
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	8	113	121	31	12	43	75	2	77	241
07:15 AM	6	119	125	38	23	61	77	1	78	264
07:30 AM	27	101	128	47	25	72	61	5	66	266
07:45 AM	18	61	79	36	22	58	48	12	60	197
Total	59	394	453	152	82	234	261	20	281	968
08:00 AM	28	44	72	28	23	51	45	14	59	182
08:15 AM	16	57	73	31	26	57	55	14	69	199
08:30 AM	23	32	55	14	19	33	44	18	62	150
08:45 AM	20	33	53	10	26	36	35	8	43	132
Total	87	166	253	83	94	177	179	54	233	663
Grand Total	146	560	706	235	176	411	440	74	514	1631
Apprch %	20.7	79.3		57.2	42.8		85.6	14.4		
Total %	9	34.3	43.3	14.4	10.8	25.2	27	4.5	31.5	
Passenger Vehicles	145	547	692	230	175	405	420	72	492	1589
% Passenger Vehicles	99.3	97.7	98	97.9	99.4	98.5	95.5	97.3	95.7	97.4
Large 2 Axle Vehicles	1	11	12	5	1	6	19	1	20	38
% Large 2 Axle Vehicles	0.7	2	1.7	2.1	0.6	1.5	4.3	1.4	3.9	2.3
3 Axle Vehicles	0	1	1	0	0	0	0	0	0	1
% 3 Axle Vehicles	0	0.2	0.1	0	0	0	0	0	0	0.1
4+ Axle Trucks	0	1	1	0	0	0	1	1	2	3
% 4+ Axle Trucks	0	0.2	0.1	0	0	0	0.2	1.4	0.4	0.2

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	8	113	121	31	12	43	75	2	77	241
07:15 AM	6	119	125	38	23	61	77	1	78	264
07:30 AM	27	101	128	47	25	72	61	5	66	266
07:45 AM	18	61	79	36	22	58	48	12	60	197
Total Volume	59	394	453	152	82	234	261	20	281	968
% App. Total	13	87		65	35		92.9	7.1		
PHF	.546	.828	.885	.809	.820	.813	.847	.417	.901	.910

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			07:00 AM		
+0 mins.	8	113	121	38	23	61	75	2	77
+15 mins.	6	119	125	47	25	72	77	1	78
+30 mins.	27	101	128	36	22	58	61	5	66
+45 mins.	18	61	79	28	23	51	48	12	60
Total Volume	59	394	453	149	93	242	261	20	281
% App. Total	13	87		61.6	38.4		92.9	7.1	
PHF	.546	.828	.885	.793	.930	.840	.847	.417	.901

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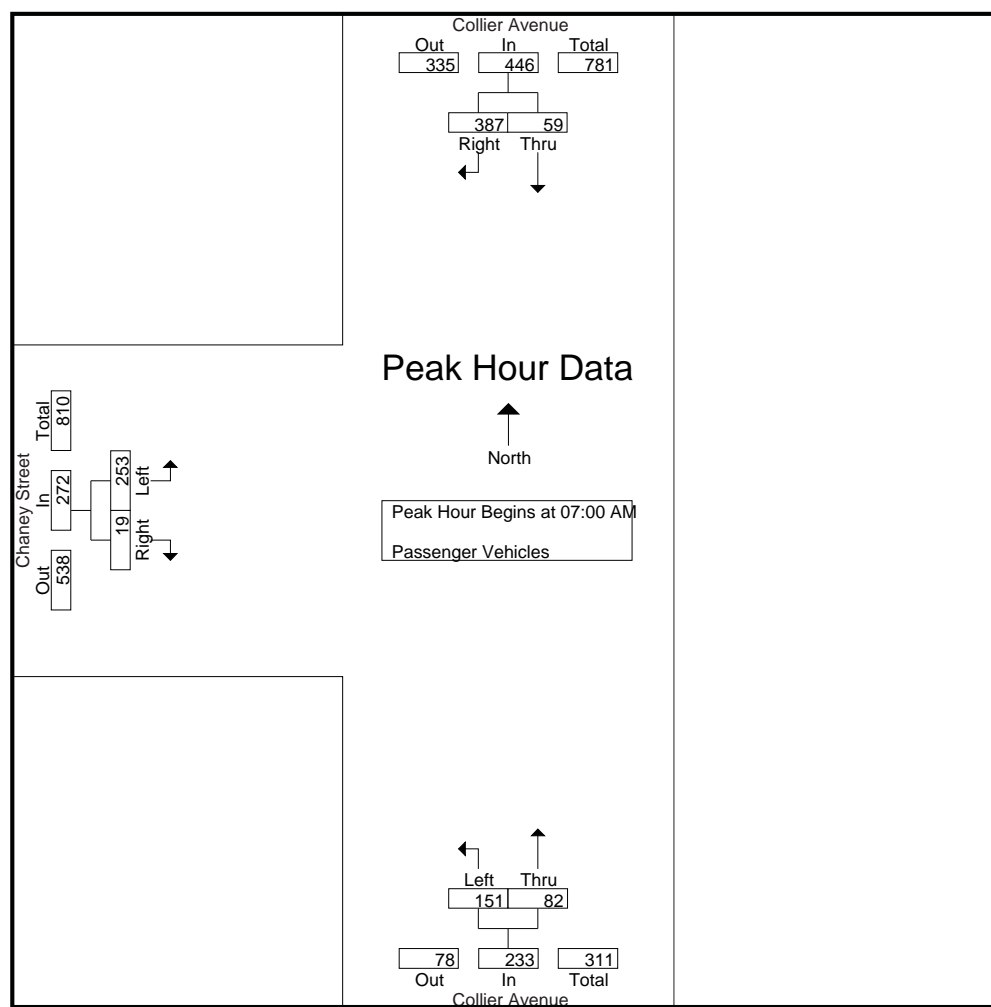
Groups Printed- Passenger Vehicles

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	8	111	119	31	12	43	74	2	76	238
07:15 AM	6	117	123	38	23	61	75	1	76	260
07:30 AM	27	99	126	46	25	71	59	5	64	261
07:45 AM	18	60	78	36	22	58	45	11	56	192
Total	59	387	446	151	82	233	253	19	272	951
08:00 AM	27	43	70	25	22	47	40	14	54	171
08:15 AM	16	56	72	31	26	57	54	14	68	197
08:30 AM	23	32	55	14	19	33	40	17	57	145
08:45 AM	20	29	49	9	26	35	33	8	41	125
Total	86	160	246	79	93	172	167	53	220	638
Grand Total	145	547	692	230	175	405	420	72	492	1589
Apprch %	21	79		56.8	43.2		85.4	14.6		
Total %	9.1	34.4	43.5	14.5	11	25.5	26.4	4.5	31	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
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07:30 AM	27	99	126	46	25	71	59	5	64	261
07:45 AM	18	60	78	36	22	58	45	11	56	192
Total Volume	59	387	446	151	82	233	253	19	272	951
% App. Total	13.2	86.8		64.8	35.2		93	7		
PHF	.546	.827	.885	.821	.820	.820	.843	.432	.895	.911

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
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Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	8	111	119	31	12	43	74	2	76
+15 mins.	6	117	123	38	23	61	75	1	76
+30 mins.	27	99	126	46	25	71	59	5	64
+45 mins.	18	60	78	36	22	58	45	11	56
Total Volume	59	387	446	151	82	233	253	19	272
% App. Total	13.2	86.8		64.8	35.2		93	7	
PHF	.546	.827	.885	.821	.820	.820	.843	.432	.895

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N/S: Collier Avenue
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File Name : LKECOCHAM
Site Code : 05119399
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Page No : 1

Groups Printed- Large 2 Axle Vehicles

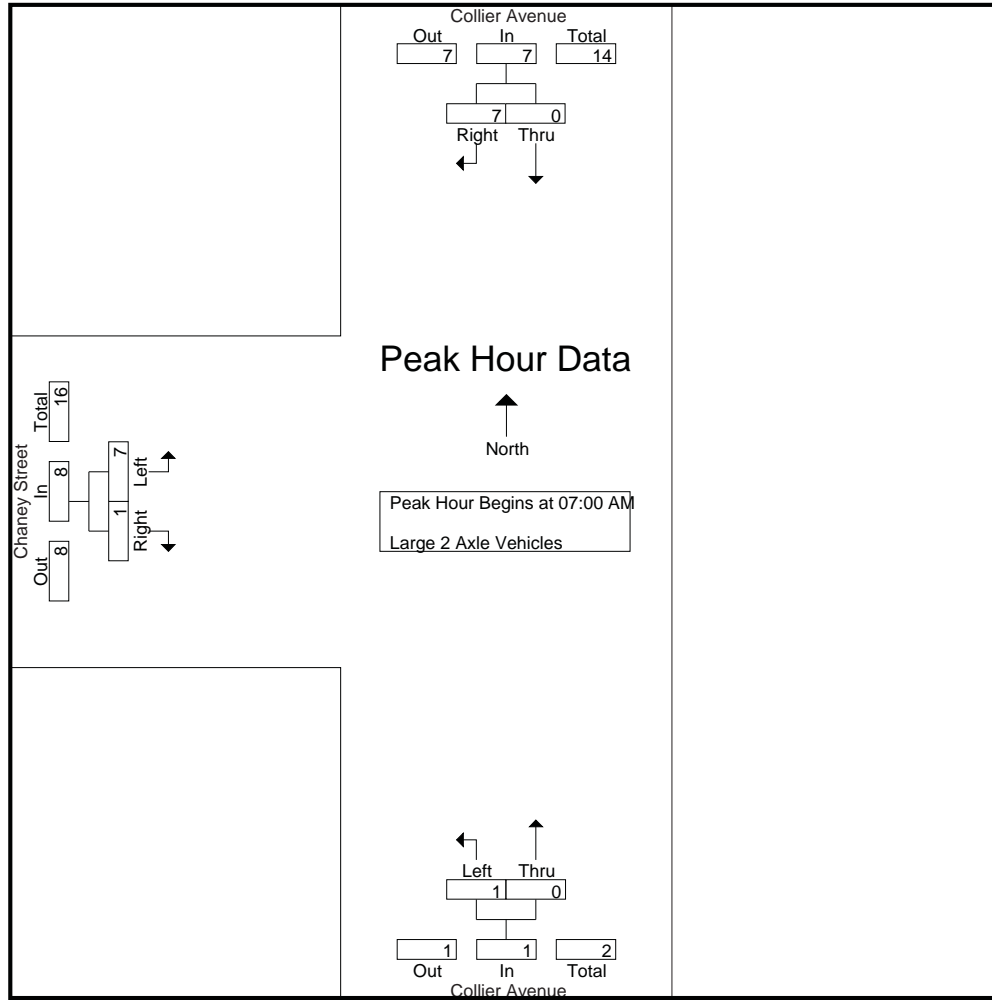
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	2	2	0	0	0	1	0	1	3
07:15 AM	0	2	2	0	0	0	1	0	1	3
07:30 AM	0	2	2	1	0	1	2	0	2	5
07:45 AM	0	1	1	0	0	0	3	1	4	5
Total	0	7	7	1	0	1	7	1	8	16
08:00 AM	1	1	2	3	1	4	5	0	5	11
08:15 AM	0	1	1	0	0	0	1	0	1	2
08:30 AM	0	0	0	0	0	0	4	0	4	4
08:45 AM	0	2	2	1	0	1	2	0	2	5
Total	1	4	5	4	1	5	12	0	12	22
Grand Total	1	11	12	5	1	6	19	1	20	38
Apprch %	8.3	91.7		83.3	16.7		95	5		
Total %	2.6	28.9	31.6	13.2	2.6	15.8	50	2.6	52.6	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	2	2	0	0	0	1	0	1	3
07:15 AM	0	2	2	0	0	0	1	0	1	3
07:30 AM	0	2	2	1	0	1	2	0	2	5
07:45 AM	0	1	1	0	0	0	3	1	4	5
Total Volume	0	7	7	1	0	1	7	1	8	16
% App. Total	0	100		100	0		87.5	12.5		
PHF	.000	.875	.875	.250	.000	.250	.583	.250	.500	.800

2-AXLE
PASSENGER CAR EQUIVALENT (PCE) = 1.5

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
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Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	2	2	0	0	0	1	0	1
+15 mins.	0	2	2	0	0	0	1	0	1
+30 mins.	0	2	2	1	0	1	2	0	2
+45 mins.	0	1	1	0	0	0	3	1	4
Total Volume	0	7	7	1	0	1	7	1	8
% App. Total	0	100		100	0		87.5	12.5	
PHF	.000	.875	.875	.250	.000	.250	.583	.250	.500

2-AXLE
PCE = 1.5

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 1

Groups Printed- 3 Axle Vehicles

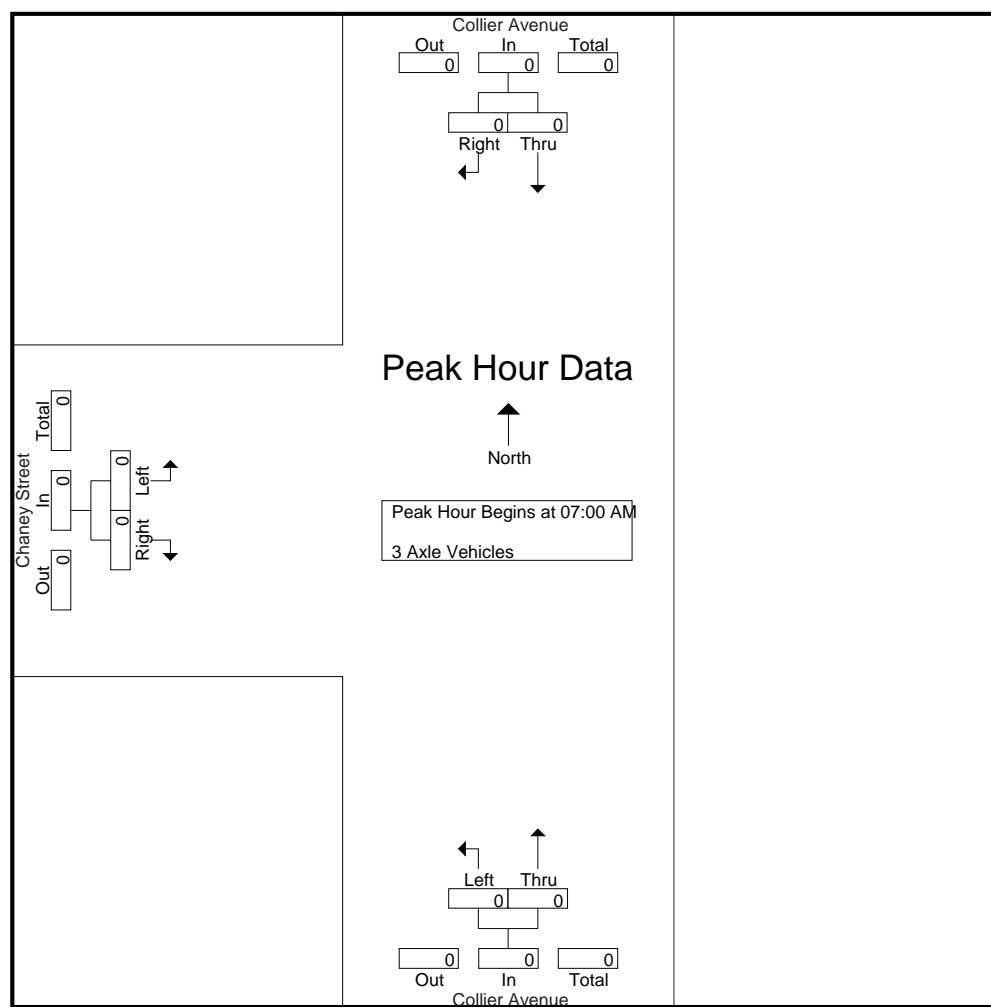
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	1	0	0	0	0	0	0	1
Total	0	1	1	0	0	0	0	0	0	1
Grand Total	0	1	1	0	0	0	0	0	0	1
Apprch %	0	100		0	0		0	0		
Total %	0	100	100	0	0	0	0	0	0	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

3-AXLE
PCE = 2.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

3-AXLE
PCE = 2.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 1

Groups Printed- 4+ Axle Trucks

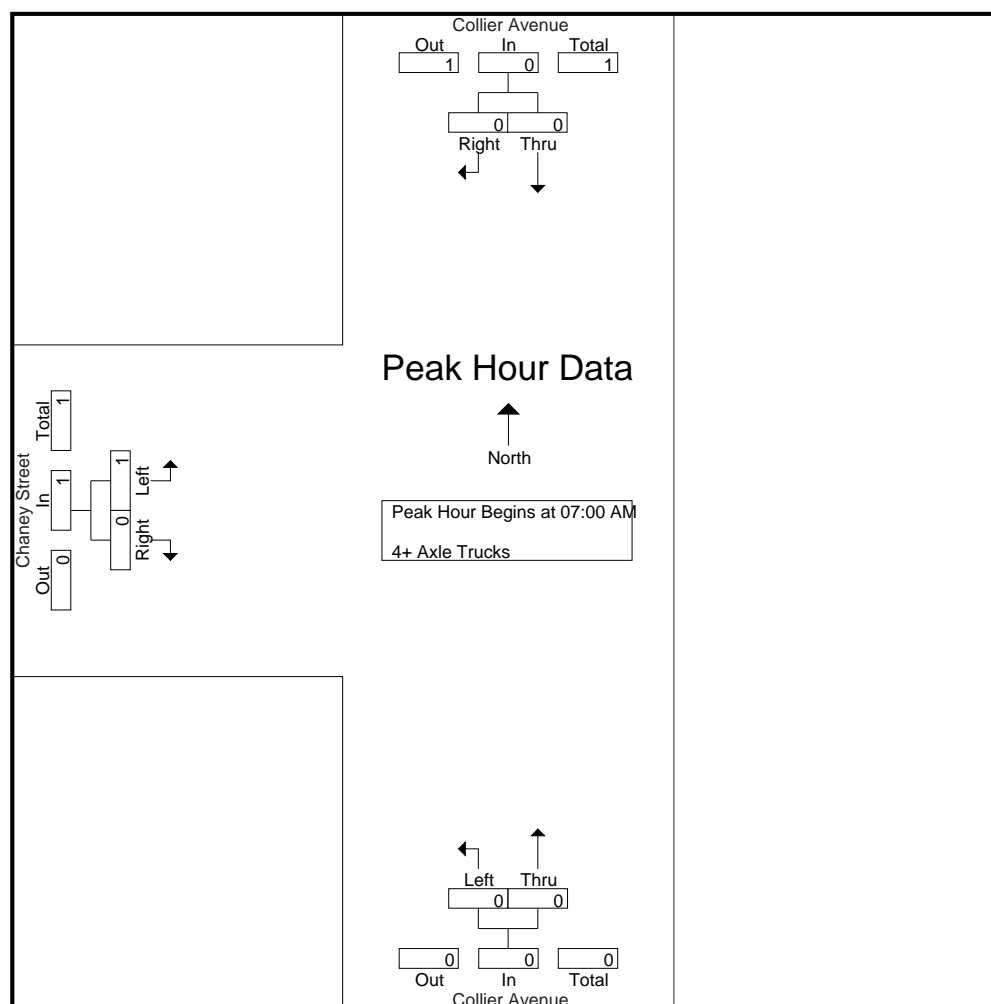
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	1	1	1
08:45 AM	0	1	1	0	0	0	0	0	0	1
Total	0	1	1	0	0	0	0	1	1	2
Grand Total	0	1	1	0	0	0	1	1	2	3
Apprch %	0	100		0	0		50	50		
Total %	0	33.3	33.3	0	0	0	33.3	33.3	66.7	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1	1
% App. Total	0	0		0	0		100	0		
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

4-AXLE
PCE = 3.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHAM
Site Code : 05119399
Start Date : 5/29/2019
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Peak Hour Analysis From 07:00 AM to 07:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	1	0	1
% App. Total	0	0	0	0	0	0	100	0	100
PHF	.000	.000	.000	.000	.000	.000	.250	.000	.250

4-AXLE
PCE = 3.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
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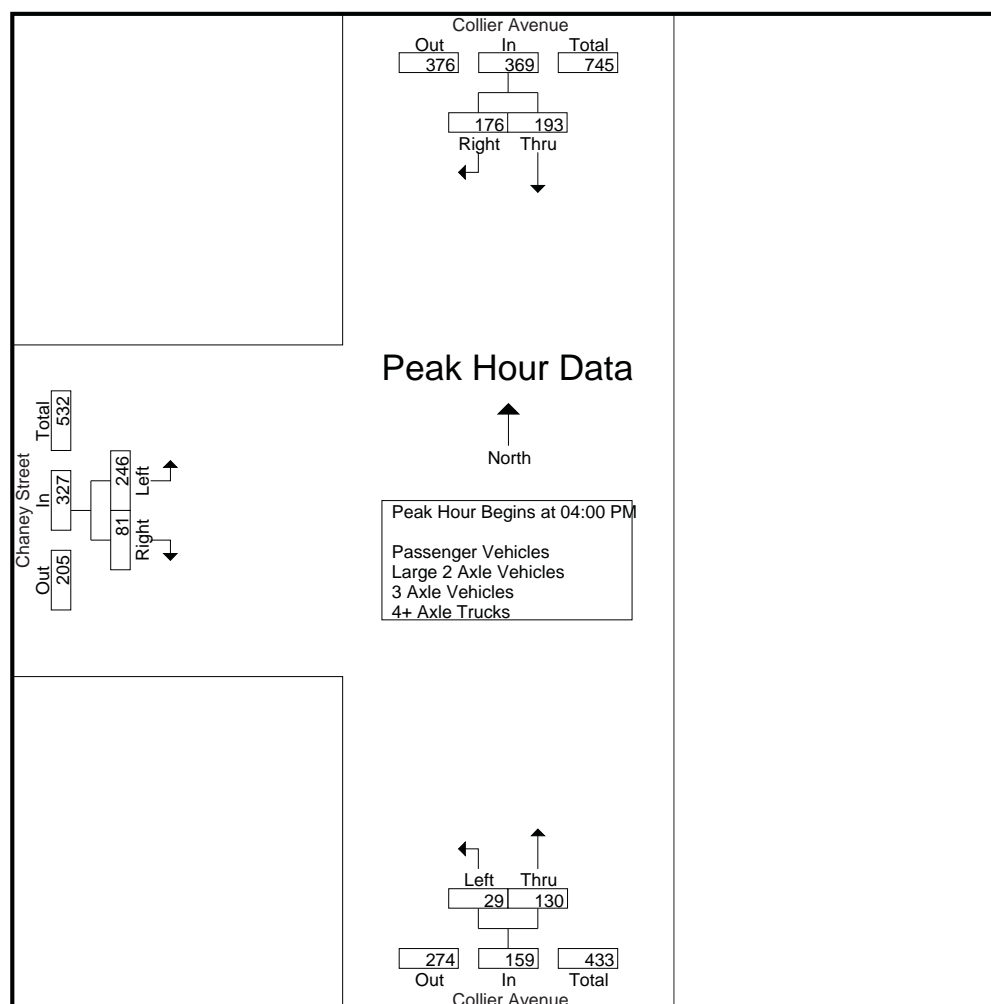
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	44	50	94	12	29	41	70	18	88	223
04:15 PM	46	35	81	7	30	37	41	13	54	172
04:30 PM	49	52	101	6	31	37	84	30	114	252
04:45 PM	54	39	93	4	40	44	51	20	71	208
Total	193	176	369	29	130	159	246	81	327	855
05:00 PM	54	32	86	5	37	42	58	9	67	195
05:15 PM	54	36	90	7	22	29	46	8	54	173
05:30 PM	30	37	67	4	28	32	83	8	91	190
05:45 PM	44	33	77	2	32	34	37	4	41	152
Total	182	138	320	18	119	137	224	29	253	710
Grand Total	375	314	689	47	249	296	470	110	580	1565
Apprch %	54.4	45.6		15.9	84.1		81	19		
Total %	24	20.1	44	3	15.9	18.9	30	7	37.1	
Passenger Vehicles	373	308	681	44	247	291	464	109	573	1545
% Passenger Vehicles	99.5	98.1	98.8	93.6	99.2	98.3	98.7	99.1	98.8	98.7
Large 2 Axle Vehicles	1	5	6	2	0	2	5	0	5	13
% Large 2 Axle Vehicles	0.3	1.6	0.9	4.3	0	0.7	1.1	0	0.9	0.8
3 Axle Vehicles	1	0	1	0	2	2	0	0	0	3
% 3 Axle Vehicles	0.3	0	0.1	0	0.8	0.7	0	0	0	0.2
4+ Axle Trucks	0	1	1	1	0	1	1	1	2	4
% 4+ Axle Trucks	0	0.3	0.1	2.1	0	0.3	0.2	0.9	0.3	0.3

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	44	50	94	12	29	41	70	18	88	223
04:15 PM	46	35	81	7	30	37	41	13	54	172
04:30 PM	49	52	101	6	31	37	84	30	114	252
04:45 PM	54	39	93	4	40	44	51	20	71	208
Total Volume	193	176	369	29	130	159	246	81	327	855
% App. Total	52.3	47.7		18.2	81.8		75.2	24.8		
PHF	.894	.846	.913	.604	.813	.903	.732	.675	.717	.848

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:15 PM			04:00 PM		
+0 mins.	49	52	101	7	30	37	70	18	88
+15 mins.	54	39	93	6	31	37	41	13	54
+30 mins.	54	32	86	4	40	44	84	30	114
+45 mins.	54	36	90	5	37	42	51	20	71
Total Volume	211	159	370	22	138	160	246	81	327
% App. Total	57	43		13.8	86.2		75.2	24.8	
PHF	.977	.764	.916	.786	.863	.909	.732	.675	.717

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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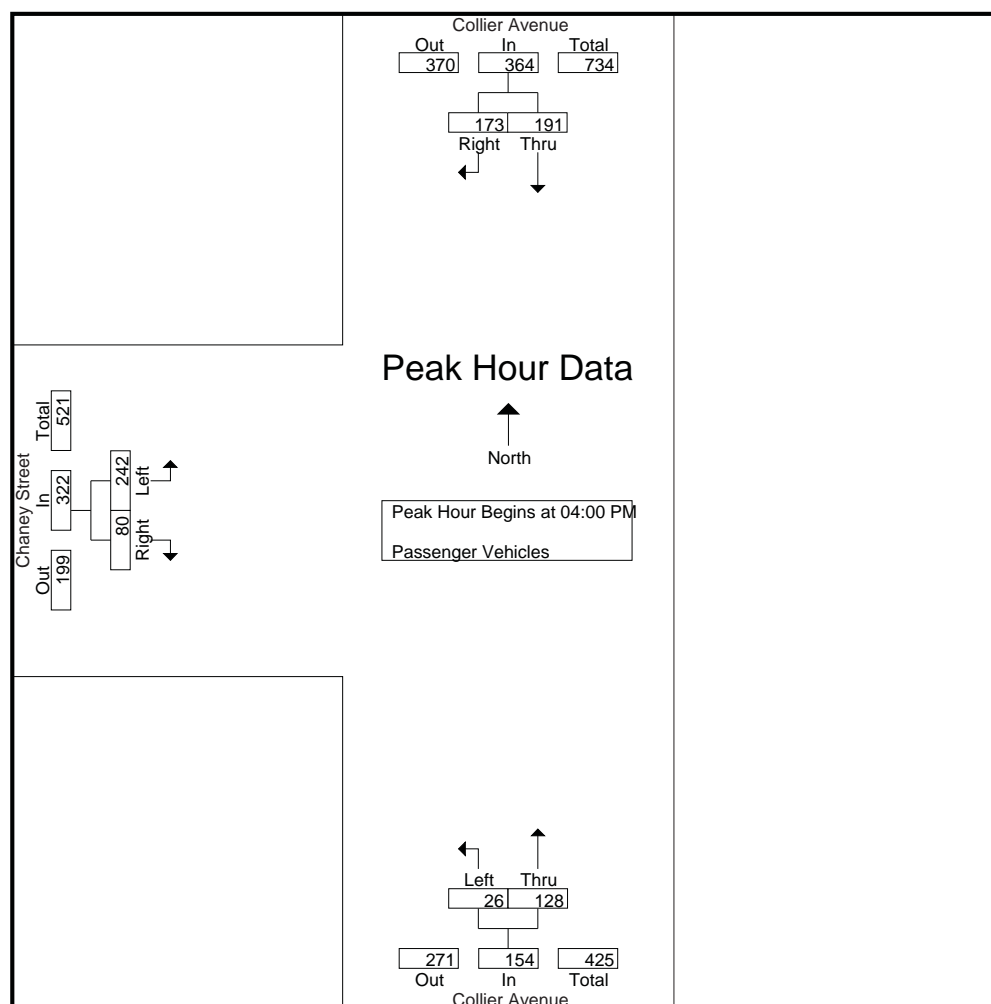
Groups Printed- Passenger Vehicles

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	44	49	93	10	28	38	68	17	85	216
04:15 PM	46	33	79	6	30	36	41	13	54	169
04:30 PM	48	52	100	6	31	37	82	30	112	249
04:45 PM	53	39	92	4	39	43	51	20	71	206
Total	191	173	364	26	128	154	242	80	322	840
05:00 PM	54	32	86	5	37	42	57	9	66	194
05:15 PM	54	34	88	7	22	29	46	8	54	171
05:30 PM	30	37	67	4	28	32	83	8	91	190
05:45 PM	44	32	76	2	32	34	36	4	40	150
Total	182	135	317	18	119	137	222	29	251	705
Grand Total	373	308	681	44	247	291	464	109	573	1545
Apprch %	54.8	45.2		15.1	84.9		81	19		
Total %	24.1	19.9	44.1	2.8	16	18.8	30	7.1	37.1	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	44	49	93	10	28	38	68	17	85	216
04:15 PM	46	33	79	6	30	36	41	13	54	169
04:30 PM	48	52	100	6	31	37	82	30	112	249
04:45 PM	53	39	92	4	39	43	51	20	71	206
Total Volume	191	173	364	26	128	154	242	80	322	840
% App. Total	52.5	47.5		16.9	83.1		75.2	24.8		
PHF	.901	.832	.910	.650	.821	.895	.738	.667	.719	.843

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	44	49	93	10	28	38	68	17	85
+15 mins.	46	33	79	6	30	36	41	13	54
+30 mins.	48	52	100	6	31	37	82	30	112
+45 mins.	53	39	92	4	39	43	51	20	71
Total Volume	191	173	364	26	128	154	242	80	322
% App. Total	52.5	47.5		16.9	83.1		75.2	24.8	
PHF	.901	.832	.910	.650	.821	.895	.738	.667	.719

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Groups Printed- Large 2 Axle Vehicles

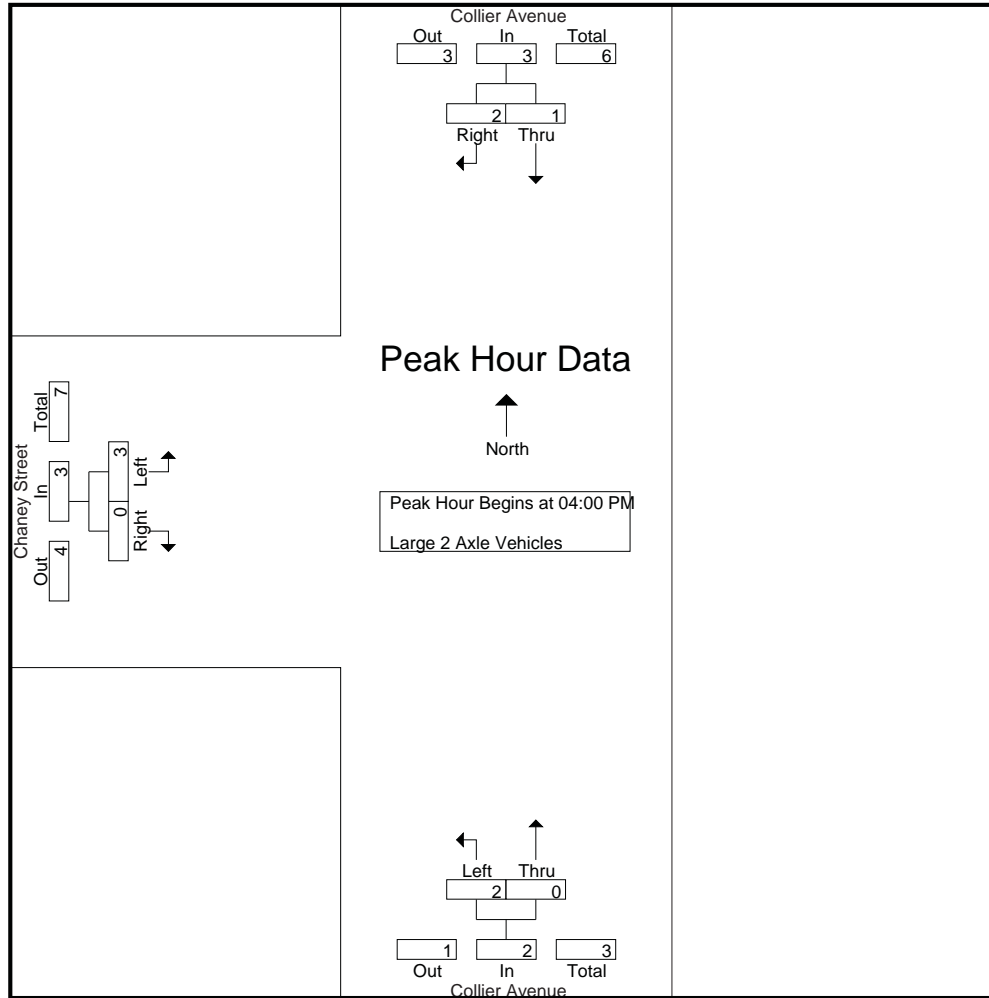
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	1	1	2	0	2	2	0	2	5
04:15 PM	0	1	1	0	0	0	0	0	0	1
04:30 PM	1	0	1	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	1	2	3	2	0	2	3	0	3	8
05:00 PM	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	2	2	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	1	1	0	0	0	1	0	1	2
Total	0	3	3	0	0	0	2	0	2	5
Grand Total	1	5	6	2	0	2	5	0	5	13
Apprch %	16.7	83.3		100	0		100	0		
Total %	7.7	38.5	46.2	15.4	0	15.4	38.5	0	38.5	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	1	1	2	0	2	2	0	2	5
04:15 PM	0	1	1	0	0	0	0	0	0	1
04:30 PM	1	0	1	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	1	2	3	2	0	2	3	0	3	8
% App. Total	33.3	66.7		100	0		100	0		
PHF	.250	.500	.750	.250	.000	.250	.375	.000	.375	.400

2-AXLE
PCE = 1.5

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	1	1	2	0	2	2	0	2
+15 mins.	0	1	1	0	0	0	0	0	0
+30 mins.	1	0	1	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	1	2	3	2	0	2	3	0	3
% App. Total	33.3	66.7		100	0		100	0	
PHF	.250	.500	.750	.250	.000	.250	.375	.000	.375

2-AXLE
PCE = 1.5

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Groups Printed- 3 Axle Vehicles

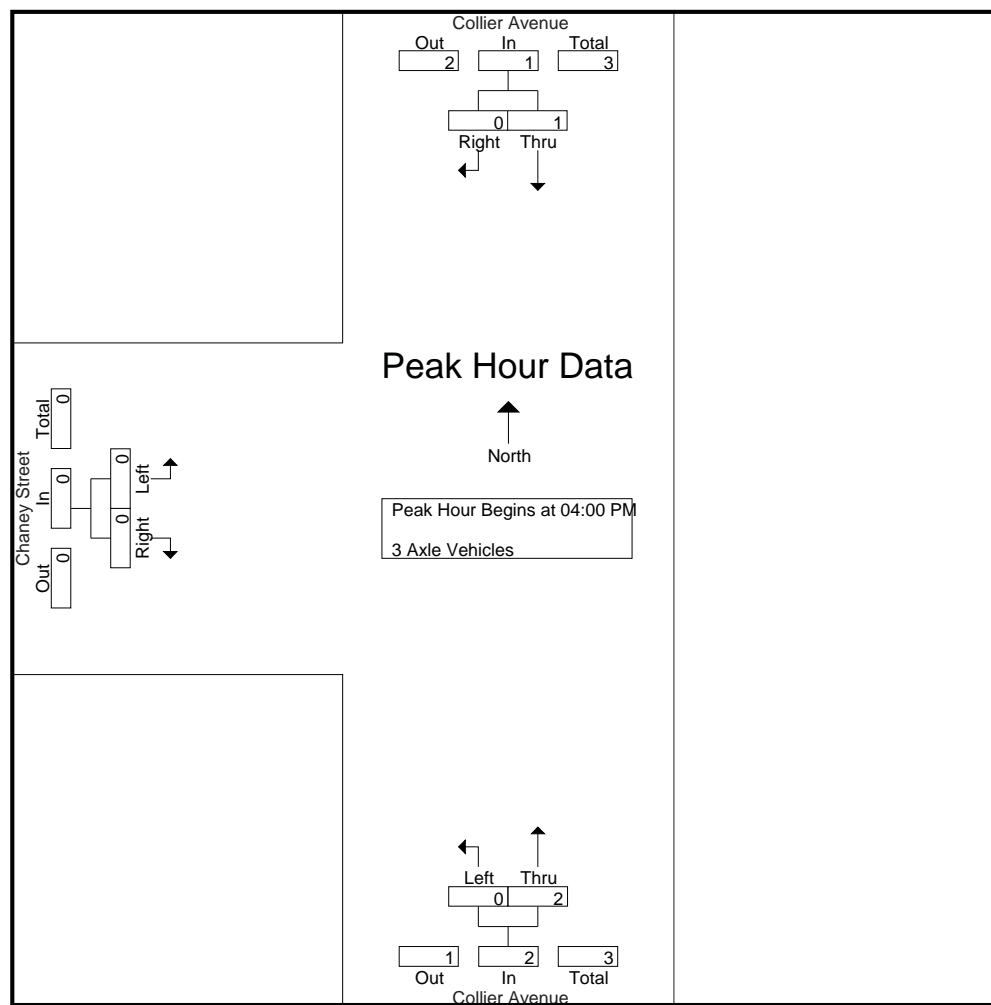
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	1	1	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	1	0	1	1	0	0	0	2
Total	1	0	1	0	2	2	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	1	0	2	2	0	0	0	3
Apprch %	100	0		0	100		0	0		
Total %	33.3	0	33.3	0	66.7	66.7	0	0	0	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	1	1	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	1	0	1	1	0	0	0	2
Total Volume	1	0	1	0	2	2	0	0	0	3
% App. Total	100	0		0	100		0	0		
PHF	.250	.000	.250	.000	.500	.500	.000	.000	.000	.375

3-AXLE
PCE = 2.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
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Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	1	1	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	1	0	1	0	1	1	0	0	0
Total Volume	1	0	1	0	2	2	0	0	0
% App. Total	100	0		0	100		0	0	
PHF	.250	.000	.250	.000	.500	.500	.000	.000	.000

3-AXLE
PCE = 2.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 1

Groups Printed- 4+ Axle Trucks

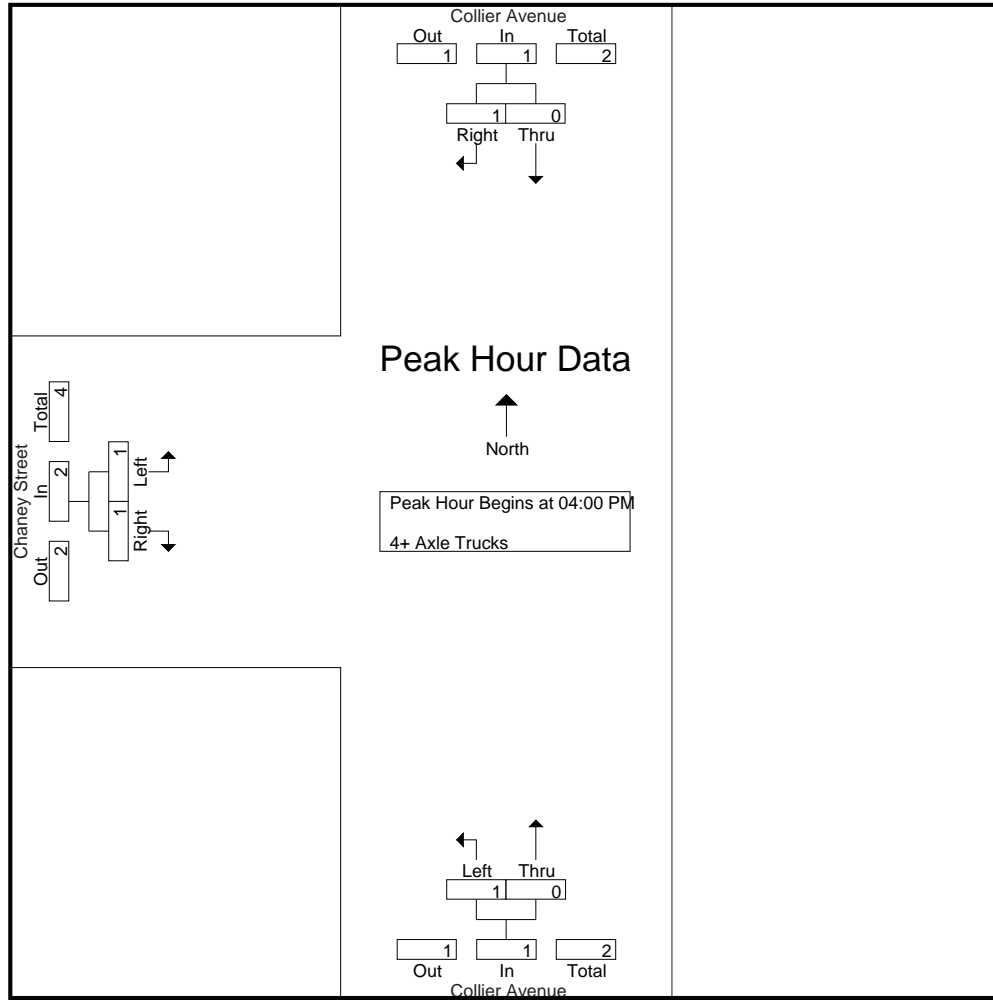
	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	1	1	1
04:15 PM	0	1	1	1	0	1	0	0	0	2
04:30 PM	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	1	0	1	1	1	2	4
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	1	1	0	1	1	1	2	4
Apprch %	0	100		100	0		50	50		
Total %	0	25	25	25	0	25	25	25	50	

	Collier Avenue Southbound			Collier Avenue Northbound			Chaney Street Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	0	0	0	0	1	1	1
04:15 PM	0	1	1	1	0	1	0	0	0	2
04:30 PM	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	1	0	1	1	1	2	4
% App. Total	0	100		100	0		50	50		
PHF	.000	.250	.250	.250	.000	.250	.250	.250	.500	.500

4-AXLE
PCE = 3.0

City of Lake Elsinore
N/S: Collier Avenue
E/W: Chaney Street
Weather: Clear

File Name : LKECOCHPM
Site Code : 05119399
Start Date : 5/29/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 04:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:00 PM		
+0 mins.	0	0	0	0	0	0	0	1	1
+15 mins.	0	1	1	1	0	1	0	0	0
+30 mins.	0	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	1	0	1	1	1	2
% App. Total	0	100		100	0		50	50	
PHF	.000	.250	.250	.250	.000	.250	.250	.250	.500

4-AXLE
PCE = 3.0












ATTACHMENT 3:

**EXISTING (2019) CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS**

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Lanes, Volumes, Timings
1: Collier Av & Chaney St.

Existing (2019) AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	267	21	153	82	59	398
Future Volume (vph)	267	21	153	82	59	398
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					












HCM 6th TWSC
1: Collier Av & Chaney St.

Existing (2019) AM Peak Hour

Intersection						
Int Delay, s/veh	9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	267	21	153	82	59	398
Future Vol, veh/h	267	21	153	82	59	398
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	23	168	90	65	437
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	491	65	502	0	-	0
Stage 1	65	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	999	1062	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	447	999	1062	-	-	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	25.9	5.9		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1062	-	447	999	-	-
HCM Lane V/C Ratio	0.158	-	0.656	0.023	-	-
HCM Control Delay (s)	9	0	27.2	8.7	-	-
HCM Lane LOS	A	A	D	A	-	-
HCM 95th %tile Q(veh)	0.6	-	4.6	0.1	-	-






Lanes, Volumes, Timings
1: Collier Av & Chaney St.

Existing (2019) PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	250	83	32	132	195	179
Future Volume (vph)	250	83	32	132	195	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Collier Av & Chaney St.

Existing (2019) PM Peak Hour

Intersection						
Int Delay, s/veh	6.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	250	83	32	132	195	179
Future Vol, veh/h	250	83	32	132	195	179
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	294	98	38	155	229	211
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	460	229	440	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	559	810	1120	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	538	810	1120	-	-	-
Mov Cap-2 Maneuver	538	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.2	1.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1120	-	538	810	-	-
HCM Lane V/C Ratio	0.034	-	0.547	0.121	-	-
HCM Control Delay (s)	8.3	0	19.5	10.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	3.3	0.4	-	-

ATTACHMENT 4:

TRAFFIC SIGNAL WARRANTS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

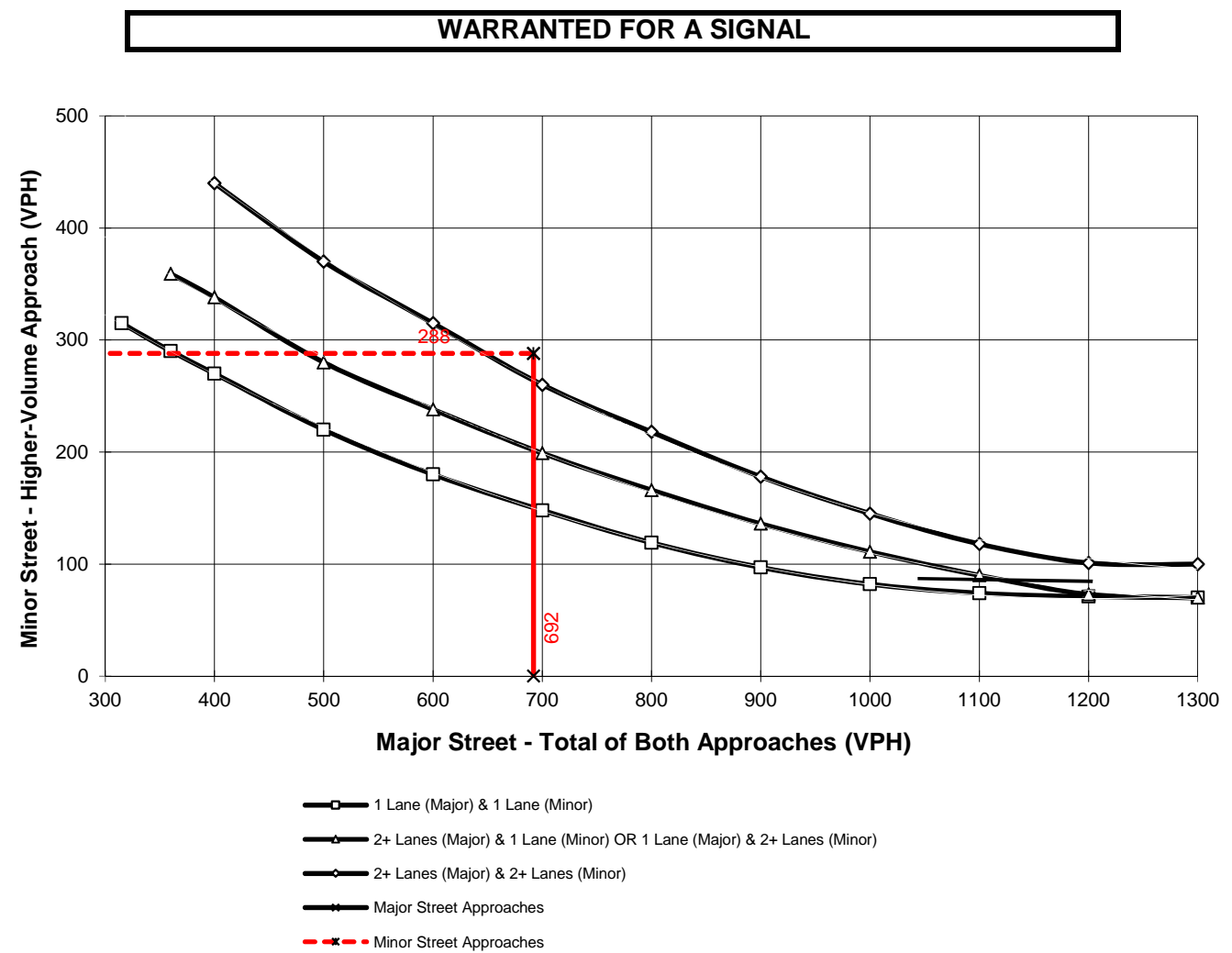
Traffic Conditions = **EXISTING (2019) PCE AM PEAK HOUR WARRANTS**

Major Street Name = **Collier Av.**

Total of Both Approaches (VPH) = **692**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St.**

High Volume Approach (VPH) = **288**
Number of Approach Lanes Minor Street = **2**



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes
and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

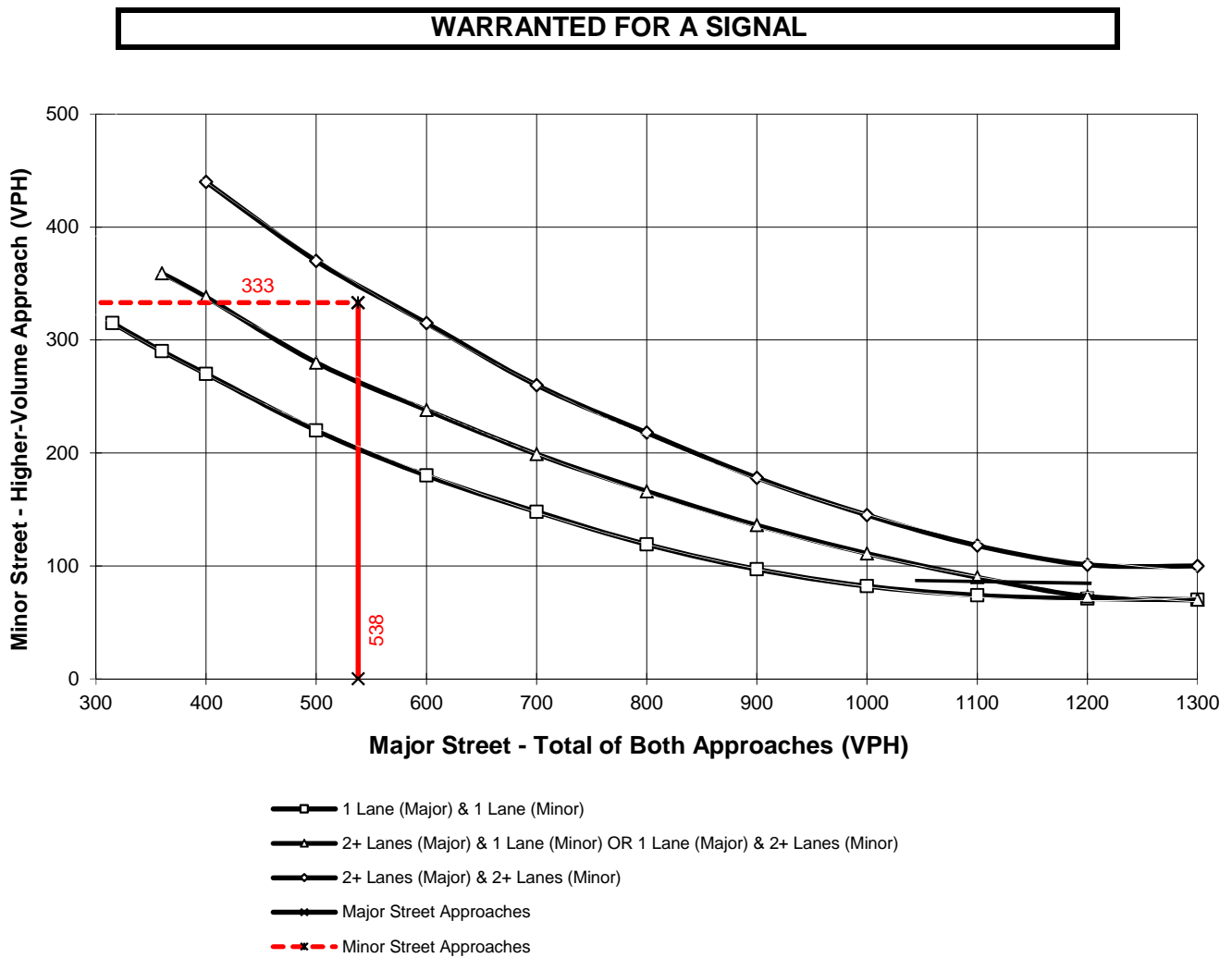
Traffic Conditions = **EXISTING (2019) PCE PM PEAK HOUR WARRANTS**

Major Street Name = **Collier Av.**

Total of Both Approaches (VPH) = **538**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Chaney St.**

High Volume Approach (VPH) = **333**
Number of Approach Lanes Minor Street = **2**



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes
and 75 vph applies as the lower threshold for a minor-street approach with one lane












ATTACHMENT 5:

**EXISTING PLUS PROJECT CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS**

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Lanes, Volumes, Timings
1: Collier Av & Chaney St.

Existing + Project AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	275	21	153	82	59	426
Future Volume (vph)	275	21	153	82	59	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Collier Av & Chaney St.

Existing + Project AM Peak Hour

Intersection						
Int Delay, s/veh	9.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	275	21	153	82	59	426
Future Vol, veh/h	275	21	153	82	59	426
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	302	23	168	90	65	468












Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	491	65	533	0	-	0
Stage 1	65	-	-	-	-	-
Stage 2	426	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	999	1035	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	445	999	1035	-	-	-
Mov Cap-2 Maneuver	445	-	-	-	-	-
Stage 1	794	-	-	-	-	-
Stage 2	659	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.2	6	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1035	-	445	999	-	-
HCM Lane V/C Ratio	0.162	-	0.679	0.023	-	-
HCM Control Delay (s)	9.2	0	28.6	8.7	-	-
HCM Lane LOS	A	A	D	A	-	-
HCM 95th %tile Q(veh)	0.6	-	5	0.1	-	-






Lanes, Volumes, Timings
1: Collier Av & Chaney St.

Existing + Project PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	277	83	32	132	195	191
Future Volume (vph)	277	83	32	132	195	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

HCM 6th TWSC
1: Collier Av & Chaney St.

Existing + Project PM Peak Hour

Intersection						
Int Delay, s/veh	7.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	277	83	32	132	195	191
Future Vol, veh/h	277	83	32	132	195	191
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	326	98	38	155	229	225
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	460	229	454	0	-	0
Stage 1	229	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	559	810	1107	-	-	-
Stage 1	809	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	538	810	1107	-	-	-
Mov Cap-2 Maneuver	538	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	807	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18.8	1.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1107	-	538	810	-	-
HCM Lane V/C Ratio	0.034	-	0.606	0.121	-	-
HCM Control Delay (s)	8.4	0	21.4	10.1	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	4	0.4	-	-












ATTACHMENT 6:

**EAPC (2021) CONDITIONS
INTERSECTION OPERATIONS ANALYSIS WORKSHEETS**

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Lanes, Volumes, Timings
1: Collier Av & Chaney St.

EAPC (2020) AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	321	36	259	146	102	469
Future Volume (vph)	321	36	259	146	102	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					













HCM 6th TWSC
1: Collier Av & Chaney St.

EAPC (2020) AM Peak Hour

Intersection						
Int Delay, s/veh	78.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	321	36	259	146	102	469
Future Vol, veh/h	321	36	259	146	102	469
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	353	40	285	160	112	515
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	842	112	627	0	-	0
Stage 1	112	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 334	941	955	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 224	941	955	-	-	-
Mov Cap-2 Maneuver	~ 224	-	-	-	-	-
Stage 1	614	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	286.9		6.6		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	955	-	224	941	-	-
HCM Lane V/C Ratio	0.298	-	1.575	0.042	-	-
HCM Control Delay (s)	10.4	0	318.1	9	-	-
HCM Lane LOS	B	A	F	A	-	-
HCM 95th %tile Q(veh)	1.3	-	22.1	0.1	-	-
Notes						
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Lanes, Volumes, Timings
1: Collier Av & Chaney St.

EAPC (2020) AM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	321	36	259	146	102	469
Future Volume (vph)	321	36	259	146	102	469
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	1	1			1
Taper Length (ft)	25		90			
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	14.5	37.5	37.5	37.5
Total Split (s)	33.0	33.0	28.0	67.0	39.0	39.0
Total Split (%)	33.0%	33.0%	28.0%	67.0%	39.0%	39.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 85













Control Type: Actuated-Coordinated

Splits and Phases: 1: Collier Av & Chaney St.














HCM 6th Signalized Intersection Summary 1: Collier Av & Chaney St.

EAPC (2020) AM Peak Hour with Improvements

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	321	36	259	146	102	469
Future Volume (veh/h)	321	36	259	146	102	469
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	353	40	285	160	112	515
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	392	349	321	1290	869	736
Arrive On Green	0.22	0.22	0.18	0.69	0.46	0.46
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	353	40	285	160	112	515
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	19.3	2.0	15.6	2.9	3.4	25.8
Cycle Q Clear(g_c), s	19.3	2.0	15.6	2.9	3.4	25.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	392	349	321	1290	869	736
V/C Ratio(X)	0.90	0.11	0.89	0.12	0.13	0.70
Avail Cap(c_a), veh/h	508	452	419	1290	869	736
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	37.9	31.2	40.0	5.3	15.3	21.2
Incr Delay (d2), s/veh	15.9	0.1	16.7	0.2	0.3	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	2.0	8.0	1.0	1.4	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	53.8	31.3	56.7	5.5	15.6	26.7
LnGrp LOS	D	C	E	A	B	C
Approach Vol, veh/h	393			445	627	
Approach Delay, s/veh	51.5			38.3	24.7	
Approach LOS	D			D	C	
Timer - Assigned Phs	2		4		5	6
Phs Duration (G+Y+Rc), s	73.5		26.5		22.5	50.9
Change Period (Y+Rc), s	4.5		4.5		4.5	4.5
Max Green Setting (Gmax), s	62.5		28.5		23.5	34.5
Max Q Clear Time (g_c+I1), s	4.9		21.3		17.6	27.8
Green Ext Time (p_c), s	0.9		0.8		0.4	1.5
Intersection Summary						
HCM 6th Ctrl Delay			36.0			
HCM 6th LOS			D			
Notes						






Lanes, Volumes, Timings
1: Collier Av & Chaney St.

EAPC PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	335	195	51	198	270	248
Future Volume (vph)	335	195	51	198	270	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					













HCM 6th TWSC
1: Collier Av & Chaney St.

EAPC PM Peak Hour

Intersection						
Int Delay, s/veh	22.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	335	195	51	198	270	248
Future Vol, veh/h	335	195	51	198	270	248
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	0	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	394	229	60	233	318	292
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	671	318	610	0	-	0
Stage 1	318	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	422	723	969	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 392	723	969	-	-	-
Mov Cap-2 Maneuver	~ 392	-	-	-	-	-
Stage 1	686	-	-	-	-	-
Stage 2	711	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	55		1.8		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	969	-	392	723	-	-
HCM Lane V/C Ratio	0.062	-	1.005	0.317	-	-
HCM Control Delay (s)	9	0	79.9	12.3	-	-
HCM Lane LOS	A	A	F	B	-	-
HCM 95th %tile Q(veh)	0.2	-	12.3	1.4	-	-
Notes						
-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Lanes, Volumes, Timings
1: Collier Av & Chaney St.

EAPC (2020) PM Peak Hour with Improvements

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	335	195	51	198	270	248
Future Volume (vph)	335	195	51	198	270	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	150			0
Storage Lanes	1	1	1			1
Taper Length (ft)	25		90			
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			45	45	
Link Distance (ft)	895			434	296	
Travel Time (s)	20.3			6.6	4.5	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Shared Lane Traffic (%)						
Turn Type	Prot	Perm	Prot	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4				6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.5	29.5	14.5	37.5	37.5	37.5
Total Split (s)	40.0	40.0	15.0	60.0	45.0	45.0
Total Split (%)	40.0%	40.0%	15.0%	60.0%	45.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Max	C-Max	C-Max

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 85













Control Type: Actuated-Coordinated

Splits and Phases: 1: Collier Av & Chaney St.



HCM 6th Signalized Intersection Summary 1: Collier Av & Chaney St.

EAPC (2020) PM Peak Hour with Improvements

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	335	195	51	198	270	248
Future Volume (veh/h)	335	195	51	198	270	248
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	394	229	60	233	318	292
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	446	397	144	1234	998	846
Arrive On Green	0.25	0.25	0.08	0.66	0.53	0.53
Sat Flow, veh/h	1781	1585	1781	1870	1870	1585
Grp Volume(v), veh/h	394	229	60	233	318	292
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1870	1870	1585
Q Serve(g_s), s	21.3	12.7	3.2	4.8	9.6	10.5
Cycle Q Clear(g_c), s	21.3	12.7	3.2	4.8	9.6	10.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	446	397	144	1234	998	846
V/C Ratio(X)	0.88	0.58	0.42	0.19	0.32	0.35
Avail Cap(c_a), veh/h	632	563	187	1234	998	846
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.1	32.8	43.7	6.6	13.1	13.3
Incr Delay (d2), s/veh	10.4	1.3	1.9	0.3	0.8	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	11.3	1.4	1.7	3.8	3.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	46.5	34.2	45.6	7.0	13.9	14.5
LnGrp LOS	D	C	D	A	B	B
Approach Vol, veh/h	623			293	610	
Approach Delay, s/veh	42.0			14.9	14.2	
Approach LOS	D			B	B	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	70.5			29.5	12.6	57.9
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	55.5			35.5	10.5	40.5
Max Q Clear Time (g_c+I1), s	6.8			23.3	5.2	12.5
Green Ext Time (p_c), s	1.3			1.7	0.0	2.8
Intersection Summary						
HCM 6th Ctrl Delay			25.7			
HCM 6th LOS			C			
Notes						