

GATEWAY SOUTH 9 WAREHOUSE

TRAFFIC IMPACT ANALYSIS

DECEMBER 2, 2022

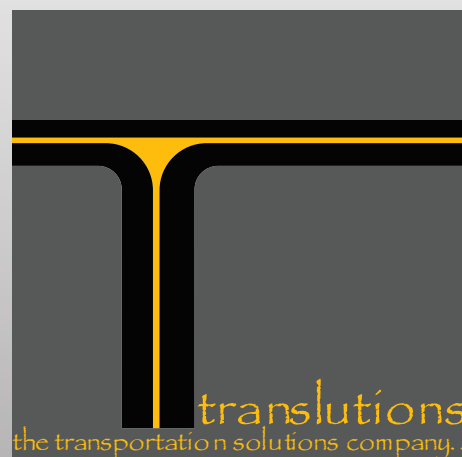
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1.0 EXECUTIVE SUMMARY

The following Executive Summary includes a summary of the VMT analyses prepared for the proposed Gateway South 9 warehouse development project. A summary of the LOS for the study intersections is also included.

1.1 Project Generated VMT

Table A below summarizes the project generated baseline and year 2040 Vehicle Miles Traveled (VMT) analyses for the proposed project. As shown in Table A, the baseline plus project VMT per service population is 24.9 miles, which is less than the City's General Plan Buildout VMT per service population of 31.6 miles, therefore, the project does not have an VMT impact under baseline plus project conditions. In addition, the year 2040 plus project VMT per service population is 27.6 miles, which is less than the City's General Plan Buildout VMT per service population of 31.6 miles, and therefore, the project does not have an VMT impact under year 2040 plus project conditions.

Table A: Summary of Project Generated VMT

Baseline	Project
OD VMT per service population	24.9
City Threshold**	31.6
Impact Less Than Significant?	Yes
2040	Project
OD VMT per service population	27.6
City Threshold**	31.6
Impact Less Than Significant?	Yes

1.2 Project Effect on VMT

Table B below summarizes the project effect on VMT under baseline and year 2040 conditions for the proposed project. As shown in Table B, the baseline plus project VMT per service population does not increase when compared to the no project condition, therefore, the project does not have an VMT impact under baseline plus project conditions. In addition, the year 2040 plus project VMT per service population does not increase when compared to the no project condition, therefore, the project does not have an VMT impact under year 2040 plus project conditions.

Table B: Summary of Project Effect on VMT

	With Project	Without Project	Difference
Baseline			
VMT per service population	10.976	11.017	-0.041
Year 2040			
VMT per service population	12.379	12.385	-0.006

1.3 LOS Analysis Deficiencies

The deficient intersections at the study are intersections are included below.

Existing Conditions

The following intersections currently operate at deficient LOS under existing conditions:

- Lena Road and Orange Show Road (p.m. peak hour).

A traffic signal is planned to be installed at the intersection of Lena Road and Orange Show Road prior to opening year (2024) conditions. Therefore, a traffic signal at Lena Road and Orange Show Road has been included in the opening year (2024) scenarios. With the implementation of the traffic signal, all intersections are forecast to operate at satisfactory LOS under opening year (2024) conditions.

2.0 INTRODUCTION

This report presents the methodology, findings and conclusions of the Traffic Impact Analysis (TIA) prepared for the proposed Gateway South 9 warehouse development project. The proposed project site is located at the northeast corner of the intersection of Lena Road and Orange Show Road in the City of San Bernardino. The project proposes the construction of approximately 397,400 square feet of High-Cube Transload and Short-Term Storage warehousing.

2.1 Purpose of the Traffic Study and Study Objectives

This report is intended to satisfy the requirements for a TIA established by the City of San Bernardino *Traffic Impact Analysis Guidelines* August 2020 (Guidelines) and the San Bernardino County Congestion Management Program (CMP), adopted November 3, 1993, and last revised in 2016. The San Bernardino County CMP is implemented by the San Bernardino County Transportation Authority (SBCTA, previously San Bernardino Associated Governments). The City has adopted vehicle LOS policies that set standards for which local agency infrastructure will strive to maintain. These policies are contained in the General Plan and apply to discretionary approvals of new land use and transportation projects.

The City guidelines require analysis of off-site intersections potentially affected by the project, which the City defines as intersections at which the project is forecast to add 50 or more peak hour trips (two-way). This report evaluates five intersections and project driveways under four analysis scenarios. The analysis intersections were approved by the City during the scoping process and is included in Appendix A. In addition, this reports also evaluates alternative modes of travel in the vicinity of the project.

2.2 Project Location & Study Area

As stated earlier, the project is located at the northeast corner of the intersection of Lena Road and Orange Show Road in the City of San Bernardino. Figure 1 shows the regional location of the project. The project proposes 397,400 square feet of High-Cube Transload and Short-Term Storage warehousing. The project opening year is anticipated to be 2024. Figure 2 illustrates the site plan of the proposed project.

Based on the trip generation and trip distribution of the proposed project, and based on discussion with City staff, this report analyzes the following intersections for traffic operations:

1. Lena Road and Norman Road.
2. Lena Road and Driveway 1.
3. Lena Road and Orange Show Road.
4. Driveway 2 and Orange Show Road.
5. Driveway 3 and Norman Road.

Figure 3 illustrates the study intersections included in the analysis.

2.3 Analysis Scenarios

Based on the City guidelines, this report analyzes traffic conditions for the following scenarios:

1. Existing Conditions,
2. Opening Year (2024) Base Conditions,
3. Opening Year (2024) Base plus Other Projects Conditions. and
4. Opening Year (2024) Base plus Other Projects plus Project Conditions.

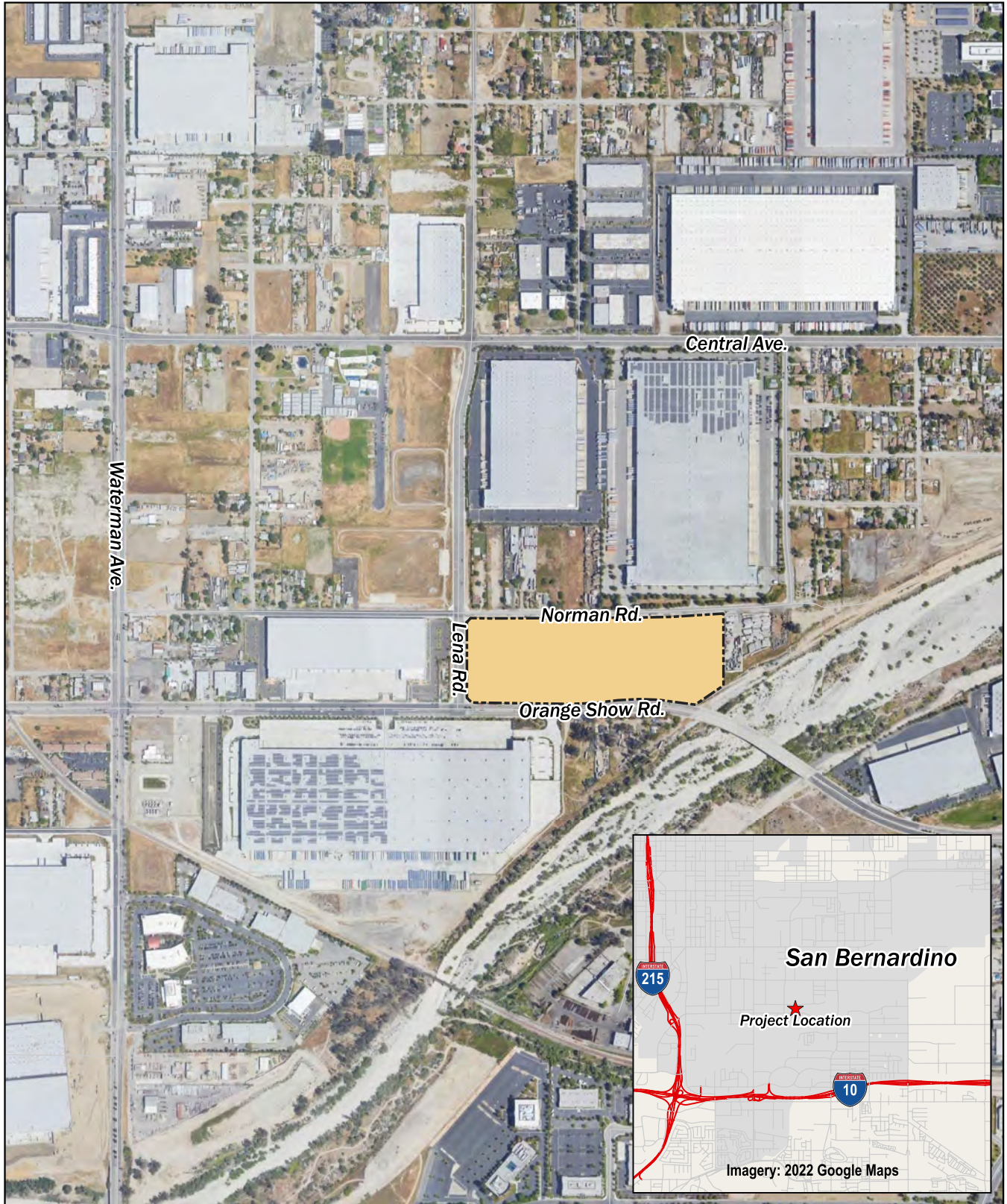


FIGURE 1

Legend

-  Project Boundary
-  City of San Bernardino

Gateway South 9 Warehouse
Regional and Project Location





FIGURE 3

Gateway South 9 Warehouse
Study Area Intersections

Legend
 Project Boundary Study Area Intersections



Consistent with City guidelines, this report analyzes weekday a.m. and p.m. peak hour conditions. The a.m. peak hour is defined as the one hour of highest traffic volumes occurring between 7:00 and 9:00 a.m. The p.m. peak hour is defined as the one hour of highest traffic volumes occurring between 4:00 and 6:00 p.m.

3.0 PROJECT DESCRIPTION

The project proposes the construction of approximately 397,400 square feet of high-cube warehouse uses on approximately 18.43 acres. Access to the project will be provided via three driveways. Driveway 1 is located on Lena Road and is a right-in/right-out access driveway. Driveway 2 is located on Orange Show Road and will allow left turns in via an existing curb cut with left turn pocket as well as right-in/right-out-access. Driveway 3 is located on Norman Road and is a full-access driveway for autos and trucks.

3.1 Internal Circulation

As stated previously, access to the project will be provided via three driveways, with one driveway on Lena Road, one driveway on Orange Show Road, and one driveway on Norman Road. The following includes a description of the internal circulation at each driveway.

The driveway on Lena Road is 30 feet wide and will provide access for passenger vehicles. Passenger vehicles will have access to parking to the north and south of the driveway aisle and access to the parking along the western portion of the building.

The driveway on Norman Road is 50 feet wide and will provide access for passenger vehicles and trucks. Passenger vehicles will have access to the parking along the eastern portion of the building. Trucks will enter the project on Norman Road and have access to the dock doors and parking without having to wait for any gates to open.

The driveway on Orange Show Road is 50 feet wide and will provide access for passenger vehicles and trucks. Passenger vehicles will have access to parking to the west of the driveway aisle. Trucks will enter the project on Orange Show Road and have access to the dock doors and parking without having to wait for any gates to open.

3.2 Project Trip Generation

Existing Traffic. The project site includes various industrial land uses with multiple driveways on Norman Road and Orange Show Road. However, based on our site visit, there is one trailer parking lot on Norman Road totaling approximately 2 acres that currently generate a significant number of trips. The Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition) does not currently have a land use for truck storage facilities. The trip generation for the drop lots have been calculated from the County of San Bernardino guidance on trailer parking trip generation. Table C shows the trip generation of the trailer parking lots. As shown on Table C, the existing trailer parking are anticipated to generate 19 PCE trips during the a.m. peak hour, PCE 22 trips during the p.m. peak hour, and 419 daily PCE trips. The trip rates are included in Appendix B.

Project Traffic. Table D shows the trip generation of the proposed High-Cube Transload and Short-Term Storage use. As shown on Table D, the proposed project is anticipated to generate 46 PCE trips during the a.m. peak hour, 47 PCE trips during the p.m. peak hour, and 708 daily PCE trips. The trips from the existing trailer parking were subtracted from the proposed high-cube warehouse trips to develop the total net project trip generation. Table E includes the total net project trip generation. The total net project trip generation is forecast to be 27 a.m. peak hour PCE trips, 25 p.m. peak hour PCE trips, and 289 daily PCE trips.

3.3 Project Trip Distribution & Assignment

Project trip distribution patterns for the proposed project were developed separately for autos and trucks based on location of local and regional destinations. The project trip generation was applied to the trip distribution patterns for the project to develop trip assignments for new project trips. Figure 4 shows the trip distribution for passenger vehicles and Figure 5 shows the trip distribution for trucks. Figure 6 shows the trip assignment for passenger vehicles and Figure 7 shows the trip assignment for trucks. The total project trip assignment is shown in Figure 8.

Table C: Existing Trip Generation

Land Use	Units ¹	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Truck Terminal	2.00 Ac.							
Trip Generation Rates ²		1.936	1.584	3.520	1.950	2.030	3.980	76.840
PCE Inbound/Outbound Splits		55%	45%	100%	49%	51%	100%	50%/50%
Vehicle Mix ³								
Passenger Cars		13.30%	13.30%	13.30%	13.30%	13.30%	13.30%	13.30%
4-Axle Trucks		86.70%	86.70%	86.70%	86.70%	86.70%	86.70%	86.70%
Total Trips								
Passenger Cars		1	0	1	0	1	1	20
4-Axle+ Trucks		3	3	6	3	4	7	133
Total Vehicle Trips		4	3	7	3	5	8	153
Total PCE Trips								
Passenger Cars		1	0	1	0	1	1	20
4-Axle+ Trucks		9	9	18	9	12	21	399
Total Vehicle Trips		10	9	19	9	13	22	419

¹ Ac = Acres

² Rates provided by County of San Bernardino.

³ Appendix B includes County of San Bernardino rates.

Table D: Project Trip Generation (High-Cube Warehouse)

Land Use	Units	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Total Vehicle Rates								
Trip Generation Rates ¹	TSF	0.062	0.018	0.080	0.028	0.072	0.100	1.400
PCE Inbound/Outbound Splits		69%	31%	100%	31%	69%	100%	100%
Passenger Car Equivalent Rates Calculations								
Passenger Cars								
Recommended Mix (%) ²		84.09%	44.57%	75.00%	83.21%	92.64%	90.00%	84.29%
PCE Factor ³		1.0	1.0	1.0	1.0	1.0	1.0	1.0
PCE Rates		0.052	0.008	0.060	0.023	0.067	0.090	1.180
2-Axle Trucks								
Recommended Mix (%) ²		2.69%	9.39%	4.23%	2.84%	1.25%	1.69%	2.66%
PCE Factor ³		2.0	2.0	2.0	2.0	2.0	2.0	2.0
PCE Rates		0.003	0.003	0.007	0.002	0.002	0.003	0.075
3-Axle Trucks								
Recommended Mix (%) ²		3.61%	12.59%	5.68%	3.81%	1.67%	2.27%	3.57%
PCE Factor ³		2.5	2.5	2.5	2.5	2.5	2.5	2.5
PCE Rates		0.006	0.006	0.011	0.003	0.003	0.006	0.125
4-Axle Trucks								
Recommended Mix (%) ²		9.60%	33.46%	15.09%	10.13%	4.44%	6.04%	9.48%
PCE Factor ³		3.0	3.0	3.0	3.0	3.0	3.0	3.0
PCE Rates		0.018	0.018	0.036	0.009	0.010	0.018	0.398
Warehouse Net PCE Rate		0.078	0.036	0.114	0.036	0.081	0.117	1.778
Total Project Trip Generation (Trips, By Vehicle Type)								
Warehouse	397.400 TSF							
Passenger Cars		21	3	24	9	27	36	469
2-Axle Trucks		0	1	1	1	0	1	15
3-Axle Trucks		1	1	2	1	0	1	20
4+ Axle Trucks		3	2	5	1	1	2	53
All Trucks		4	4	8	3	1	4	88
Total Vehicles		25	7	32	12	28	40	557
Total Project Trip Generation (Passenger Car Equivalent Trips, By Vehicle Type)								
Passenger Cars		21	3	24	9	27	36	469
Truck PCE								
2-Axle Trucks		0	2	2	2	0	2	30
3-Axle Trucks		2	3	5	3	0	3	50
4+ Axle Trucks		9	6	15	3	3	6	159
Total Truck PCE		11	11	22	8	3	11	239
Total PCE		32	14	46	17	30	47	708

¹ Rates based on Land Use 154 - "High-Cube Transload and Short-Term Storage Warehouse" from Institute of Transportation Engineers (ITE) Trip Generation (11th Edition).

² Recommended Truck Mix Percentages per ITE 11th Ed. Sub types based on Fontana Study.

³ Recommended PCE Factor per City of San Bernardino Traffic Impact Study Guidelines, 2004

Table E: Net New Trip Generation

Land Use	Units ¹	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Proposed PCE Trips								
Passenger Cars		21	3	24	9	27	36	469
Truck PCE		11	11	22	8	3	11	239
Total Vehicle Trips		32	14	46	17	30	47	708
Existing PCE Trips								
Passenger Cars		1	0	1	0	1	1	20
Truck PCE		9	9	18	9	12	21	399
Total Vehicle Trips		10	9	19	9	13	22	419
Net New PCE Trips								
Passenger Cars		20	3	23	9	26	35	449
Truck PCE		2	2	4	-1	-9	-10	-160
Total PCE Trips		22	5	27	8	17	25	289

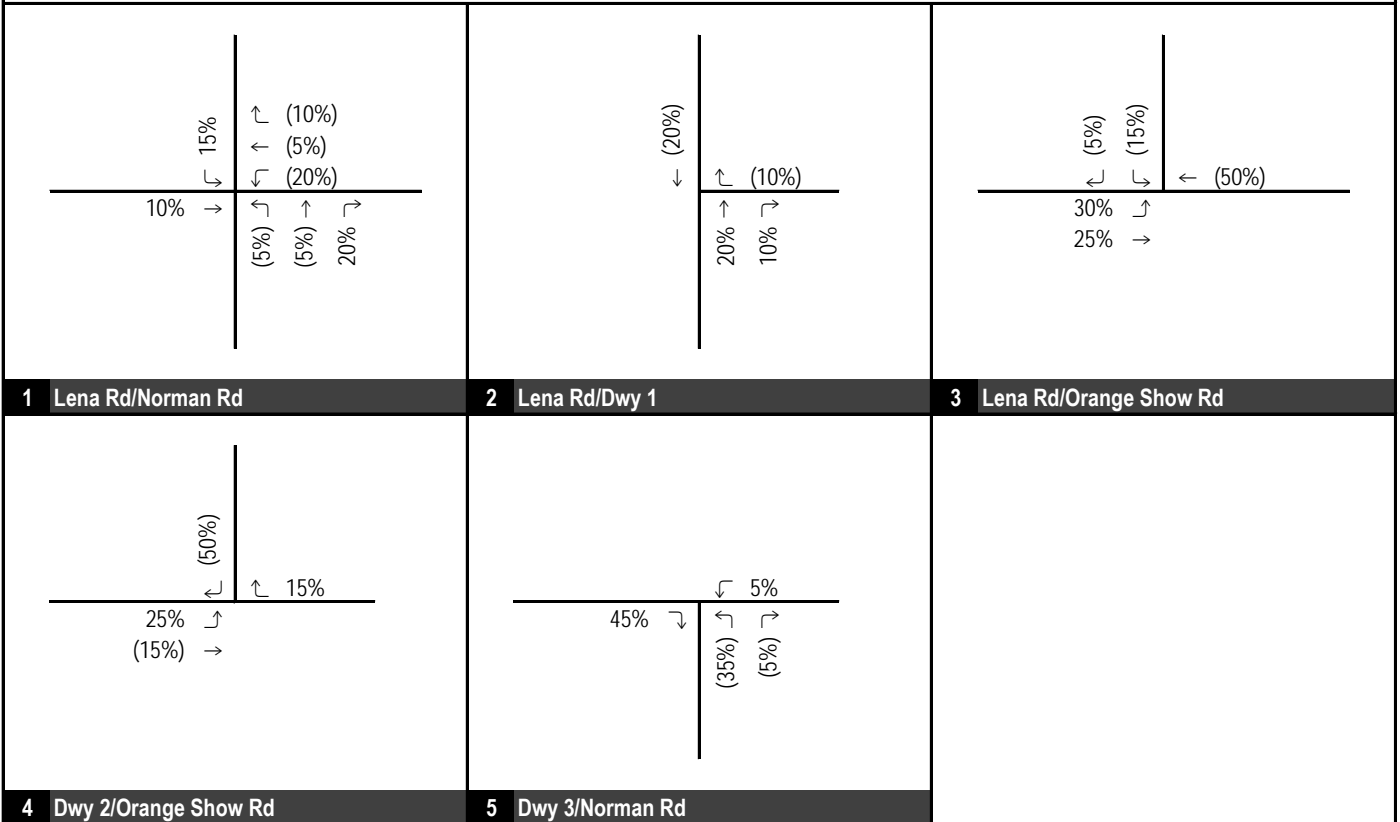


FIGURE 4

XXX%(YYY%) Inbound%(Outbound%) Percent



**Gateway South 9 Warehouse
Project Trip Distribution (Autos)**

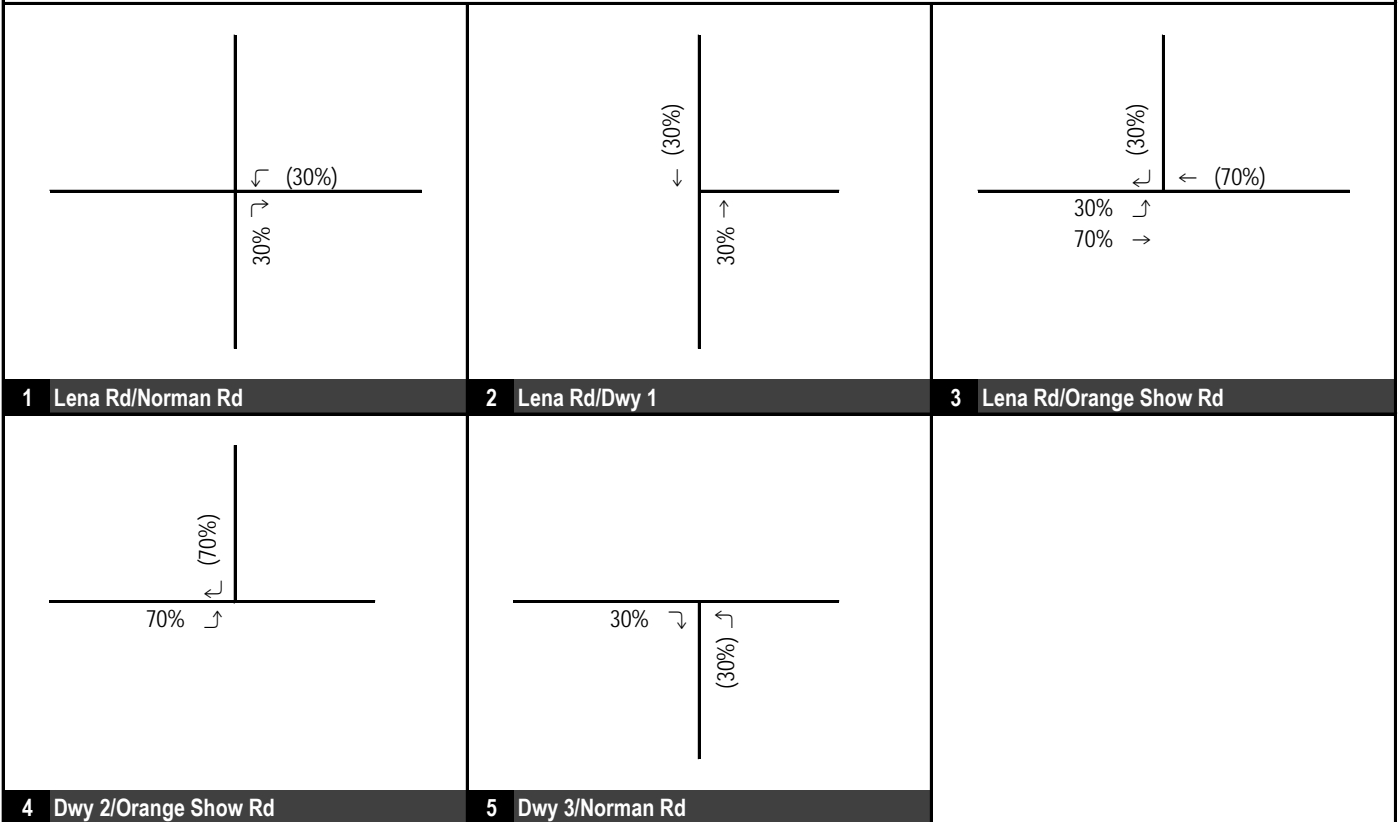


FIGURE 5

XXX%(YYY%) Inbound%(Outbound%) Percent



**Gateway South 9 Warehouse
Project Trip Distribution (Trucks)**

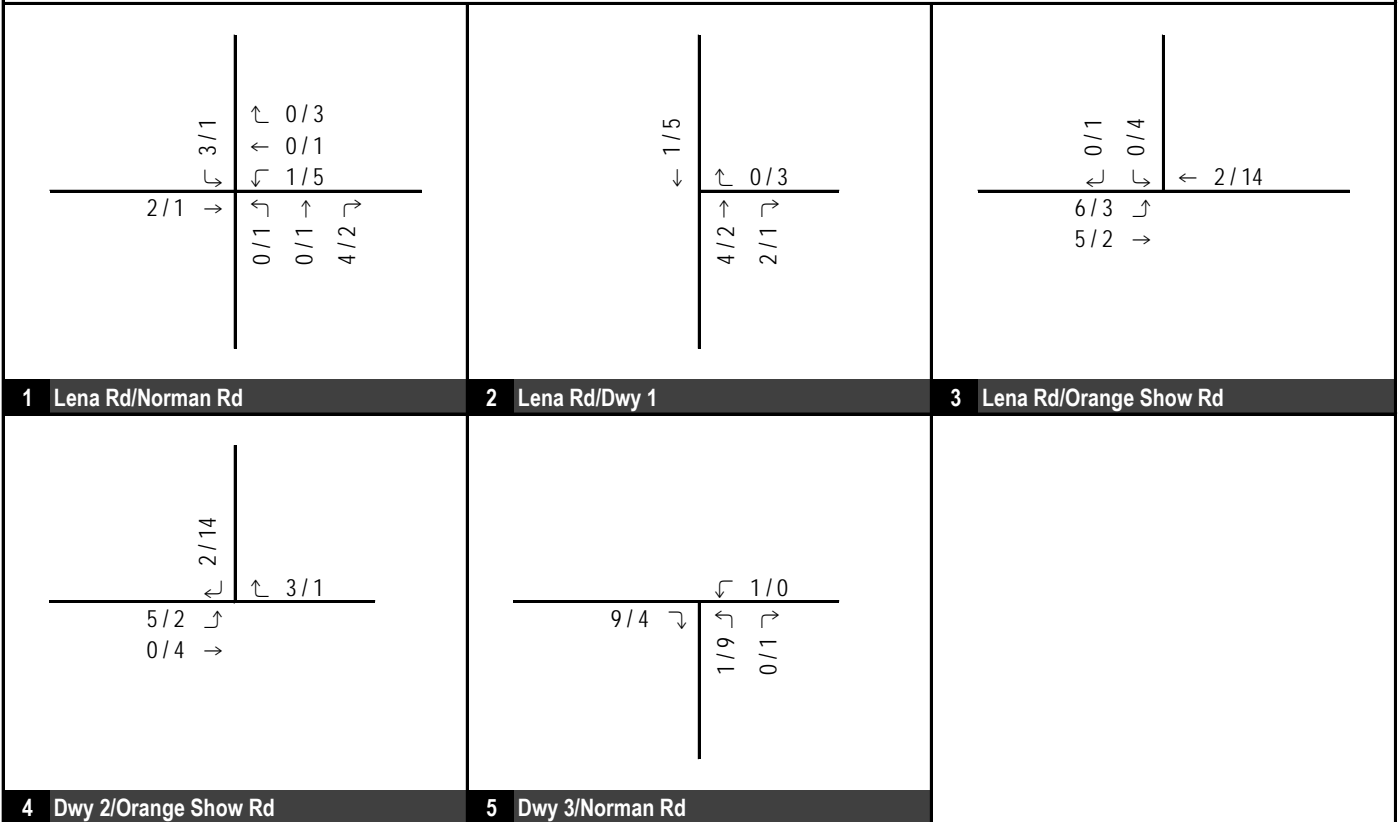
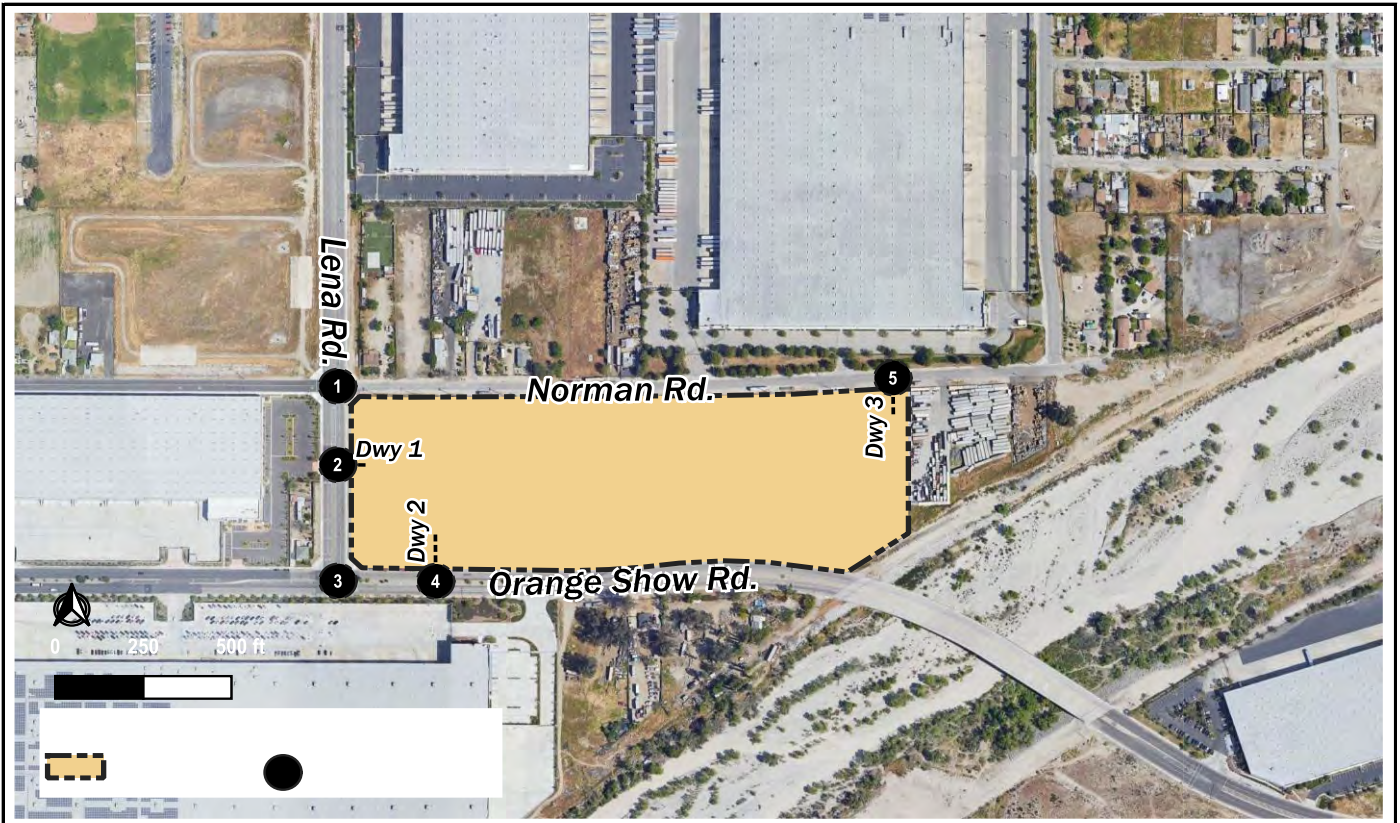


FIGURE 6

XXX / YYY AM / PM Peak Hour Trips



**Gateway South 9 Warehouse
Project Trip Assignment (Autos)**

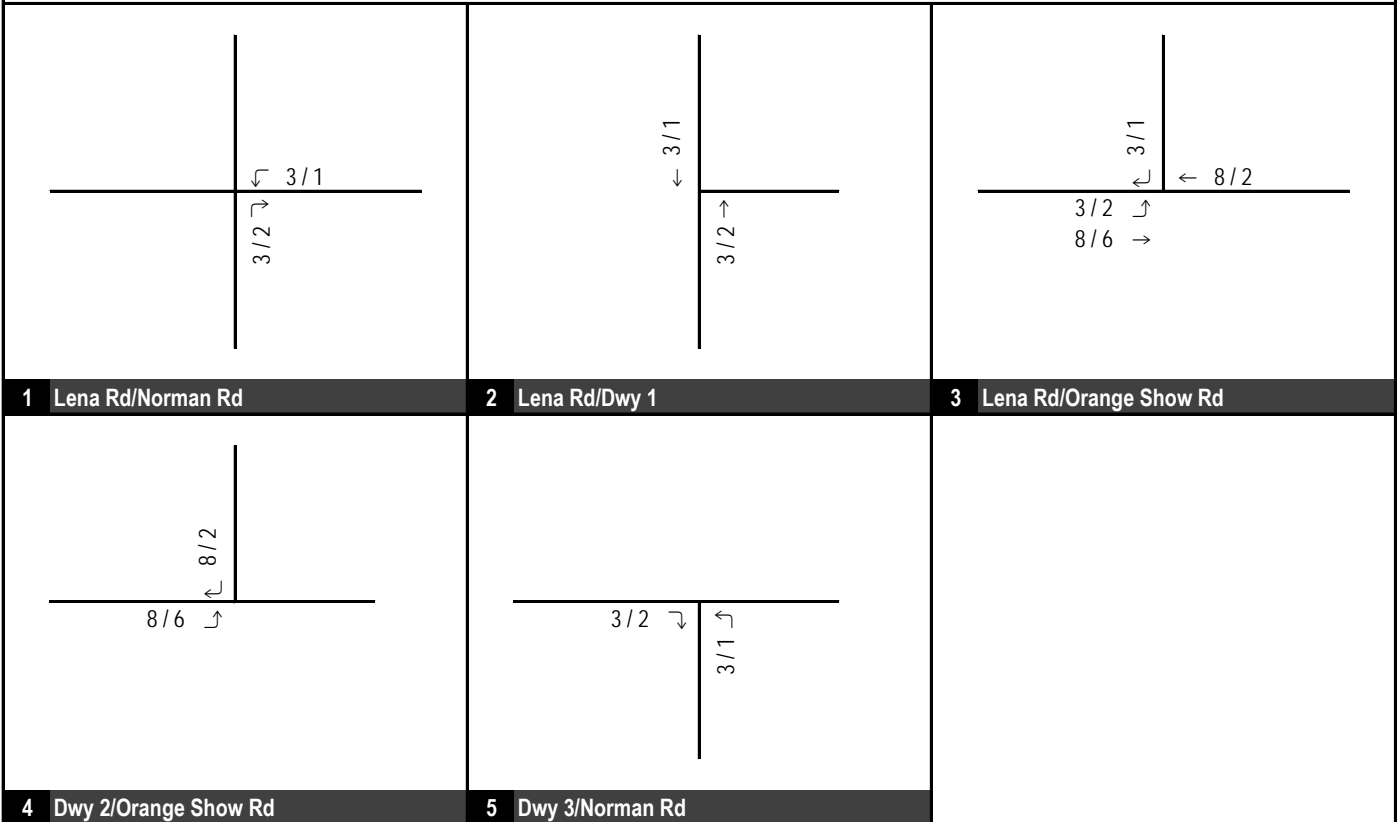


FIGURE 7

XXX / YYY AM / PM Peak Hour Trips



**Gateway South 9 Warehouse
Project Trip Assignment (Trucks)**

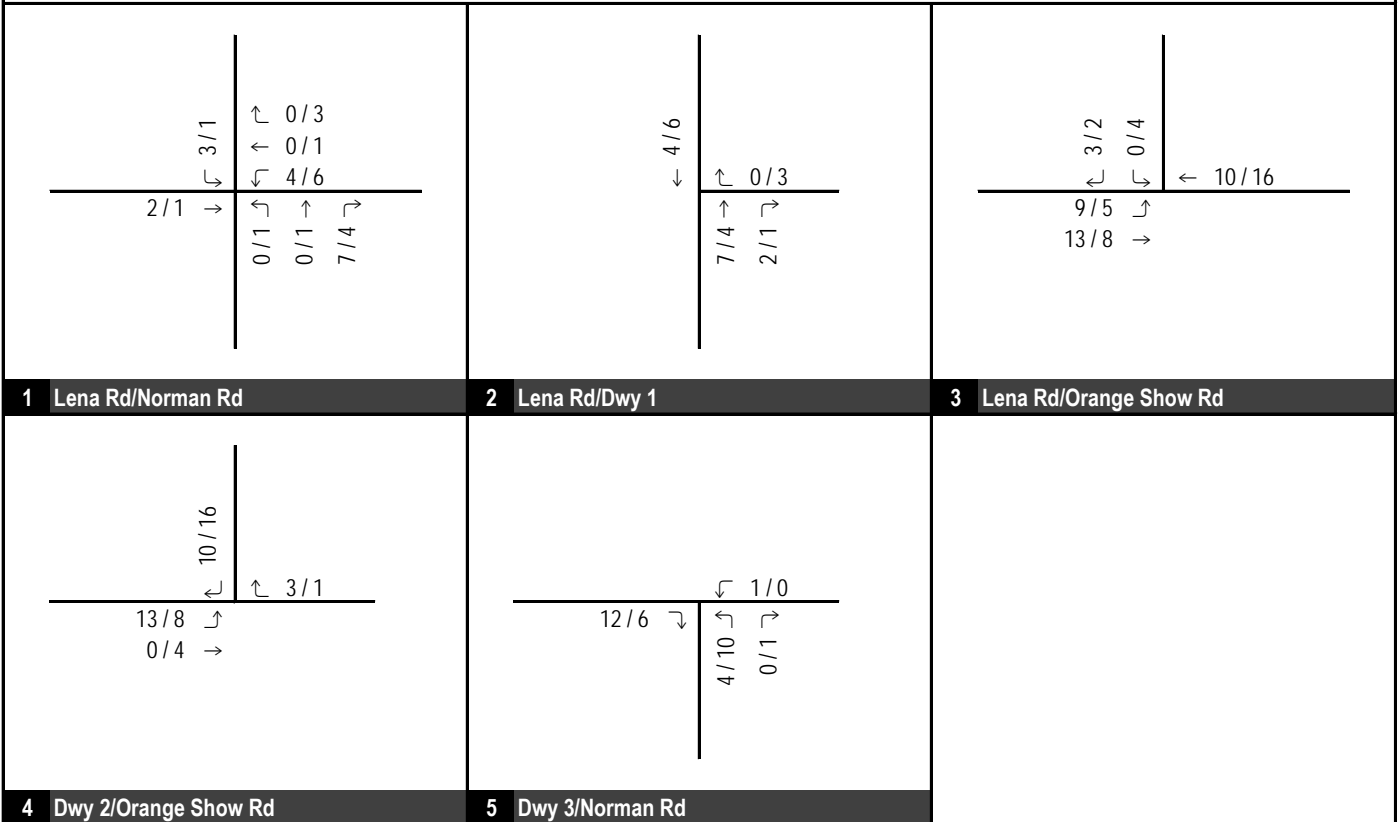
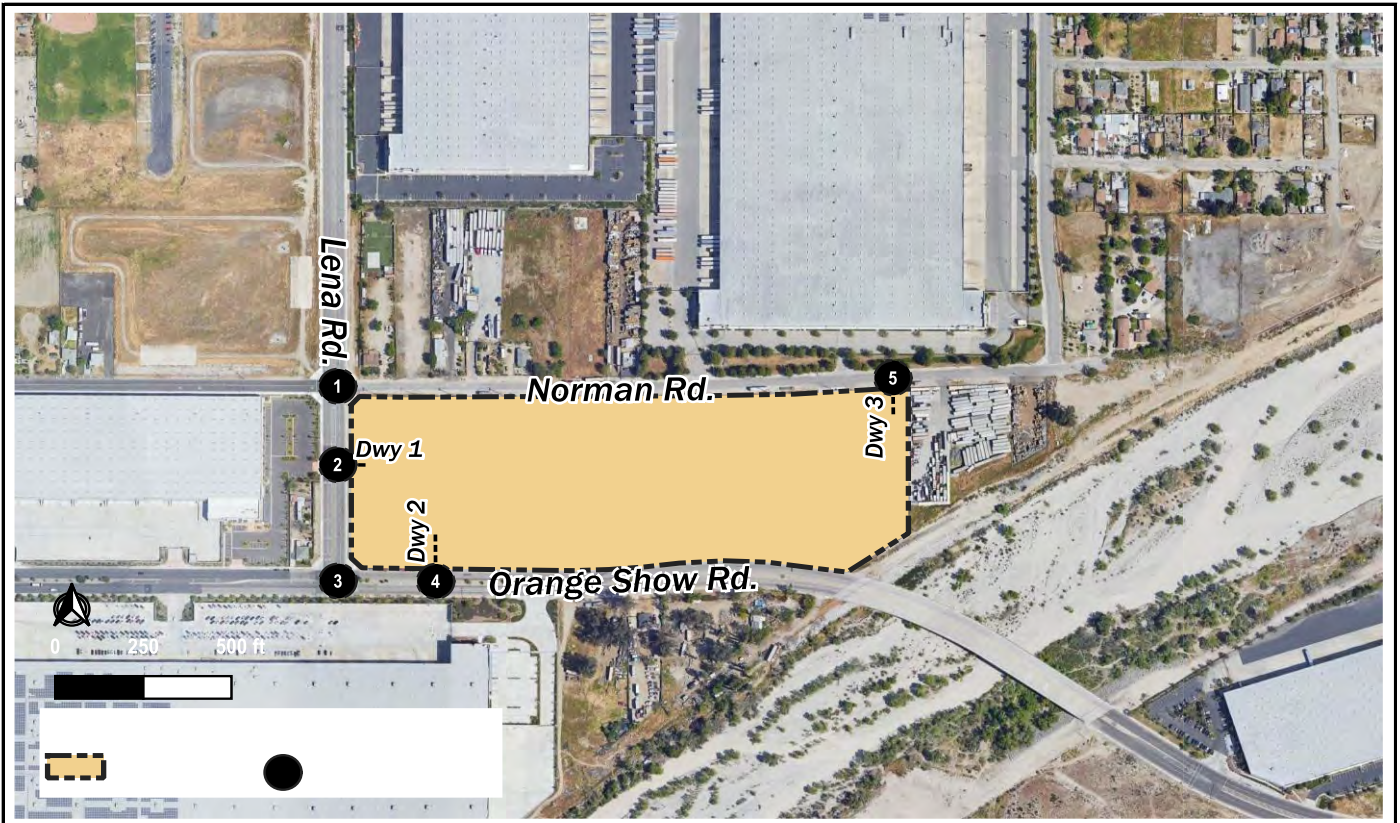


FIGURE 8

XXX / YYY AM / PM Peak Hour Trips



**Gateway South 9 Warehouse
Total Project Trip Assignment**

4.0 LOS DEFINITIONS, PROCEDURES, AND THRESHOLDS

Level of service (LOS) is a measure of the quality of operational conditions within a traffic stream and is generally expressed in terms of such measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Levels range from A to F, with LOS A representing excellent (free-flow) conditions and LOS F representing extreme congestion. Consistent to the guidelines, the Highway Capacity Manual (HCM) procedures have been used to evaluate levels of service. This section discusses the LOS definitions, procedures, and thresholds used in this report.

4.1 Intersection Levels of Service

The analysis of traffic operations at intersections was conducted according to the Highway Capacity Manual 6th Edition (HCM) delay methodologies, which is described in the Highway Capacity Manual (Transportation Research Board, Washington, D.C., November 2016). Under the HCM methodology, LOS for signalized intersections is based on the average delay experienced by vehicles traveling through an intersection, whereas for unsignalized intersections, the LOS is based on the worst approach where the minor leg has a shared lane and on the worst movement where the minor leg has dedicated turn lanes. Table F presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.

4.2 Levels of Service Thresholds

The City of San Bernardino uses LOS D as the minimum level of service standard for intersection operations. Therefore, study intersections operating at LOS E, or F are required to be mitigated to provide LOS conformity with the City's General Plan goals.

4.3 Project Deficiencies

The City Guidelines include project deficiencies for intersection operations. Based on the guidelines, intersections are considered to be deficient when any of the following changes in the volume to capacity ratios occur between the without and with project conditions:

- LOS C: > 0.04
- LOS D: > 0.02
- LOS E, F: > 0.01

5.0 VOLUME DEVELOPMENT METHODOLOGY

Forecast traffic volumes at study intersections were developed based on discussion with City staff. This section discusses the volume development methodology used to forecast future traffic volumes.

5.1 Existing (2022) Traffic Volumes

Existing peak hour traffic volumes are based on peak hour intersection turn movement counts collected by Counts Unlimited Inc. in June 2021. The counts are included in Appendix B. Vehicle classification counts (e.g., passenger vehicle, 2-axle truck, 3-axle truck, and 4 or more axle truck), were conducted at all existing study area intersections. Consistent with the City guidelines, PCE volumes at these intersections were calculated using a PCE factor of 2.0 for 2-axle trucks, 2.5 for 3-axle trucks, and 3.0 for trucks with 4 or more axles. To develop existing (2022) peak hour traffic volumes, an ambient growth rate of 3 percent per annum (2021 to 2022) was applied to the existing counts at each study intersection. Detailed volume development worksheets are included in Appendix C.

5.2 Opening Year (2024) Base Traffic Volumes

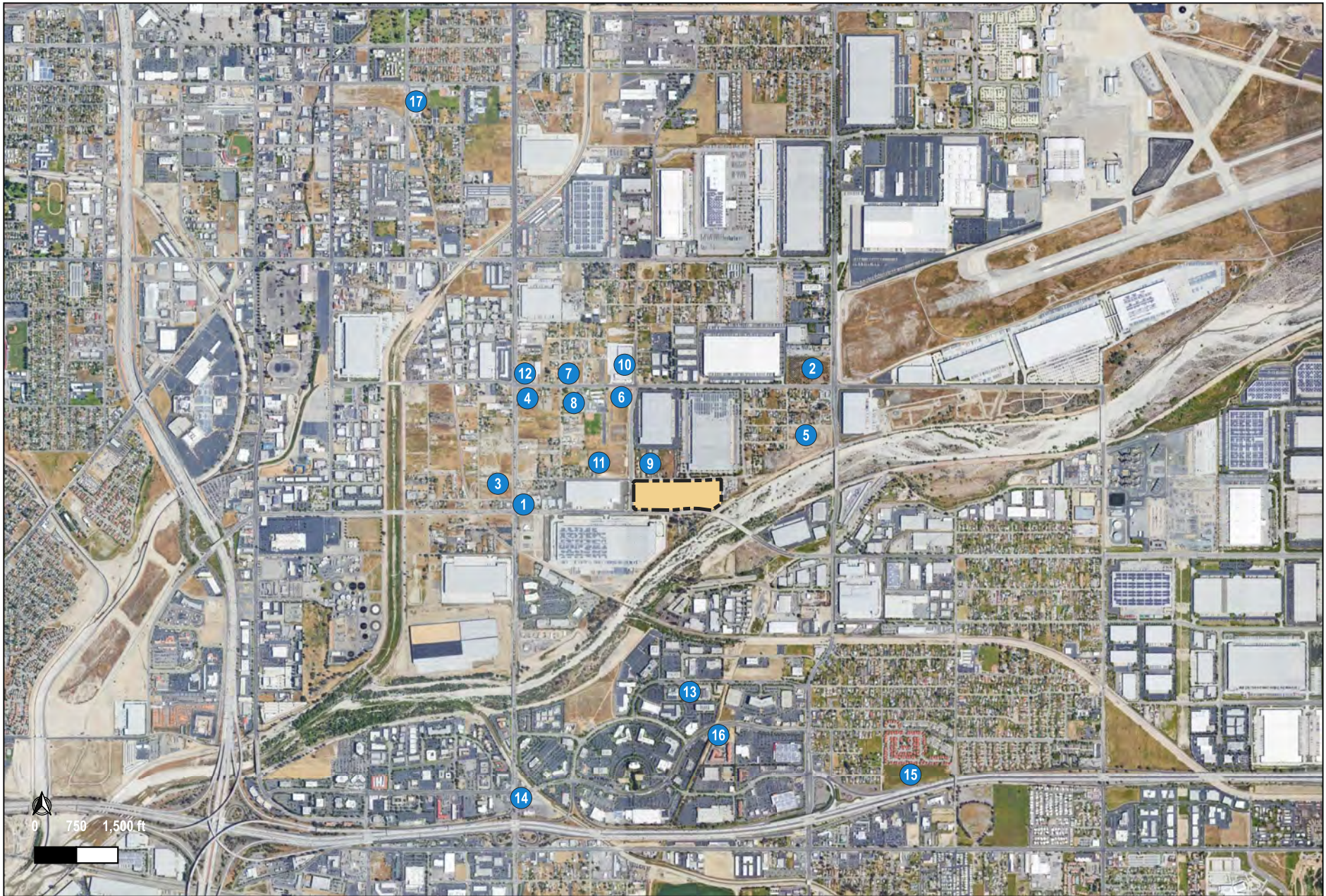
Opening year (2024) base peak hour traffic volumes were developed by applying an annual growth rate of 3 percent per year (2022 to 2024) to the existing traffic volumes at each study intersection. Detailed volume development worksheets are included in Appendix C.

5.3 Opening Year (2024) Base plus Other Proposed Projects Traffic Volumes



Opening year (2024) base plus other proposed projects peak hour traffic volumes were developed by adding project trips from other proposed projects to the opening year (2024) base traffic volumes. Figure 9 shows the locations of the other

Table F: Intersection Level of Service Criteria

LOS	Description of Drivers' Perception and Traffic Operation	Intersection Delay in Seconds	
		Unsignalized	Signalized
A	This level is typically assigned 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	≤ 10
B	This level is assigned 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 LOS A.	> 10 and ≤ 15	> 10 and ≤ 20
C	This level is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	> 15 and ≤ 25	> 20 and ≤ 35
D	This level is typically assigned 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.	> 25 and ≤ 35	> 35 and ≤ 55
E	This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	> 35 and ≤ 50	> 55 and ≤ 80
F	This level is typically assigned 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.	> 50	> 80



Legend

 Project Boundary  Other Projects Locations


 **translutions**
the transportation solutions company...

FIGURE 9

**Gateway South 9 Warehouse
Other Proposed Project Locations**

proposed projects. Table G lists the other proposed projects included in the analysis. The other proposed projects are anticipated to generate 874 a.m. peak hour trips, 929 p.m. peak hour trips, and 17,496 daily trips. Detailed volume development worksheets are included in Appendix C.

5.4 Opening Year (2024) Base plus Other Proposed Projects plus Project Traffic Volumes

Traffic volumes for opening year (2024) base plus Other Proposed Projects plus Project were developed by adding the trip assignment to the opening year (2024) base plus Other Proposed Projects peak hour traffic volumes. In addition, the opening year background traffic was adjusted to account for the trip generation for the existing drop lots on the project site.

6.0 EXISTING CONDITIONS

This section discusses the existing transportation conditions in the study area.

6.1 Existing Roadway Conditions

Regional access to the project site is provided by Interstate 10 to the south and west, and State Route 210 to the north and Interstate 15 to the east. Local access is provided by the following roadways:

- **Lena Road** is oriented in the north-south direction and is a four-lane roadway. There is a two-way left-turn lane on Lena Road from Norman Road to Orange Show Road. On-street parking is prohibited. There are no existing bike lanes on Lena Road. There is no posted speed limit on Lena Road. Lena Road is classified as a Major Arterial in the City's General Plan.
- **Orange Show Road** is oriented in the east-west direction and is a four-lane roadway. There is a raised median on Orange Show Road from Lena Road to Waterman Avenue. On-street parking is permitted. The speed limit on Orange Show Road is 50 miles per hour. There are no existing bike lanes on Orange Show Road. Orange Show Road is classified as a Major Arterial in the City's General Plan.
- **Norman Road** is oriented in the east-west direction and is a two-lane roadway. There are no raised medians or two-left-turn lanes on Norman Road. On-street parking is prohibited. There is no posted speed limit on Norman Road. There are no existing bike lanes on Norman Road. Norman Road is classified as Local in the City's General Plan.

The City's functional classification of roadways is illustrated in Figure 10. The City's typical street sections are illustrated in Figure 11.

6.2 Existing Transit Service

Public transportation services within the City of San Bernardino and near the proposed project include bus transit service (Omnitrans) and commuter rail transportation (Metrolink). These services are further described below.

Bus Service. Public transportation in the City of San Bernardino is provided by Omnitrans, which is the regional transit operator in San Bernardino County. The following transit routes operate near the project:

- **Route 8** provides service near the project site. Route 8 connects the project area to Redlands, Loma Linda, and the San Bernardino Transfer Center. Near the study area, Route 8 travels along Tippecanoe Avenue and Mill Street. Route 8 operates at 60-minute headways during the week. The nearest stop is located near the intersection of Tippecanoe Waterman Avenue and Orange Show Road.
- **Route 305** serves the City of San Bernardino and Grand Terrace, connecting with the San Bernardino Transit Center, the Montecito Memorial Park, and the Grand Terrace Civic Center. Headways are 60-minutes on weekdays and weekends. The nearest stop is near the intersection of Waterman Avenue and Orange Show Road.

Commuter Rail Service. Commuter rail service is provided by Metrolink, which is operated by the Southern California Regional Rail Authority (SCRRA). Metrolink train service is available between the counties of Ventura, Los Angeles, San Bernardino, Orange, Riverside, and north San Diego. The area is served by the San Bernardino Line, which runs east-west between the San Bernardino Station and the Los Angeles Union Station. The San Bernardino Station is the nearest

Table G: Other Proposed Projects Trip Generation

Project Number	Location	Land Use	Quantity	Units	A.M. Peak Hour			P.M. Peak Hour			Daily								
					In	Out	Total	In	Out	Total									
1	1195 S. Waterman Ave	Gasoline Station w/Convenience Market ¹	18	FP	8.03	8.03	16.06	9.21	9.21	18.42	265.12								
		Trip Generation Rates										145	145	289	166	166	332	4,772	
		Trip Generation										(110)	(110)	(220)	(124)	(124)	(249)	(468)	
		Pass-By Trips										35	35	69	41	41	83	4,304	
2	NWC Central Ave/Tippecanoe Ave	Gasoline Station w/Convenience Market ¹	8	FP	8.03	8.03	16.06	9.21	9.21	18.42	265.12								
		Trip Generation Rates										64	64	128	74	74	147	2,121	
		Trip Generation										(39)	(39)	(77)	(41)	(41)	(83)	(160)	
		Pass-By Trips										26	26	51	32	32	65	1,961	
		Fast-Food Restaurant ²	7	TSF	25.04	18.14	43.18	16.61	16.61	33.21	450.49								
												Trip Generation Rates	173	125	298	115	115	229	3,108
												Trip Generation	(74)	(74)	(149)	(63)	(63)	(126)	(275)
												Pass-By Trips	98	51	149	52	52	103	2,833
3	NWC of Waterman Ave/Ennis St	Warehousing ³	343	TSF	18	3	21	8	23	31	405								
		Trip Generation (Passenger Cars)										8	11	19	16	26	42	207	
4	SEC Waterman Ave/Central Ave	Warehousing ⁴	198	TSF	24	6	30	7	23	30	225								
		Trip Generation (Passenger Cars)										8	3	11	8	9	17	324	
5	SEC Benedict Rd/Sunnyside Ave	Warehousing ⁴	173	TSF	21	5	26	6	20	26	197								
		Trip Generation (Passenger Cars)										8	3	11	5	9	14	285	
6	SWC Central Ave/Lena Rd	Warehousing ⁵	135	TSF	14	5	19	6	15	21	188								
		Trip Generation (Passenger Cars)										8	8	16	5	14	19	136	
7	NEC Foisy St/Central Ave	Warehousing ⁴	3	TSF	0	0	0	0	0	0	4								
		Trip Generation (Passenger Cars)										0	0	0	0	0	0	3	
8	SEC Foisy St/Central Ave	Warehousing ⁵	447	TSF	49	14	63	19	52	71	647								
		Trip Generation (Passenger Cars)										34	10	44	14	36	50	451	
9	NEC Lena Rd/Norman Rd	Warehousing ⁷	231	TSF	12	3	15	5	14	19	272								
		Trip Generation (Passenger Cars)										7	3	10	2	8	10	131	
10	NWC Lena Rd/Central Ave	Warehousing ⁴	155	TSF	18	5	23	5	18	23	176								
		Trip Generation (Passenger Cars)										8	3	11	8	6	14	253	
11	NWC Lena Rd/Norman Rd	Warehousing ⁸	305	TSF	11	-1	10	1	12	13	284								
		Trip Generation (Passenger Cars)										8	9	17	3	6	9	269	
12	791 Waterman Ave	Warehousing ⁴	89	TSF	10	3	13	3	10	13	102								
		Trip Generation (Passenger Cars)										0	3	3	6	3	9	144	
13	South of Brier Dr	Hotel	113	Rooms	0.26	0.20	0.46	0.30	0.29	0.59	7.99								
		Trip Generation Rates ⁹										29	23	52	34	33	67	903	
14	SEC Waterman Ave/Hospitality Ln	Fast-Food With Drive-Thru	2	TSF	22.75	21.86	44.61	17.18	15.85	33.03	467.18								
		Trip Generation Rates ¹⁰										47	45	91	35	33	68	958	
		Trip Generation										(23)	(23)	(46)	(19)	(19)	(37)	(83)	
		Pass-By Trips										24	22	46	17	14	30	875	
Total Net Trip Generation																			

Table G: Other Proposed Projects Trip Generation

Project Number	Location	Land Use	Quantity	Units	A.M. Peak Hour			P.M. Peak Hour			Daily
					In	Out	Total	In	Out	Total	
15	East of Ferree St, West of Richardson St, North of I-10	Single-Family Detached Housing	96	DU	0.18	0.52	0.70	0.59	0.35	0.94	9.43
		Trip Generation Rates ¹¹			17	50	67	57	33	90	905
16	South of Hospitality Ln, West of Tippecanoe Ave	Coffee Shop	1	TSF	43.80	42.08	85.88	19.50	19.50	38.99	533.57
		Trip Generation Rates ¹²			42	40	82	19	19	37	507
		Trip Generation			(34)	(34)	(68)	(15)	(15)	(31)	(98)
		Pass-By Trips			8	6	14	3	3	6	408
17	East side of Sierra Way, 200 feet south of Rialto Ave	Office Park ¹³	31	TSF	1.34	0.18	1.52	0.24	1.20	1.44	10.84
		Trip Generation Rates			41	6	47	8	37	44	334
		Trip Generation									
Total Trip Generation					552	322	874	374	555	929	17,496

Notes: TSF = Thousand Square Feet, FP = Fueling Positions

¹ Trip generation based on rates for Land Use 945 - "Gasoline/Service Station With Convenience Market" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

² Trip generation based on rates for Land Use 933 - "Fast-Food Restaurant without Drive-Through Window" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

³ Rates based on Land Use 154 - "High-Cube Transload and Short-Term Storage Warehouse" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Ed.).

⁴ Rates based on Land Use 150 "Warehousing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Ed.).

⁵ Trip Generation from "Valley View Warehouse TIA" from Translutions (May, 2018.)

⁶ Trip Generation from "Folsy East Warehouse Traffic Impact Study" from Kimley Horn (June, 2020.)

⁷ Trip Generation from "Gateway South 7 Warehouse TIA" from Translutions (September, 2021.)

⁸ Trip Generation from "Gateway South 8 Warehouse TIA" from Translutions (July, 2022.)

⁹ Trip generation based on rates for Land Use 310 - "Hotel" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

¹⁰ Trip generation based on rates for Land Use 934 - "Fast-Food Restaurant with Drive-Through" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

¹¹ Trip generation based on rates for Land Use 210 - "Single-Family Detached Housing" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

¹² Trip generation based on rates for Land Use 937 - "Coffee/Donut Shop with Drive-Through Window" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

¹³ Trip generation based on rates for Land Use 710 - "General Office Building" from Institute of Transportation Engineers' (ITE) *Trip Generation* (11th Edition).

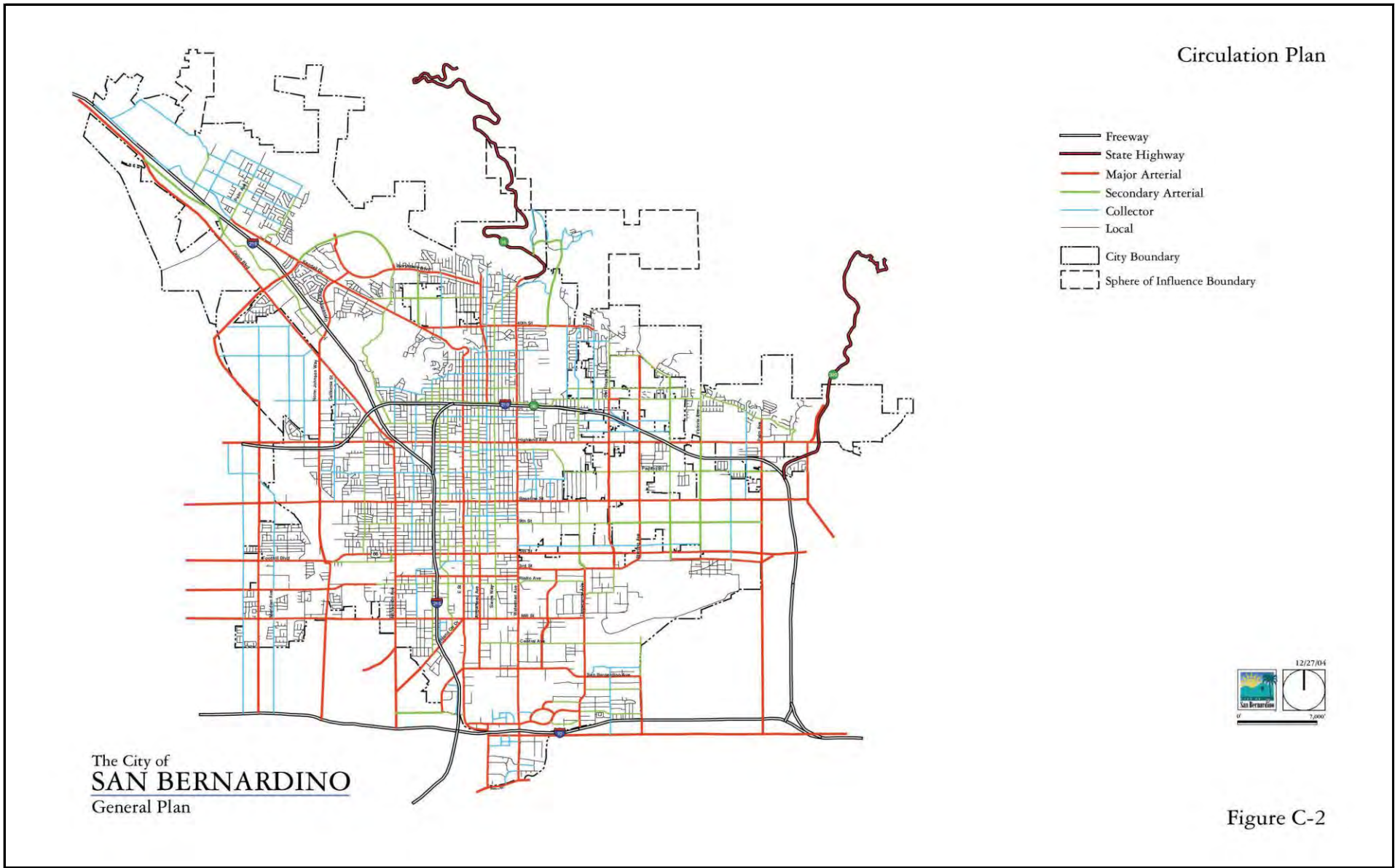


FIGURE 10

**Gateway South 9 Warehouse
City of San Bernardino Circulation Plan**



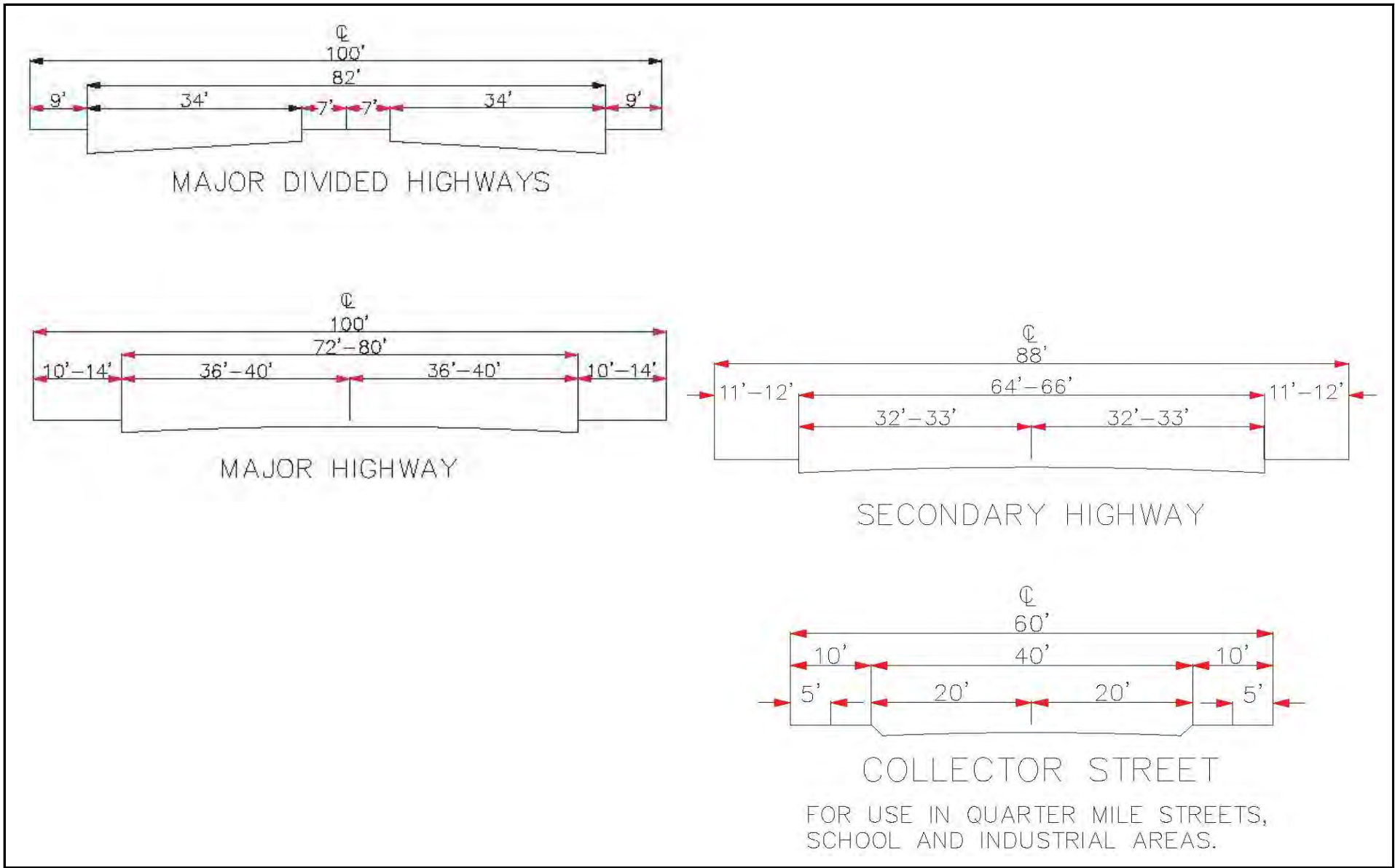


FIGURE 11

Gateway South 9 Warehouse
 City of San Bernardino Roadway Cross-Sections



Metrolink station to the project site and is approximately 2 miles from the project area. Figure 12 illustrates the transit lines within the project area.

6.3 Existing Bicycle & Pedestrian Facilities

The City's bikeway network includes three types of facilities and are discussed below:

- **Class I Bikeways** A Class I bikeway is a dedicated travel-way for bicyclists. The most common applications for these facilities are along rivers, canals, and utility rights-of-way, within college campuses, or within and between parks.
- **Class II Bikeways** Class II bikeways delineate the right-of-way assigned to bicyclists along roadways. Bike lane signs and pavement markings help define these bike lanes.
- **Class III Bikeways** Class III bikeways are shared facilities that serve either to provide continuity to other bicycle facilities or designate preferred routes through high demand corridors. These facilities are normally shared with motor vehicles on the street, or with pedestrians on sidewalks.

Figure 13 illustrates the existing bike lanes within the project area. As shown in Figure 13, there are no existing bike lanes on Lena Road, Norman Road, and Orange Show Road within the project area. Figure 14 illustrates the existing pedestrian facilities near the project. As illustrated in Figure 14, there are no sidewalks adjacent to the project on Norman Road. Lena Road has continuous sidewalks adjacent to the project and sidewalks are continuous on Orange Show Road.

6.4 Existing Intersection Levels of Service

An intersection level of service analysis was conducted for existing conditions to determine current circulation system performance. Figure 15 shows the existing lane geometrics and stop controls at the study intersections. Existing traffic volumes at study intersections are shown in Figure 16. Detailed volume development worksheets are included in Appendix C. The existing levels of service for the study area intersections are summarized in Table H. Level of service calculation worksheets are contained in Appendix D. As shown in Table H, all study area intersections are currently operating at satisfactory levels of service with the exception of the following:

- Lena Road and Orange Show Road (p.m. peak hour).

7.0 OPENING YEAR (2024) CONDITIONS

This section discusses opening year transportation conditions in the study area. It is anticipated that the project will open in 2024.

7.1 Opening Year (2024) Roadway Conditions

Opening year roadway conditions are assumed to be the same as those under existing conditions. However, it should be noted that a traffic signal is planned to be installed at the intersection of Lena Road and Orange Show Road prior to opening year (2024). Therefore, a traffic signal at Lena Road and Orange Show Road has been included in the opening year (2024) scenarios. Figure 17 illustrates the intersection geometrics and stop control for opening year (2024) conditions.

7.2 Opening Year (2024) Transit Service

Transit service under opening year conditions is anticipated to remain the same as under existing conditions.

7.3 Opening Year (2024) Pedestrian & Bicycle Facilities

Pedestrian and bicycle facilities under opening year conditions are anticipated to remain the same as under existing conditions. It should be noted that the City is proposing Class II bike lanes on Orange Show Road. Previously referenced Figure 13 illustrates the proposed bike lanes.

7.4 Opening Year (2024) Base Intersection Levels of Service

An intersection level of service analysis was conducted for opening year (2024) base conditions to determine circulation system performance. Opening year (2024) base traffic volumes at study intersections are shown in Figure 18. Detailed volume development worksheets are included in Appendix C. Opening year (2024) base levels of service for the study



FIGURE 12

Gateway South 9 Warehouse
Transit Facilities

Legend

Project Boundary
 Route 305
 Route 8



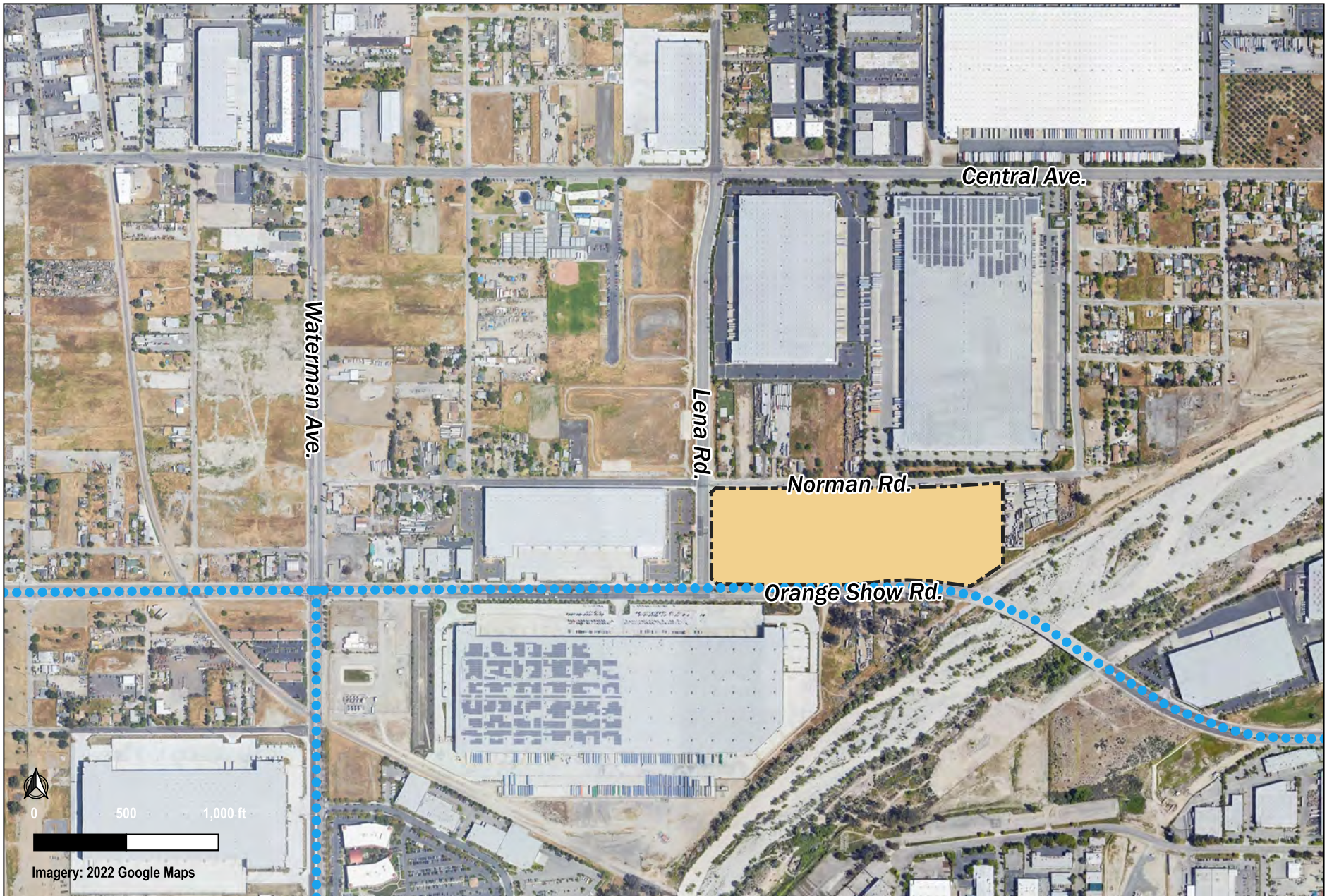


FIGURE 13

Legend

 Project Boundary
  Proposed Class II
  Exist Class II



Gateway South 9 Warehouse
City of San Bernardino Existing and Proposed Bike Lanes

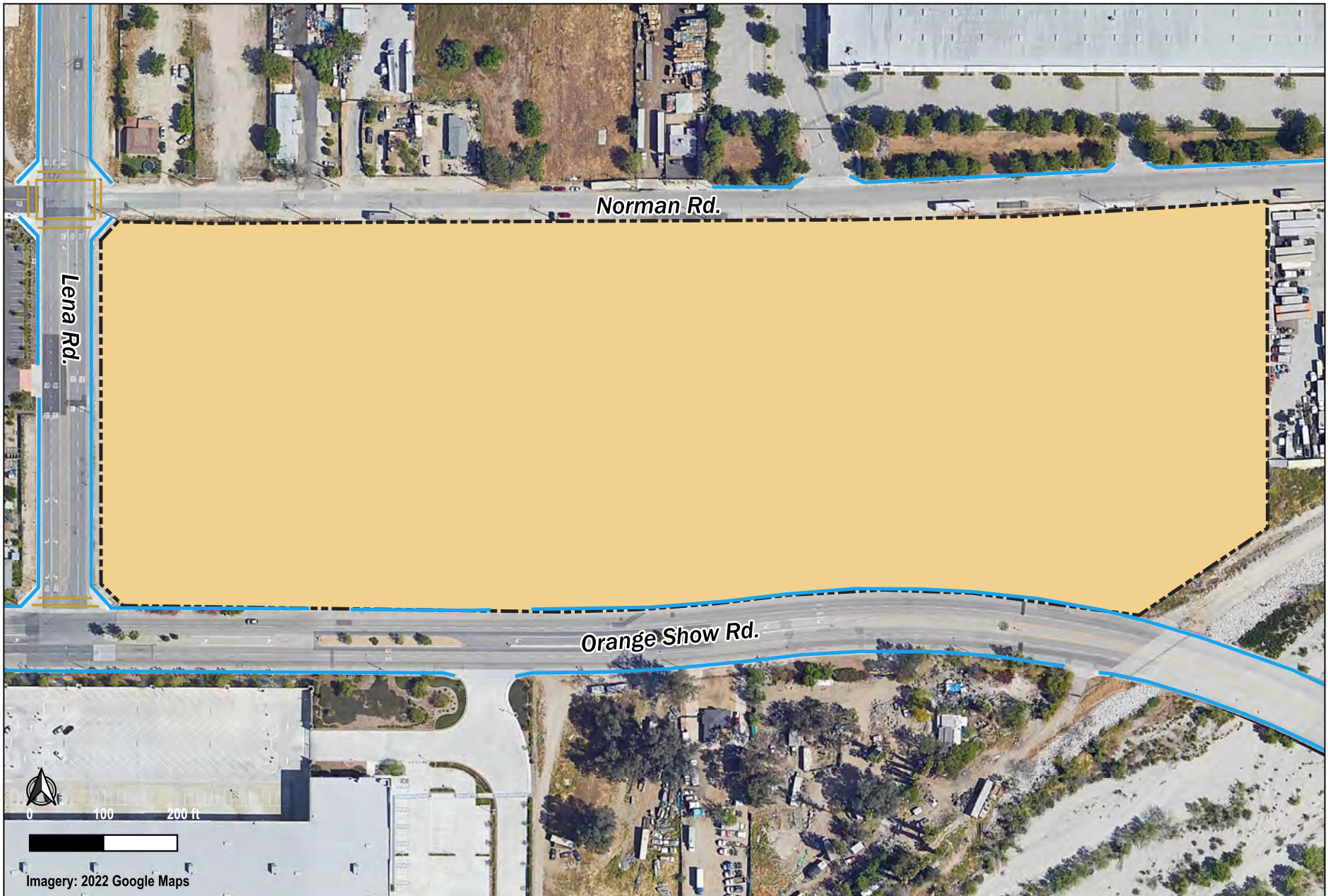
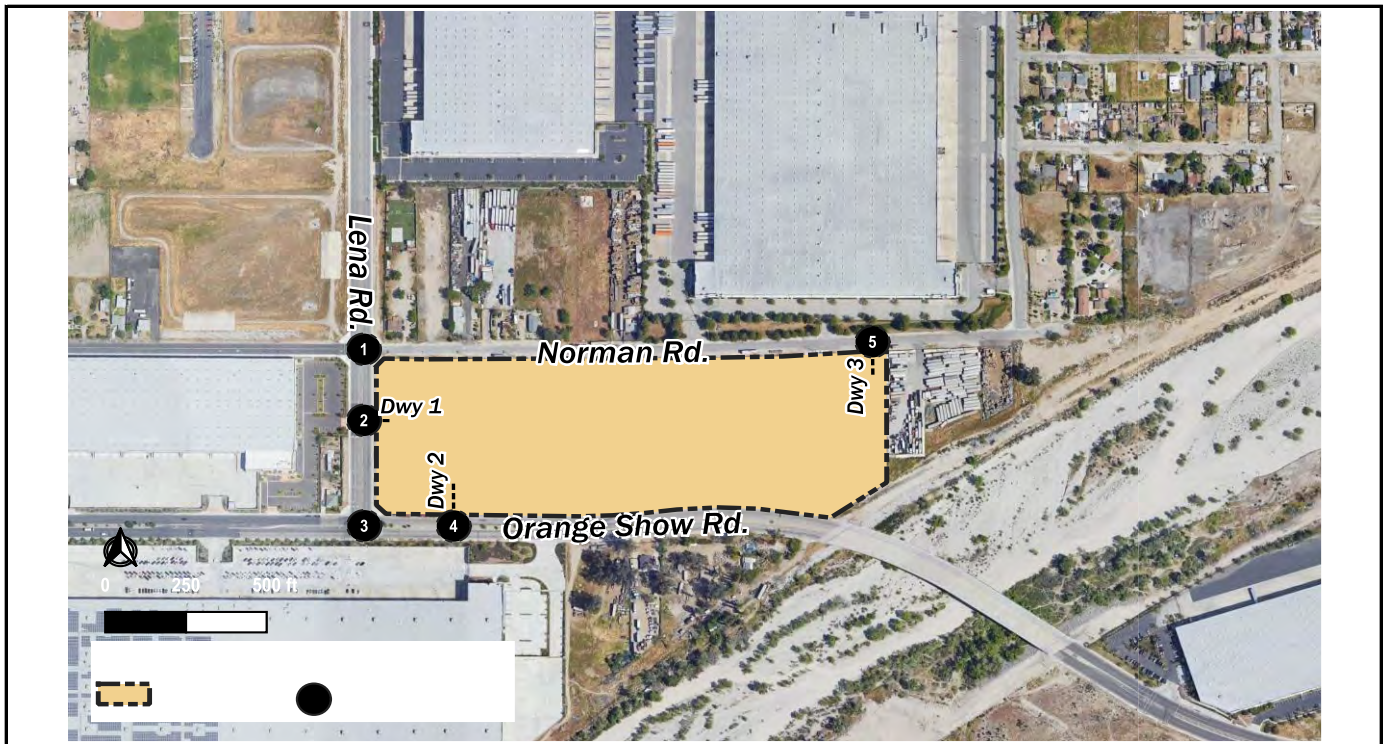


FIGURE 14

Gateway South 9 Warehouse
Pedestrian Facilities

- Legend
- Project Boundary
 - Sidewalks
 - Crosswalks





	<p>Future Intersection</p>	
<p>1 Lena Road/Norman Road</p>	<p>2 Lena Road/Driveway 1</p>	<p>3 Lena Road/Orange Show Road</p>
<p>Future Intersection</p>	<p>Future Intersection</p>	<p>Future Intersection</p>
<p>4 Driveway 2/Orange Show Road</p>	<p>5 Driveway 3/Norman Road</p>	

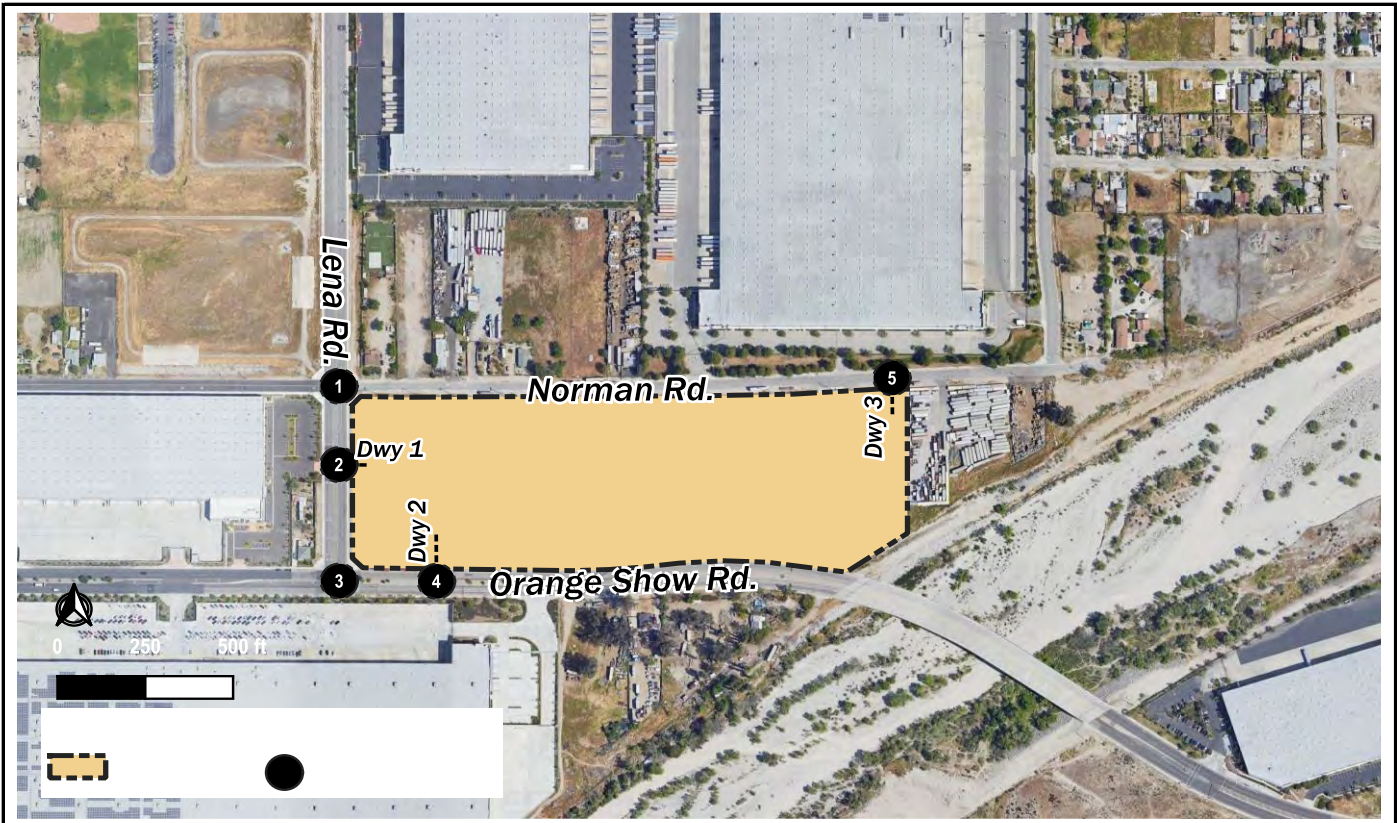
FIGURE 15

Legend

-  Signal
-  Stop Sign

**Gateway South 9 Warehouse
Existing Intersection Lane Geometrics and Stop Control**





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↖ 130/129	↘ 398/575	↙ 351/518																						
<p>1 Lena Road/Norman Road</p>	<p>2 Lena Road/Driveway 1</p>	<p>3 Lena Road/Orange Show Road</p>																						
<p style="text-align: center;"><i>Future Intersection</i></p>	<p style="text-align: center;"><i>Future Intersection</i></p>																							
<p>4 Driveway 2/Orange Show Road</p>	<p>5 Driveway 3/Norman Road</p>																							

FIGURE 16

XXX / YYY AM / PM PCE Volumes

**Gateway South 9 Warehouse
Existing Peak Hour Traffic Volumes (PCEs)**



Table H: Existing Levels of Service

Intersection	Jurisdiction	LOS Standard	Control	Without Project					
				AM Peak Hour			PM Peak Hour		
				Delay	V/C	LOS	Delay	V/C	LOS
1 . Lena Road/Norman Road	San Bernardino	D	AWSC	8.1	-	A	8.1	-	A
2 . Lena Road/Driveway 1	San Bernardino	D	TWSC	<i>Future Intersection</i>					
3 . Lena Road/Orange Show Road	San Bernardino	D	TWSC	21.2	0.04	C	38.6	0.13	E *
4 . Driveway 2/Orange Show Road	San Bernardino	D	TWSC	<i>Future Intersection</i>					
5 . Driveway 3/Norman Road	San Bernardino	D	TWSC	<i>Future Intersection</i>					

Notes:

* Exceeds LOS Standard

LOS = Level of Service

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement. operating at LOS C or worse are reported from HCM 6th Edition movement that defines LOS.

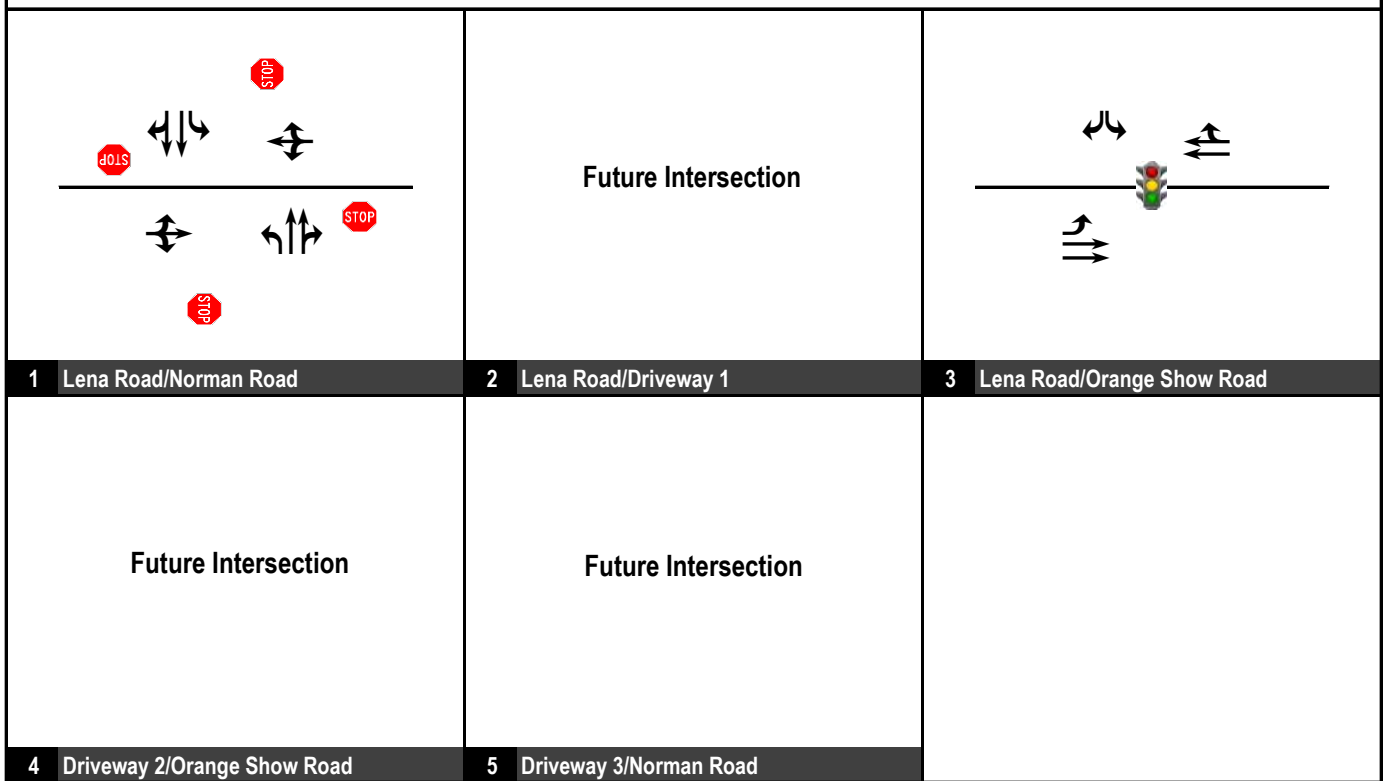
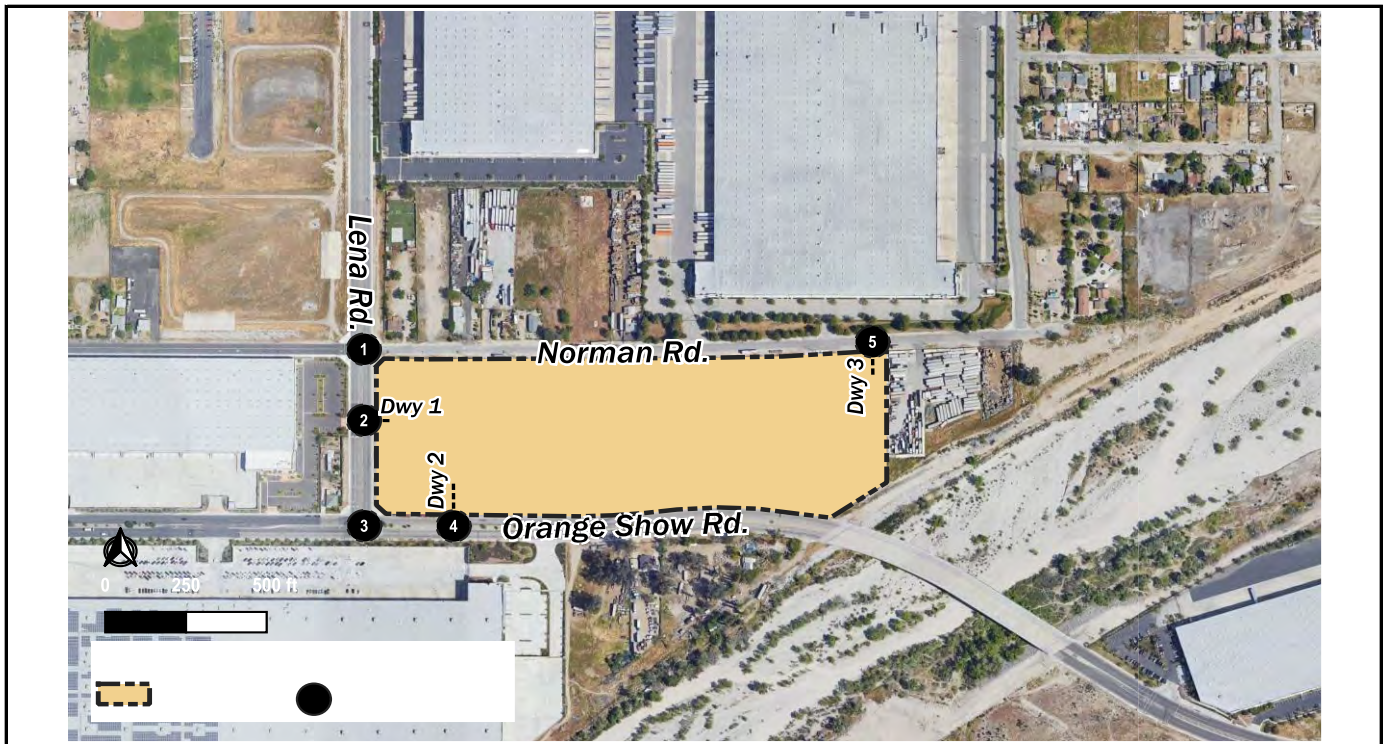


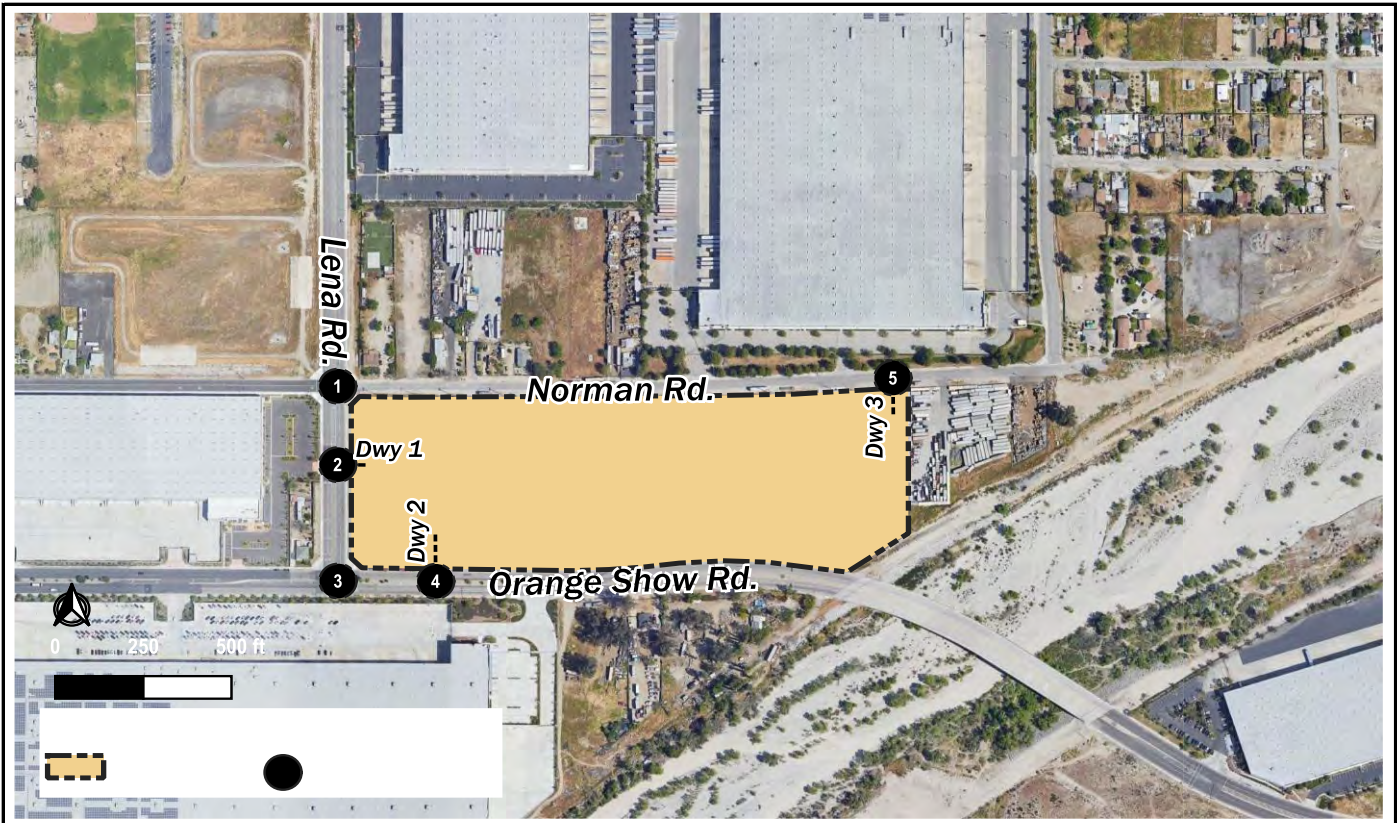
FIGURE 17

Legend

-  Signal
-  Stop Sign

Gateway South 9 Warehouse
Opening Year (2024) Base Intersection Lane Geometrics and Stop Control





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↖ 1/4	↘ 64/64	↙ 5/8	↗ 6/3																	
↖ 2/1	↘ 5/13	↙ 2/7	↗ 2/14																	
↖ 8/6	↘ 86/109	↙ 34/55	↗ 46/37																	
↖ 41/93	↘ 8/14	↙ 22/33																		
↖ 138/137	↘ 422/610	↙ 372/549																		
<p>1 Lena Road/Norman Road</p>	<p>2 Lena Road/Driveway 1</p>	<p>3 Lena Road/Orange Show Road</p>																		
<p style="text-align: center;"><i>Future Intersection</i></p>	<p style="text-align: center;"><i>Future Intersection</i></p>																			
<p>4 Driveway 2/Orange Show Road</p>	<p>5 Driveway 3/Norman Road</p>																			

FIGURE 18

XXX / YYY AM / PM PCE Volumes

**Gateway South 9 Warehouse
Opening Year (2024) Base Peak Hour Traffic Volumes (PCEs)**



area intersections are summarized in Table I. Level of service calculation worksheets are contained in Appendix D. As shown in Table I, all study area intersections are forecast to operate at satisfactory levels of service.

7.5 Opening Year (2024) Base plus Other Proposed Projects Intersection Levels of Service

An intersection level of service analysis was conducted for opening year (2024) base plus other proposed projects to determine circulation system performance. Opening year (2024) base plus other proposed projects traffic volumes at study intersections are shown in Figure 19. The opening year base plus other proposed projects levels of service for the study area intersections are summarized in Table J. Level of service calculation worksheets are contained in Appendix D. As shown in Table J, all study area intersections are forecast to operate at satisfactory levels of service.

7.6 Opening Year (2024) Base plus Other Proposed Projects plus Project Intersection Levels of Service

An intersection level of service analysis was conducted for opening year (2024) base plus other proposed projects plus project to determine circulation system performance. Opening year (2024) base plus other proposed projects plus project traffic volumes at study intersections are shown in Figure 20. The opening year base plus other proposed projects plus project levels of service for the study area intersections are summarized in Table J. Level of service calculation worksheets are contained in Appendix D. As shown in Table J, all study area intersections are forecast to operate at satisfactory levels of service.

8.0 VMT ANALYSIS

Based on the City guidelines, there are three types of screening criteria that lead agencies can apply to screen projects from a project-level VMT assessment. These screening steps include Transit Priority Area Screening, Low VMT Area Screening, Project Type Screening. The SBCTA low VMT area screening tool is included in Appendix E. The project does not screen out from any of the steps mentioned above and therefore, a complete VMT analysis and forecasting through the SBTAM model was conducted to determine if the project may have a significant VMT impact. The VMT analysis included below analyzes the project generated VMT and project effect on VMT consistent with the City guidelines. Based on the City guidelines, this report analyzes the project generated VMT and project effect on VMT for the following scenarios:

1. Baseline conditions.
2. Baseline plus project conditions.
3. Year 2040 without project conditions; and
4. Year 2040 plus project conditions.

CEQA VMT Impact Thresholds

The City guidelines have established thresholds of significance for project generated VMT for use as part of the environmental review process under CEQA. The following would result in a significant project generated VMT:

The baseline plus project generated VMT per service population exceeds the City of San Bernardino General Plan Buildout VMT per service population, or

1. The cumulative (2040) plus project generated VMT per service population exceeds the City of San Bernardino General Plan Buildout VMT per service population.

The project's effect on VMT would be considered significant if it resulted in the cumulative link-level boundary VMT per service population within the City of San Bernardino to increase under the plus project condition to the no project condition.

Project Generated VMT

The project generated VMT per service population is compared back to the appropriate benchmark noted in the Impact thresholds section above under baseline and year 2040 conditions.

Table I: Opening Year (2024) Base Levels of Service

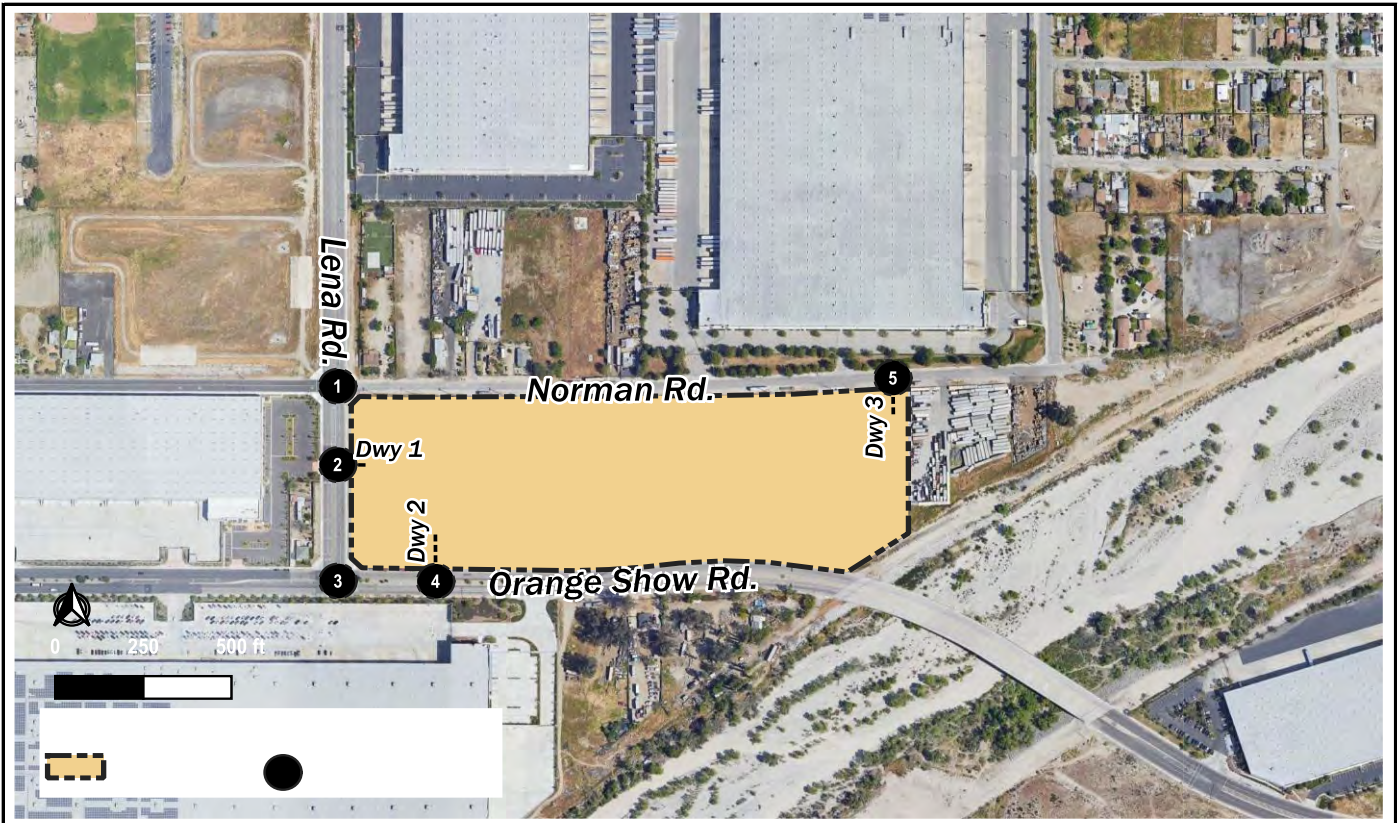
Intersection	Jurisdiction	LOS Standard	Control	Without Project					
				AM Peak Hour			PM Peak Hour		
				Delay	V/C	LOS	Delay	V/C	LOS
1 . Lena Road/Norman Road	San Bernardino	D	AWSC	8.1	-	A	8.2	-	A
2 . Lena Road/Driveway 1	San Bernardino	D	TWSC	<i>Future Intersection</i>					
3 . Lena Road/Orange Show Road	San Bernardino	D	Signal	20.5	-	C	22.2	-	C
4 . Driveway 2/Orange Show Road	San Bernardino	D	TWSC	<i>Future Intersection</i>					
5 . Driveway 3/Norman Road	San Bernardino	D	TWSC	<i>Future Intersection</i>					

Notes:

* Exceeds LOS Standard

LOS = Level of Service

TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.



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8/10	80/98	6/8	6/4																													
9/8	6/14	3/12	12/7																													
119/129	36/56	36	119																													
46/39	3/15	6/8	6/4																													
9/8	6/14	3/12	12/7																													
119/129	36/56	36	119																													
51/115	14/33	37/42																														
158/149	434/629	385/565																														
<p>1 Lena Road/Norman Road</p>	<p>2 Lena Road/Driveway 1</p>	<p>3 Lena Road/Orange Show Road</p>																														
<p>Future Intersection</p>	<p>Future Intersection</p>																															
<p>4 Driveway 2/Orange Show Road</p>	<p>5 Driveway 3/Norman Road</p>																															

FIGURE 19

XXX / YYY AM / PM PCE Volumes



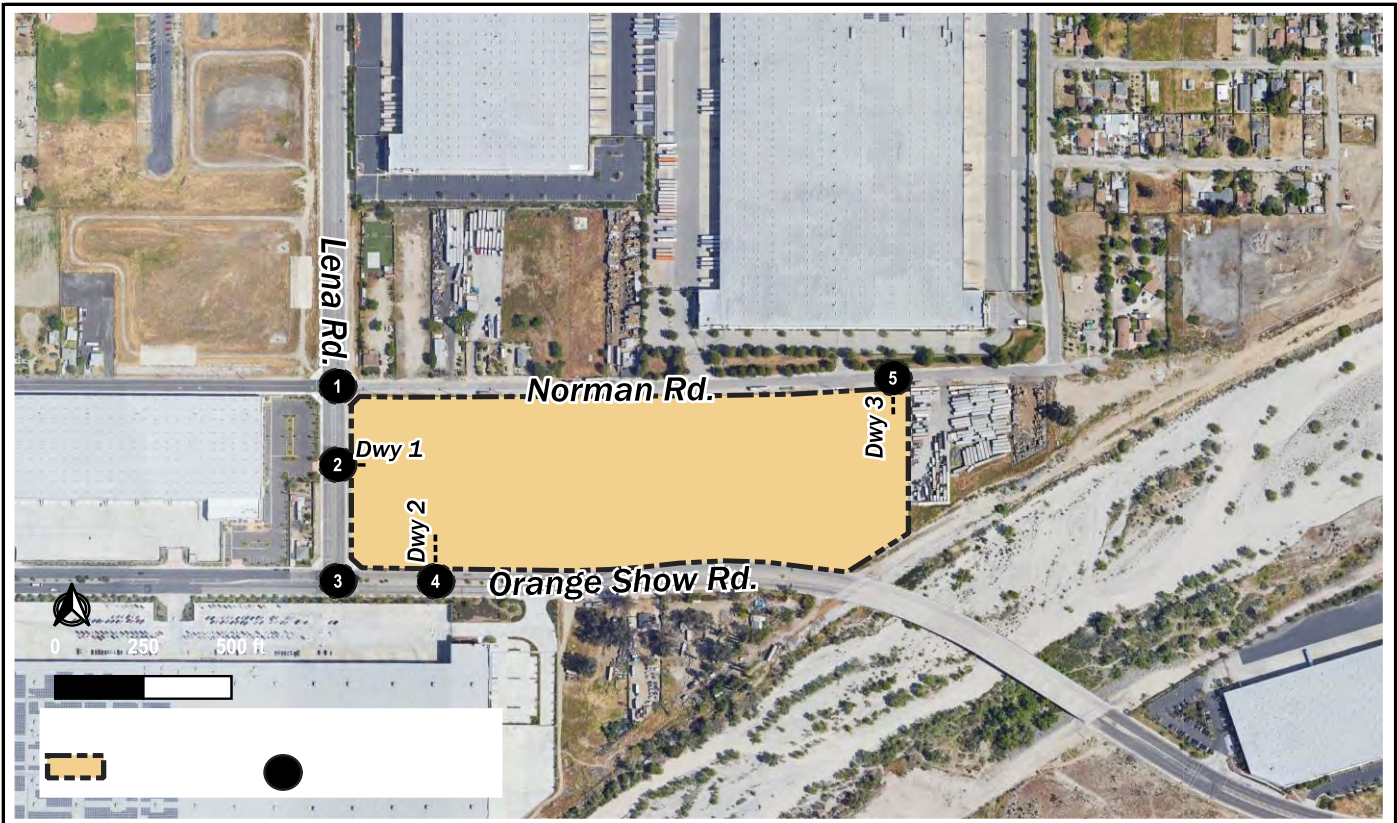
Gateway South 9 Warehouse
 Opening Year (2024) Base Plus Other Approved Projects
 Peak Hour Traffic Volumes (PCEs)

Table J: Opening Year Base Plus Other Projects Levels of Service

Intersection	Jurisdiction	LOS Standard	Control	Without Project						With Project						V/C Change	
				AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM	PM
				Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS		
1. Lena Road/Norman Road	San Bernardino	D	AWSC	8.4	-	A	8.5	-	A	8.4	-	A	8.4	-	A	-	-
2. Lena Road/Driveway 1	San Bernardino	D	TWSC	<i>Future Intersection</i>						0.01	-	A	8.9	-	A	-	-
3. Lena Road/Orange Show Road	San Bernardino	D	Signal	23.7	0.34	C	24	0.49	C	23.9	0.34	C	24.4	0.49	C	0	0
4. Driveway 2/Orange Show Road	San Bernardino	D	TWSC	<i>Future Intersection</i>						9.7	-	A	10.5	-	B	-	-
5. Driveway 3/Norman Road	San Bernardino	D	TWSC	<i>Future Intersection</i>						9.1	-	A	9.3	-	A	-	-

Notes:

- * Exceeds LOS Standard
- LOS = Level of Service
- TWSC = Two-Way Stop Control; For TWSC intersections, reported delay is for worst-case movement.



<table border="1"> <tr> <td>↖ 8 / 10</td> <td>↘ 80 / 98</td> <td>↙ 9 / 9</td> <td>↗ 6 / 7</td> </tr> <tr> <td>↖ 9 / 8</td> <td>↘ 8 / 15</td> <td>↙ 3 / 12</td> <td>↗ 3 / 16</td> </tr> <tr> <td>↖ 12 / 8</td> <td>↘ 119 / 130</td> <td>↙ 33 / 51</td> <td>↗ 41 / 32</td> </tr> <tr> <td>↖ 10 / 16</td> <td>↘ 450 / 664</td> <td>↙ 13 / 8</td> <td>↗ 424 / 606</td> </tr> </table>	↖ 8 / 10	↘ 80 / 98	↙ 9 / 9	↗ 6 / 7	↖ 9 / 8	↘ 8 / 15	↙ 3 / 12	↗ 3 / 16	↖ 12 / 8	↘ 119 / 130	↙ 33 / 51	↗ 41 / 32	↖ 10 / 16	↘ 450 / 664	↙ 13 / 8	↗ 424 / 606	<table border="1"> <tr> <td>↖ 124 / 142</td> <td>↘ 164 / 188</td> <td>↙ 2 / 1</td> <td>↗ 0 / 3</td> </tr> </table>	↖ 124 / 142	↘ 164 / 188	↙ 2 / 1	↗ 0 / 3	<table border="1"> <tr> <td>↖ 45 / 104</td> <td>↘ 157 / 145</td> <td>↙ 447 / 637</td> <td>↗ 37 / 42</td> </tr> <tr> <td>↖ 14 / 37</td> <td>↘ 395 / 581</td> <td>↙ 157 / 145</td> <td>↗ 37 / 42</td> </tr> </table>	↖ 45 / 104	↘ 157 / 145	↙ 447 / 637	↗ 37 / 42	↖ 14 / 37	↘ 395 / 581	↙ 157 / 145	↗ 37 / 42
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↖ 9 / 8	↘ 8 / 15	↙ 3 / 12	↗ 3 / 16																											
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1 Lena Road/Norman Road	2 Lena Road/Driveway 1	3 Lena Road/Orange Show Road																												
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↖ 4 / 10	↘ 0 / 1	↙ 45 / 78	↗ 1 / 0																											
4 Driveway 2/Orange Show Road	5 Driveway 3/Norman Road																													

FIGURE 20

XXX / YYY AM / PM PCE Volumes



Gateway South 9 Warehouse
Opening Year (2024) Base Plus Other Approved Projects Plus Project
Peak Hour Traffic Volumes (PCEs)

Baseline Conditions

The baseline VMT conditions is derived from the SBCTA Screening tool. The baseline VMT per service population from the screening tool is 29.6 miles.

Baseline Plus Project Conditions

The baseline plus project conditions was derived from a SBTAM model run by adding the project related Socio-Economic Data (SED), which is based on SCAG's employee forecast data to Traffic Analysis Zone (TAZ) 53806201 and moving the baseline no project SED data to an adjacent TAZ. The project was coded using a service population of 260. The project generated VMT was extracted from the model using the origin-destination trip matrix. Table K shows the baseline plus project VMT per service population. As shown in Table K, the baseline plus project VMT per service population is 24.9 miles. Based on the City thresholds, a project would have a significant VMT impact if the baseline plus project generated VMT per service population exceeds the City's General Plan Buildout VMT per service population of 31.6 miles. The baseline plus project VMT per service population is 24.9 miles, which is less than the City's General Plan Buildout VMT per service population of 31.6 miles, therefore, the project does not have an VMT impact under baseline plus project conditions.

Table K: Project Generated VMT

Baseline	Project
Population	-
Employment	260
Service Population	260
Homebased Work (HBW) VMT*	4,410
OD VMT*	6,469
HBW VMT per employee	17.0
OD VMT per service population	24.9
City Threshold**	31.6
Impact Less Than Significant?	Yes
2040	Project
Population	-
Employment	260
Service Population	260
Homebased Work (HBW) VMT*	4,346
OD VMT*	7,166
HBW VMT per employee	16.7
OD VMT per service population	27.6
City Threshold**	31.6
Impact Less Than Significant?	Yes

*: Derived from a SBTAM model run by adding project related SED, based on SCAG's employee forecast data. .

** : Obtained from SBCTA SB743 screening tool (<https://www.gosbcta.com/vmtscreening>)

Year 2040 Conditions

The year 2040 VMT per service population is derived from the SBCTA Screening tool. The year 2040 VMT per service population from the screening tool is 31.6 miles.

Year 2040 Plus Project Conditions

The year 2040 plus project conditions was derived from a SBTAM model run by adding the project related Socio-Economic Data (SED), which is based on SCAG's employee forecast data to Traffic Analysis Zone (TAZ) 53806201 and moving the year 2040 no project SED data to an adjacent TAZ. The project was coded using a service population of 260. The project generated VMT was extracted from the model using the origin-destination trip matrix. Table K shows the year 2040 plus project VMT per service population. As shown in Table K, the year 2040 plus project VMT per service population is 27.6 miles. The year 2040 VMT per service population for the City is 31.6 miles. Based on the City thresholds, a project would have a significant VMT impact if the year 2040 plus project generated VMT per service population exceeds the City's General Plan Buildout VMT per service population. The year 2040 plus project VMT per service population is 27.6 miles, which is less than the City's General Plan Buildout VMT per service population of 31.6 miles, and therefore, the project does not have an VMT impact under year 2040 plus project conditions.

Project Effect on VMT

The project effect on VMT compares how the project changes VMT on the Citywide network and compares it to the no project condition under baseline and year 2040 conditions. The project effect on VMT was estimated using the SBTAM using the City of San Bernardino boundary and extracting the total link-level VMT for both the without and with project conditions consistent with the City guidelines.

Baseline Plus Project Conditions

Table L below shows the baseline plus project effect on VMT per service population. As shown in Table L, the baseline plus project VMT per service population is 10.976 miles. The baseline no project VMT per service population for the City is 11.017 miles. Based on the City thresholds, a project would have a significant VMT impact if the baseline VMT per service population within the City increases under the plus project condition compared to the no project condition. The baseline plus project VMT per service population does not increase when compared to the no project condition, therefore, the project does not have an VMT impact under baseline plus project conditions.

Year 2040 Plus Project Conditions

Table L below shows the year 2040 plus project VMT per service population. As shown in Table L, the year 2040 plus project VMT per service population is 12.379 miles. The year 2040 no project VMT per service population for the City is 12.385 miles. Based on the City thresholds, a project would have a significant VMT impact if the year 2040 VMT per service population within the City increases under the plus project condition compared to the no project condition. The year 2040 plus project VMT per service population does not increase when compared to the no project condition, therefore, the project does not have an VMT impact under year 2040 plus project conditions.

Table L: Project Effect on VMT

	With Project	Without Project	Difference
Baseline			
Roadway VMT	3,555,963	3,566,315	-
Service Population	323,982	323,722	-
VMT per service population	10.976	11.017	-0.041
Year 2040			
Roadway VMT	4,665,050	4,664,057	-
Service Population	376,857	376,597	-
VMT per service population	12.379	12.385	-0.006

9.0 SUMMARY & CONCLUSIONS

The project proposes the construction of approximately 397,400 square feet of high-cube warehousing uses. Access to the project will be provided via three driveways. Driveway 1 is located on Lena Road and is a right-in/right-out access driveway. Driveway 2 is located on Orange Show Road and will allow left turns in via an existing curb cut with left turn pocket as well as right-in/right-out-access. Driveway 3 is located on Norman Road and is a full-access driveway for autos and trucks. Under existing conditions, the intersection of Lena Road and Orange Show Road is forecast to operate at unsatisfactory LOS. A traffic signal is planned to be installed at the intersection of Lena Road and Orange Show Road prior to opening year (2024). Therefore, a traffic signal at Lena Road and Orange Show Road has been included in the opening year (2024) scenarios. Under opening year (2024) conditions, all intersections are forecast to operate at satisfactory LOS under with and without project conditions.

APPENDIX A: APPROVED SCOPING AGREEMENT



City of San Bernardino Public Works / Traffic Engineering Department Traffic Scope Approval Form

To be completed by applicant consultant and approved by Public Works prior to start of study

Project Name:	Gateway South 9 Warehouse	
Address:	GWS9 Warehouse	
Description:	Southeast corner of Lena Road/Norman Road	
Developer's Name:	397,700 SF High-Cube Transload and Short-Term Storage	
Address:	Hillwood Investment Properties	
Telephone No.:	901 Via Piemonte, Suite 175 Ontario, CA 91764	Email address: Jason.Huber@hillwood.com
	909-256-5911	

Trip Generation Rates from ITE Latest Edition

Land Use (1) High-Cube Transload and Short-Term Storage Warehouse
 Development Sq Ft 397,400 SF
 ITE Land Use Code 154
 Daily Trips 708
AM Peak Hour Trips
 Inbound 32
 Outbound 14
 Total 46
PM Peak Hour Trips
 Inbound 17
 Outbound 30
 Total 47

Land Use (2) _____
 Development Sq Ft _____
 ITE Land Use Code _____
 Daily Trips _____
AM Peak Hour Trips
 Inbound _____
 Outbound _____
 Total _____
PM Peak Hour Trips
 Inbound _____
 Outbound _____
 Total (Please see attached Trip Generation Table A)

(Use Additional Sheet(s), if necessary)

Pass-by Trips (%), if applicable: _____ %
Land Use (1) Existing Use - Drop Lot
 ITE Land Use Code San Bernardino County Rates
 Daily Trips 419
AM Peak Hour Trips
 Inbound 10
 Outbound 9
 Total 19
PM Peak Hour Trips:
 Inbound 9
 Outbound 13
 Total 22

Land Use (2) Total Net Trips (Proposed - Existing)
 ITE Land Use Code _____
 Daily Trips 289
AM Peak Hour Trips
 Inbound 22
 Outbound 5
 Total 27
PM Peak Hour Trips:
 Inbound 8
 Outbound 17
 Total 25

Project Opening Year: 2024
Study Intersections:

1	Lena Road/Norman Road	
2	Lena Road/Driveway 1	
3	Lena Road/Orange Show Road	
4	Driveway 2/Orange Show	
5	Road Driveway 3/Norman Road	

Build-out Year: _____

6	_____	
7	_____	
8	_____	
9	_____	
10	_____	

(Use Additional Sheet(s) and Maps to show project Boundaries & Attach memo for project Description)



**City of San Bernardino Public Works / Traffic Engineering Department
Traffic Scope Approval Form**

To be completed by applicant consultant and approved by Public Works prior to start of study

Study Roadway Segments: 1 _____ 2 _____
 3 _____ 4 _____
 5 _____ 6 _____

Proposed Development Use: Residential Commercial Mixed Use Other

Software Methodology: Synchro HCS

Additional issues to be considered: Traffic calming measures Queuing Analysis
 Bike/Ped Accommodations Merge Analysis Gap Analysis
 Actuation/Coordination Safety Analysis Sight Distance Analysis

Is the project screened from VMT assessment? Yes No

VMT Screening Justification: Please see Attachment 1 for VMT analysis.

Ambient Growth Rate: 3 %

Please see Attachment for Trip Distribution and Trip Assignment.

Trip Distribution: East _____ % West _____ % North _____ % South _____ %

Consultant Preparer's Name: Translutions

Address: 17632 Irvine Boulevard Suite 200, Tustin, CA 92780

(949) 656-3131

Telephone No. _____

PE / TE License #: T2847, C81872

Email Address: sandipan@translutions.com

Signature: _____

Sandipan Shrivastava

Date: 11/4/2022

Approved By (Public Works Department):

Signature: _____

Azam Jabshah

Date: _____

11/14/2022

Name: _____

Azam Jabshah

Title: _____

Traffic Engineer

*prepare a TIA
prepare a VMT detailed analysis.*

PROJECT DESCRIPTION: The project site is located at the southeast corner of Lena Road and Norman Road in the City of San Bernardino, California. The project includes the construction of 397,400 square feet of High-Cube Transload and Short-Term Storage warehousing. The project includes four project driveways. Driveway 1 is located on Lena Road and is a right-in/right-out access driveway. Driveway 2 is located on Orange Show Road and will allow left turns in via an existing curb cut with left turn pocket as well as right-in/right-out-access. Driveway 3 is located on Norman Road and is a full-access driveway for autos and trucks.

SITE PLAN: Attached Figure 1

PROJECT TRIP GENERATION

Existing Traffic. The project site includes various industrial land uses with multiple driveways on Norman Road and Orange Show Road. However, based on our site visit, there is one trailer parking lot on Norman Road totaling approximately 2 acres that currently generate a significant number of trips. The Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition) does not currently have a land use for truck storage facilities. The trip generation for the drop lots have been calculated from the County of San Bernardino guidance on trailer parking trip generation. Table A shows the trip generation of the trailer parking lots. As shown on Table A, the existing trailer parking are anticipated to generate 19 PCE trips during the a.m. peak hour, PCE 22 trips during the p.m. peak hour, and 419 daily PCE trips. The trip rates are included in Appendix A.

Project Traffic. Table B shows the trip generation of the proposed High-Cube Transload and Short-Term Storage use. As shown on Table B, the proposed project is anticipated to generate 46 PCE trips during the a.m. peak hour, 47 PCE trips during the p.m. peak hour, and 708 daily PCE trips. Figures 2 through 5 show the distribution and assignment of truck and auto trips for the proposed project.

The trips from the existing trailer parking were subtracted from the proposed high-cube warehouse trips to develop the total net project trip generation. Table C includes the total net project trip generation. The total net project trip generation is forecast to be 27 a.m. peak hour PCE trips, 25 p.m. peak hour PCE trips, and 289 daily PCE trips. The City guidelines require a traffic impact analysis with a Level of Service analysis for projects that generate 250 or more daily two-way trips. Since the project generates more than 250 daily trips, a traffic impact analysis with Level of Service analysis will be prepared and submitted to the City.

LOS ANALYSIS EVALUATION:

A focused traffic analysis will be conducted at the study area intersections listed below:

1. Lena Road/Norman Road
2. Lena Road/Driveway 2
3. Lena Road/Orange Show Road
4. Driveway 4/Orange Show Road
5. Driveway 5/Norman Road

The LOS analysis will be conducted for the following scenarios:

- Existing Year Traffic Conditions.
- Project Opening Year Base Traffic Conditions.
- Project Opening Year Base Plus Other Proposed Projects Traffic Conditions.
- Project Opening Year Base Plus Other Proposed Projects Plus Project Conditions.

With Project Adjustment to Existing Volumes. As stated previously, the project site includes an existing trailer parking facility that will be removed when the project is completed. To account for the existing trailer parking trips

already on the roadway network, the existing volumes will be adjusted by removing the trip assignment for the existing parking facility and adding the proposed project trips under the with project scenarios.

VMT SCREENING ANALYSIS: The City VMT guidelines include three types of screening that lead agencies can apply to effectively screen projects from project-level assessment. The screening steps are Transit Priority Area Screening, Low VMT Area Screening, and Project Type Screening. Based on an initial assessment of the screening steps, the project does not meet any of the screening requirements and a project-level VMT assessment will be conducted.

VMT ANALYSIS: The SBTAM will be modified to include the project socio-economic data. A model run will be conducted to calculate project VMT. The analysis will include project generated VMT and the project effect on VMT estimates for the project TAZ under baseline and year 2040 conditions. The VMT data extraction will be conducted based on the "Detailed VMT Forecasting Information" included in the City's Guidelines.

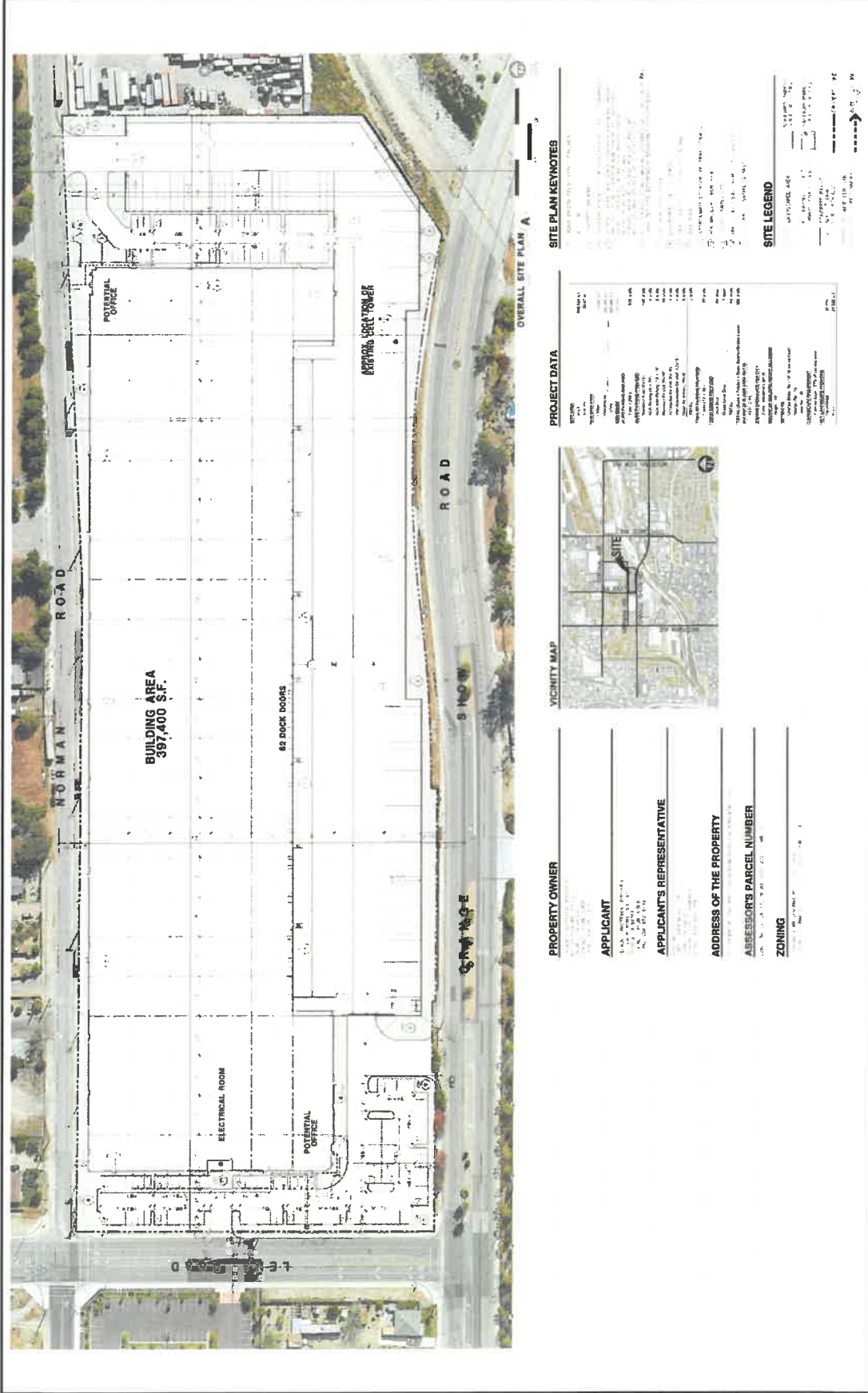


FIGURE 1
Gateway South 9 Warehouse
Site Plan



Table A - Existing Trip Generation

Land Use	Units ¹	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Truck Terminal	2.00 Ac.							
Trip Generation Rates ²		1.936	1.584	3.520	1.950	2.030	3.980	76.840
PCE Inbound/Outbound Splits		55%	45%	100%	49%	51%	100%	50%/50%
Vehicle Mix³								
Passenger Cars		13.30%	13.30%	13.30%	13.30%	13.30%	13.30%	13.30%
4-Axle Trucks		86.70%	86.70%	86.70%	86.70%	86.70%	86.70%	86.70%
Total Trips								
Passenger Cars		1	0	1	0	1	1	20
4-Axle+ Trucks		3	3	6	3	4	7	133
Total Vehicle Trips		4	3	7	3	5	8	153
Total PCE Trips								
Passenger Cars		1	0	1	0	1	1	20
4-Axle+ Trucks		9	9	18	9	12	21	399
Total Vehicle Trips		10	9	19	9	13	22	419

¹ Ac = Acres

² Rates provided by County of San Bernardino.

³ Appendix A includes County of San Bernardino rates.

Table B: Project Trip Generation (HCW)

Land Use	Units	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Total Vehicle Rates								
Trip Generation Rates ¹	TSF	0.062	0.018	0.080	0.028	0.072	0.100	1.400
PCE Inbound/Outbound Splits		69%	31%	100%	31%	69%	100%	100%
Passenger Car Equivalent Rates Calculations								
Passenger Cars								
Recommended Mix (%) ²		84.09%	44.57%	75.00%	83.21%	92.64%	90.00%	84.29%
PCE Factor ³		1.0	1.0	1.0	1.0	1.0	1.0	1.0
PCE Rates		0.052	0.008	0.060	0.023	0.067	0.090	1.180
2-Axle Trucks								
Recommended Mix (%) ²		2.69%	9.39%	4.23%	2.84%	1.25%	1.69%	2.66%
PCE Factor ³		2.0	2.0	2.0	2.0	2.0	2.0	2.0
PCE Rates		0.003	0.003	0.007	0.002	0.002	0.003	0.075
3-Axle Trucks								
Recommended Mix (%) ²		3.61%	12.59%	5.68%	3.81%	1.67%	2.27%	3.57%
PCE Factor ³		2.5	2.5	2.5	2.5	2.5	2.5	2.5
PCE Rates		0.006	0.006	0.011	0.003	0.003	0.006	0.125
4-Axle Trucks								
Recommended Mix (%) ²		9.60%	33.46%	15.09%	10.13%	4.44%	6.04%	9.48%
PCE Factor ³		3.0	3.0	3.0	3.0	3.0	3.0	3.0
PCE Rates		0.018	0.018	0.036	0.009	0.010	0.018	0.398
Warehouse Net PCE Rate		0.078	0.036	0.114	0.036	0.081	0.117	1.778
Total Project Trip Generation (Trips, By Vehicle Type)								
Warehouse	397.400 TSF							
Passenger Cars		21	3	24	9	27	36	469
2-Axle Trucks		0	1	1	1	0	1	15
3-Axle Trucks		1	1	2	1	0	1	20
4+ Axle Trucks		3	2	5	1	1	2	53
All Trucks		4	4	8	3	1	4	88
Total Vehicles		25	7	32	12	28	40	557
Total Project Trip Generation (Passenger Car Equivalent Trips, By Vehicle Type)								
Passenger Cars		21	3	24	9	27	36	469
Truck PCE								
2-Axle Trucks		0	2	2	2	0	2	30
3-Axle Trucks		2	3	5	3	0	3	50
4+ Axle Trucks		9	6	15	3	3	6	159
Total Truck PCE		11	11	22	8	3	11	239
Total PCE		32	14	46	17	30	47	708

¹ Rates based on Land Use 154 - "High-Cube Transload and Short-Term Storage Warehouse" from Institute of Transportation Engineers (ITE) Trip Generation (11th Edition).

² Recommended Truck Mix Percentages per ITE 11th Ed. Sub types based on Fontana Study.

³ Recommended PCE Factor per City of San Bernardino Traffic Impact Study Guidelines, 2004

Table C - Net New Trip Generation

Land Use	Units ¹	Peak Hour						Daily
		AM Peak Hour			PM Peak Hour			
		In	Out	Total	In	Out	Total	
Proposed PCE Trips								
Passenger Cars		21	3	24	9	27	36	469
Truck PCE		11	11	22	8	3	11	239
Total Vehicle Trips		32	14	46	17	30	47	708
Existing PCE Trips								
Passenger Cars		1	0	1	0	1	1	20
Truck PCE		9	9	18	9	12	21	399
Total Vehicle Trips		10	9	19	9	13	22	419
Net New PCE Trips								
Passenger Cars		20	3	23	9	26	35	449
Truck PCE		2	2	4	-1	-9	-10	-160
Total PCE Trips		22	5	27	8	17	25	289

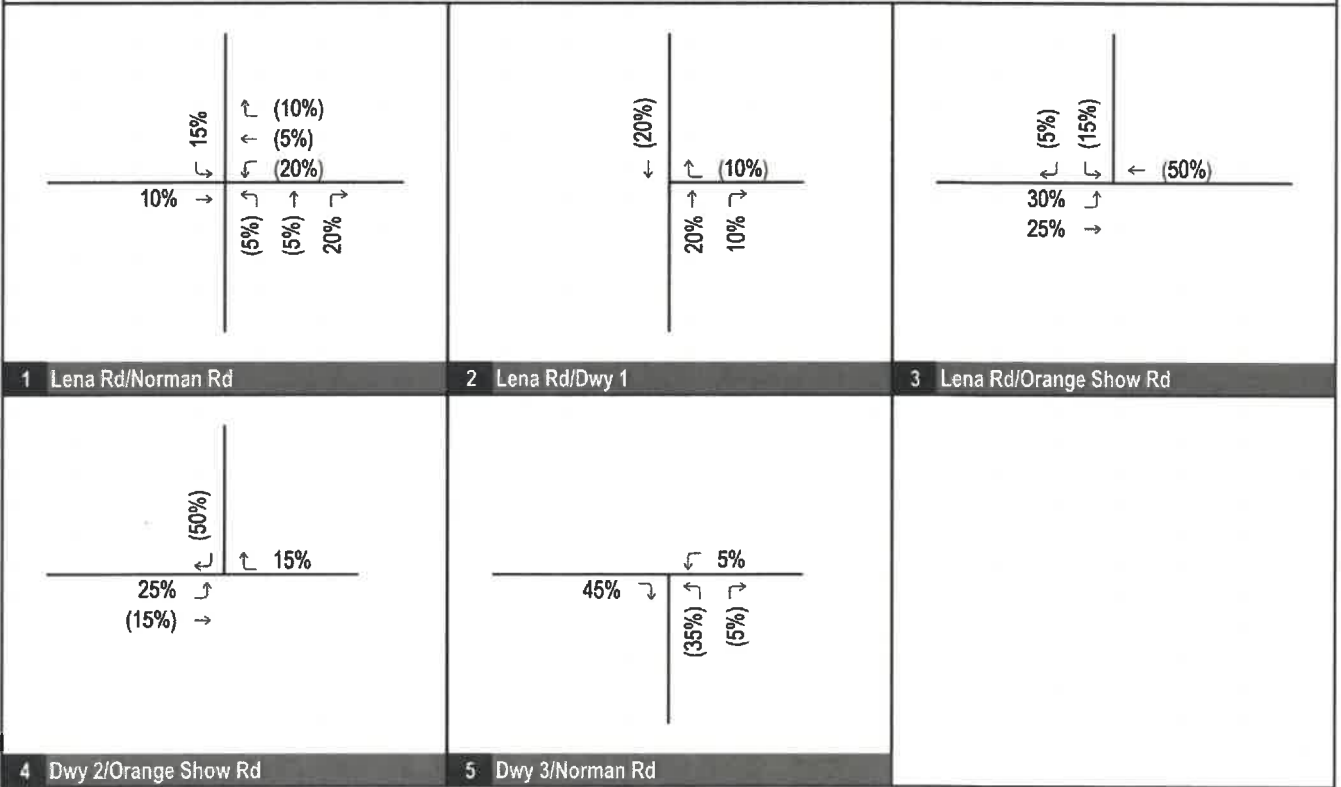


FIGURE 2

XXX%(YYY%) Inbound%(Outbound%) Percent



**Gateway South 9 Warehouse
Project Trip Distribution (Autos)**



1 Lena Rd/Norman Rd	2 Lena Rd/Dwy 1	3 Lena Rd/Orange Show Rd
4 Dwy 2/Orange Show Rd	5 Dwy 3/Norman Rd	

FIGURE 3

XXX / YYY AM / PM Peak Hour Trips



Gateway South 9 Warehouse
Project Trip Assignment (Autos)

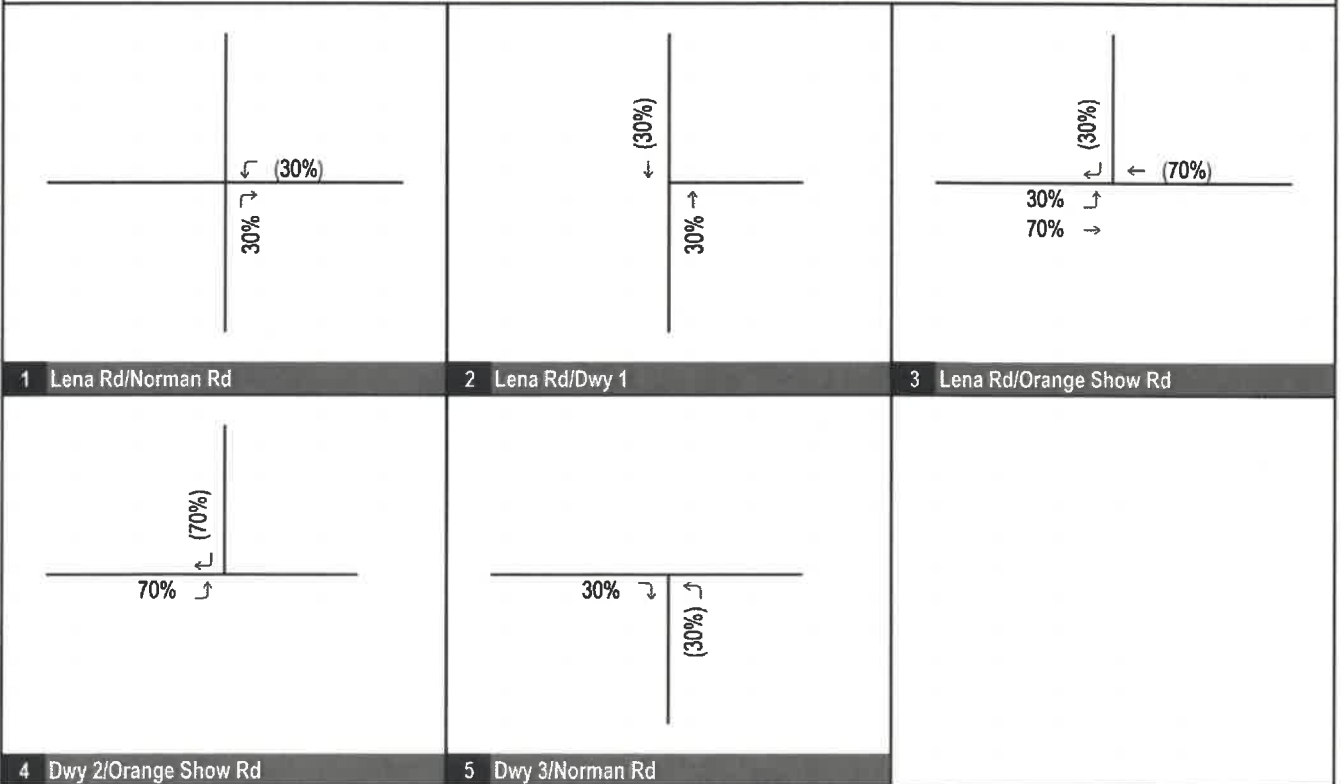
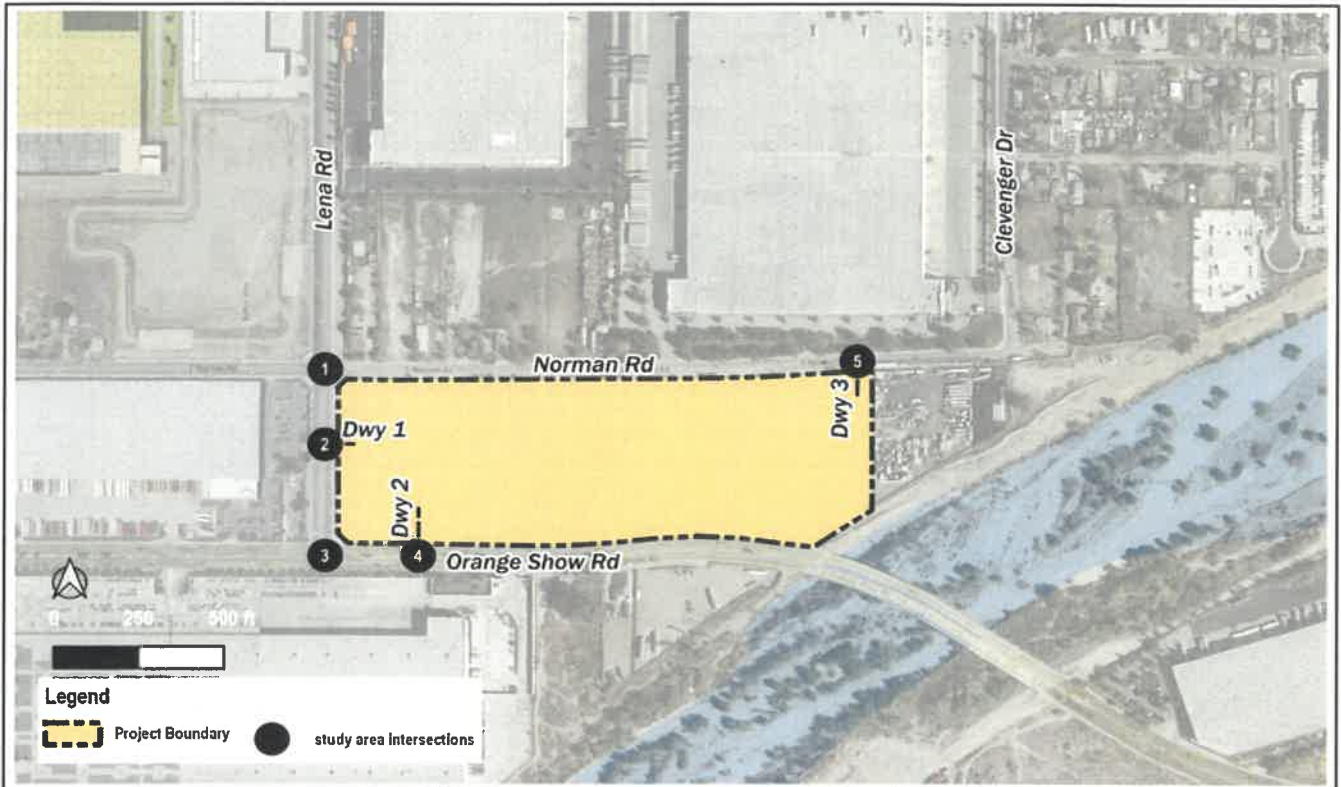


FIGURE 4

XXX%(YYY%) Inbound%(Outbound%) Percent



**Gateway South 9 Warehouse
Project Trip Distribution (Trucks)**

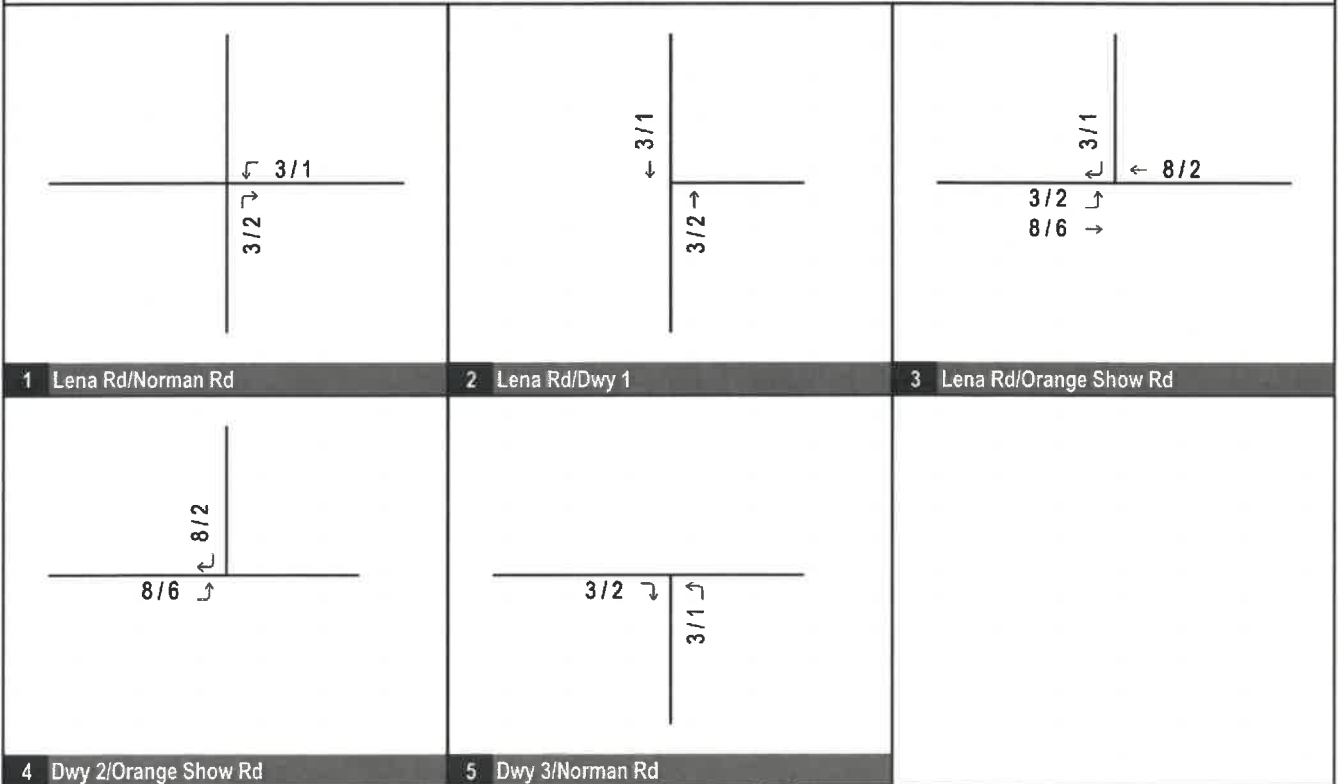
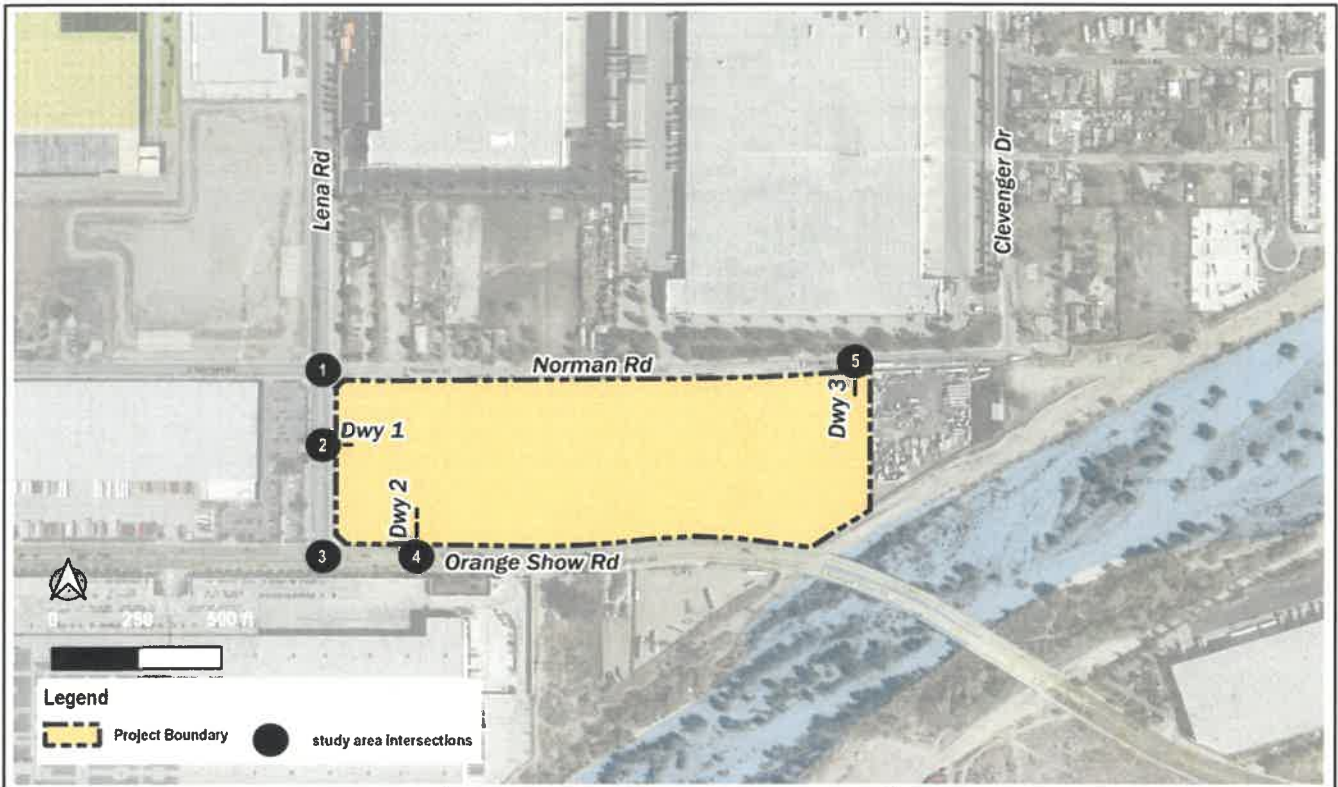


FIGURE 5

XXX / YYY AM / PM Peak Hour Trips



**Gateway South 9 Warehouse
Project Trip Assignment (Trucks)**



1 Lena Rd/Norman Rd	2 Lena Rd/Dwy 1	3 Lena Rd/Orange Show Rd
4 Dwy 2/Orange Show Rd	5 Dwy 3/Norman Rd	

FIGURE 6

XXX / YYY AM / PM Peak Hour Trips



Gateway South 9 Warehouse
Total Project Trip Assignment



Appendix A: County of San Bernardino Trailer Parking Rates

Sandipan Bhattacharjee

From: Shanabo, Eanas - DPW <Eanas.Shanabo@dpw.sbcounty.gov>
Sent: Wednesday, November 6, 2019 9:47 AM
To: Sandipan Bhattacharjee
Cc: Pham, Anthony - DPW; Johnson, Jeremy - DPW; Mitri, Marc - DPW
Subject: P201800024; Palm ave. Truck Terminal; APN: 0266-021-53

Sandi,

- The vehicle mix should be consistent with the types of parking stalls
- Please use the following rates per acre for the project trips

	Daily			am peak			pm peak	
Rate per Acre	In	Out	Rate per Acre	In	Out	Rate per Acre	In	Out
76.84	51	49	3.52	55	45	3.98	49	51

If you have any question please let me know

Thank you

Eanas Shanabo
Department of Public Works
Phone: 909-387-8186
Fax: 909-387-7809
825 E. Third Street
San Bernardino, CA 92415



Our job is to create a county in which those who reside and invest can prosper and achieve well-being.

www.SBCounty.gov



County of San Bernardino Confidentiality Notice: This communication contains confidential information sent solely for the use of the intended recipient. If you are not the intended recipient of this communication, you are not authorized to use it in any manner, except to immediately destroy it and notify the sender.

APPENDIX B: TRAFFIC COUNTS

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

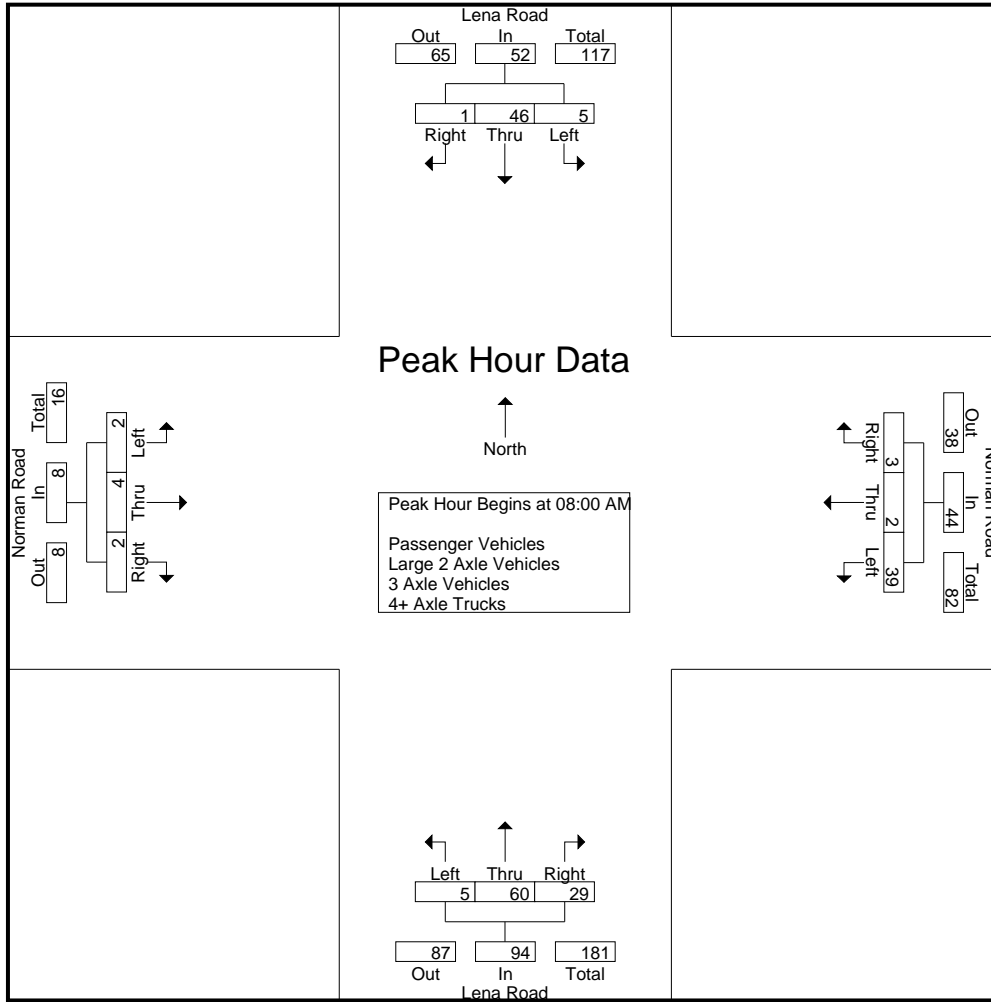
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	9	1	11	3	0	0	3	3	21	3	27	0	0	2	2	43
07:15 AM	0	5	0	5	1	1	1	3	0	19	3	22	0	0	0	0	30
07:30 AM	1	6	1	8	2	2	0	4	1	22	6	29	0	0	1	1	42
07:45 AM	0	8	0	8	3	1	1	5	1	35	6	42	1	0	0	1	56
Total	2	28	2	32	9	4	2	15	5	97	18	120	1	0	3	4	171
08:00 AM	1	8	1	10	3	0	2	5	1	20	7	28	1	2	1	4	47
08:15 AM	0	10	0	10	2	1	0	3	1	14	9	24	1	1	0	2	39
08:30 AM	1	12	0	13	6	0	0	6	2	17	4	23	0	1	0	1	43
08:45 AM	3	16	0	19	28	1	1	30	1	9	9	19	0	0	1	1	69
Total	5	46	1	52	39	2	3	44	5	60	29	94	2	4	2	8	198
Grand Total	7	74	3	84	48	6	5	59	10	157	47	214	3	4	5	12	369
Apprch %	8.3	88.1	3.6		81.4	10.2	8.5		4.7	73.4	22		25	33.3	41.7		
Total %	1.9	20.1	0.8	22.8	13	1.6	1.4	16	2.7	42.5	12.7	58	0.8	1.1	1.4	3.3	
Passenger Vehicles	7	68	3	78	45	6	3	54	8	135	45	188	3	3	5	11	331
% Passenger Vehicles	100	91.9	100	92.9	93.8	100	60	91.5	80	86	95.7	87.9	100	75	100	91.7	89.7
Large 2 Axle Vehicles	0	0	0	0	1	0	1	2	0	3	1	4	0	1	0	1	7
% Large 2 Axle Vehicles	0	0	0	0	2.1	0	20	3.4	0	1.9	2.1	1.9	0	25	0	8.3	1.9
3 Axle Vehicles	0	1	0	1	1	0	0	1	2	8	1	11	0	0	0	0	13
% 3 Axle Vehicles	0	1.4	0	1.2	2.1	0	0	1.7	20	5.1	2.1	5.1	0	0	0	0	3.5
4+ Axle Trucks	0	5	0	5	1	0	1	2	0	11	0	11	0	0	0	0	18
% 4+ Axle Trucks	0	6.8	0	6	2.1	0	20	3.4	0	7	0	5.1	0	0	0	0	4.9

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	8	1	10	3	0	2	5	1	20	7	28	1	2	1	4	47
08:15 AM	0	10	0	10	2	1	0	3	1	14	9	24	1	1	0	2	39
08:30 AM	1	12	0	13	6	0	0	6	2	17	4	23	0	1	0	1	43
08:45 AM	3	16	0	19	28	1	1	30	1	9	9	19	0	0	1	1	69
Total Volume	5	46	1	52	39	2	3	44	5	60	29	94	2	4	2	8	198
% App. Total	9.6	88.5	1.9		88.6	4.5	6.8		5.3	63.8	30.9		25	50	25		
PHF	.417	.719	.250	.684	.348	.500	.375	.367	.625	.750	.806	.839	.500	.500	.500	.500	.717

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 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:

	08:00 AM				08:00 AM				07:30 AM				07:30 AM			
+0 mins.	1	8	1	10	3	0	2	5	1	22	6	29	0	0	1	1
+15 mins.	0	10	0	10	2	1	0	3	1	35	6	42	1	0	0	1
+30 mins.	1	12	0	13	6	0	0	6	1	20	7	28	1	2	1	4
+45 mins.	3	16	0	19	28	1	1	30	1	14	9	24	1	1	0	2
Total Volume	5	46	1	52	39	2	3	44	4	91	28	123	3	3	2	8
% App. Total	9.6	88.5	1.9		88.6	4.5	6.8		3.3	74	22.8		37.5	37.5	25	
PHF	.417	.719	.250	.684	.348	.500	.375	.367	1.000	.650	.778	.732	.750	.375	.500	.500

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

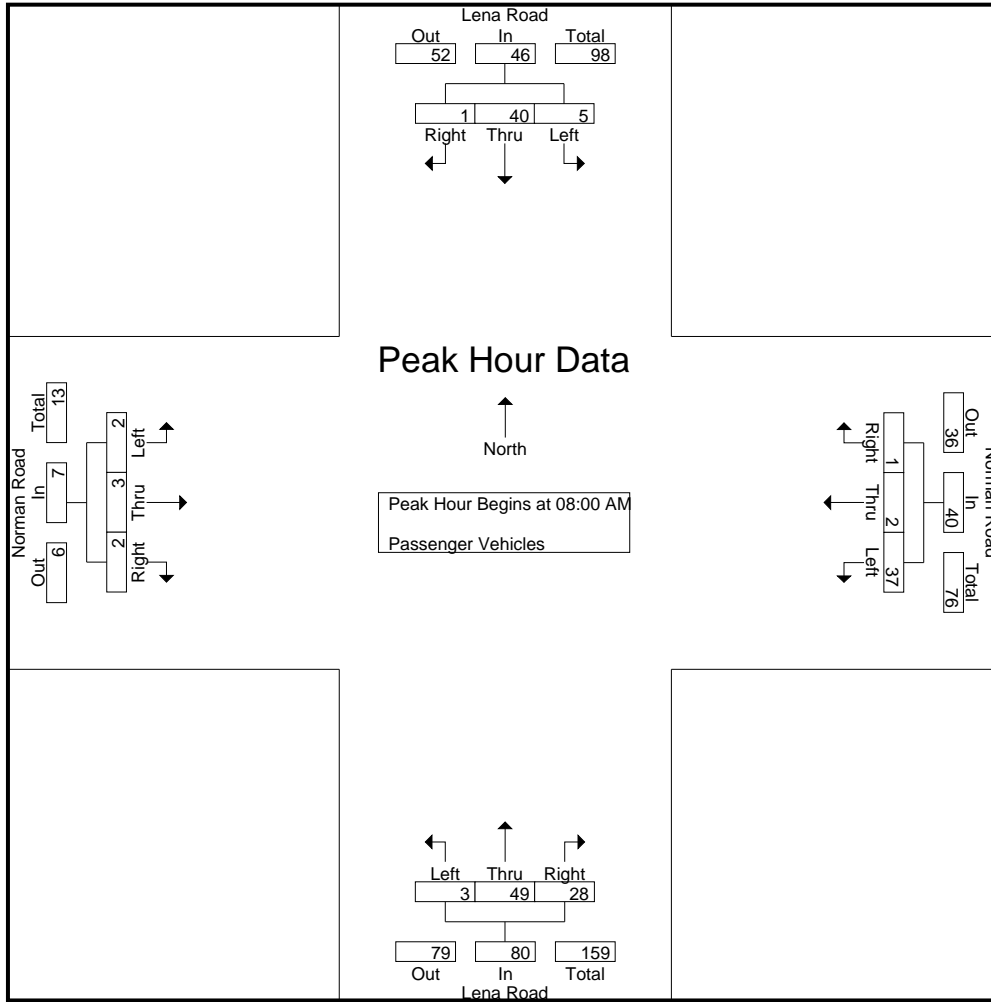
Groups Printed- Passenger Vehicles

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	1	9	1	11	2	0	0	2	3	18	3	24	0	0	2	2	39
07:15 AM	0	5	0	5	1	1	1	3	0	18	2	20	0	0	0	0	28
07:30 AM	1	6	1	8	2	2	0	4	1	19	6	26	0	0	1	1	39
07:45 AM	0	8	0	8	3	1	1	5	1	31	6	38	1	0	0	1	52
Total	2	28	2	32	8	4	2	14	5	86	17	108	1	0	3	4	158
08:00 AM	1	7	1	9	3	0	1	4	1	17	7	25	1	1	1	3	41
08:15 AM	0	9	0	9	2	1	0	3	0	12	8	20	1	1	0	2	34
08:30 AM	1	12	0	13	5	0	0	5	1	12	4	17	0	1	0	1	36
08:45 AM	3	12	0	15	27	1	0	28	1	8	9	18	0	0	1	1	62
Total	5	40	1	46	37	2	1	40	3	49	28	80	2	3	2	7	173
Grand Total	7	68	3	78	45	6	3	54	8	135	45	188	3	3	5	11	331
Apprch %	9	87.2	3.8		83.3	11.1	5.6		4.3	71.8	23.9		27.3	27.3	45.5		
Total %	2.1	20.5	0.9	23.6	13.6	1.8	0.9	16.3	2.4	40.8	13.6	56.8	0.9	0.9	1.5	3.3	

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	7	1	9	3	0	1	4	1	17	7	25	1	1	1	3	41
08:15 AM	0	9	0	9	2	1	0	3	0	12	8	20	1	1	0	2	34
08:30 AM	1	12	0	13	5	0	0	5	1	12	4	17	0	1	0	1	36
08:45 AM	3	12	0	15	27	1	0	28	1	8	9	18	0	0	1	1	62
Total Volume	5	40	1	46	37	2	1	40	3	49	28	80	2	3	2	7	173
% App. Total	10.9	87	2.2		92.5	5	2.5		3.8	61.2	35		28.6	42.9	28.6		
PHF	.417	.833	.250	.767	.343	.500	.250	.357	.750	.721	.778	.800	.500	.750	.500	.583	.698

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



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

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	1	7	1	9	3	0	1	4	1	17	7	25	1	1	1	3
+15 mins.	0	9	0	9	2	1	0	3	0	12	8	20	1	1	0	2
+30 mins.	1	12	0	13	5	0	0	5	1	12	4	17	0	1	0	1
+45 mins.	3	12	0	15	27	1	0	28	1	8	9	18	0	0	1	1
Total Volume	5	40	1	46	37	2	1	40	3	49	28	80	2	3	2	7
% App. Total	10.9	87	2.2		92.5	5	2.5		3.8	61.2	35		28.6	42.9	28.6	
PHF	.417	.833	.250	.767	.343	.500	.250	.357	.750	.721	.778	.800	.500	.750	.500	.583

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

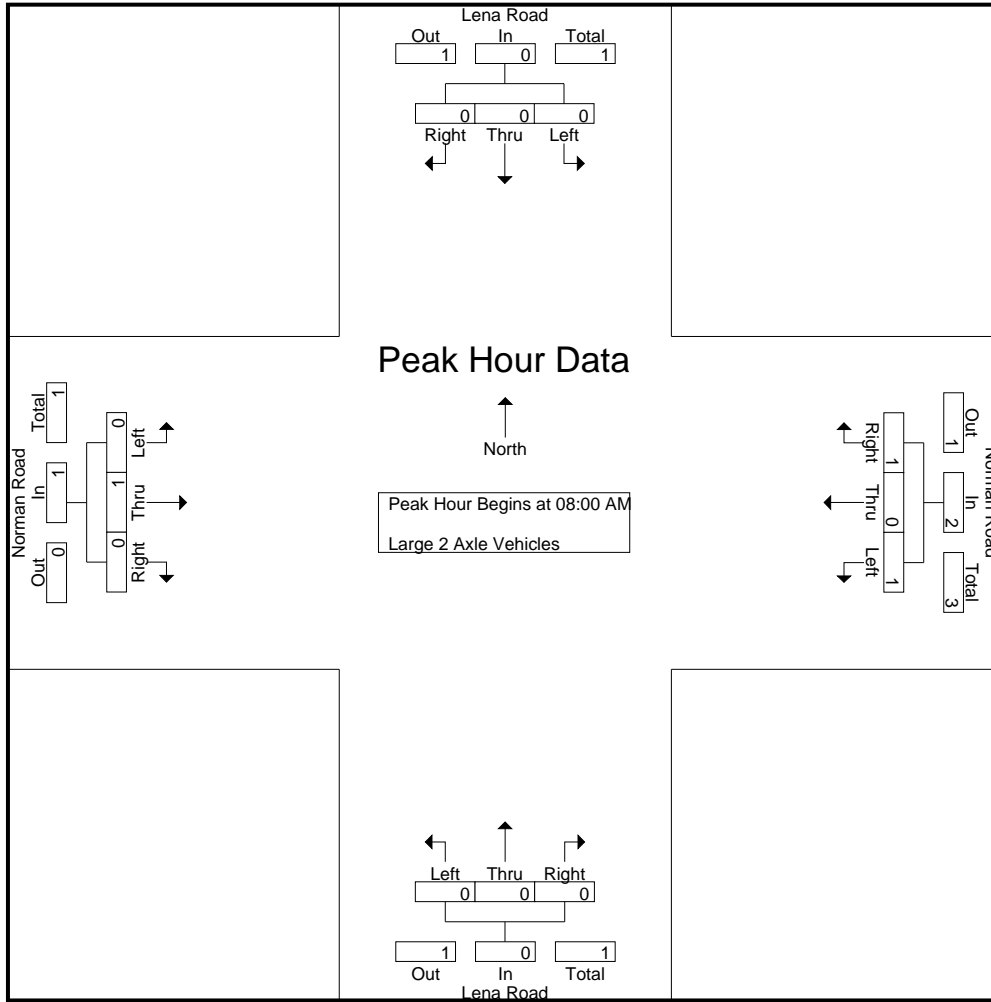
Groups Printed- Large 2 Axle Vehicles

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0	0	4
08:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	1	3
Grand Total	0	0	0	0	1	0	1	2	0	3	1	4	0	1	0	1	7
Apprch %	0	0	0		50	0	50		0	75	25		0	100	0		
Total %	0	0	0	0	14.3	0	14.3	28.6	0	42.9	14.3	57.1	0	14.3	0	14.3	

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	1	3
% App. Total	0	0	0		50	0	50		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.250	.000	.250	.500	.000	.000	.000	.000	.000	.250	.000	.250	.375

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



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

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	1	0	1	2	0	0	0	0	0	1	0	1
% App. Total	0	0	0	0	50	0	50	50	0	0	0	0	0	100	0	100
PHF	.000	.000	.000	.000	.250	.000	.250	.500	.000	.000	.000	.000	.000	.250	.000	.250

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 3 Axle Vehicles

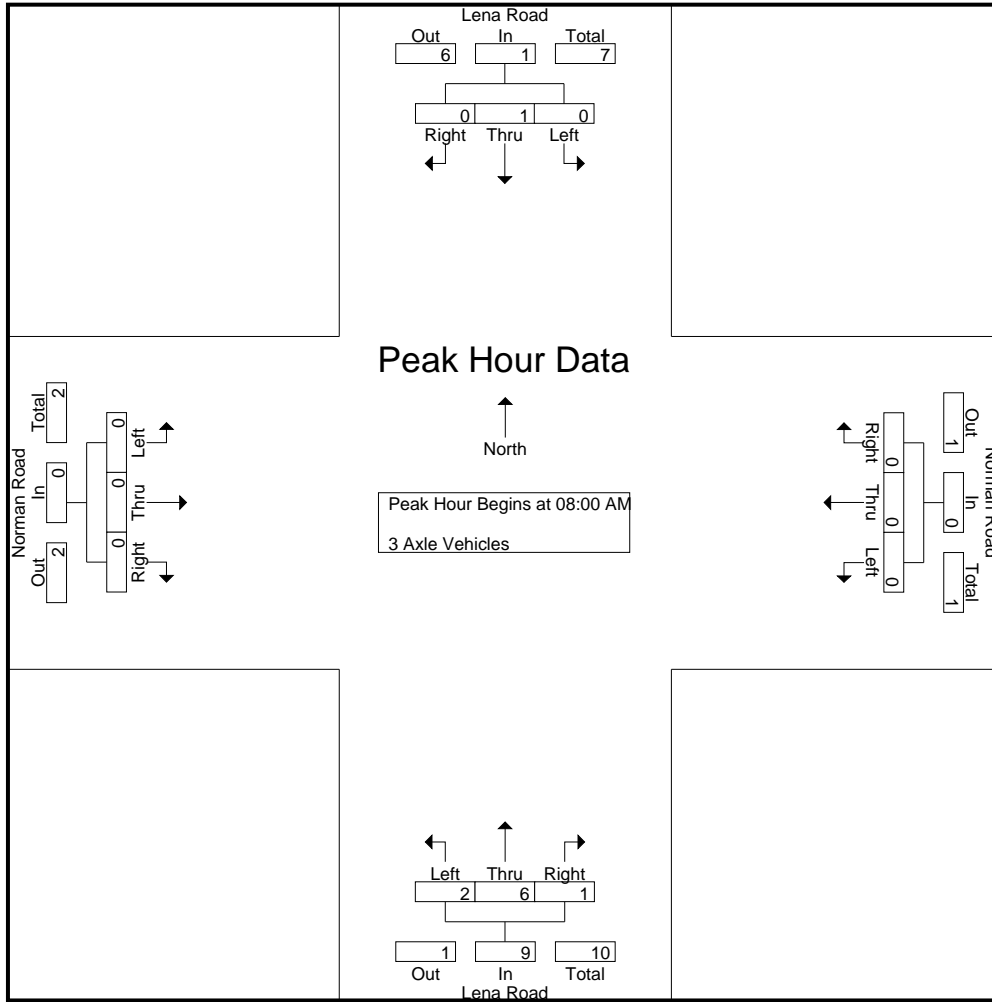
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	1	0	0	1	0	2	0	2	0	0	0	0	3
08:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	1	2	1	4	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
08:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	1	0	0	0	0	2	6	1	9	0	0	0	0	10
Grand Total	0	1	0	1	1	0	0	1	2	8	1	11	0	0	0	0	13
Apprch %	0	100	0		100	0	0		18.2	72.7	9.1		0	0	0		
Total %	0	7.7	0	7.7	7.7	0	0	7.7	15.4	61.5	7.7	84.6	0	0	0	0	

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
08:00 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	1	2	1	4	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0	3
08:45 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	1	0	1	0	0	0	0	2	6	1	9	0	0	0	0	10
% App. Total	0	100	0		0	0	0		22.2	66.7	11.1		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.500	.750	.250	.563	.000	.000	.000	.000	.625

Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 08:00 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



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

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	1	2	1	4	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	1	0	0	0	0	2	6	1	9	0	0	0	0
% App. Total	0	100	0	0	0	0	0	0	22.2	66.7	11.1	0	0	0	0	0
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.500	.750	.250	.563	.000	.000	.000	.000

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
07:45 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	6
08:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
08:45 AM	0	3	0	3	1	0	1	2	0	1	0	1	0	0	0	0	6
Total	0	5	0	5	1	0	1	2	0	5	0	5	0	0	0	0	12
Grand Total	0	5	0	5	1	0	1	2	0	11	0	11	0	0	0	0	18
Apprch %	0	100	0		50	0	50		0	100	0		0	0	0		
Total %	0	27.8	0	27.8	5.6	0	5.6	11.1	0	61.1	0	61.1	0	0	0	0	

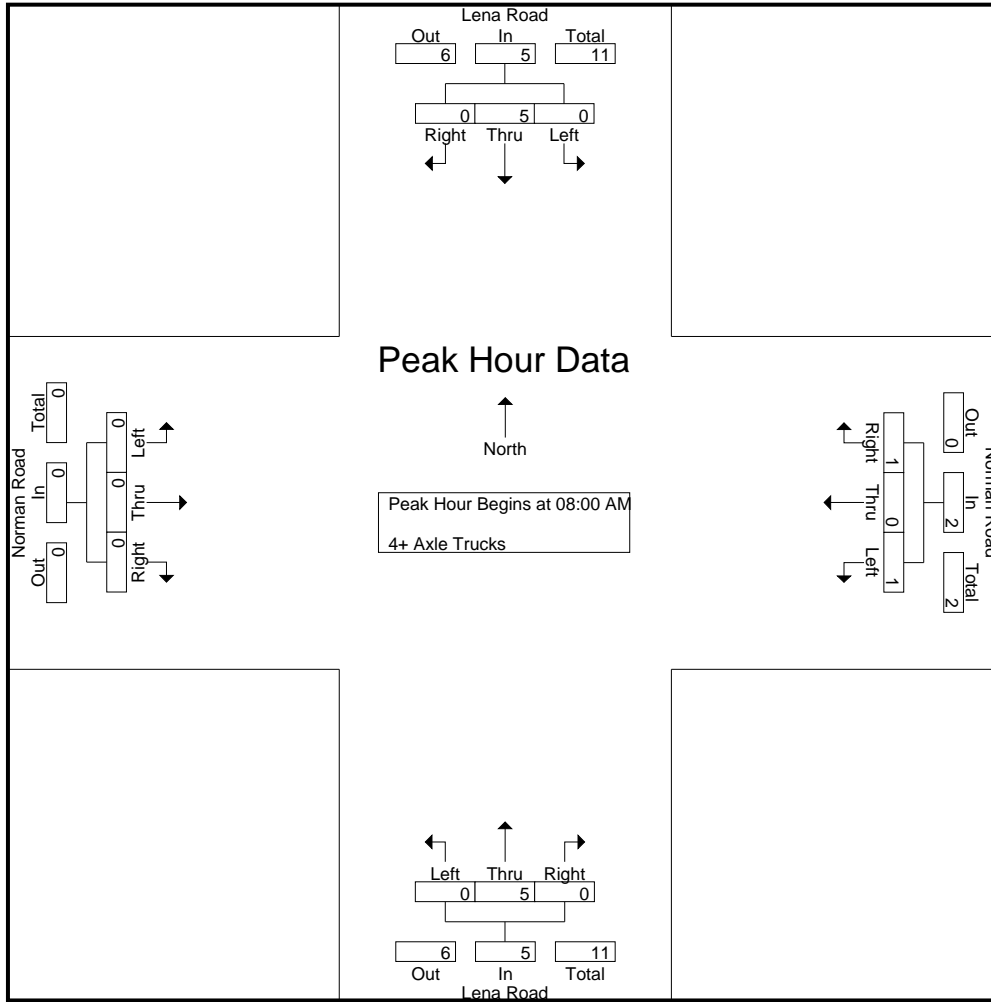
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
08:00 AM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
08:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
08:45 AM	0	3	0	3	1	0	1	2	0	1	0	1	0	0	0	0	6
Total Volume	0	5	0	5	1	0	1	2	0	5	0	5	0	0	0	0	12
% App. Total	0	100	0		50	0	50		0	100	0		0	0	0		
PHF	.000	.417	.000	.417	.250	.000	.250	.250	.000	.417	.000	.417	.000	.000	.000	.000	.500

Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



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

	08:00 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
+15 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0
+45 mins.	0	3	0	3	1	0	1	2	0	1	0	1	0	0	0	0
Total Volume	0	5	0	5	1	0	1	2	0	5	0	5	0	0	0	0
% App. Total	0	100	0	0	50	0	50	0	0	100	0	0	0	0	0	0
PHF	.000	.417	.000	.417	.250	.000	.250	.250	.000	.417	.000	.417	.000	.000	.000	.000

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

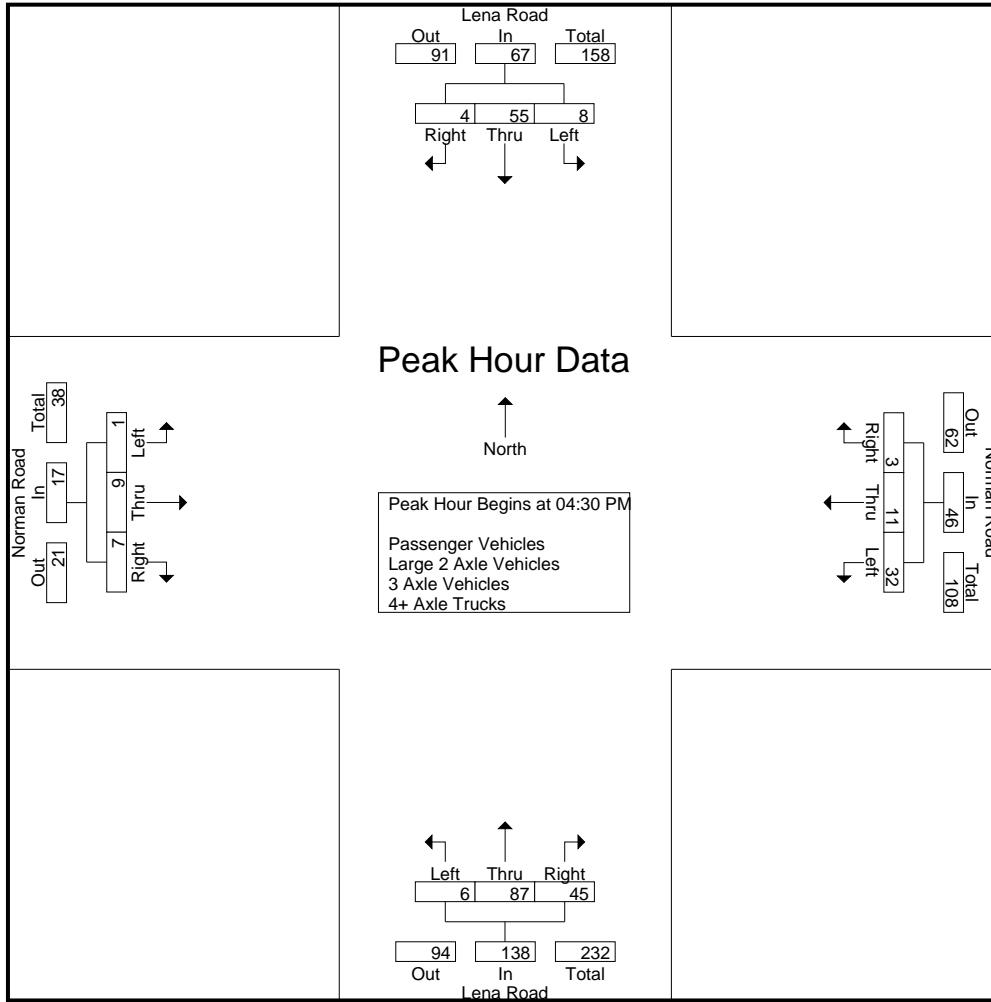
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	1	8	1	10	8	2	0	10	2	20	10	32	0	2	2	4	56
04:15 PM	1	10	1	12	4	1	0	5	1	12	13	26	0	1	1	2	45
04:30 PM	4	23	1	28	15	1	0	16	2	22	15	39	0	0	3	3	86
04:45 PM	1	4	2	7	12	4	2	18	3	23	16	42	0	0	0	0	67
Total	7	45	5	57	39	8	2	49	8	77	54	139	0	3	6	9	254
05:00 PM	1	20	1	22	2	1	1	4	1	19	6	26	1	4	1	6	58
05:15 PM	2	8	0	10	3	5	0	8	0	23	8	31	0	5	3	8	57
05:30 PM	1	14	0	15	4	3	2	9	1	18	5	24	0	2	1	3	51
05:45 PM	0	8	1	9	5	2	1	8	2	17	9	28	2	5	0	7	52
Total	4	50	2	56	14	11	4	29	4	77	28	109	3	16	5	24	218
Grand Total	11	95	7	113	53	19	6	78	12	154	82	248	3	19	11	33	472
Apprch %	9.7	84.1	6.2		67.9	24.4	7.7		4.8	62.1	33.1		9.1	57.6	33.3		
Total %	2.3	20.1	1.5	23.9	11.2	4	1.3	16.5	2.5	32.6	17.4	52.5	0.6	4	2.3	7	
Passenger Vehicles	11	89	7	107	52	16	6	74	12	130	76	218	2	14	10	26	425
% Passenger Vehicles	100	93.7	100	94.7	98.1	84.2	100	94.9	100	84.4	92.7	87.9	66.7	73.7	90.9	78.8	90
Large 2 Axle Vehicles	0	2	0	2	0	0	0	0	0	6	1	7	1	1	0	2	11
% Large 2 Axle Vehicles	0	2.1	0	1.8	0	0	0	0	0	3.9	1.2	2.8	33.3	5.3	0	6.1	2.3
3 Axle Vehicles	0	2	0	2	0	3	0	3	0	10	2	12	0	0	1	1	18
% 3 Axle Vehicles	0	2.1	0	1.8	0	15.8	0	3.8	0	6.5	2.4	4.8	0	0	9.1	3	3.8
4+ Axle Trucks	0	2	0	2	1	0	0	1	0	8	3	11	0	4	0	4	18
% 4+ Axle Trucks	0	2.1	0	1.8	1.9	0	0	1.3	0	5.2	3.7	4.4	0	21.1	0	12.1	3.8

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	4	23	1	28	15	1	0	16	2	22	15	39	0	0	3	3	86
04:45 PM	1	4	2	7	12	4	2	18	3	23	16	42	0	0	0	0	67
05:00 PM	1	20	1	22	2	1	1	4	1	19	6	26	1	4	1	6	58
05:15 PM	2	8	0	10	3	5	0	8	0	23	8	31	0	5	3	8	57
Total Volume	8	55	4	67	32	11	3	46	6	87	45	138	1	9	7	17	268
% App. Total	11.9	82.1	6		69.6	23.9	6.5		4.3	63	32.6		5.9	52.9	41.2		
PHF	.500	.598	.500	.598	.533	.550	.375	.639	.500	.946	.703	.821	.250	.450	.583	.531	.779

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:15 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	1	10	1	12	8	2	0	10	2	20	10	32	1	4	1	6
+15 mins.	4	23	1	28	4	1	0	5	1	12	13	26	0	5	3	8
+30 mins.	1	4	2	7	15	1	0	16	2	22	15	39	0	2	1	3
+45 mins.	1	20	1	22	12	4	2	18	3	23	16	42	2	5	0	7
Total Volume	7	57	5	69	39	8	2	49	8	77	54	139	3	16	5	24
% App. Total	10.1	82.6	7.2		79.6	16.3	4.1		5.8	55.4	38.8		12.5	66.7	20.8	
PHF	.438	.620	.625	.616	.650	.500	.250	.681	.667	.837	.844	.827	.375	.800	.417	.750

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- Passenger Vehicles

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	1	7	1	9	8	1	0	9	2	15	10	27	0	2	2	4	49
04:15 PM	1	10	1	12	4	1	0	5	1	10	12	23	0	1	1	2	42
04:30 PM	4	22	1	27	15	1	0	16	2	20	14	36	0	0	3	3	82
04:45 PM	1	4	2	7	11	4	2	17	3	19	15	37	0	0	0	0	61
Total	7	43	5	55	38	7	2	47	8	64	51	123	0	3	6	9	234
05:00 PM	1	19	1	21	2	1	1	4	1	18	6	25	1	4	1	6	56
05:15 PM	2	8	0	10	3	4	0	7	0	21	7	28	0	3	3	6	51
05:30 PM	1	12	0	13	4	2	2	8	1	12	3	16	0	1	0	1	38
05:45 PM	0	7	1	8	5	2	1	8	2	15	9	26	1	3	0	4	46
Total	4	46	2	52	14	9	4	27	4	66	25	95	2	11	4	17	191
Grand Total	11	89	7	107	52	16	6	74	12	130	76	218	2	14	10	26	425
Apprch %	10.3	83.2	6.5		70.3	21.6	8.1		5.5	59.6	34.9		7.7	53.8	38.5		
Total %	2.6	20.9	1.6	25.2	12.2	3.8	1.4	17.4	2.8	30.6	17.9	51.3	0.5	3.3	2.4	6.1	

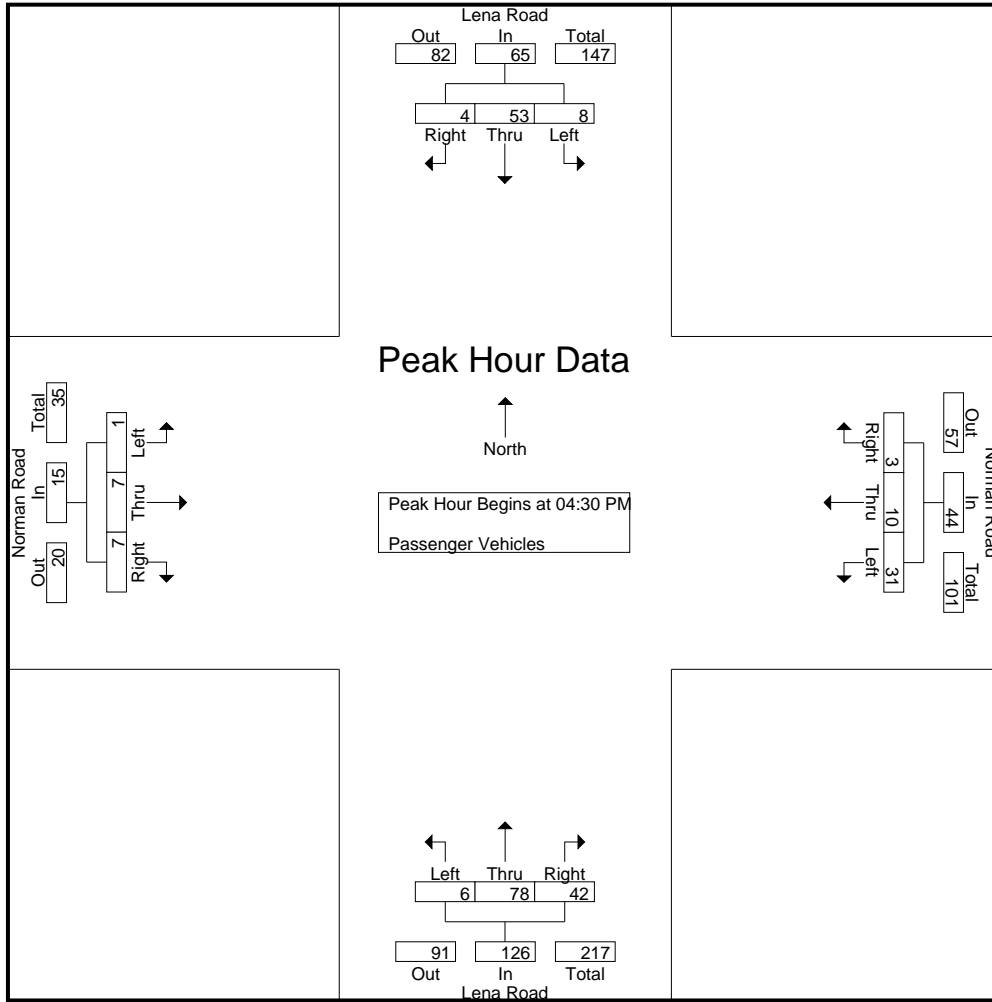
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	4	22	1	27	15	1	0	16	2	20	14	36	0	0	3	3	82
04:45 PM	1	4	2	7	11	4	2	17	3	19	15	37	0	0	0	0	61
05:00 PM	1	19	1	21	2	1	1	4	1	18	6	25	1	4	1	6	56
05:15 PM	2	8	0	10	3	4	0	7	0	21	7	28	0	3	3	6	51
Total Volume	8	53	4	65	31	10	3	44	6	78	42	126	1	7	7	15	250
% App. Total	12.3	81.5	6.2		70.5	22.7	6.8		4.8	61.9	33.3		6.7	46.7	46.7		
PHF	.500	.602	.500	.602	.517	.625	.375	.647	.500	.929	.700	.851	.250	.438	.583	.625	.762

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	4	22	1	27	15	1	0	16	2	20	14	36	0	0	0	3
+15 mins.	1	4	2	7	11	4	2	17	3	19	15	37	0	0	0	0
+30 mins.	1	19	1	21	2	1	1	4	1	18	6	25	1	4	1	6
+45 mins.	2	8	0	10	3	4	0	7	0	21	7	28	0	3	3	6
Total Volume	8	53	4	65	31	10	3	44	6	78	42	126	1	7	7	15
% App. Total	12.3	81.5	6.2		70.5	22.7	6.8		4.8	61.9	33.3		6.7	46.7	46.7	
PHF	.500	.602	.500	.602	.517	.625	.375	.647	.500	.929	.700	.851	.250	.438	.583	.625

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
04:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
Total	0	2	0	2	0	0	0	0	0	0	2	1	3	0	0	0	0	5
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2
Total	0	0	0	0	0	0	0	0	0	0	4	0	4	1	1	0	2	6
Grand Total	0	2	0	2	0	0	0	0	0	0	6	1	7	1	1	0	2	11
Apprch %	0	100	0		0	0	0		0	85.7	14.3			50	50	0		
Total %	0	18.2	0	18.2	0	0	0	0	0	54.5	9.1	63.6		9.1	9.1	0	18.2	

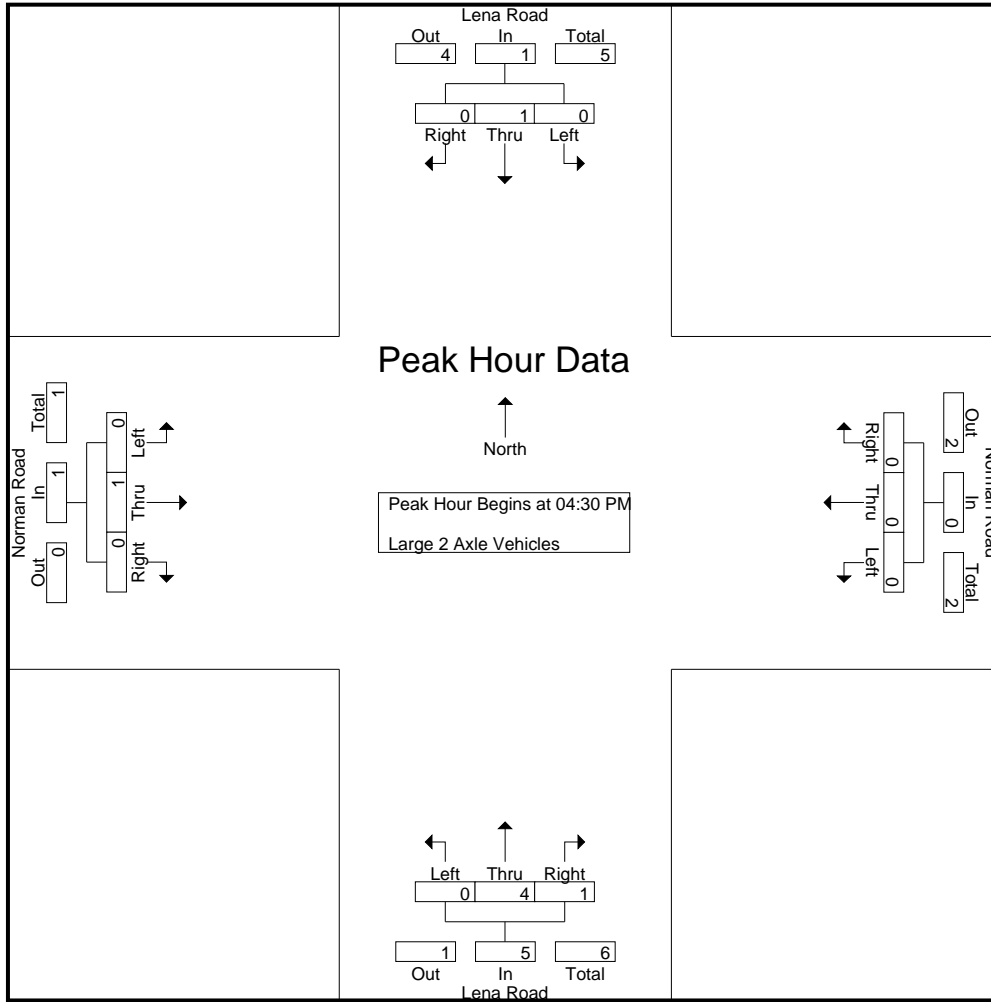
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
04:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3
Total Volume	0	1	0	1	0	0	0	0	0	0	4	1	5	0	1	0	1	7
% App. Total	0	100	0		0	0	0		0	80	20			0	100	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.250	.417		.000	.250	.000	.250	.583

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1
Total Volume	0	1	0	1	0	0	0	0	0	4	1	5	0	1	0	1
% App. Total	0	100	0	0	0	0	0	0	0	80	20	0	0	100	0	0
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.250	.417	.000	.250	.000	.250

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 3 Axle Vehicles

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	3
04:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	0	0	0	0	1	0	1	0	7	1	8	0	0	0	0	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	1	0	1	0	1	0	1	0	2	1	3	0	0	1	1	6
05:45 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
Total	0	2	0	2	0	2	0	2	0	3	1	4	0	0	1	1	9
Grand Total	0	2	0	2	0	3	0	3	0	10	2	12	0	0	1	1	18
Apprch %	0	100	0		0	100	0		0	83.3	16.7		0	0	100		
Total %	0	11.1	0	11.1	0	16.7	0	16.7	0	55.6	11.1	66.7	0	0	5.6	5.6	

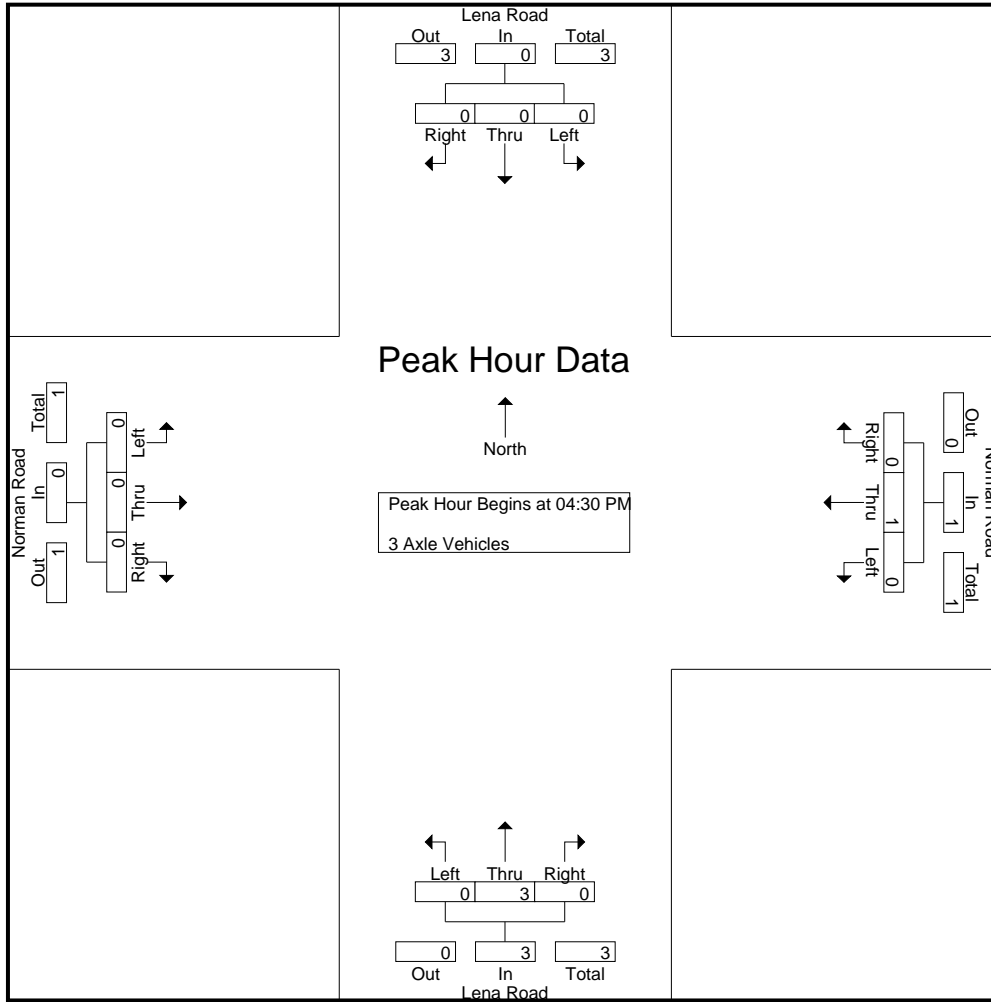
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	3	0	3	0	0	0	0	4
% App. Total	0	0	0		0	100	0		0	100	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.375	.000	.375	.000	.000	.000	.000	.500

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

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

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 4+ Axle Trucks

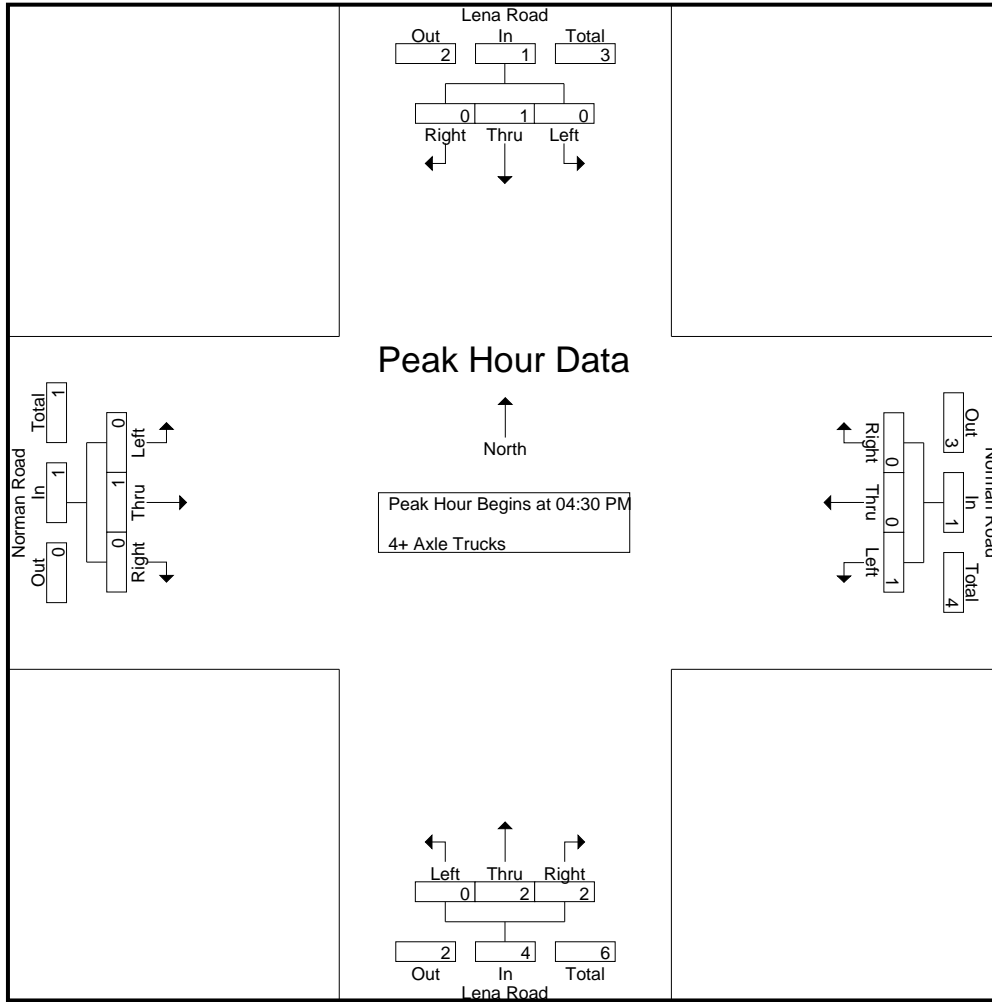
Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:45 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
Total	0	0	0	0	1	0	0	1	0	4	1	5	0	0	0	0	6
05:00 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
05:30 PM	0	1	0	1	0	0	0	0	0	3	1	4	0	1	0	1	6
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	2	0	2	0	0	0	0	0	4	2	6	0	4	0	4	12
Grand Total	0	2	0	2	1	0	0	1	0	8	3	11	0	4	0	4	18
Apprch %	0	100	0		100	0	0		0	72.7	27.3		0	100	0		
Total %	0	11.1	0	11.1	5.6	0	0	5.6	0	44.4	16.7	61.1	0	22.2	0	22.2	

Start Time	Lena Road Southbound				Norman Road Westbound				Lena Road Northbound				Norman Road Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:45 PM	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	2
05:00 PM	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2
Total Volume	0	1	0	1	1	0	0	1	0	2	2	4	0	1	0	1	7
% App. Total	0	100	0		100	0	0		0	50	50		0	100	0		
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.500	.500	1.00	.000	.250	.000	.250	.875

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Norman Road
 Weather: Clear

File Name : 02_SBC_Lena_Norman PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
+15 mins.	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0
+30 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1
Total Volume	0	1	0	1	1	0	0	1	0	2	2	4	0	1	0	1
% App. Total	0	100	0	0	100	0	0	0	0	50	50	100	0	100	0	0
PHF	.000	.250	.000	.250	.250	.000	.000	.250	.000	.500	.500	1.000	.000	.250	.000	.250

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

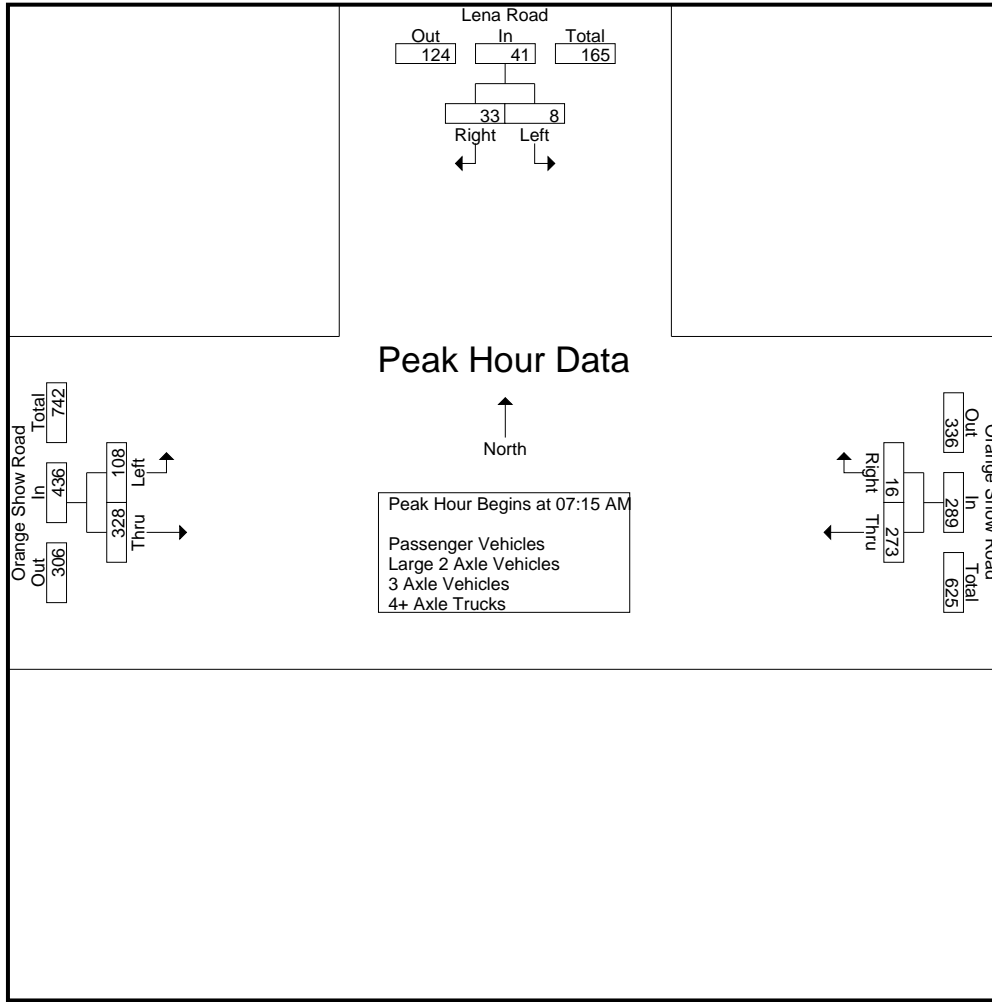
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	2	10	12	46	8	54	18	81	99	165
07:15 AM	1	5	6	56	2	58	22	78	100	164
07:30 AM	1	8	9	85	4	89	25	64	89	187
07:45 AM	2	11	13	68	9	77	35	95	130	220
Total	6	34	40	255	23	278	100	318	418	736
08:00 AM	4	9	13	64	1	65	26	91	117	195
08:15 AM	1	12	13	62	4	66	20	65	85	164
08:30 AM	6	12	18	52	5	57	18	60	78	153
08:45 AM	5	40	45	69	5	74	14	66	80	199
Total	16	73	89	247	15	262	78	282	360	711
Grand Total	22	107	129	502	38	540	178	600	778	1447
Apprch %	17.1	82.9		93	7		22.9	77.1		
Total %	1.5	7.4	8.9	34.7	2.6	37.3	12.3	41.5	53.8	
Passenger Vehicles	20	98	118	405	31	436	158	529	687	1241
% Passenger Vehicles	90.9	91.6	91.5	80.7	81.6	80.7	88.8	88.2	88.3	85.8
Large 2 Axle Vehicles	0	2	2	22	3	25	4	14	18	45
% Large 2 Axle Vehicles	0	1.9	1.6	4.4	7.9	4.6	2.2	2.3	2.3	3.1
3 Axle Vehicles	1	1	2	38	3	41	7	17	24	67
% 3 Axle Vehicles	4.5	0.9	1.6	7.6	7.9	7.6	3.9	2.8	3.1	4.6
4+ Axle Trucks	1	6	7	37	1	38	9	40	49	94
% 4+ Axle Trucks	4.5	5.6	5.4	7.4	2.6	7	5.1	6.7	6.3	6.5

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	1	5	6	56	2	58	22	78	100	164
07:30 AM	1	8	9	85	4	89	25	64	89	187
07:45 AM	2	11	13	68	9	77	35	95	130	220
08:00 AM	4	9	13	64	1	65	26	91	117	195
Total Volume	8	33	41	273	16	289	108	328	436	766
% App. Total	19.5	80.5		94.5	5.5		24.8	75.2		
PHF	.500	.750	.788	.803	.444	.812	.771	.863	.838	.870

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 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:

	08:00 AM			07:30 AM			07:15 AM		
+0 mins.	4	9	13	85	4	89	22	78	100
+15 mins.	1	12	13	68	9	77	25	64	89
+30 mins.	6	12	18	64	1	65	35	95	130
+45 mins.	5	40	45	62	4	66	26	91	117
Total Volume	16	73	89	279	18	297	108	328	436
% App. Total	18	82		93.9	6.1		24.8	75.2	
PHF	.667	.456	.494	.821	.500	.834	.771	.863	.838

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- Passenger Vehicles

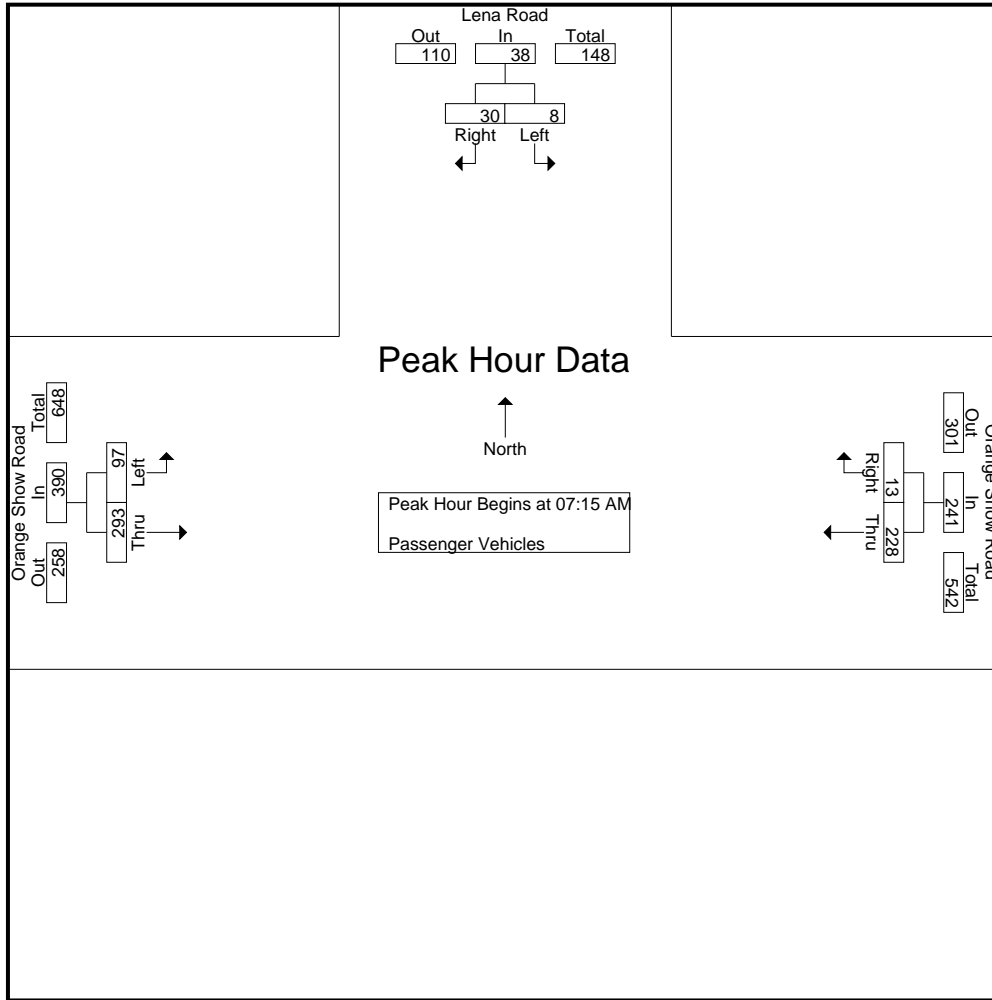
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	2	9	11	35	7	42	17	74	91	144
07:15 AM	1	5	6	45	0	45	21	74	95	146
07:30 AM	1	8	9	70	4	74	22	53	75	158
07:45 AM	2	10	12	55	8	63	31	86	117	192
Total	6	32	38	205	19	224	91	287	378	640
08:00 AM	4	7	11	58	1	59	23	80	103	173
08:15 AM	1	11	12	45	2	47	18	56	74	133
08:30 AM	6	11	17	44	4	48	13	52	65	130
08:45 AM	3	37	40	53	5	58	13	54	67	165
Total	14	66	80	200	12	212	67	242	309	601
Grand Total	20	98	118	405	31	436	158	529	687	1241
Apprch %	16.9	83.1		92.9	7.1		23	77		
Total %	1.6	7.9	9.5	32.6	2.5	35.1	12.7	42.6	55.4	

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:15 AM	1	5	6	45	0	45	21	74	95	146
07:30 AM	1	8	9	70	4	74	22	53	75	158
07:45 AM	2	10	12	55	8	63	31	86	117	192
08:00 AM	4	7	11	58	1	59	23	80	103	173
Total Volume	8	30	38	228	13	241	97	293	390	669
% App. Total	21.1	78.9		94.6	5.4		24.9	75.1		
PHF	.500	.750	.792	.814	.406	.814	.782	.852	.833	.871

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 07:15 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	1	5	6	45	0	45	21	74	95
+15 mins.	1	8	9	70	4	74	22	53	75
+30 mins.	2	10	12	55	8	63	31	86	117
+45 mins.	4	7	11	58	1	59	23	80	103
Total Volume	8	30	38	228	13	241	97	293	390
% App. Total	21.1	78.9		94.6	5.4		24.9	75.1	
PHF	.500	.750	.792	.814	.406	.814	.782	.852	.833

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	3	0	3	1	2	3	6
07:15 AM	0	0	0	3	2	5	1	1	2	7
07:30 AM	0	0	0	5	0	5	1	4	5	10
07:45 AM	0	1	1	2	0	2	1	0	1	4
Total	0	1	1	13	2	15	4	7	11	27
08:00 AM	0	0	0	2	0	2	0	3	3	5
08:15 AM	0	0	0	4	1	5	0	2	2	7
08:30 AM	0	1	1	1	0	1	0	1	1	3
08:45 AM	0	0	0	2	0	2	0	1	1	3
Total	0	1	1	9	1	10	0	7	7	18
Grand Total	0	2	2	22	3	25	4	14	18	45
Apprch %	0	100		88	12		22.2	77.8		
Total %	0	4.4	4.4	48.9	6.7	55.6	8.9	31.1	40	

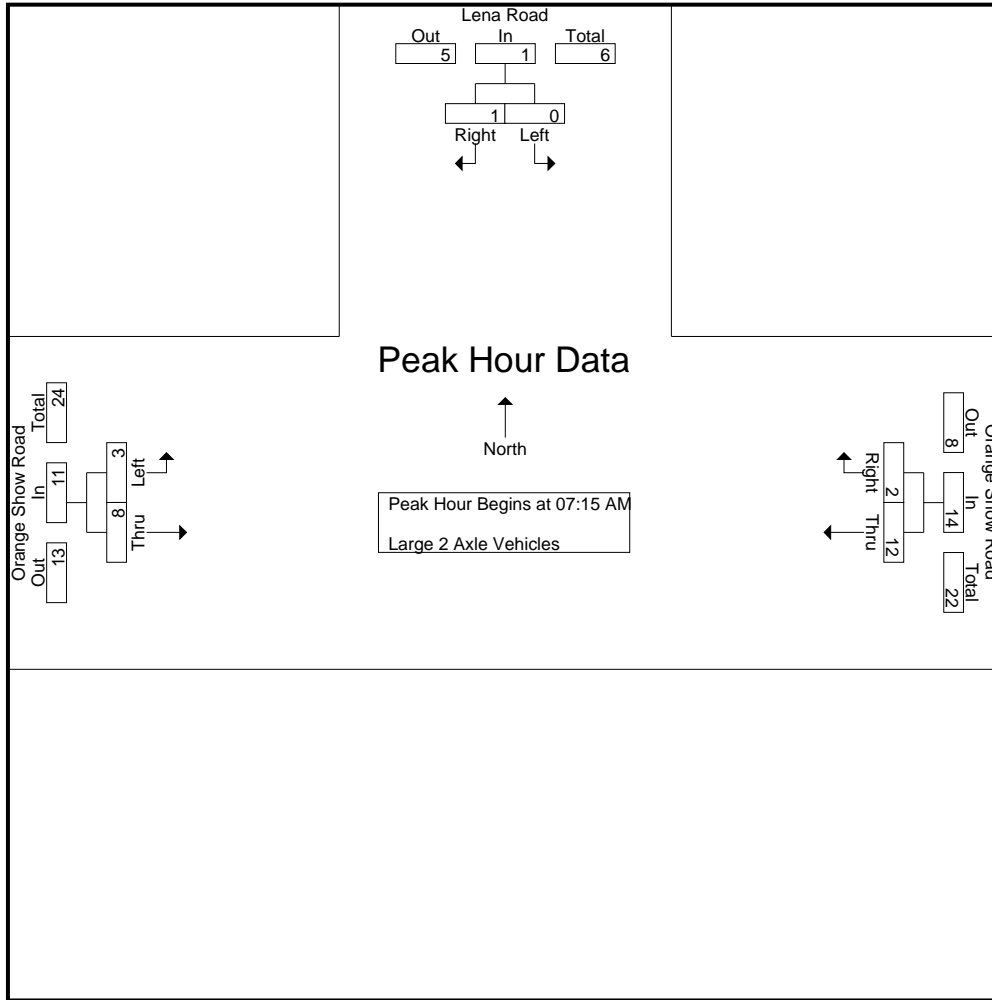
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:15 AM	0	0	0	3	2	5	1	1	2	7
07:30 AM	0	0	0	5	0	5	1	4	5	10
07:45 AM	0	1	1	2	0	2	1	0	1	4
08:00 AM	0	0	0	2	0	2	0	3	3	5
Total Volume	0	1	1	12	2	14	3	8	11	26
% App. Total	0	100		85.7	14.3		27.3	72.7		
PHF	.000	.250	.250	.600	.250	.700	.750	.500	.550	.650

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	3	2	5	1	1	2
+15 mins.	0	0	0	5	0	5	1	4	5
+30 mins.	0	1	1	2	0	2	1	0	1
+45 mins.	0	0	0	2	0	2	0	3	3
Total Volume	0	1	1	12	2	14	3	8	11
% App. Total	0	100		85.7	14.3		27.3	72.7	
PHF	.000	.250	.250	.600	.250	.700	.750	.500	.550

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 3 Axle Vehicles

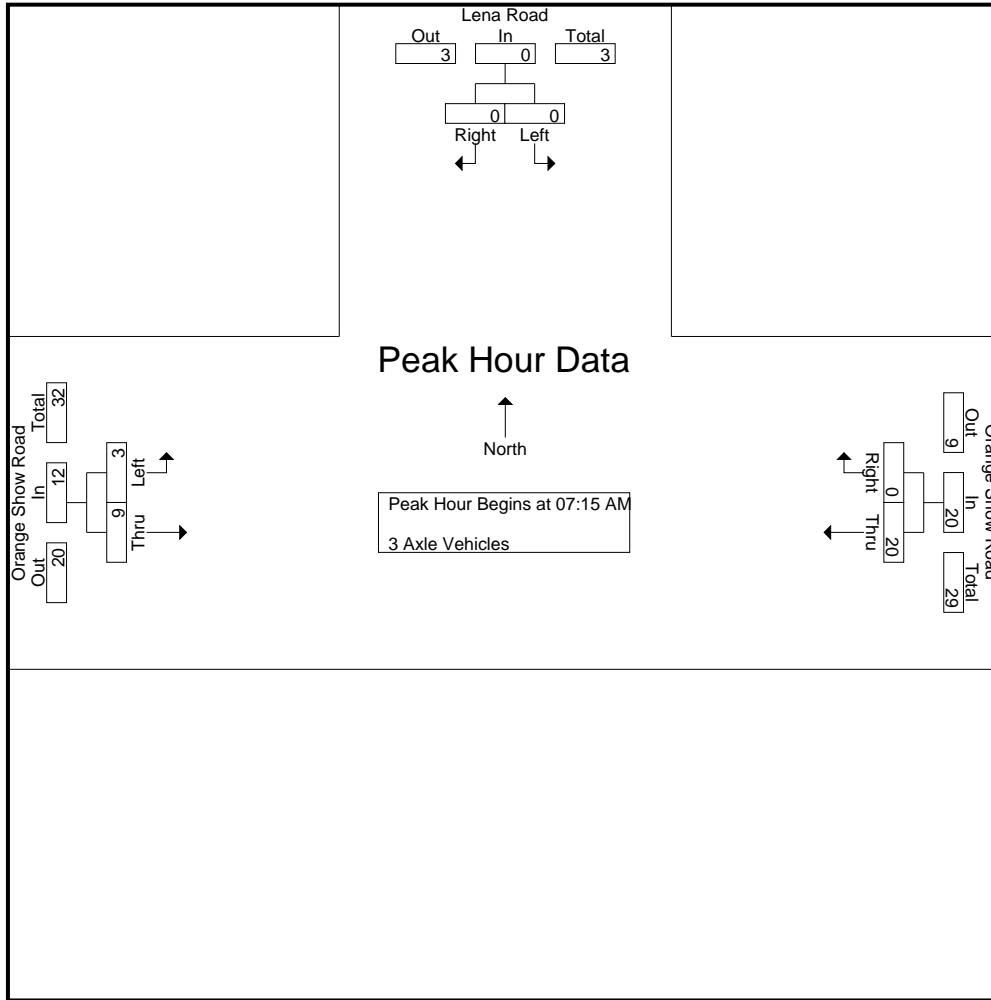
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	1	1	4	1	5	0	0	0	6
07:15 AM	0	0	0	2	0	2	0	1	1	3
07:30 AM	0	0	0	6	0	6	0	1	1	7
07:45 AM	0	0	0	9	0	9	1	4	5	14
Total	0	1	1	21	1	22	1	6	7	30
08:00 AM	0	0	0	3	0	3	2	3	5	8
08:15 AM	0	0	0	5	1	6	2	3	5	11
08:30 AM	0	0	0	2	1	3	2	2	4	7
08:45 AM	1	0	1	7	0	7	0	3	3	11
Total	1	0	1	17	2	19	6	11	17	37
Grand Total	1	1	2	38	3	41	7	17	24	67
Apprch %	50	50		92.7	7.3		29.2	70.8		
Total %	1.5	1.5	3	56.7	4.5	61.2	10.4	25.4	35.8	

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:15 AM	0	0	0	2	0	2	0	1	1	3
07:30 AM	0	0	0	6	0	6	0	1	1	7
07:45 AM	0	0	0	9	0	9	1	4	5	14
08:00 AM	0	0	0	3	0	3	2	3	5	8
Total Volume	0	0	0	20	0	20	3	9	12	32
% App. Total	0	0		100	0		25	75		
PHF	.000	.000	.000	.556	.000	.556	.375	.563	.600	.571

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 07:15 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	2	0	2	0	1	1
+15 mins.	0	0	0	6	0	6	0	1	1
+30 mins.	0	0	0	9	0	9	1	4	5
+45 mins.	0	0	0	3	0	3	2	3	5
Total Volume	0	0	0	20	0	20	3	9	12
% App. Total	0	0	0	100	0		25	75	
PHF	.000	.000	.000	.556	.000	.556	.375	.563	.600

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	0	0	4	0	4	0	5	5	9
07:15 AM	0	0	0	6	0	6	0	2	2	8
07:30 AM	0	0	0	4	0	4	2	6	8	12
07:45 AM	0	0	0	2	1	3	2	5	7	10
Total	0	0	0	16	1	17	4	18	22	39
08:00 AM	0	2	2	1	0	1	1	5	6	9
08:15 AM	0	1	1	8	0	8	0	4	4	13
08:30 AM	0	0	0	5	0	5	3	5	8	13
08:45 AM	1	3	4	7	0	7	1	8	9	20
Total	1	6	7	21	0	21	5	22	27	55
Grand Total	1	6	7	37	1	38	9	40	49	94
Apprch %	14.3	85.7		97.4	2.6		18.4	81.6		
Total %	1.1	6.4	7.4	39.4	1.1	40.4	9.6	42.6	52.1	

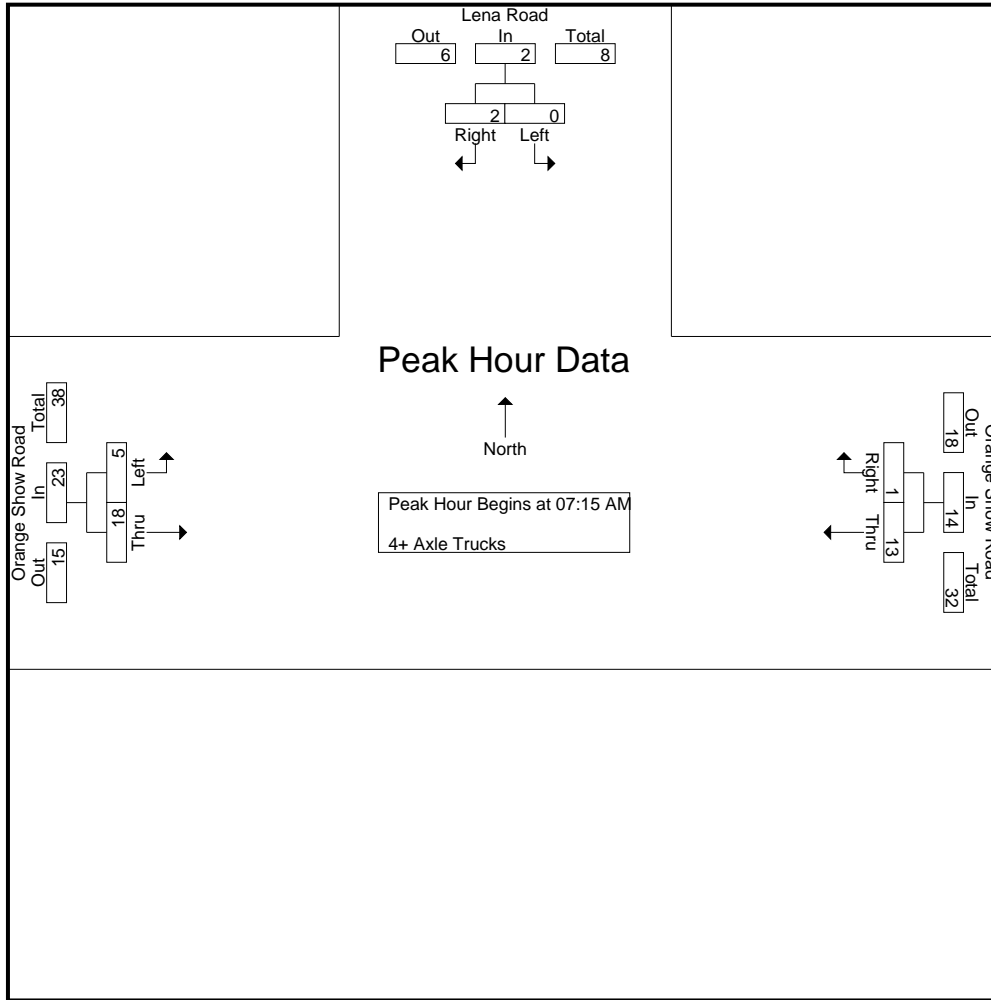
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:15 AM	0	0	0	6	0	6	0	2	2	8
07:30 AM	0	0	0	4	0	4	2	6	8	12
07:45 AM	0	0	0	2	1	3	2	5	7	10
08:00 AM	0	2	2	1	0	1	1	5	6	9
Total Volume	0	2	2	13	1	14	5	18	23	39
% App. Total	0	100		92.9	7.1		21.7	78.3		
PHF	.000	.250	.250	.542	.250	.583	.625	.750	.719	.813

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:15 AM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange AM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 2



Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	6	0	6	0	2	2
+15 mins.	0	0	0	4	0	4	2	6	8
+30 mins.	0	0	0	2	1	3	2	5	7
+45 mins.	0	2	2	1	0	1	1	5	6
Total Volume	0	2	2	13	1	14	5	18	23
% App. Total	0	100		92.9	7.1		21.7	78.3	
PHF	.000	.250	.250	.542	.250	.583	.625	.750	.719

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

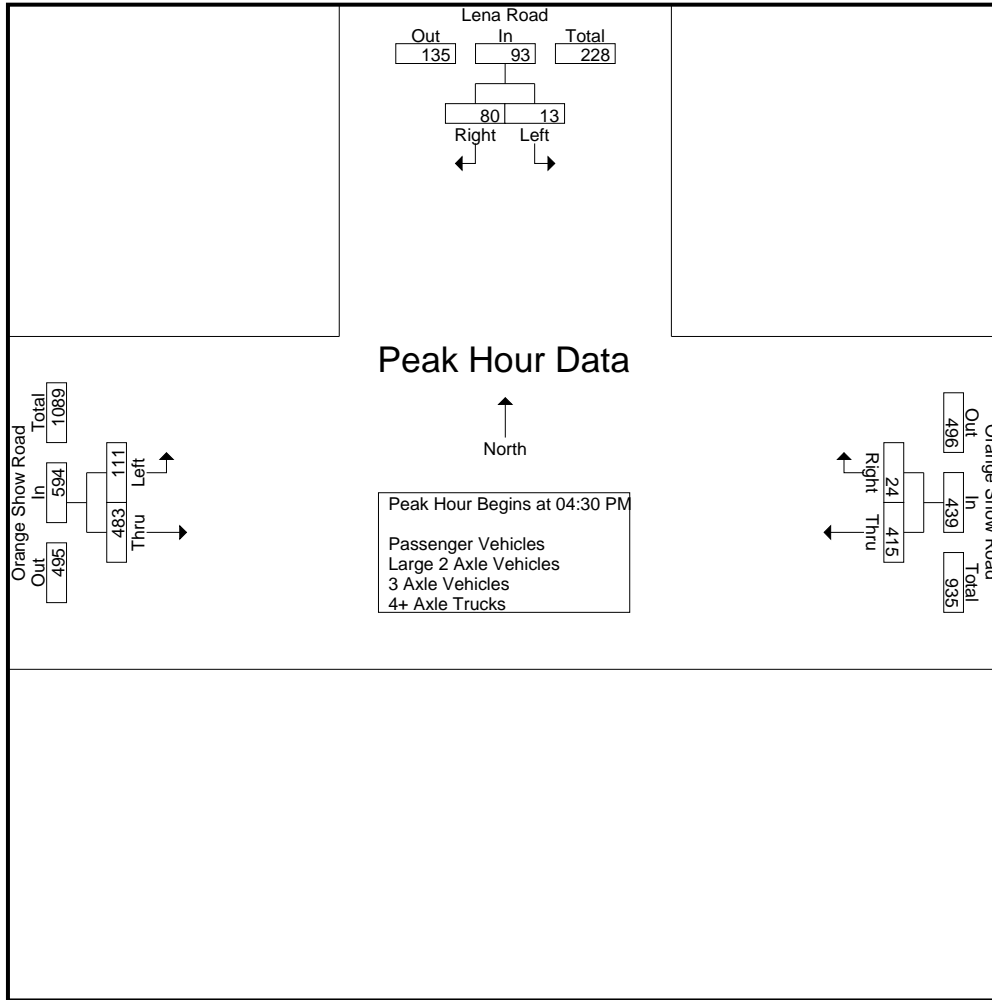
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	2	17	19	117	4	121	26	107	133	273
04:15 PM	4	13	17	79	3	82	22	105	127	226
04:30 PM	6	34	40	153	10	163	27	118	145	348
04:45 PM	1	16	17	87	7	94	35	88	123	234
Total	13	80	93	436	24	460	110	418	528	1081
05:00 PM	5	19	24	99	1	100	23	137	160	284
05:15 PM	1	11	12	76	6	82	26	140	166	260
05:30 PM	1	19	20	78	5	83	20	115	135	238
05:45 PM	0	14	14	56	3	59	23	121	144	217
Total	7	63	70	309	15	324	92	513	605	999
Grand Total	20	143	163	745	39	784	202	931	1133	2080
Apprch %	12.3	87.7		95	5		17.8	82.2		
Total %	1	6.9	7.8	35.8	1.9	37.7	9.7	44.8	54.5	
Passenger Vehicles	20	135	155	656	33	689	174	834	1008	1852
% Passenger Vehicles	100	94.4	95.1	88.1	84.6	87.9	86.1	89.6	89	89
Large 2 Axle Vehicles	0	3	3	8	2	10	10	32	42	55
% Large 2 Axle Vehicles	0	2.1	1.8	1.1	5.1	1.3	5	3.4	3.7	2.6
3 Axle Vehicles	0	2	2	26	0	26	11	22	33	61
% 3 Axle Vehicles	0	1.4	1.2	3.5	0	3.3	5.4	2.4	2.9	2.9
4+ Axle Trucks	0	3	3	55	4	59	7	43	50	112
% 4+ Axle Trucks	0	2.1	1.8	7.4	10.3	7.5	3.5	4.6	4.4	5.4

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	6	34	40	153	10	163	27	118	145	348
04:45 PM	1	16	17	87	7	94	35	88	123	234
05:00 PM	5	19	24	99	1	100	23	137	160	284
05:15 PM	1	11	12	76	6	82	26	140	166	260
Total Volume	13	80	93	415	24	439	111	483	594	1126
% App. Total	14	86		94.5	5.5		18.7	81.3		
PHF	.542	.588	.581	.678	.600	.673	.793	.863	.895	.809

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
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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:

	04:15 PM			04:00 PM			05:00 PM		
+0 mins.	4	13	17	117	4	121	23	137	160
+15 mins.	6	34	40	79	3	82	26	140	166
+30 mins.	1	16	17	153	10	163	20	115	135
+45 mins.	5	19	24	87	7	94	23	121	144
Total Volume	16	82	98	436	24	460	92	513	605
% App. Total	16.3	83.7		94.8	5.2		15.2	84.8	
PHF	.667	.603	.613	.712	.600	.706	.885	.916	.911

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
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Groups Printed- Passenger Vehicles

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	2	16	18	107	4	111	20	93	113	242
04:15 PM	4	13	17	67	3	70	19	95	114	201
04:30 PM	6	33	39	140	9	149	25	101	126	314
04:45 PM	1	15	16	78	5	83	30	80	110	209
Total	13	77	90	392	21	413	94	369	463	966
05:00 PM	5	18	23	85	1	86	22	127	149	258
05:15 PM	1	11	12	63	5	68	23	127	150	230
05:30 PM	1	16	17	69	3	72	14	100	114	203
05:45 PM	0	13	13	47	3	50	21	111	132	195
Total	7	58	65	264	12	276	80	465	545	886
Grand Total	20	135	155	656	33	689	174	834	1008	1852
Apprch %	12.9	87.1		95.2	4.8		17.3	82.7		
Total %	1.1	7.3	8.4	35.4	1.8	37.2	9.4	45	54.4	

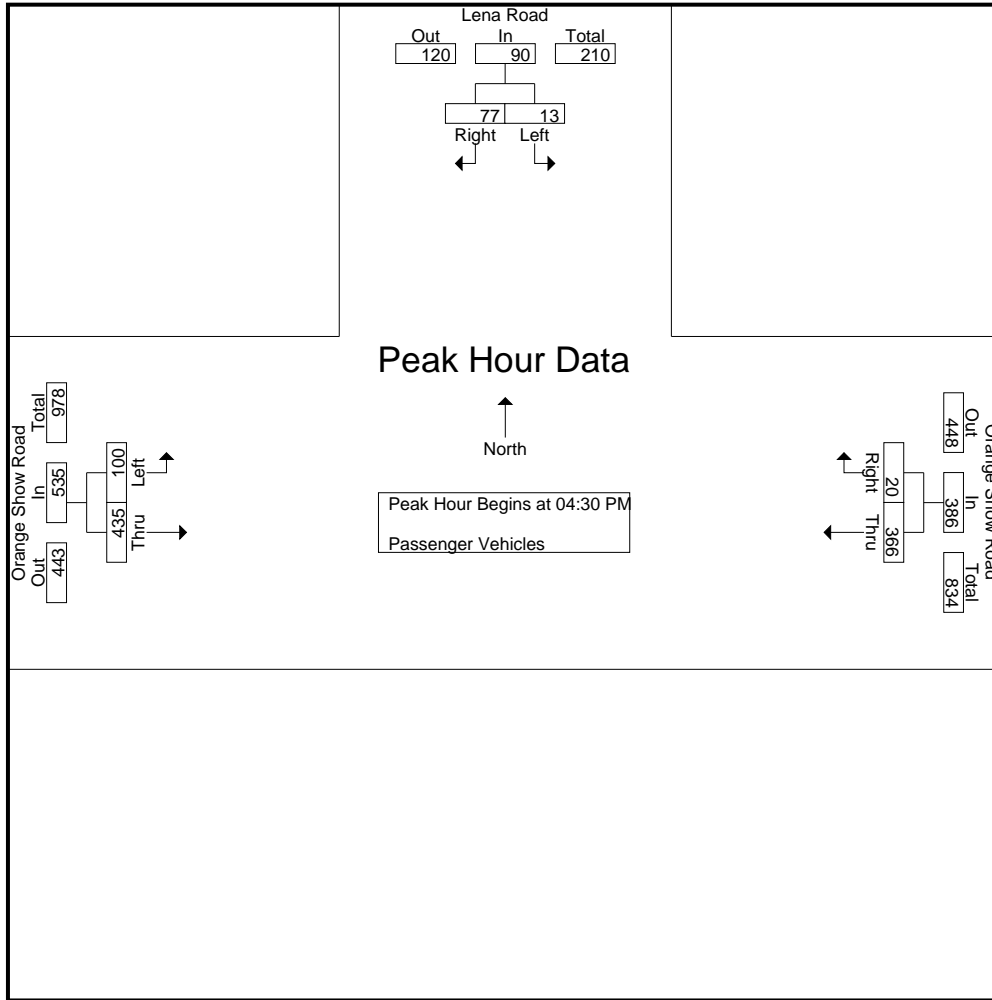
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:30 PM	6	33	39	140	9	149	25	101	126	314
04:45 PM	1	15	16	78	5	83	30	80	110	209
05:00 PM	5	18	23	85	1	86	22	127	149	258
05:15 PM	1	11	12	63	5	68	23	127	150	230
Total Volume	13	77	90	366	20	386	100	435	535	1011
% App. Total	14.4	85.6		94.8	5.2		18.7	81.3		
PHF	.542	.583	.577	.654	.556	.648	.833	.856	.892	.805

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	6	33	39	140	9	149	25	101	126
+15 mins.	1	15	16	78	5	83	30	80	110
+30 mins.	5	18	23	85	1	86	22	127	149
+45 mins.	1	11	12	63	5	68	23	127	150
Total Volume	13	77	90	366	20	386	100	435	535
% App. Total	14.4	85.6		94.8	5.2		18.7	81.3	
PHF	.542	.583	.577	.654	.556	.648	.833	.856	.892

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- Large 2 Axle Vehicles

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	1	1	1	0	1	1	4	5	7
04:15 PM	0	0	0	1	0	1	0	4	4	5
04:30 PM	0	1	1	1	0	1	1	3	4	6
04:45 PM	0	0	0	1	1	2	4	3	7	9
Total	0	2	2	4	1	5	6	14	20	27
05:00 PM	0	0	0	2	0	2	0	3	3	5
05:15 PM	0	0	0	0	1	1	2	6	8	9
05:30 PM	0	1	1	1	0	1	1	6	7	9
05:45 PM	0	0	0	1	0	1	1	3	4	5
Total	0	1	1	4	1	5	4	18	22	28
Grand Total	0	3	3	8	2	10	10	32	42	55
Apprch %	0	100		80	20		23.8	76.2		
Total %	0	5.5	5.5	14.5	3.6	18.2	18.2	58.2	76.4	

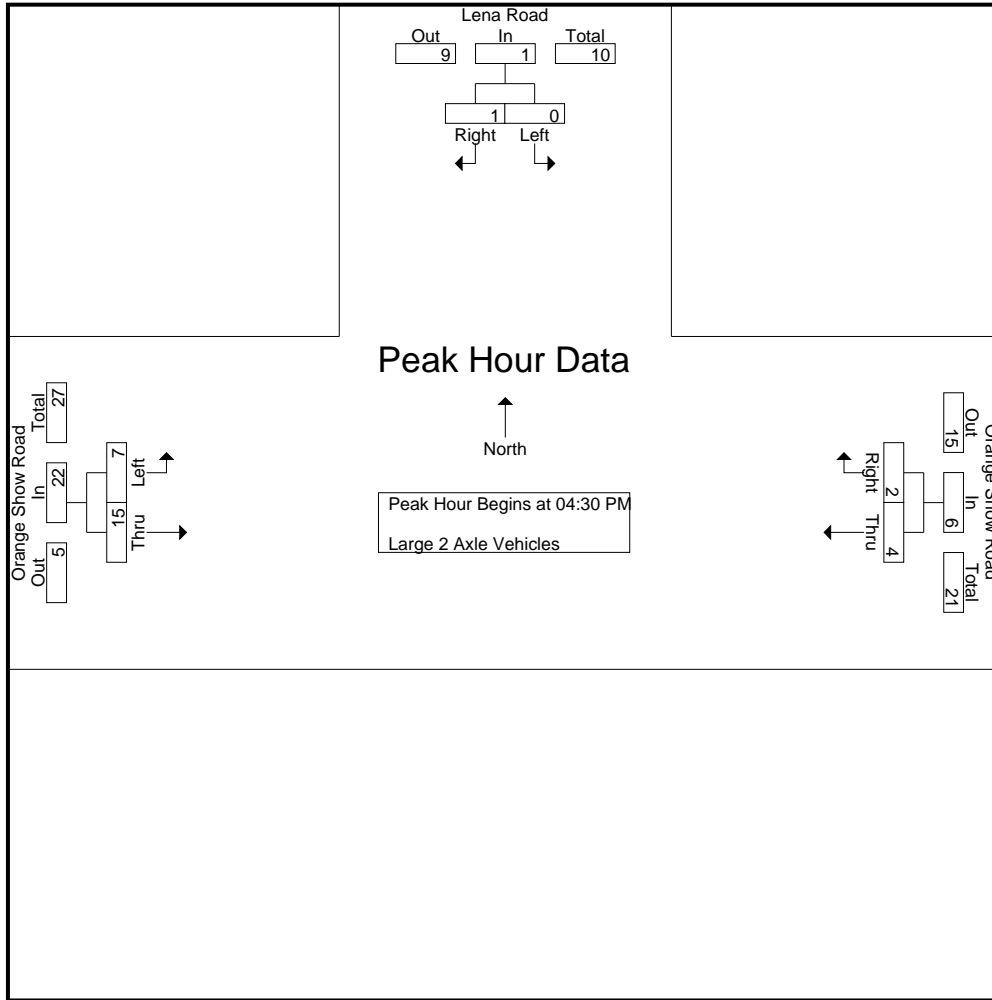
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:30 PM	0	1	1	1	0	1	1	3	4	6
04:45 PM	0	0	0	1	1	2	4	3	7	9
05:00 PM	0	0	0	2	0	2	0	3	3	5
05:15 PM	0	0	0	0	1	1	2	6	8	9
Total Volume	0	1	1	4	2	6	7	15	22	29
% App. Total	0	100		66.7	33.3		31.8	68.2		
PHF	.000	.250	.250	.500	.500	.750	.438	.625	.688	.806

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	1	1	1	0	1	1	3	4
+15 mins.	0	0	0	1	1	2	4	3	7
+30 mins.	0	0	0	2	0	2	0	3	3
+45 mins.	0	0	0	0	1	1	2	6	8
Total Volume	0	1	1	4	2	6	7	15	22
% App. Total	0	100		66.7	33.3		31.8	68.2	
PHF	.000	.250	.250	.500	.500	.750	.438	.625	.688

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
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Groups Printed- 3 Axle Vehicles

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	2	0	2	2	3	5	7
04:15 PM	0	0	0	3	0	3	3	3	6	9
04:30 PM	0	0	0	5	0	5	1	4	5	10
04:45 PM	0	0	0	2	0	2	1	1	2	4
Total	0	0	0	12	0	12	7	11	18	30
05:00 PM	0	0	0	3	0	3	0	3	3	6
05:15 PM	0	0	0	3	0	3	0	5	5	8
05:30 PM	0	1	1	2	0	2	3	3	6	9
05:45 PM	0	1	1	6	0	6	1	0	1	8
Total	0	2	2	14	0	14	4	11	15	31
Grand Total	0	2	2	26	0	26	11	22	33	61
Apprch %	0	100		100	0		33.3	66.7		
Total %	0	3.3	3.3	42.6	0	42.6	18	36.1	54.1	

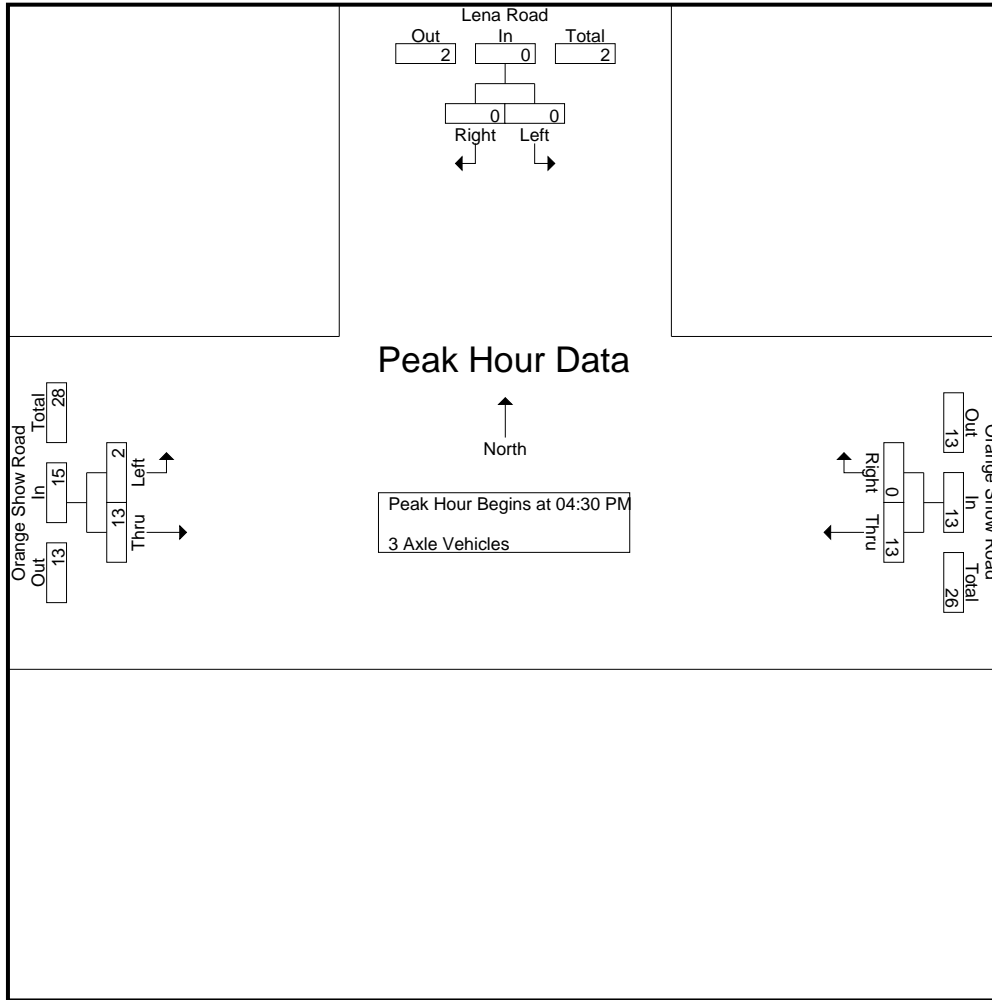
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:30 PM	0	0	0	5	0	5	1	4	5	10
04:45 PM	0	0	0	2	0	2	1	1	2	4
05:00 PM	0	0	0	3	0	3	0	3	3	6
05:15 PM	0	0	0	3	0	3	0	5	5	8
Total Volume	0	0	0	13	0	13	2	13	15	28
% App. Total	0	0		100	0		13.3	86.7		
PHF	.000	.000	.000	.650	.000	.650	.500	.650	.750	.700

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	5	0	5	1	4	5
+15 mins.	0	0	0	2	0	2	1	1	2
+30 mins.	0	0	0	3	0	3	0	3	3
+45 mins.	0	0	0	3	0	3	0	5	5
Total Volume	0	0	0	13	0	13	2	13	15
% App. Total	0	0	0	100	0		13.3	86.7	
PHF	.000	.000	.000	.650	.000	.650	.500	.650	.750

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
 Page No : 1

Groups Printed- 4+ Axle Trucks

Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	0	0	0	7	0	7	3	7	10	17
04:15 PM	0	0	0	8	0	8	0	3	3	11
04:30 PM	0	0	0	7	1	8	0	10	10	18
04:45 PM	0	1	1	6	1	7	0	4	4	12
Total	0	1	1	28	2	30	3	24	27	58
05:00 PM	0	1	1	9	0	9	1	4	5	15
05:15 PM	0	0	0	10	0	10	1	2	3	13
05:30 PM	0	1	1	6	2	8	2	6	8	17
05:45 PM	0	0	0	2	0	2	0	7	7	9
Total	0	2	2	27	2	29	4	19	23	54
Grand Total	0	3	3	55	4	59	7	43	50	112
Apprch %	0	100		93.2	6.8		14	86		
Total %	0	2.7	2.7	49.1	3.6	52.7	6.2	38.4	44.6	

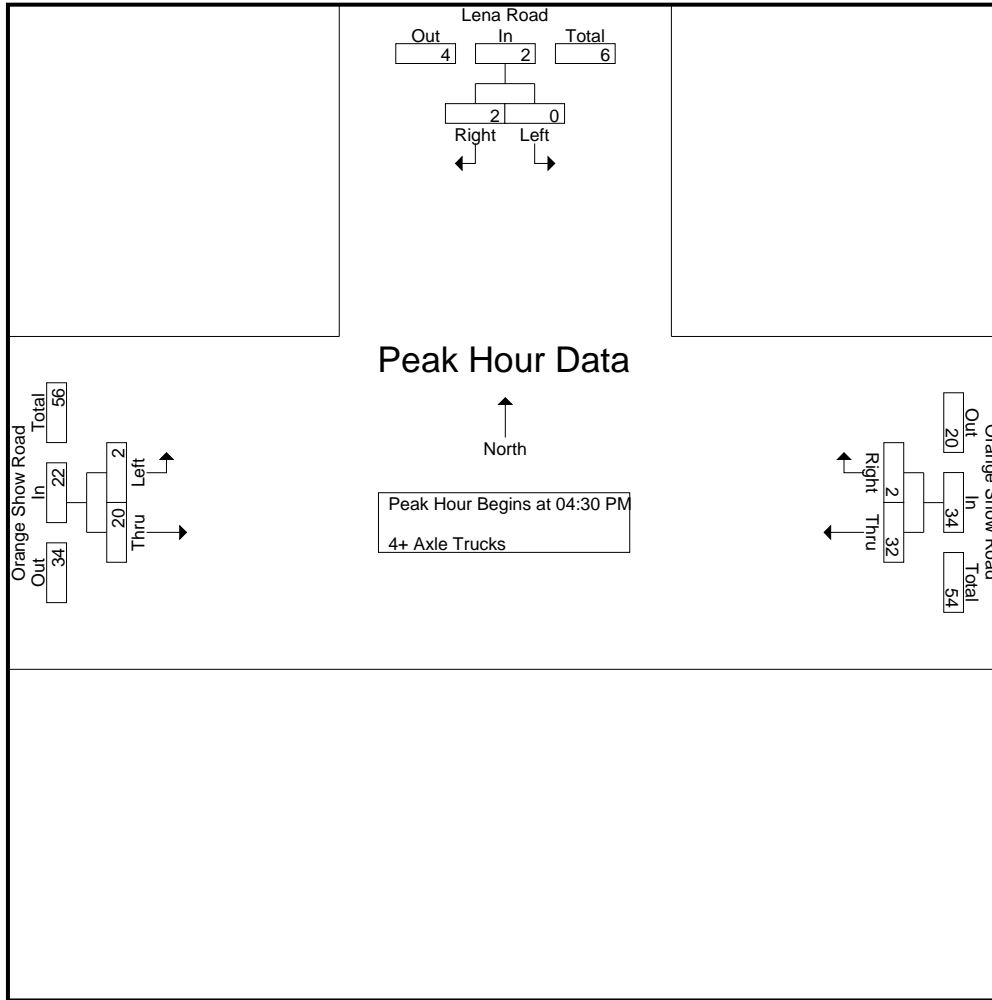
Start Time	Lena Road Southbound			Orange Show Road Westbound			Orange Show Road Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:30 PM	0	0	0	7	1	8	0	10	10	18
04:45 PM	0	1	1	6	1	7	0	4	4	12
05:00 PM	0	1	1	9	0	9	1	4	5	15
05:15 PM	0	0	0	10	0	10	1	2	3	13
Total Volume	0	2	2	32	2	34	2	20	22	58
% App. Total	0	100		94.1	5.9		9.1	90.9		
PHF	.000	.500	.500	.800	.500	.850	.500	.500	.550	.806

Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

City of San Bernardino
 N/S: Lena Road
 E/W: Orange Show Road
 Weather: Clear

File Name : 03_SBC_Lena_Orange PM
 Site Code : 99921278
 Start Date : 6/15/2021
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Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:30 PM			04:30 PM			04:30 PM		
+0 mins.	0	0	0	7	1	8	0	10	10
+15 mins.	0	1	1	6	1	7	0	4	4
+30 mins.	0	1	1	9	0	9	1	4	5
+45 mins.	0	0	0	10	0	10	1	2	3
Total Volume	0	2	2	32	2	34	2	20	22
% App. Total	0	100		94.1	5.9		9.1	90.9	
PHF	.000	.500	.500	.800	.500	.850	.500	.500	.550

APPENDIX C: VOLUME DEVELOPMENT WORKSHEETS

Table C-1: Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour					PM Peak Hour						
	Pass. Veh.	Trucks			Total PCE Volume	Pass. Veh.	Trucks			Total PCE Volume		
		2 Axle	3 Axle	4 Axle			PCE	2 Axle	3 Axle		4 Axle	PCE
1 . Lena Road/Norman Road												
NBL	3	0	2	0	5	8	6	0	0	0	0	6
NBT	49	0	6	5	30	79	78	4	3	2	22	100
NBR	28	0	1	0	3	31	42	1	0	2	8	50
SBL	5	0	0	0	0	5	8	0	0	0	0	8
SBT	40	0	1	5	18	58	53	1	0	1	5	58
SBR	1	0	0	0	0	1	4	0	0	0	0	4
EBL	2	0	0	0	0	2	1	0	0	0	0	1
EBT	3	1	0	0	2	5	7	1	0	1	5	12
EBR	2	0	0	0	0	2	7	0	0	0	0	7
WBL	37	1	0	1	5	42	31	0	0	1	3	34
WBT	2	0	0	0	0	2	10	0	1	0	3	13
WBR	1	1	0	1	5	6	3	0	0	0	0	3
North Leg												
Approach	46	0	1	5	18	64	65	1	0	1	5	70
Departure	52	1	6	6	35	87	82	4	3	2	22	104
Total	98	1	7	11	53	151	147	5	3	3	27	174
South Leg												
Approach	80	0	9	5	38	118	126	5	3	4	30	156
Departure	79	1	1	6	23	102	91	1	0	2	8	99
Total	159	1	10	11	61	220	217	6	3	6	38	255
East Leg												
Approach	40	2	0	2	10	50	44	0	1	1	6	50
Departure	36	1	1	0	5	41	57	2	0	3	13	70
Total	76	3	1	2	15	91	101	2	1	4	19	120
West Leg												
Approach	7	1	0	0	2	9	15	1	0	1	5	20
Departure	6	0	2	0	5	11	20	0	1	0	3	23
Total	13	1	2	0	7	20	35	1	1	1	8	43
Total Approaches												
Approach	173	3	10	12	68	241	250	7	4	7	46	296
Departure	173	3	10	12	68	241	250	7	4	7	46	296
Total	346	6	20	24	136	482	500	14	8	14	92	592

Table C-1: Existing Peak Hour Volumes
(Intersections With Classification Counts)

	AM Peak Hour					PM Peak Hour					Total PCE Volume	
	Pass. Veh.	Trucks			PCE	Pass. Veh.	Trucks			PCE		
		2 Axle	3 Axle	4 Axle			2 Axle	3 Axle	4 Axle			
3 . Lena Road/Orange Show Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	8	0	0	0	0	8	13	0	0	0	0	13
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	30	1	0	2	8	38	77	1	0	2	8	85
EBL	97	3	3	5	29	126	100	7	2	2	25	125
EBT	293	8	9	18	93	386	435	15	13	20	123	558
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	228	12	20	13	113	341	366	4	13	32	137	503
WBR	13	2	0	1	7	20	20	2	0	2	10	30
North Leg												
Approach	38	1	0	2	8	46	90	1	0	2	8	98
Departure	110	5	3	6	36	146	120	9	2	4	35	155
Total	148	6	3	8	44	192	210	10	2	6	43	253
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	241	14	20	14	120	361	386	6	13	34	147	533
Departure	301	8	9	18	93	394	448	15	13	20	123	571
Total	542	22	29	32	213	755	834	21	26	54	270	1,104
West Leg												
Approach	390	11	12	23	122	512	535	22	15	22	148	683
Departure	258	13	20	15	121	379	443	5	13	34	145	588
Total	648	24	32	38	243	891	978	27	28	56	293	1,271
Total Approaches												
Approach	669	26	32	39	250	919	1,011	29	28	58	303	1,314
Departure	669	26	32	39	250	919	1,011	29	28	58	303	1,314
Total	1,338	52	64	78	500	1,838	2,022	58	56	116	606	2,628

Table C-2: Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %
1 . Lena Road/Norman Road								
NBL	3	2	5	40.00%	6	0	6	0.00%
NBT	49	11	60	18.33%	78	9	87	10.34%
NBR	28	1	29	3.45%	42	3	45	6.67%
SBL	5	0	5	0.00%	8	0	8	0.00%
SBT	40	6	46	13.04%	53	2	55	3.64%
SBR	1	0	1	0.00%	4	0	4	0.00%
EBL	2	0	2	0.00%	1	0	1	0.00%
EBT	3	1	4	25.00%	7	2	9	22.22%
EBR	2	0	2	0.00%	7	0	7	0.00%
WBL	37	2	39	5.13%	31	1	32	3.13%
WBT	2	0	2	0.00%	10	1	11	9.09%
WBR	1	2	3	66.67%	3	0	3	0.00%
North Leg								
Approach	46	6	52	11.5%	65	2	67	3.0%
Departure	52	13	65	20.0%	82	9	91	9.9%
Total	98	19	117	16.2%	147	11	158	7.0%
South Leg								
Approach	80	14	94	14.9%	126	12	138	8.7%
Departure	79	8	87	9.2%	91	3	94	3.2%
Total	159	22	181	12.2%	217	15	232	6.5%
East Leg								
Approach	40	4	44	9.1%	44	2	46	4.3%
Departure	36	2	38	5.3%	57	5	62	8.1%
Total	76	6	82	7.3%	101	7	108	6.5%
West Leg								
Approach	7	1	8	12.5%	15	2	17	11.8%
Departure	6	2	8	25.0%	20	1	21	4.8%
Total	13	3	16	18.8%	35	3	38	7.9%
Total Approaches								
Approach	173	25	198		250	18	268	
Departure	173	25	198		250	18	268	
Total	346	50	396	12.6%	500	36	536	6.7%

Table C-2: Existing Peak Hour Truck Percentages

	AM Peak Hour				PM Peak Hour			
	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %	Passenger Vehicles	Total Trucks	Total Vehicle Volume	Truck %
3 . Lena Road/Orange Show Road								
NBL	0	0	0	0.00%	0	0	0	0.00%
NBT	0	0	0	0.00%	0	0	0	0.00%
NBR	0	0	0	0.00%	0	0	0	0.00%
SBL	8	0	8	0.00%	13	0	13	0.00%
SBT	0	0	0	0.00%	0	0	0	0.00%
SBR	30	3	33	9.09%	77	3	80	3.75%
EBL	97	11	108	10.19%	100	11	111	9.91%
EBT	293	35	328	10.67%	435	48	483	9.94%
EBR	0	0	0	0.00%	0	0	0	0.00%
WBL	0	0	0	0.00%	0	0	0	0.00%
WBT	228	45	273	16.48%	366	49	415	11.81%
WBR	13	3	16	18.75%	20	4	24	16.67%
North Leg								
Approach	38	3	41		90	3	93	
Departure	110	14	124		120	15	135	
Total	148	17	165	10.3%	210	18	228	7.9%
South Leg								
Approach	0	0	0		0	0	0	
Departure	0	0	0		0	0	0	
Total	0	0	0	0.0%	0	0	0	0.0%
East Leg								
Approach	241	48	289		386	53	439	
Departure	301	35	336		448	48	496	
Total	542	83	625	13.3%	834	101	935	10.8%
West Leg								
Approach	390	46	436		535	59	594	
Departure	258	48	306		443	52	495	
Total	648	94	742	12.7%	978	111	1,089	10.2%
Total Approaches								
Approach	669	97	766		1,011	115	1,126	
Departure	669	97	766		1,011	115	1,126	
Total	1,338	194	1,532	12.7%	2,022	230	2,252	10.2%

Table C-3: Existing (2022) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist		Exist 2,022	Exist		Exist 2,022
	PCE 2,021	Growth		PCE 2,021	Growth	
1 . Lena Road/Norman Road						
NBL	8	0	8	6	0	6
NBT	79	2	81	100	3	103
NBR	31	1	32	50	2	52
SBL	5	0	5	8	0	8
SBT	58	2	60	58	2	60
SBR	1	0	1	4	0	4
EBL	2	0	2	1	0	1
EBT	5	0	5	12	0	12
EBR	2	0	2	7	0	7
WBL	42	1	43	34	1	35
WBT	2	0	2	13	0	13
WBR	6	0	6	3	0	3
North Leg						
Approach	64	2	66	70	2	72
Departure	87	2	89	104	3	107
Total	151	4	155	174	5	179
South Leg						
Approach	118	3	121	156	5	161
Departure	102	3	105	99	3	102
Total	220	6	226	255	8	263
East Leg						
Approach	50	1	51	50	1	51
Departure	41	1	42	70	2	72
Total	91	2	93	120	3	123
West Leg						
Approach	9	0	9	20	0	20
Departure	11	0	11	23	0	23
Total	20	0	20	43	0	43
Total Approaches						
Approach	241	6	247	296	8	304
Departure	241	6	247	296	8	304
Total	482	12	494	592	16	608

Table C-3: Existing (2022) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Exist		Exist 2,022	Exist		Exist 2,022
	PCE 2,021	Growth		PCE 2,021	Growth	
3 . Lena Road/Orange Show Road						
NBL	0	0	0	0	0	0
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	8	0	8	13	0	13
SBT	0	0	0	0	0	0
SBR	38	1	39	85	3	88
EBL	126	4	130	125	4	129
EBT	386	12	398	558	17	575
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	341	10	351	503	15	518
WBR	20	1	21	30	1	31
North Leg						
Approach	46	1	47	98	3	101
Departure	146	5	151	155	5	160
Total	192	6	198	253	8	261
South Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
East Leg						
Approach	361	11	372	533	16	549
Departure	394	12	406	571	17	588
Total	755	23	778	1,104	33	1,137
West Leg						
Approach	512	16	528	683	21	704
Departure	379	11	390	588	18	606
Total	891	27	918	1,271	39	1,310
Total Approaches						
Approach	919	28	947	1,314	40	1,354
Departure	919	28	947	1,314	40	1,354
Total	1,838	56	1,894	2,628	80	2,708

Table C-4: Existing Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist PCE Volumes	Adj.	Project Trips	Exist With Project	Exist PCE Volumes	Adj.	Project Trips	Exist With Project
1 . Lena Road/Norman Road								
NBL	8	0	0	8	6	0	1	7
NBT	81	0	0	81	103	0	1	104
NBR	32	-10	7	29	52	-9	4	47
SBL	5	0	3	8	8	0	1	9
SBT	60	0	0	60	60	0	0	60
SBR	1	0	0	1	4	0	0	4
EBL	2	0	0	2	1	0	0	1
EBT	5	0	2	7	12	0	1	13
EBR	2	0	0	2	7	0	0	7
WBL	43	-9	4	38	35	-13	6	28
WBT	2	0	0	2	13	0	1	14
WBR	6	0	0	6	3	0	3	6
North Leg								
Approach	66	0	3	69	72	0	1	73
Departure	89	0	0	89	107	0	4	111
Total	155	0	3	158	179	0	5	184
South Leg								
Approach	121	-10	7	118	161	-9	6	158
Departure	105	-9	4	100	102	-13	6	95
Total	226	-19	11	218	263	-22	12	253
East Leg								
Approach	51	-9	4	46	51	-13	10	48
Departure	42	-10	12	44	72	-9	6	69
Total	93	-19	16	90	123	-22	16	117
West Leg								
Approach	9	0	2	11	20	0	1	21
Departure	11	0	0	11	23	0	2	25
Total	20	0	2	22	43	0	3	46
Total Approaches								
Approach	247	-19	16	244	304	-22	18	300
Departure	247	-19	16	244	304	-22	18	300
Total	494	-38	32	488	608	-44	36	600

Table C-4: Existing Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist PCE Volumes	Adj.	Project Trips	Exist With Project	Exist PCE Volumes	Adj.	Project Trips	Exist With Project
2 . Lena Road/Driveway 1								
NBL	0	0	0	0	0	0	0	0
NBT	121	-10	7	118	161	-9	4	156
NBR	0	0	2	2	0	0	1	1
SBL	0	0	0	0	0	0	0	0
SBT	105	-9	4	100	102	-13	6	95
SBR	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	3	3
North Leg								
Approach	105	-9	4	100	102	-13	6	95
Departure	121	-10	7	118	161	-9	7	159
Total	226	-19	11	218	263	-22	13	254
South Leg								
Approach	121	-10	9	120	161	-9	5	157
Departure	105	-9	4	100	102	-13	6	95
Total	226	-19	13	220	263	-22	11	252
East Leg								
Approach	0	0	0	0	0	0	3	3
Departure	0	0	2	2	0	0	1	1
Total	0	0	2	2	0	0	4	4
West Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
Total Approaches								
Approach	226	-19	13	220	263	-22	14	255
Departure	226	-19	13	220	263	-22	14	255
Total	452	-38	26	440	526	-44	28	510

Table C-4: Existing Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist PCE Volumes	Adj.	Project Trips	Exist With Project	Exist PCE Volumes	Adj.	Project Trips	Exist With Project
3 . Lena Road/Orange Show Road								
NBL	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0
SBL	8	0	0	8	13	0	4	17
SBT	0	0	0	0	0	0	0	0
SBR	39	-9	3	33	88	-13	2	77
EBL	130	-10	9	129	129	-9	5	125
EBT	398	0	13	411	575	0	8	583
EBR	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0
WBT	351	0	10	361	518	0	16	534
WBR	21	0	0	21	31	0	0	31
North Leg								
Approach	47	-9	3	41	101	-13	6	94
Departure	151	-10	9	150	160	-9	5	156
Total	198	-19	12	191	261	-22	11	250
South Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
East Leg								
Approach	372	0	10	382	549	0	16	565
Departure	406	0	13	419	588	0	12	600
Total	778	0	23	801	1,137	0	28	1,165
West Leg								
Approach	528	-10	22	540	704	-9	13	708
Departure	390	-9	13	394	606	-13	18	611
Total	918	-19	35	934	1,310	-22	31	1,319
Total Approaches								
Approach	947	-19	35	963	1,354	-22	35	1,367
Departure	947	-19	35	963	1,354	-22	35	1,367
Total	1,894	-38	70	1,926	2,708	-44	70	2,734

Table C-4: Existing Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist PCE Volumes	Adj.	Project Trips	Exist With Project	Exist PCE Volumes	Adj.	Project Trips	Exist With Project
4 . Driveway 2/Orange Show Road								
NBL	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0
SBR	0	0	10	10	0	0	16	16
EBL	0	0	13	13	0	0	8	8
EBT	406	0	0	406	588	0	4	592
EBR	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0
WBT	372	0	0	372	549	0	0	549
WBR	0	0	3	3	0	0	1	1
North Leg								
Approach	0	0	10	10	0	0	16	16
Departure	0	0	16	16	0	0	9	9
Total	0	0	26	26	0	0	25	25
South Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
East Leg								
Approach	372	0	3	375	549	0	1	550
Departure	406	0	0	406	588	0	4	592
Total	778	0	3	781	1,137	0	5	1,142
West Leg								
Approach	406	0	13	419	588	0	12	600
Departure	372	0	10	382	549	0	16	565
Total	778	0	23	801	1,137	0	28	1,165
Total Approaches								
Approach	778	0	26	804	1,137	0	29	1,166
Departure	778	0	26	804	1,137	0	29	1,166
Total	1,556	0	52	1,608	2,274	0	58	2,332

Table C-4: Existing Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist PCE Volumes	Adj.	Project Trips	Exist With Project	Exist PCE Volumes	Adj.	Project Trips	Exist With Project
5 . Driveway 3/Norman Road								
NBL	0	0	4	4	0	0	10	10
NBT	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	1	1
SBL	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0
EBT	42	0	0	42	72	0	0	72
EBR	0	0	12	12	0	0	6	6
WBL	0	0	1	1	0	0	0	0
WBT	51	0	0	51	51	0	0	51
WBR	0	0	0	0	0	0	0	0
North Leg								
Approach	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0
South Leg								
Approach	0	0	4	4	0	0	11	11
Departure	0	0	13	13	0	0	6	6
Total	0	0	17	17	0	0	17	17
East Leg								
Approach	51	0	1	52	51	0	0	51
Departure	42	0	0	42	72	0	1	73
Total	93	0	1	94	123	0	1	124
West Leg								
Approach	42	0	12	54	72	0	6	78
Departure	51	0	4	55	51	0	10	61
Total	93	0	16	109	123	0	16	139
Total Approaches								
Approach	93	0	17	110	123	0	17	140
Departure	93	0	17	110	123	0	17	140
Total	186	0	34	220	246	0	34	280

Table C-5: Opening Year (2024) Base Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project
1 . Lena Road/Norman Road												
NBL	8	0	8	0	0	8	6	0	6	0	1	7
NBT	81	5	86	0	0	86	103	6	109	0	1	110
NBR	32	2	34	-10	7	31	52	3	55	-9	4	50
SBL	5	0	5	0	3	8	8	0	8	0	1	9
SBT	60	4	64	0	0	64	60	4	64	0	0	64
SBR	1	0	1	0	0	1	4	0	4	0	0	4
EBL	2	0	2	0	0	2	1	0	1	0	0	1
EBT	5	0	5	0	2	7	12	1	13	0	1	14
EBR	2	0	2	0	0	2	7	0	7	0	0	7
WBL	43	3	46	-9	4	41	35	2	37	-13	6	30
WBT	2	0	2	0	0	2	13	1	14	0	1	15
WBR	6	0	6	0	0	6	3	0	3	0	3	6
North Leg												
Approach	66	4	70	0	3	73	72	4	76	0	1	77
Departure	89	5	94	0	0	94	107	6	113	0	4	117
Total	155	9	164	0	3	167	179	10	189	0	5	194
South Leg												
Approach	121	7	128	-10	7	125	161	9	170	-9	6	167
Departure	105	7	112	-9	4	107	102	6	108	-13	6	101
Total	226	14	240	-19	11	232	263	15	278	-22	12	268
East Leg												
Approach	51	3	54	-9	4	49	51	3	54	-13	10	51
Departure	42	2	44	-10	12	46	72	4	76	-9	6	73
Total	93	5	98	-19	16	95	123	7	130	-22	16	124
West Leg												
Approach	9	0	9	0	2	11	20	1	21	0	1	22
Departure	11	0	11	0	0	11	23	1	24	0	2	26
Total	20	0	20	0	2	22	43	2	45	0	3	48
Total Approaches												
Approach	247	14	261	-19	16	258	304	17	321	-22	18	317
Departure	247	14	261	-19	16	258	304	17	321	-22	18	317
Total	494	28	522	-38	32	516	608	34	642	-44	36	634

Table C-5: Opening Year (2024) Base Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project
2 . Lena Road/Driveway 1												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	121	7	128	-10	7	125	161	10	171	-9	4	166
NBR	0	0	0	0	2	2	0	0	0	0	1	1
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	105	6	111	-9	4	106	102	6	108	-13	6	101
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	3	3
North Leg												
Approach	105	6	111	-9	4	106	102	6	108	-13	6	101
Departure	121	7	128	-10	7	125	161	10	171	-9	7	169
Total	226	13	239	-19	11	231	263	16	279	-22	13	270
South Leg												
Approach	121	7	128	-10	9	127	161	10	171	-9	5	167
Departure	105	6	111	-9	4	106	102	6	108	-13	6	101
Total	226	13	239	-19	13	233	263	16	279	-22	11	268
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	3	3
Departure	0	0	0	0	2	2	0	0	0	0	1	1
Total	0	0	0	0	2	2	0	0	0	0	4	4
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	226	13	239	-19	13	233	263	16	279	-22	14	271
Departure	226	13	239	-19	13	233	263	16	279	-22	14	271
Total	452	26	478	-38	26	466	526	32	558	-44	28	542

Table C-5: Opening Year (2024) Base Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project
3 . Lena Road/Orange Show Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	8	0	8	0	0	8	13	1	14	0	4	18
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	39	2	41	-9	3	35	88	5	93	-13	2	82
EBL	130	8	138	-10	9	137	129	8	137	-9	5	133
EBT	398	24	422	0	13	435	575	35	610	0	8	618
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	351	21	372	0	10	382	518	31	549	0	16	565
WBR	21	1	22	0	0	22	31	2	33	0	0	33
North Leg												
Approach	47	2	49	-9	3	43	101	6	107	-13	6	100
Departure	151	9	160	-10	9	159	160	10	170	-9	5	166
Total	198	11	209	-19	12	202	261	16	277	-22	11	266
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	372	22	394	0	10	404	549	33	582	0	16	598
Departure	406	24	430	0	13	443	588	36	624	0	12	636
Total	778	46	824	0	23	847	1,137	69	1,206	0	28	1,234
West Leg												
Approach	528	32	560	-10	22	572	704	43	747	-9	13	751
Departure	390	23	413	-9	13	417	606	36	642	-13	18	647
Total	918	55	973	-19	35	989	1,310	79	1,389	-22	31	1,398
Total Approaches												
Approach	947	56	1,003	-19	35	1,019	1,354	82	1,436	-22	35	1,449
Departure	947	56	1,003	-19	35	1,019	1,354	82	1,436	-22	35	1,449
Total	1,894	112	2,006	-38	70	2,038	2,708	164	2,872	-44	70	2,898

Table C-5: Opening Year (2024) Base Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Exist		OY Base	Adj.	Project Trips	OY With Project	Exist		OY Base	Adj.	Project Trips	OY With Project
	PCE Volumes	Growth					PCE Volumes	Growth				
4 . Driveway 2/Orange Show Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	10	10	0	0	0	0	16	16
EBL	0	0	0	0	13	13	0	0	0	0	8	8
EBT	406	24	430	0	0	430	588	35	623	0	4	627
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	372	22	394	0	0	394	549	33	582	0	0	582
WBR	0	0	0	0	3	3	0	0	0	0	1	1
North Leg												
Approach	0	0	0	0	10	10	0	0	0	0	16	16
Departure	0	0	0	0	16	16	0	0	0	0	9	9
Total	0	0	0	0	26	26	0	0	0	0	25	25
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	372	22	394	0	3	397	549	33	582	0	1	583
Departure	406	24	430	0	0	430	588	35	623	0	4	627
Total	778	46	824	0	3	827	1,137	68	1,205	0	5	1,210
West Leg												
Approach	406	24	430	0	13	443	588	35	623	0	12	635
Departure	372	22	394	0	10	404	549	33	582	0	16	598
Total	778	46	824	0	23	847	1,137	68	1,205	0	28	1,233
Total Approaches												
Approach	778	46	824	0	26	850	1,137	68	1,205	0	29	1,234
Departure	778	46	824	0	26	850	1,137	68	1,205	0	29	1,234
Total	1,556	92	1,648	0	52	1,700	2,274	136	2,410	0	58	2,468

Table C-5: Opening Year (2024) Base Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project	Exist PCE Volumes	Growth	OY Base	Adj.	Project Trips	OY With Project
5 . Driveway 3/Norman Road												
NBL	0	0	0	0	4	4	0	0	0	0	10	10
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	1	1
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	42	3	45	0	0	45	72	4	76	0	0	76
EBR	0	0	0	0	12	12	0	0	0	0	6	6
WBL	0	0	0	0	1	1	0	0	0	0	0	0
WBT	51	3	54	0	0	54	51	3	54	0	0	54
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	4	4	0	0	0	0	11	11
Departure	0	0	0	0	13	13	0	0	0	0	6	6
Total	0	0	0	0	17	17	0	0	0	0	17	17
East Leg												
Approach	51	3	54	0	1	55	51	3	54	0	0	54
Departure	42	3	45	0	0	45	72	4	76	0	1	77
Total	93	6	99	0	1	100	123	7	130	0	1	131
West Leg												
Approach	42	3	45	0	12	57	72	4	76	0	6	82
Departure	51	3	54	0	4	58	51	3	54	0	10	64
Total	93	6	99	0	16	115	123	7	130	0	16	146
Total Approaches												
Approach	93	6	99	0	17	116	123	7	130	0	17	147
Departure	93	6	99	0	17	116	123	7	130	0	17	147
Total	186	12	198	0	34	232	246	14	260	0	34	294

Table C-6: Opening Year (2024) Base Plus Other Proposed Projects Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	OY	Cumul.	OY		OY		OY	Cumul.	OY		OY	
	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.
1 . Lena Road/Norman Road												
NBL	8	4	12	0	0	12	6	1	7	0	1	8
NBT	86	33	119	0	0	119	109	20	129	0	1	130
NBR	34	2	36	-10	7	33	55	1	56	-9	4	51
SBL	5	1	6	0	3	9	8	0	8	0	1	9
SBT	64	16	80	0	0	80	64	34	98	0	0	98
SBR	1	7	8	0	0	8	4	6	10	0	0	10
EBL	2	7	9	0	0	9	1	7	8	0	0	8
EBT	5	1	6	0	2	8	13	1	14	0	1	15
EBR	2	1	3	0	0	3	7	5	12	0	0	12
WBL	46	0	46	-9	4	41	37	2	39	-13	6	32
WBT	2	1	3	0	0	3	14	1	15	0	1	16
WBR	6	0	6	0	0	6	3	1	4	0	3	7
North Leg												
Approach	70	24	94	0	3	97	76	40	116	0	1	117
Departure	94	40	134	0	0	134	113	28	141	0	4	145
Total	164	64	228	0	3	231	189	68	257	0	5	262
South Leg												
Approach	128	39	167	-10	7	164	170	22	192	-9	6	189
Departure	112	17	129	-9	4	124	108	41	149	-13	6	142
Total	240	56	296	-19	11	288	278	63	341	-22	12	331
East Leg												
Approach	54	1	55	-9	4	50	54	4	58	-13	10	55
Departure	44	4	48	-10	12	50	76	2	78	-9	6	75
Total	98	5	103	-19	16	100	130	6	136	-22	16	130
West Leg												
Approach	9	9	18	0	2	20	21	13	34	0	1	35
Departure	11	12	23	0	0	23	24	8	32	0	2	34
Total	20	21	41	0	2	43	45	21	66	0	3	69
Total Approaches												
Approach	261	73	334	-19	16	331	321	79	400	-22	18	396
Departure	261	73	334	-19	16	331	321	79	400	-22	18	396
Total	522	146	668	-38	32	662	642	158	800	-44	36	792

Table C-6: Opening Year (2024) Base Plus Other Proposed Projects Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	OY Base Volumes	Cumul. Pr. Trips	OY Base plus Other Proj.	Adj.	Project Trips	OY Base plus Pr. plus Pr.	OY Base Volumes	Cumul. Pr. Trips	OY Base plus Other Proj.	Adj.	Project Trips	OY Base plus Pr. plus Pr.
2 . Lena Road/Driveway 1												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	128	39	167	-10	7	164	171	22	193	-9	4	188
NBR	0	0	0	0	2	2	0	0	0	0	1	1
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	111	18	129	-9	4	124	108	41	149	-13	6	142
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	0	0	0	0	0	0	0	0	0	0	0	0
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	0	0	0	0	0	0	0	0	0	0	0	0
WBR	0	0	0	0	0	0	0	0	0	0	3	3
North Leg												
Approach	111	18	129	-9	4	124	108	41	149	-13	6	142
Departure	128	39	167	-10	7	164	171	22	193	-9	7	191
Total	239	57	296	-19	11	288	279	63	342	-22	13	333
South Leg												
Approach	128	39	167	-10	9	166	171	22	193	-9	5	189
Departure	111	18	129	-9	4	124	108	41	149	-13	6	142
Total	239	57	296	-19	13	290	279	63	342	-22	11	331
East Leg												
Approach	0	0	0	0	0	0	0	0	0	0	3	3
Departure	0	0	0	0	2	2	0	0	0	0	1	1
Total	0	0	0	0	2	2	0	0	0	0	4	4
West Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
Total Approaches												
Approach	239	57	296	-19	13	290	279	63	342	-22	14	334
Departure	239	57	296	-19	13	290	279	63	342	-22	14	334
Total	478	114	592	-38	26	580	558	126	684	-44	28	668

Table C-6: Opening Year (2024) Base Plus Other Proposed Projects Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	OY	Cumul.	OY		OY		OY	Cumul.	OY		OY	
	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.
3 . Lena Road/Orange Show Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	8	6	14	0	0	14	14	19	33	0	4	37
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	41	10	51	-9	3	45	93	22	115	-13	2	104
EBL	138	20	158	-10	9	157	137	12	149	-9	5	145
EBT	422	12	434	0	13	447	610	19	629	0	8	637
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	372	13	385	0	10	395	549	16	565	0	16	581
WBR	22	15	37	0	0	37	33	9	42	0	0	42
North Leg												
Approach	49	16	65	-9	3	59	107	41	148	-13	6	141
Departure	160	35	195	-10	9	194	170	21	191	-9	5	187
Total	209	51	260	-19	12	253	277	62	339	-22	11	328
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	394	28	422	0	10	432	582	25	607	0	16	623
Departure	430	18	448	0	13	461	624	38	662	0	12	674
Total	824	46	870	0	23	893	1,206	63	1,269	0	28	1,297
West Leg												
Approach	560	32	592	-10	22	604	747	31	778	-9	13	782
Departure	413	23	436	-9	13	440	642	38	680	-13	18	685
Total	973	55	1,028	-19	35	1,044	1,389	69	1,458	-22	31	1,467
Total Approaches												
Approach	1,003	76	1,079	-19	35	1,095	1,436	97	1,533	-22	35	1,546
Departure	1,003	76	1,079	-19	35	1,095	1,436	97	1,533	-22	35	1,546
Total	2,006	152	2,158	-38	70	2,190	2,872	194	3,066	-44	70	3,092

Table C-6: Opening Year (2024) Base Plus Other Proposed Projects Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	OY	Cumul.	OY		OY		OY	Cumul.	OY		OY	
	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.
4 . Driveway 2/Orange Show Road												
NBL	0	0	0	0	0	0	0	0	0	0	0	0
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	10	10	0	0	0	0	16	16
EBL	0	0	0	0	13	13	0	0	0	0	8	8
EBT	430	20	450	0	0	450	623	37	660	0	4	664
EBR	0	0	0	0	0	0	0	0	0	0	0	0
WBL	0	0	0	0	0	0	0	0	0	0	0	0
WBT	394	30	424	0	0	424	582	24	606	0	0	606
WBR	0	0	0	0	3	3	0	0	0	0	1	1
North Leg												
Approach	0	0	0	0	10	10	0	0	0	0	16	16
Departure	0	0	0	0	16	16	0	0	0	0	9	9
Total	0	0	0	0	26	26	0	0	0	0	25	25
South Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
East Leg												
Approach	394	30	424	0	3	427	582	24	606	0	1	607
Departure	430	20	450	0	0	450	623	37	660	0	4	664
Total	824	50	874	0	3	877	1,205	61	1,266	0	5	1,271
West Leg												
Approach	430	20	450	0	13	463	623	37	660	0	12	672
Departure	394	30	424	0	10	434	582	24	606	0	16	622
Total	824	50	874	0	23	897	1,205	61	1,266	0	28	1,294
Total Approaches												
Approach	824	50	874	0	26	900	1,205	61	1,266	0	29	1,295
Departure	824	50	874	0	26	900	1,205	61	1,266	0	29	1,295
Total	1,648	100	1,748	0	52	1,800	2,410	122	2,532	0	58	2,590

Table C-6: Opening Year (2024) Base Plus Other Proposed Projects Peak Hour Volume Summary

	AM Peak Hour						PM Peak Hour					
	OY	Cumul.	OY		OY		OY	Cumul.	OY		OY	
	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.	Base Volumes	Pr. Trips	Base plus Other Proj.	Adj.	Project Trips	Base plus Other Pr. plus Pr.
5 . Driveway 3/Norman Road												
NBL	0	0	0	0	4	4	0	0	0	0	10	10
NBT	0	0	0	0	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	0	0	0	0	1	1
SBL	0	0	0	0	0	0	0	0	0	0	0	0
SBT	0	0	0	0	0	0	0	0	0	0	0	0
SBR	0	0	0	0	0	0	0	0	0	0	0	0
EBL	0	0	0	0	0	0	0	0	0	0	0	0
EBT	45	0	45	0	0	45	76	2	78	0	0	78
EBR	0	0	0	0	12	12	0	0	0	0	6	6
WBL	0	0	0	0	1	1	0	0	0	0	0	0
WBT	54	2	56	0	0	56	54	0	54	0	0	54
WBR	0	0	0	0	0	0	0	0	0	0	0	0
North Leg												
Approach	0	0	0	0	0	0	0	0	0	0	0	0
Departure	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0
South Leg												
Approach	0	0	0	0	4	4	0	0	0	0	11	11
Departure	0	0	0	0	13	13	0	0	0	0	6	6
Total	0	0	0	0	17	17	0	0	0	0	17	17
East Leg												
Approach	54	2	56	0	1	57	54	0	54	0	0	54
Departure	45	0	45	0	0	45	76	2	78	0	1	79
Total	99	2	101	0	1	102	130	2	132	0	1	133
West Leg												
Approach	45	0	45	0	12	57	76	2	78	0	6	84
Departure	54	2	56	0	4	60	54	0	54	0	10	64
Total	99	2	101	0	16	117	130	2	132	0	16	148
Total Approaches												
Approach	99	2	101	0	17	118	130	2	132	0	17	149
Departure	99	2	101	0	17	118	130	2	132	0	17	149
Total	198	4	202	0	34	236	260	4	264	0	34	298

APPENDIX D: LEVEL OF SERVICE WORKSHEETS

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/10/2022

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	2	5	2	43	2	6	8	81	32	5	60	1
Future Vol, veh/h	2	5	2	43	2	6	8	81	32	5	60	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	7	3	60	3	8	11	113	44	7	83	1
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.9	8.8	7.9	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	22%	84%	100%	0%	0%
Vol Thru, %	0%	100%	46%	56%	4%	0%	100%	95%
Vol Right, %	0%	0%	54%	22%	12%	0%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	54	59	9	51	5	40	21
LT Vol	8	0	0	2	43	5	0	0
Through Vol	0	54	27	5	2	0	40	20
RT Vol	0	0	32	2	6	0	0	1
Lane Flow Rate	11	75	82	12	71	7	56	29
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.016	0.1	0.101	0.018	0.107	0.01	0.075	0.039
Departure Headway (Hd)	5.315	4.814	4.433	5.104	5.42	5.373	4.871	4.838
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	676	747	811	703	664	668	738	742
Service Time	3.028	2.526	2.145	2.82	3.133	3.087	2.585	2.552
HCM Lane V/C Ratio	0.016	0.1	0.101	0.017	0.107	0.01	0.076	0.039
HCM Control Delay	8.1	8.1	7.6	7.9	8.8	8.1	8	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.3	0.3	0.1	0.4	0	0.2	0.1

HCM 6th TWSC
3: Orange Show Rd & Lena Rd

11/10/2022

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑		↘	↘
Traffic Vol, veh/h	130	398	351	21	8	39
Future Vol, veh/h	130	398	351	21	8	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	145	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	149	457	403	24	9	45

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	427	0	-	0	942
Stage 1	-	-	-	-	415
Stage 2	-	-	-	-	527
Critical Hdwy	4.1	-	-	-	6.8
Critical Hdwy Stg 1	-	-	-	-	5.8
Critical Hdwy Stg 2	-	-	-	-	5.8
Follow-up Hdwy	2.2	-	-	-	3.5
Pot Cap-1 Maneuver	1143	-	-	-	265
Stage 1	-	-	-	-	641
Stage 2	-	-	-	-	562
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1143	-	-	-	231
Mov Cap-2 Maneuver	-	-	-	-	231
Stage 1	-	-	-	-	558
Stage 2	-	-	-	-	562

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1143	-	-	-	231	797
HCM Lane V/C Ratio	0.131	-	-	-	0.04	0.056
HCM Control Delay (s)	8.6	-	-	-	21.2	9.8
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.5	-	-	-	0.1	0.2

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/10/2022

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	12	7	35	13	3	6	103	52	8	60	4
Future Vol, veh/h	1	12	7	35	13	3	6	103	52	8	60	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	15	9	45	17	4	8	132	67	10	77	5
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	7.9	8.8	8	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	5%	69%	100%	0%	0%
Vol Thru, %	0%	100%	40%	60%	25%	0%	100%	83%
Vol Right, %	0%	0%	60%	35%	6%	0%	0%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	69	86	20	51	8	40	24
LT Vol	6	0	0	1	35	8	0	0
Through Vol	0	69	34	12	13	0	40	20
RT Vol	0	0	52	7	3	0	0	4
Lane Flow Rate	8	88	111	26	65	10	51	31
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.011	0.118	0.136	0.036	0.099	0.015	0.07	0.041
Departure Headway (Hd)	5.337	4.835	4.412	5.003	5.474	5.423	4.921	4.804
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	673	744	816	717	656	662	730	747
Service Time	3.049	2.547	2.124	2.722	3.192	3.139	2.637	2.52
HCM Lane V/C Ratio	0.012	0.118	0.136	0.036	0.099	0.015	0.07	0.041
HCM Control Delay	8.1	8.2	7.8	7.9	8.8	8.2	8	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.5	0.1	0.3	0	0.2	0.1

Intersection

Intersection Delay, s/veh 6.8

Intersection LOS A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↔			↕↕
Traffic Vol, veh/h	0	0	161	0	0	102
Future Vol, veh/h	0	0	161	0	0	102
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	175	0	0	111
Number of Lanes	0	1	2	0	0	2

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	2
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	2	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	0	6.8	6.7
HCM LOS	-	A	A

Lane	NBLn1	NBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	81	0	51	51
LT Vol	0	0	0	0	0
Through Vol	81	81	0	51	51
RT Vol	0	0	0	0	0
Lane Flow Rate	88	88	0	55	55
Geometry Grp	7	7	2	7	7
Degree of Util (X)	0.111	0.069	0	0.071	0.044
Departure Headway (Hd)	4.553	2.852	4.359	4.586	2.884
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	790	1260	0	784	1243
Service Time	2.262	0.561	2.43	2.299	0.597
HCM Lane V/C Ratio	0.111	0.07	0	0.07	0.044
HCM Control Delay	7.8	5.8	7.4	7.7	5.7
HCM Lane LOS	A	A	N	A	A
HCM 95th-tile Q	0.4	0.2	0	0.2	0.1

HCM 6th TWSC
3: Orange Show Rd & Lena Rd

11/10/2022

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	129	575	518	31	13	88
Future Vol, veh/h	129	575	518	31	13	88
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	145	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	159	710	640	38	16	109

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	678	0	-	0	1332 339
Stage 1	-	-	-	-	659 -
Stage 2	-	-	-	-	673 -
Critical Hdwy	4.1	-	-	-	6.8 6.9
Critical Hdwy Stg 1	-	-	-	-	5.8 -
Critical Hdwy Stg 2	-	-	-	-	5.8 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	923	-	-	-	148 663
Stage 1	-	-	-	-	482 -
Stage 2	-	-	-	-	474 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	923	-	-	-	123 663
Mov Cap-2 Maneuver	-	-	-	-	123 -
Stage 1	-	-	-	-	399 -
Stage 2	-	-	-	-	474 -

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	923	-	-	-	123	663
HCM Lane V/C Ratio	0.173	-	-	-	0.13	0.164
HCM Control Delay (s)	9.7	-	-	-	38.6	11.5
HCM Lane LOS	A	-	-	-	E	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.4	0.6

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑			↗
Traffic Vol, veh/h	0	588	549	0	0	0
Future Vol, veh/h	0	588	549	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	639	597	0	0	0
Number of Lanes	1	2	2	0	0	1

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	2	3	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	3
HCM Control Delay	9.5	10.5	0
HCM LOS	A	B	-

Lane	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	0%	0%	0%	0%	0%
Vol Thru, %	100%	100%	100%	100%	100%	100%
Vol Right, %	0%	0%	0%	0%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	294	294	275	275	0
LT Vol	0	0	0	0	0	0
Through Vol	0	294	294	275	275	0
RT Vol	0	0	0	0	0	0
Lane Flow Rate	0	320	320	298	298	0
Geometry Grp	7	7	7	8	8	7
Degree of Util (X)	0	0.442	0.284	0.455	0.314	0
Departure Headway (Hd)	4.974	4.974	3.2	5.494	3.788	6.702
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	0	725	1099	656	952	0
Service Time	2.698	2.698	0.992	3.212	1.506	4.454
HCM Lane V/C Ratio	0	0.441	0.291	0.454	0.313	0
HCM Control Delay	7.7	11.6	7.3	12.7	8.2	9.5
HCM Lane LOS	N	B	A	B	A	N
HCM 95th-tile Q	0	2.3	1.2	2.4	1.4	0

HCM 6th AWSC
5: Dwy. 3 & Norman Rd

11/10/2022

Intersection

Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	72	0	0	51	0	0
Future Vol, veh/h	72	0	0	51	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	78	0	0	55	0	0
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.3	7.2	0
HCM LOS	A	A	-

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	0%	0%	0%
Vol Thru, %	100%	100%	100%
Vol Right, %	0%	0%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	0	72	51
LT Vol	0	0	0
Through Vol	0	72	51
RT Vol	0	0	0
Lane Flow Rate	0	78	55
Geometry Grp	1	1	1
Degree of Util (X)	0	0.086	0.061
Departure Headway (Hd)	4.13	3.941	3.958
Convergence, Y/N	Yes	Yes	Yes
Cap	0	913	907
Service Time	2.184	1.951	1.972
HCM Lane V/C Ratio	0	0.085	0.061
HCM Control Delay	7.2	7.3	7.2
HCM Lane LOS	N	A	A
HCM 95th-tile Q	0	0.3	0.2

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/16/2022

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	2	5	2	46	2	6	8	86	34	5	64	1
Future Vol, veh/h	2	5	2	46	2	6	8	86	34	5	64	1
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	7	3	64	3	8	11	119	47	7	89	1
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8	8.9	7.9	8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	22%	85%	100%	0%	0%
Vol Thru, %	0%	100%	46%	56%	4%	0%	100%	96%
Vol Right, %	0%	0%	54%	22%	11%	0%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	57	63	9	54	5	43	22
LT Vol	8	0	0	2	46	5	0	0
Through Vol	0	57	29	5	2	0	43	21
RT Vol	0	0	34	2	6	0	0	1
Lane Flow Rate	11	80	87	12	75	7	59	31
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.016	0.107	0.108	0.018	0.114	0.01	0.081	0.042
Departure Headway (Hd)	5.335	4.833	4.452	5.145	5.463	5.396	4.895	4.863
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	673	744	808	697	658	665	734	739
Service Time	3.048	2.546	2.165	2.865	3.18	3.111	2.609	2.578
HCM Lane V/C Ratio	0.016	0.108	0.108	0.017	0.114	0.011	0.08	0.042
HCM Control Delay	8.1	8.1	7.7	8	8.9	8.2	8	7.8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.4	0.1	0.4	0	0.3	0.1

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↷
Traffic Volume (veh/h)	138	422	372	22	8	41
Future Volume (veh/h)	138	422	372	22	8	41
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	159	485	428	25	9	47
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	195	1838	1123	65	506	661
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3374	191	1619	1525
Grp Volume(v), veh/h	159	485	222	231	9	47
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1766	1619	1525
Q Serve(g_s), s	7.7	6.1	7.9	7.9	0.3	1.4
Cycle Q Clear(g_c), s	7.7	6.1	7.9	7.9	0.3	1.4
Prop In Lane	1.00			0.11	1.00	1.00
Lane Grp Cap(c), veh/h	195	1838	585	604	506	661
V/C Ratio(X)	0.81	0.26	0.38	0.38	0.02	0.07
Avail Cap(c_a), veh/h	243	1838	585	604	506	661
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	34.3	10.0	19.9	19.9	19.0	13.3
Incr Delay (d2), s/veh	15.6	0.4	1.9	1.8	0.1	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	3.6	1.9	3.1	3.2	0.1	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	49.9	10.3	21.8	21.8	19.1	13.5
LnGrp LOS	D	B	C	C	B	B
Approach Vol, veh/h		644	453		56	
Approach Delay, s/veh		20.1	21.8		14.4	
Approach LOS		C	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.6	33.4
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	14.0	27.0
Max Q Clear Time (g_c+I1), s		8.1		3.4	9.7	9.9
Green Ext Time (p_c), s		3.0		0.1	0.1	2.1
Intersection Summary						
HCM 6th Ctrl Delay			20.5			
HCM 6th LOS			C			

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/16/2022

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	1	13	7	37	14	3	6	109	55	8	64	4
Future Vol, veh/h	1	13	7	37	14	3	6	109	55	8	64	4
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	1	17	9	47	18	4	8	140	71	10	82	5
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8	8.9	8.1	8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	5%	69%	100%	0%	0%
Vol Thru, %	0%	100%	40%	62%	26%	0%	100%	84%
Vol Right, %	0%	0%	60%	33%	6%	0%	0%	16%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	6	73	91	21	54	8	43	25
LT Vol	6	0	0	1	37	8	0	0
Through Vol	0	73	36	13	14	0	43	21
RT Vol	0	0	55	7	3	0	0	4
Lane Flow Rate	8	93	117	27	69	10	55	32
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.011	0.126	0.144	0.038	0.106	0.016	0.075	0.044
Departure Headway (Hd)	5.358	4.856	4.433	5.055	5.513	5.451	4.949	4.838
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	670	741	811	709	651	658	725	742
Service Time	3.074	2.572	2.148	2.78	3.236	3.169	2.667	2.556
HCM Lane V/C Ratio	0.012	0.126	0.144	0.038	0.106	0.015	0.076	0.043
HCM Control Delay	8.1	8.3	7.9	8	8.9	8.3	8.1	7.8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.5	0.1	0.4	0	0.2	0.1

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	137	610	549	33	14	93
Future Volume (veh/h)	137	610	549	33	14	93
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	169	753	678	41	17	115
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	197	1838	1117	68	506	662
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3366	198	1619	1525
Grp Volume(v), veh/h	169	753	354	365	17	115
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1764	1619	1525
Q Serve(g_s), s	8.2	10.4	13.7	13.8	0.6	3.7
Cycle Q Clear(g_c), s	8.2	10.4	13.7	13.8	0.6	3.7
Prop In Lane	1.00			0.11	1.00	1.00
Lane Grp Cap(c), veh/h	197	1838	583	602	506	662
V/C Ratio(X)	0.86	0.41	0.61	0.61	0.03	0.17
Avail Cap(c_a), veh/h	243	1838	583	602	506	662
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	34.5	11.0	21.9	21.9	19.1	13.9
Incr Delay (d2), s/veh	21.7	0.7	4.6	4.5	0.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	3.3	5.6	5.8	0.2	4.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.2	11.6	26.5	26.4	19.2	14.4
LnGrp LOS	E	B	C	C	B	B
Approach Vol, veh/h		922	719		132	
Approach Delay, s/veh		19.8	26.5		15.0	
Approach LOS		B	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.7	33.3
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	14.0	27.0
Max Q Clear Time (g_c+I1), s		12.4		5.7	10.2	15.8
Green Ext Time (p_c), s		5.0		0.3	0.1	3.0
Intersection Summary						
HCM 6th Ctrl Delay			22.2			
HCM 6th LOS			C			

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/16/2022

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	9	6	3	46	3	6	12	119	36	6	80	8
Future Vol, veh/h	9	6	3	46	3	6	12	119	36	6	80	8
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	8	4	64	4	8	17	165	50	8	111	11
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.5	9.2	8.3	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	50%	84%	100%	0%	0%
Vol Thru, %	0%	100%	52%	33%	5%	0%	100%	77%
Vol Right, %	0%	0%	48%	17%	11%	0%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	79	76	18	55	6	53	35
LT Vol	12	0	0	9	46	6	0	0
Through Vol	0	79	40	6	3	0	53	27
RT Vol	0	0	36	3	6	0	0	8
Lane Flow Rate	17	110	105	25	76	8	74	48
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.025	0.15	0.134	0.038	0.12	0.013	0.103	0.065
Departure Headway (Hd)	5.413	4.911	4.576	5.52	5.659	5.497	4.994	4.832
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	663	732	785	649	634	652	719	742
Service Time	3.133	2.631	2.296	3.255	3.39	3.219	2.717	2.555
HCM Lane V/C Ratio	0.026	0.15	0.134	0.039	0.12	0.012	0.103	0.065
HCM Control Delay	8.3	8.5	8	8.5	9.2	8.3	8.3	7.9
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.5	0.5	0.1	0.4	0	0.3	0.2

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	434	385	37	14	51
Future Volume (veh/h)	158	434	385	37	14	51
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	182	499	443	43	16	59
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	198	1838	1072	104	506	663
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3241	305	1619	1525
Grp Volume(v), veh/h	182	499	240	246	16	59
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1745	1619	1525
Q Serve(g_s), s	8.9	6.3	8.6	8.7	0.5	1.8
Cycle Q Clear(g_c), s	8.9	6.3	8.6	8.7	0.5	1.8
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	198	1838	582	594	506	663
V/C Ratio(X)	0.92	0.27	0.41	0.42	0.03	0.09
Avail Cap(c_a), veh/h	243	1838	582	594	506	663
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	34.7	10.0	20.3	20.3	19.1	13.3
Incr Delay (d2), s/veh	32.8	0.4	2.2	2.1	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	2.0	3.4	3.5	0.2	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	67.5	10.4	22.4	22.4	19.2	13.6
LnGrp LOS	E	B	C	C	B	B
Approach Vol, veh/h		681	486		75	
Approach Delay, s/veh		25.7	22.4		14.8	
Approach LOS		C	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.8	33.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	14.0	27.0
Max Q Clear Time (g_c+I1), s		8.3		3.8	10.9	10.7
Green Ext Time (p_c), s		3.1		0.2	0.1	2.2
Intersection Summary						
HCM 6th Ctrl Delay			23.7			
HCM 6th LOS			C			

HCM Signalized Intersection Capacity Analysis

3: Orange Show Rd & Lena Rd

12/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	158	434	385	37	14	51
Future Volume (vph)	158	434	385	37	14	51
Ideal Flow (vphpl)	1700	1800	1800	1800	1700	1800
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1615	3420	3375		1615	1530
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1615	3420	3375		1615	1530
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	182	499	443	43	16	59
RTOR Reduction (vph)	0	0	9	0	0	32
Lane Group Flow (vph)	182	499	477	0	16	27
Turn Type	Prot	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases						4
Actuated Green, G (s)	13.3	45.0	27.7		27.0	40.3
Effective Green, g (s)	11.3	43.0	25.7		25.0	36.3
Actuated g/C Ratio	0.14	0.54	0.32		0.31	0.45
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	228	1838	1084		504	808
v/s Ratio Prot	c0.11	0.15	c0.14		0.01	c0.00
v/s Ratio Perm						0.01
v/c Ratio	0.80	0.27	0.44		0.03	0.03
Uniform Delay, d1	33.2	10.0	21.5		19.1	12.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	17.4	0.4	1.3		0.1	0.0
Delay (s)	50.7	10.4	22.8		19.2	12.1
Level of Service	D	B	C		B	B
Approach Delay (s)		21.2	22.8		13.6	
Approach LOS		C	C		B	

Intersection Summary

HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↵	↕↗		↵	↕↗	
Traffic Vol, veh/h	8	14	12	39	15	4	7	129	56	8	98	10
Future Vol, veh/h	8	14	12	39	15	4	7	129	56	8	98	10
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	18	15	50	19	5	9	165	72	10	126	13
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.4	9.2	8.4	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	24%	67%	100%	0%	0%
Vol Thru, %	0%	100%	43%	41%	26%	0%	100%	77%
Vol Right, %	0%	0%	57%	35%	7%	0%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	7	86	99	34	58	8	65	43
LT Vol	7	0	0	8	39	8	0	0
Through Vol	0	86	43	14	15	0	65	33
RT Vol	0	0	56	12	4	0	0	10
Lane Flow Rate	9	110	127	44	74	10	84	55
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.014	0.152	0.161	0.064	0.118	0.016	0.118	0.074
Departure Headway (Hd)	5.476	4.974	4.576	5.325	5.696	5.555	5.053	4.888
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	655	722	784	672	629	645	709	733
Service Time	3.201	2.699	2.301	3.064	3.432	3.283	2.781	2.616
HCM Lane V/C Ratio	0.014	0.152	0.162	0.065	0.118	0.016	0.118	0.075
HCM Control Delay	8.3	8.6	8.2	8.4	9.2	8.4	8.5	8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.5	0.6	0.2	0.4	0	0.4	0.2

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	149	629	565	42	33	115
Future Volume (veh/h)	149	629	565	42	33	115
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	184	777	698	52	41	142
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	198	1838	1097	82	506	664
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3317	240	1619	1525
Grp Volume(v), veh/h	184	777	370	380	41	142
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1757	1619	1525
Q Serve(g_s), s	9.0	10.9	14.6	14.6	1.4	4.6
Cycle Q Clear(g_c), s	9.0	10.9	14.6	14.6	1.4	4.6
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	198	1838	581	597	506	664
V/C Ratio(X)	0.93	0.42	0.64	0.64	0.08	0.21
Avail Cap(c_a), veh/h	243	1838	581	597	506	664
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	34.8	11.1	22.2	22.2	19.4	14.1
Incr Delay (d2), s/veh	34.9	0.7	5.2	5.1	0.3	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	3.4	6.0	6.1	0.5	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.6	11.8	27.5	27.4	19.7	14.8
LnGrp LOS	E	B	C	C	B	B
Approach Vol, veh/h		961	750		183	
Approach Delay, s/veh		22.9	27.4		15.9	
Approach LOS		C	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.8	33.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	14.0	27.0
Max Q Clear Time (g_c+I1), s		12.9		6.6	11.0	16.6
Green Ext Time (p_c), s		5.2		0.5	0.1	3.0
Intersection Summary						
HCM 6th Ctrl Delay			24.0			
HCM 6th LOS			C			

HCM Signalized Intersection Capacity Analysis

3: Orange Show Rd & Lena Rd

12/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	149	629	565	42	33	115
Future Volume (vph)	149	629	565	42	33	115
Ideal Flow (vphpl)	1700	1800	1800	1800	1700	1800
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1615	3420	3384		1615	1530
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1615	3420	3384		1615	1530
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	184	777	698	52	41	142
RTOR Reduction (vph)	0	0	7	0	0	30
Lane Group Flow (vph)	184	777	743	0	41	112
Turn Type	Prot	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases						4
Actuated Green, G (s)	13.4	45.0	27.6		27.0	40.4
Effective Green, g (s)	11.4	43.0	25.6		25.0	36.4
Actuated g/C Ratio	0.14	0.54	0.32		0.31	0.45
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	230	1838	1082		504	810
v/s Ratio Prot	c0.11	0.23	c0.22		0.03	c0.02
v/s Ratio Perm						0.05
v/c Ratio	0.80	0.42	0.69		0.08	0.14
Uniform Delay, d1	33.2	11.1	23.7		19.4	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	17.8	0.7	3.6		0.3	0.1
Delay (s)	51.0	11.8	27.3		19.7	12.8
Level of Service	D	B	C		B	B
Approach Delay (s)		19.3	27.3		14.3	
Approach LOS		B	C		B	

Intersection Summary

HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/16/2022

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	9	8	3	41	3	6	12	119	33	9	80	8
Future Vol, veh/h	9	8	3	41	3	6	12	119	33	9	80	8
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	13	11	4	57	4	8	17	165	46	13	111	11
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.5	9.1	8.3	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	45%	82%	100%	0%	0%
Vol Thru, %	0%	100%	55%	40%	6%	0%	100%	77%
Vol Right, %	0%	0%	45%	15%	12%	0%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	79	73	20	50	9	53	35
LT Vol	12	0	0	9	41	9	0	0
Through Vol	0	79	40	8	3	0	53	27
RT Vol	0	0	33	3	6	0	0	8
Lane Flow Rate	17	110	101	28	69	12	74	48
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.025	0.15	0.128	0.042	0.109	0.019	0.102	0.064
Departure Headway (Hd)	5.402	4.9	4.581	5.498	5.648	5.478	4.975	4.813
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	664	734	784	652	635	655	721	745
Service Time	3.121	2.619	2.299	3.228	3.374	3.2	2.697	2.535
HCM Lane V/C Ratio	0.026	0.15	0.129	0.043	0.109	0.018	0.103	0.064
HCM Control Delay	8.3	8.5	8	8.5	9.1	8.3	8.3	7.9
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.5	0.4	0.1	0.4	0.1	0.3	0.2

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	0	164	2	0	124
Future Vol, veh/h	0	0	164	2	0	124
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	178	2	0	135

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	90	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	956	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	956	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	157	447	395	37	14	45
Future Volume (veh/h)	157	447	395	37	14	45
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	180	514	454	43	16	52
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	198	1838	1075	101	506	663
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3248	298	1619	1525
Grp Volume(v), veh/h	180	514	245	252	16	52
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1746	1619	1525
Q Serve(g_s), s	8.8	6.5	8.8	8.9	0.5	1.6
Cycle Q Clear(g_c), s	8.8	6.5	8.8	8.9	0.5	1.6
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	198	1838	582	594	506	663
V/C Ratio(X)	0.91	0.28	0.42	0.42	0.03	0.08
Avail Cap(c_a), veh/h	223	1838	582	594	506	663
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	34.7	10.1	20.3	20.3	19.1	13.2
Incr Delay (d2), s/veh	34.6	0.4	2.2	2.2	0.1	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	5.1	2.1	3.5	3.6	0.2	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.2	10.4	22.6	22.6	19.2	13.5
LnGrp LOS	E	B	C	C	B	B
Approach Vol, veh/h		694	497		68	
Approach Delay, s/veh		25.7	22.6		14.8	
Approach LOS		C	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.8	33.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	13.0	28.0
Max Q Clear Time (g_c+I1), s		8.5		3.6	10.8	10.9
Green Ext Time (p_c), s		3.2		0.2	0.1	2.3
Intersection Summary						
HCM 6th Ctrl Delay			23.9			
HCM 6th LOS			C			

HCM 6th TWSC
4: Orange Show Rd & Dwy. 2

11/16/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑			↗
Traffic Vol, veh/h	13	450	424	3	0	10
Future Vol, veh/h	13	450	424	3	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	14	489	461	3	0	11

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	464	0	-	0	-	232
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	1108	-	-	-	0	776
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1108	-	-	-	-	776
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1108	-	-	-	776
HCM Lane V/C Ratio	0.013	-	-	-	0.014
HCM Control Delay (s)	8.3	-	-	-	9.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 6th TWSC
5: Dwy. 3 & Norman Rd

11/16/2022

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	45	2	1	56	4	0
Future Vol, veh/h	45	2	1	56	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	49	2	1	61	4	0

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	51	0	113
Stage 1	-	-	-	-	50
Stage 2	-	-	-	-	63
Critical Hdwy	-	-	4.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.2	-	3.5
Pot Cap-1 Maneuver	-	-	1568	-	888
Stage 1	-	-	-	-	978
Stage 2	-	-	-	-	965
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1568	-	887
Mov Cap-2 Maneuver	-	-	-	-	887
Stage 1	-	-	-	-	978
Stage 2	-	-	-	-	964

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	887	-	-	1568	-
HCM Lane V/C Ratio	0.005	-	-	0.001	-
HCM Control Delay (s)	9.1	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM Signalized Intersection Capacity Analysis

3: Orange Show Rd & Lena Rd

12/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	157	447	395	37	14	45
Future Volume (vph)	157	447	395	37	14	45
Ideal Flow (vphpl)	1700	1800	1800	1800	1700	1800
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1615	3420	3376		1615	1530
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1615	3420	3376		1615	1530
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	180	514	454	43	16	52
RTOR Reduction (vph)	0	0	9	0	0	29
Lane Group Flow (vph)	180	514	488	0	16	23
Turn Type	Prot	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases						4
Actuated Green, G (s)	12.8	45.0	28.2		27.0	39.8
Effective Green, g (s)	10.8	43.0	26.2		25.0	35.8
Actuated g/C Ratio	0.14	0.54	0.33		0.31	0.45
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	218	1838	1105		504	799
v/s Ratio Prot	c0.11	0.15	c0.14		0.01	c0.00
v/s Ratio Perm						0.01
v/c Ratio	0.83	0.28	0.44		0.03	0.03
Uniform Delay, d1	33.7	10.1	21.2		19.1	12.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	21.8	0.4	1.3		0.1	0.0
Delay (s)	55.5	10.4	22.4		19.2	12.4
Level of Service	E	B	C		B	B
Approach Delay (s)		22.1	22.4		14.0	
Approach LOS		C	C		B	

Intersection Summary

HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Orange Show Rd & Lena Rd

12/02/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	145	637	581	42	37	104
Future Volume (vph)	145	637	581	42	37	104
Ideal Flow (vphpl)	1700	1800	1800	1800	1700	1800
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1615	3420	3385		1615	1530
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1615	3420	3385		1615	1530
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	179	786	717	52	46	128
RTOR Reduction (vph)	0	0	7	0	0	36
Lane Group Flow (vph)	179	786	762	0	46	92
Turn Type	Prot	NA	NA		Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases						4
Actuated Green, G (s)	12.0	45.0	29.0		27.0	39.0
Effective Green, g (s)	10.0	43.0	27.0		25.0	35.0
Actuated g/C Ratio	0.12	0.54	0.34		0.31	0.44
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	201	1838	1142		504	784
v/s Ratio Prot	c0.11	0.23	c0.23		0.03	c0.01
v/s Ratio Perm						0.05
v/c Ratio	0.89	0.43	0.67		0.09	0.12
Uniform Delay, d1	34.5	11.1	22.7		19.5	13.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	35.1	0.7	3.1		0.4	0.1
Delay (s)	69.5	11.8	25.8		19.8	13.4
Level of Service	E	B	C		B	B
Approach Delay (s)		22.5	25.8		15.1	
Approach LOS		C	C		B	

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th AWSC
1: Lena Rd & Norman Rd

11/16/2022

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	8	15	12	32	16	7	8	130	51	9	98	10
Future Vol, veh/h	8	15	12	32	16	7	8	130	51	9	98	10
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	10	19	15	41	21	9	10	167	65	12	126	13
Number of Lanes	0	1	0	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	1
HCM Control Delay	8.4	9	8.3	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	23%	58%	100%	0%	0%
Vol Thru, %	0%	100%	46%	43%	29%	0%	100%	77%
Vol Right, %	0%	0%	54%	34%	13%	0%	0%	23%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	8	87	94	35	55	9	65	43
LT Vol	8	0	0	8	32	9	0	0
Through Vol	0	87	43	15	16	0	65	33
RT Vol	0	0	51	12	7	0	0	10
Lane Flow Rate	10	111	121	45	71	12	84	55
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.016	0.153	0.154	0.066	0.11	0.018	0.117	0.074
Departure Headway (Hd)	5.465	4.962	4.582	5.318	5.608	5.539	5.037	4.872
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	656	723	784	673	639	647	712	736
Service Time	3.189	2.687	2.306	3.055	3.342	3.267	2.765	2.6
HCM Lane V/C Ratio	0.015	0.154	0.154	0.067	0.111	0.019	0.118	0.075
HCM Control Delay	8.3	8.6	8.1	8.4	9	8.4	8.4	8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.5	0.5	0.2	0.4	0.1	0.4	0.2

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕			↕
Traffic Vol, veh/h	0	3	188	1	0	142
Future Vol, veh/h	0	3	188	1	0	142
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	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	3	204	1	0	154

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	103	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	938	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	938	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	938
HCM Lane V/C Ratio	-	-	0.003
HCM Control Delay (s)	-	-	8.9
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	0

HCM 6th Signalized Intersection Summary

3: Orange Show Rd & Lena Rd

11/16/2022



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷		↶	↷
Traffic Volume (veh/h)	145	637	581	42	37	104
Future Volume (veh/h)	145	637	581	42	37	104
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	1700	1800	1800	1800	1700	1800
Adj Flow Rate, veh/h	179	786	717	52	46	128
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Percent Heavy Veh, %	0	0	0	0	0	0
Cap, veh/h	198	1838	1100	80	506	663
Arrive On Green	0.12	0.54	0.34	0.34	0.31	0.31
Sat Flow, veh/h	1619	3510	3323	234	1619	1525
Grp Volume(v), veh/h	179	786	379	390	46	128
Grp Sat Flow(s),veh/h/ln	1619	1710	1710	1758	1619	1525
Q Serve(g_s), s	8.7	11.0	15.0	15.0	1.6	4.1
Cycle Q Clear(g_c), s	8.7	11.0	15.0	15.0	1.6	4.1
Prop In Lane	1.00			0.13	1.00	1.00
Lane Grp Cap(c), veh/h	198	1838	582	598	506	663
V/C Ratio(X)	0.90	0.43	0.65	0.65	0.09	0.19
Avail Cap(c_a), veh/h	202	1838	582	598	506	663
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	34.7	11.1	22.4	22.4	19.5	14.0
Incr Delay (d2), s/veh	37.7	0.7	5.6	5.4	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	3.5	6.2	6.4	0.6	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.3	11.8	27.9	27.8	19.8	14.6
LnGrp LOS	E	B	C	C	B	B
Approach Vol, veh/h		965	769		174	
Approach Delay, s/veh		23.1	27.9		16.0	
Approach LOS		C	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		31.0	15.8	33.2
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		45.0		27.0	12.0	29.0
Max Q Clear Time (g_c+I1), s		13.0		6.1	10.7	17.0
Green Ext Time (p_c), s		5.3		0.5	0.1	3.3
Intersection Summary						
HCM 6th Ctrl Delay			24.4			
HCM 6th LOS			C			

HCM 6th TWSC
4: Orange Show Rd & Dwy. 2

11/16/2022

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑			↗
Traffic Vol, veh/h	8	664	606	1	0	16
Future Vol, veh/h	8	664	606	1	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	722	659	1	0	17

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	660	0	-	0	-	330
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	4.1	-	-	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	2.2	-	-	-	-	3.3
Pot Cap-1 Maneuver	938	-	-	-	0	672
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	938	-	-	-	-	672
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	938	-	-	-	672
HCM Lane V/C Ratio	0.009	-	-	-	0.026
HCM Control Delay (s)	8.9	-	-	-	10.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC
5: Dwy. 3 & Norman Rd

11/16/2022

Intersection						
Int Delay, s/veh	0.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	78	6	0	54	10	1
Future Vol, veh/h	78	6	0	54	10	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	85	7	0	59	11	1

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	92	0	148 89
Stage 1	-	-	-	-	89 -
Stage 2	-	-	-	-	59 -
Critical Hdwy	-	-	4.1	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	-	-	2.2	-	3.5 3.3
Pot Cap-1 Maneuver	-	-	1515	-	849 975
Stage 1	-	-	-	-	940 -
Stage 2	-	-	-	-	969 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1515	-	849 975
Mov Cap-2 Maneuver	-	-	-	-	849 -
Stage 1	-	-	-	-	940 -
Stage 2	-	-	-	-	969 -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	859	-	-	1515	-
HCM Lane V/C Ratio	0.014	-	-	-	-
HCM Control Delay (s)	9.3	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX E: SBCTA LOW VMT AREA SCREENING TOOL



FIGURE E-1

Gateway South 9 Warehouse
SBCTA Low VMT Area Screening Tool

