

memorandum

DATE: January 24, 2025
TO: Mr. Ruben Castañeda, Senior Engineer,
Public Works Agency – Traffic Engineering
City of Santa Ana
FROM: Deepali Chausalkar
Sandipan Bhattacharjee, PE, TE, AICP, ENV SP
SUBJECT: Footlab – Focused Traffic Analysis

Translutions, Inc. (Translutions) is pleased to provide this focused traffic analysis discussing the trip generation and levels of service for the Footlab project to be located at 400 W. Warner Avenue in the City of Santa Ana. The site includes an existing building that is classified as a light industrial use.

PROJECT DESCRIPTION

The project is an atypical land use and the site includes an existing building that is classified as a light industrial use. The project is located at Southwest corner of W Warner Avenue and S Birch Street in the City of Santa Ana. The project includes the reuse of a existing 57,705 square foot industrial building on a 5.18-acre lot as a soccer training facility. Access to the project will be provided via three driveways with Driveway 1 and Drive 2 on W Warner Avenue and Driveway 3 on S Birch Street. All three driveways are unsignalized. Figure 1 illustrates the site plan.

STUDY AREA

Based on discussion with City staff, the following study area intersections were evaluated for levels of service:

1. Project Dwy 1/Warner Ave;
2. Project Dwy 2/Warner Ave;
3. Birch St/Warner Ave;
4. Project Dwy 3/Birch St;

ANALYSIS SCENARIOS

The following scenarios were included in the analysis:

1. Existing Conditions.
2. Existing With Project Conditions.

PROJECT TRIP GENERATION

Since the project is an atypical land use, based on discussion with the City, the trip generation for the proposed project was based on surveys conducted at three similar facilities – TOCA in Costa Mesa, Momentous in Irvine, and The Map in Garden Grove. The resulting trip generation rates were used to calculate the trip generation for the proposed project. The survey data is included in Appendix A. Table A shows the peak hour trip generation as well as the trip generation rate for the three survey sites. The trip generation rate across the three sites was averaged to calculate the trip generation rate for the proposed project.

Table A: Peak Hour Traffic Count Summary

Location	Area (TSF)	AM Peak Hour Counts			PM Peak Hour Counts			AM Peak Hour Rate			PM Peak Hour Rate		
		IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
TOCA	25	2	0	2	6	7	13	0.080	0.000	0.080	0.240	0.280	0.520
Momentous	130	20	8	28	158	135	293	0.154	0.062	0.215	1.215	1.038	2.254
The Map	80	14	9	23	81	91	172	0.175	0.113	0.288	1.013	1.138	2.15
Average Rate								0.136	0.058	0.194	0.823	0.819	1.641

The resulting trip generation for the proposed project is included in Table B. As seen on Table B, the proposed project is forecast to generate 11 trips during the a.m. peak hour and 95 net trips during the p.m. peak hour.

Table B: Project Trip Generation

	Area (TSF)	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Average Rate		0.136	0.058	0.194	0.823	0.819	1.641
Footlab Trip Generation	57.705	8	3	11	47	48	95

It should be noted that the existing permitted use (light industrial) would generate 57 PCE trips during the a.m. peak hour and 52 PCE trips during the p.m. peak hour. The trip generation for the existing use based on the ITE Trip Generation, 11th Edition is included in Appendix B. Therefore, the project generates 46 fewer trips than the currently permitted use during the a.m. peak hour and 43 additional trips during the p.m. peak hour. The City requires a local traffic study if a project generates more than 50 peak hour trips. As seen above, the proposed project is anticipated to generate less than 50 trips over those that are currently permitted.

However, based on City comments, this focused traffic analysis is conducted and includes an LOS analysis at the intersections of Birch Street at Warner Avenue and project driveways. In addition, the focused traffic analysis is based on the proposed project and no credits for the existing use will be applied.

PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Primary trip distribution patterns were developed based on the location of the project in relation to the surrounding land uses and the regional network. Figures 2 and 3 illustrate the primary project trip distribution and trip assignment and the resulting project trips at the study area intersections.

VOLUME DEVELOPMENT

Forecast traffic volumes at study intersections were developed for existing and existing plus project conditions. This section discusses the volume development methodology.

Existing Conditions

Existing traffic volumes are based on peak hour intersection turn movement counts collected by Counts Unlimited Inc. on a non-holiday weekday in December 2024. The counts are included in Appendix C. Figure 4 illustrates the existing and with project geometrics and stop control and Figure 5 illustrates the existing peak hour traffic volumes at the study area intersections. Volume development worksheets are included in Appendix D.

Existing With Project Conditions

Existing plus project peak hour traffic volumes were developed by adding the project trip assignment to the existing traffic volumes. Figure 6 shows the existing plus project peak hour traffic volumes at the study intersections. Detailed volume development worksheets are included in Appendix D.

LEVEL OF SERVICE ANALYSIS

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. The analysis of traffic operations at intersections was conducted according to the Highway Capacity Manual 7th Edition (HCM) delay methodologies, which is described in the Highway Capacity Manual (Transportation Research Board, Washington, D.C., 2022). 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 B presents a brief description of each level of service letter grade, as well as the range of delays associated with each grade.

Table C: LOS Criteria

LOS	Description of Drivers' Perception and Traffic Operation	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

The City endeavors to maintain LOS D as the minimum level of service standard at intersections of collector or higher classification.

Existing Levels of Service

The levels of service for existing conditions were calculated using the existing lane geometrics and existing traffic volumes. The existing levels of service at the study intersections are shown in Table D. As shown in Table D, all intersections are currently operating at satisfactory levels of service. LOS worksheets are included in Appendix E.

Table D: Existing and With Project Levels of Service

Intersection	LOS Std.	Control	Existing				Existing With Project			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1 . Project Dwy 1/Warner Ave	D	TWSC	Does Not Exist		Does Not Exist		0.01	A	22.66	C
2 . Project Dwy 2/Warner Ave	D	TWSC	Does Not Exist		Does Not Exist		0.01	A	20.36	C
3 . Birch St/Warner Ave	D	TWSC	24.64	C	25.17	D	19.76	C	26.74	D
4 . Project Dwy 3/Birch St	D	TWSC	Does Not Exist		Does Not Exist		8.82	A	9.27	A

Notes:

* Exceeds LOS Standard

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

LOS = Level of Service

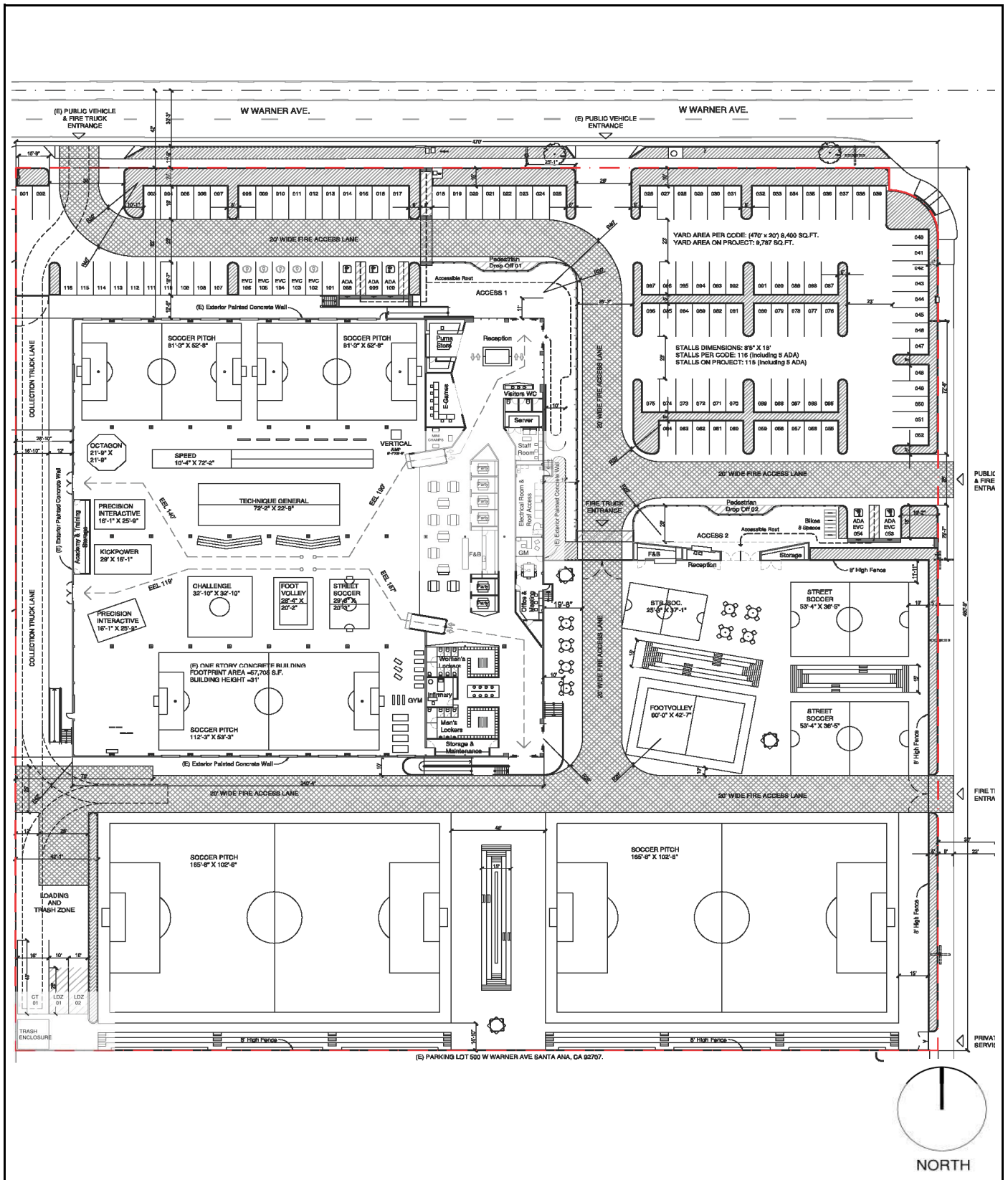
Existing With Project Levels of Service

The levels of service for existing with project conditions were calculated using the existing lane geometrics and existing with project traffic volumes. The existing with project levels of service at the study intersections are shown in Table D. As shown in Table D, all

intersections are forecast to operate at satisfactory levels of service. LOS worksheets are included in Appendix E. It should be noted that with the addition of project trips, the peak hour LOS does not degrade from acceptable LOS to unacceptable LOS.

CONCLUSION

The proposed project is forecast to generate 11 trips during the a.m. peak hour and 95 trips during the p.m. peak hour. All study intersections are forecast to operate at satisfactory levels of service under existing and existing plus project conditions.



Source: Architects Orange

FIGURE 1
Footlab
Site Plan

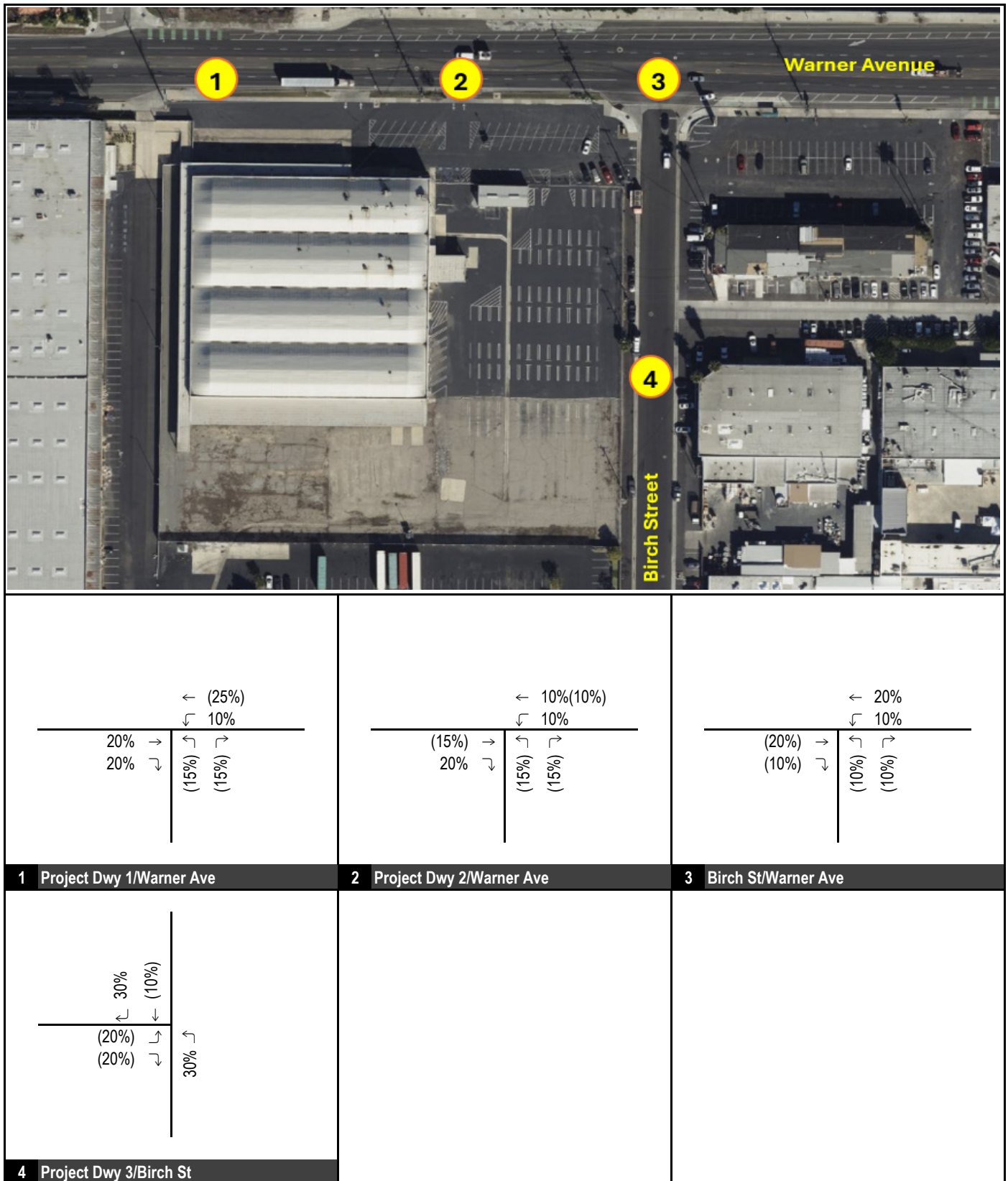


FIGURE 2

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



Footlab
Project Trip Distribution

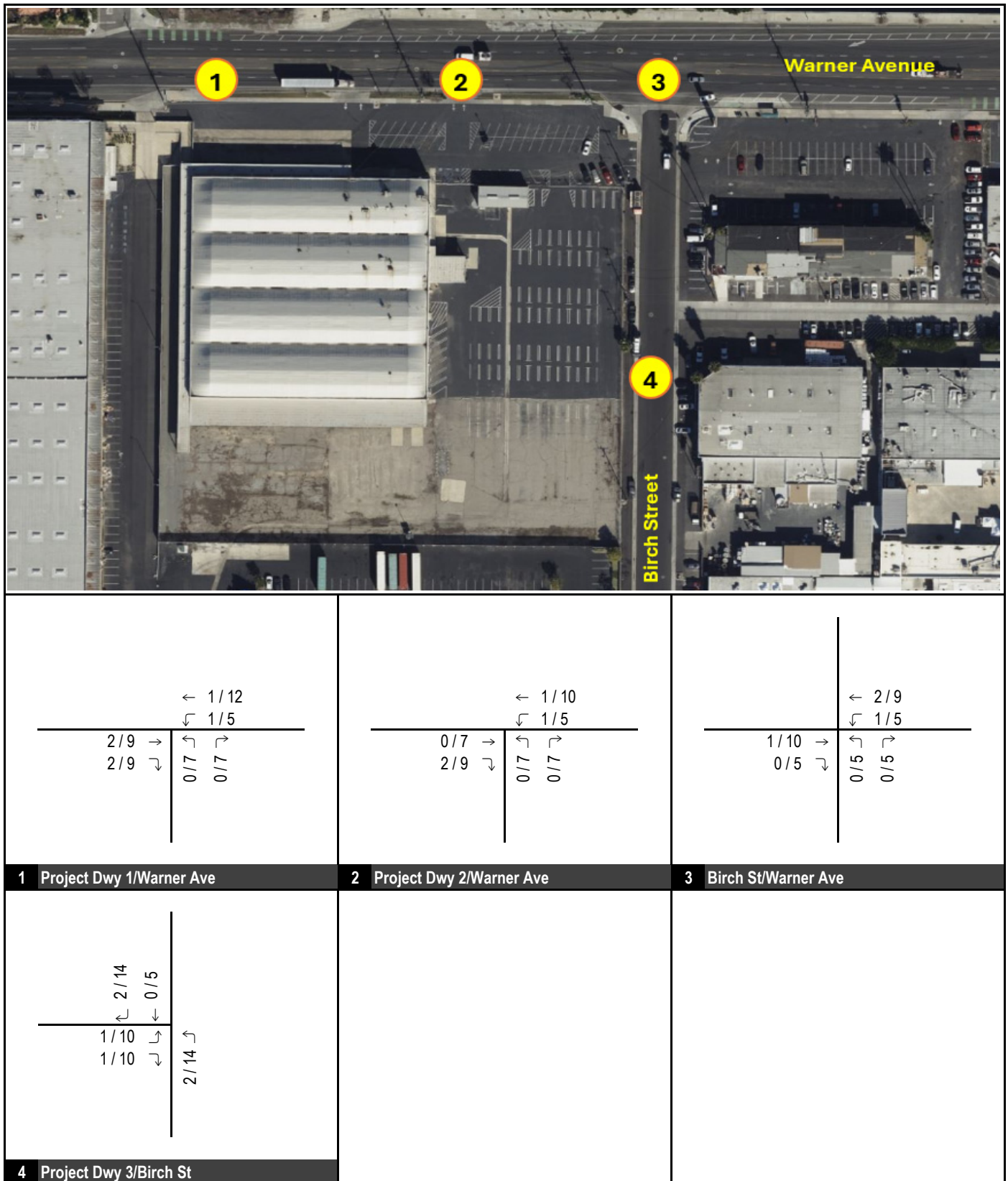


FIGURE 3

XXX / YYY AM / PM Peak Hour Trips



Footlab
Project Trip Assignment

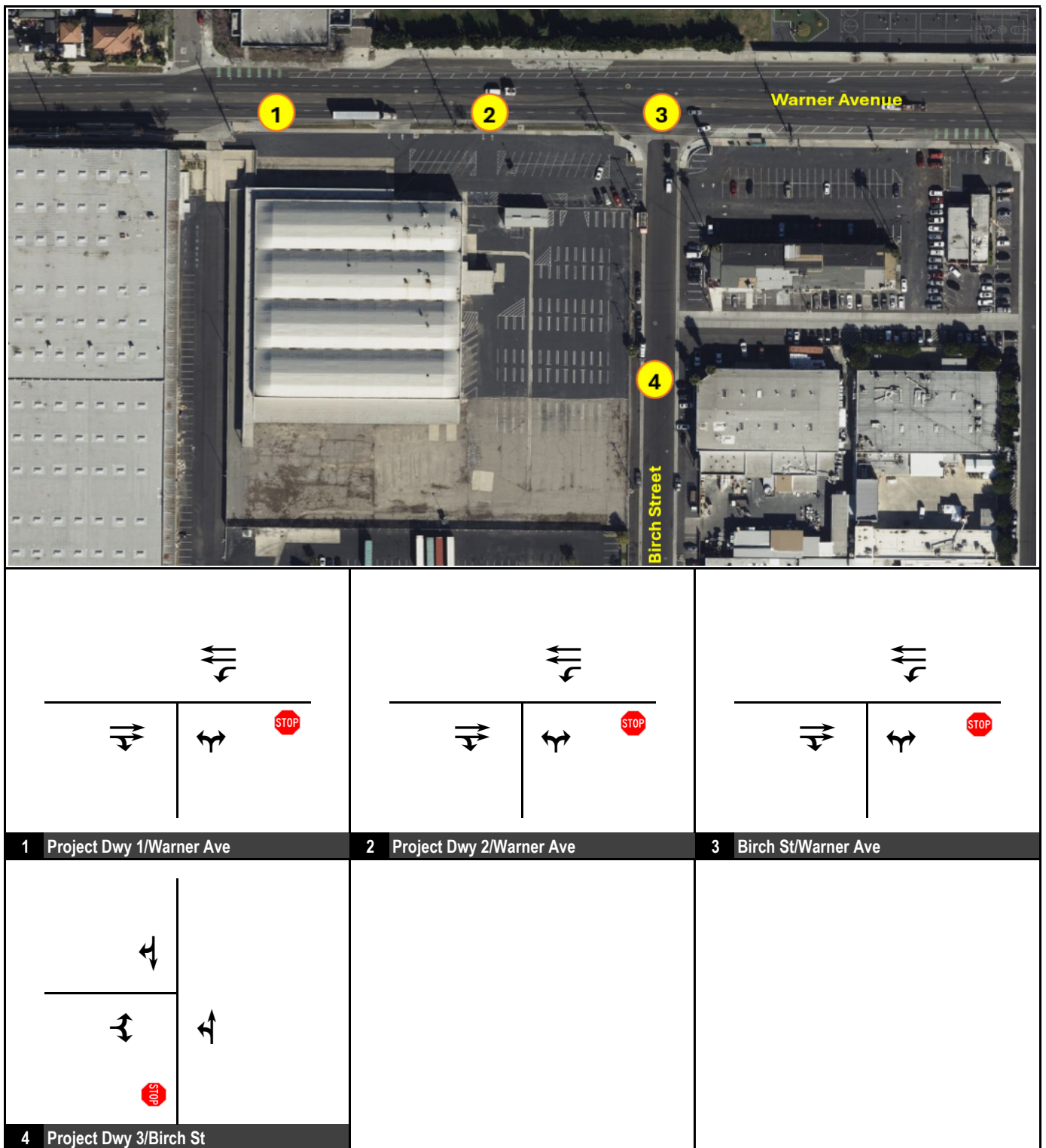


FIGURE 4

Legend



Signal



Stop Sign

Footlab
Existing and With Project Intersection Lane Geometrics and Stop Control

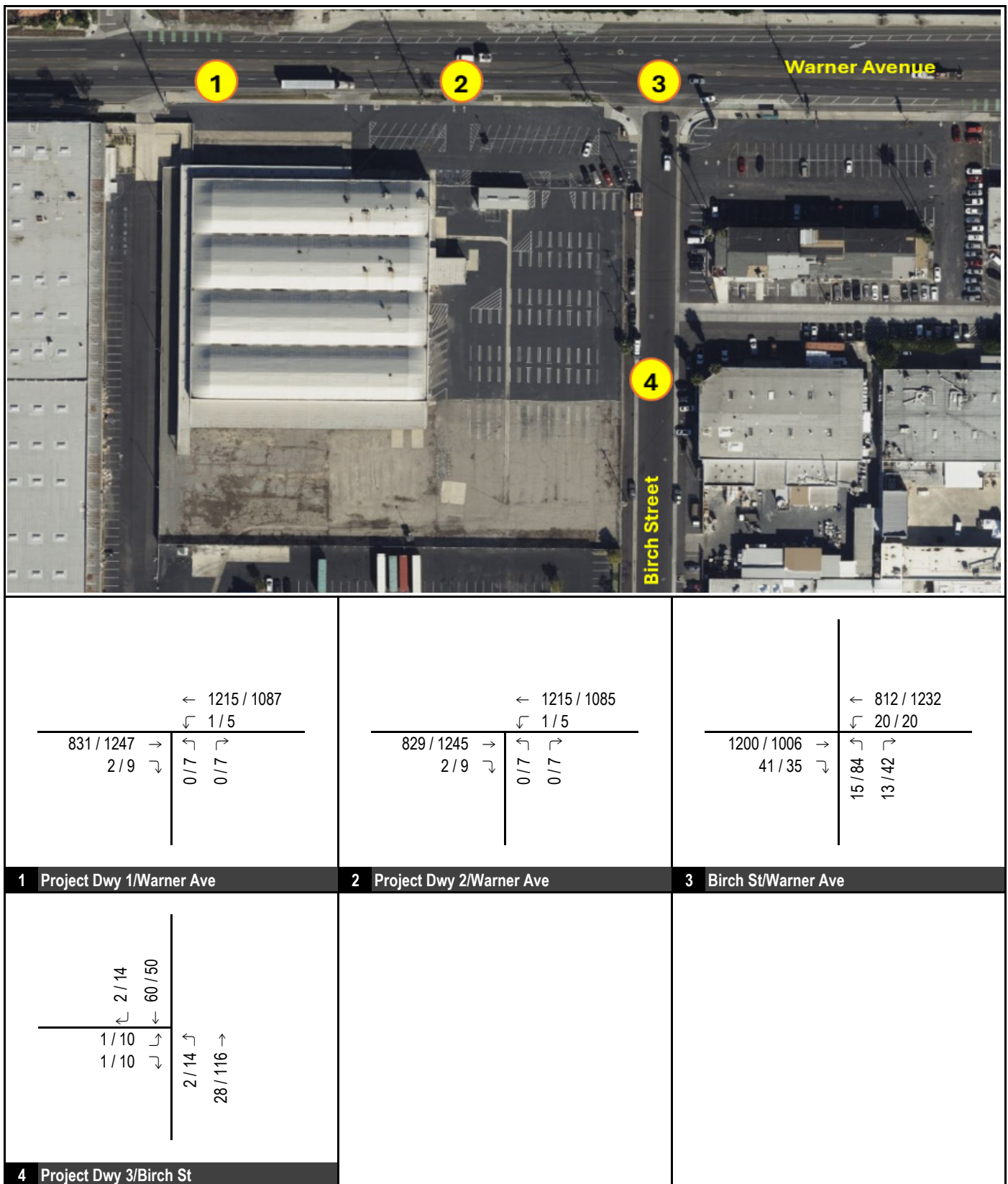
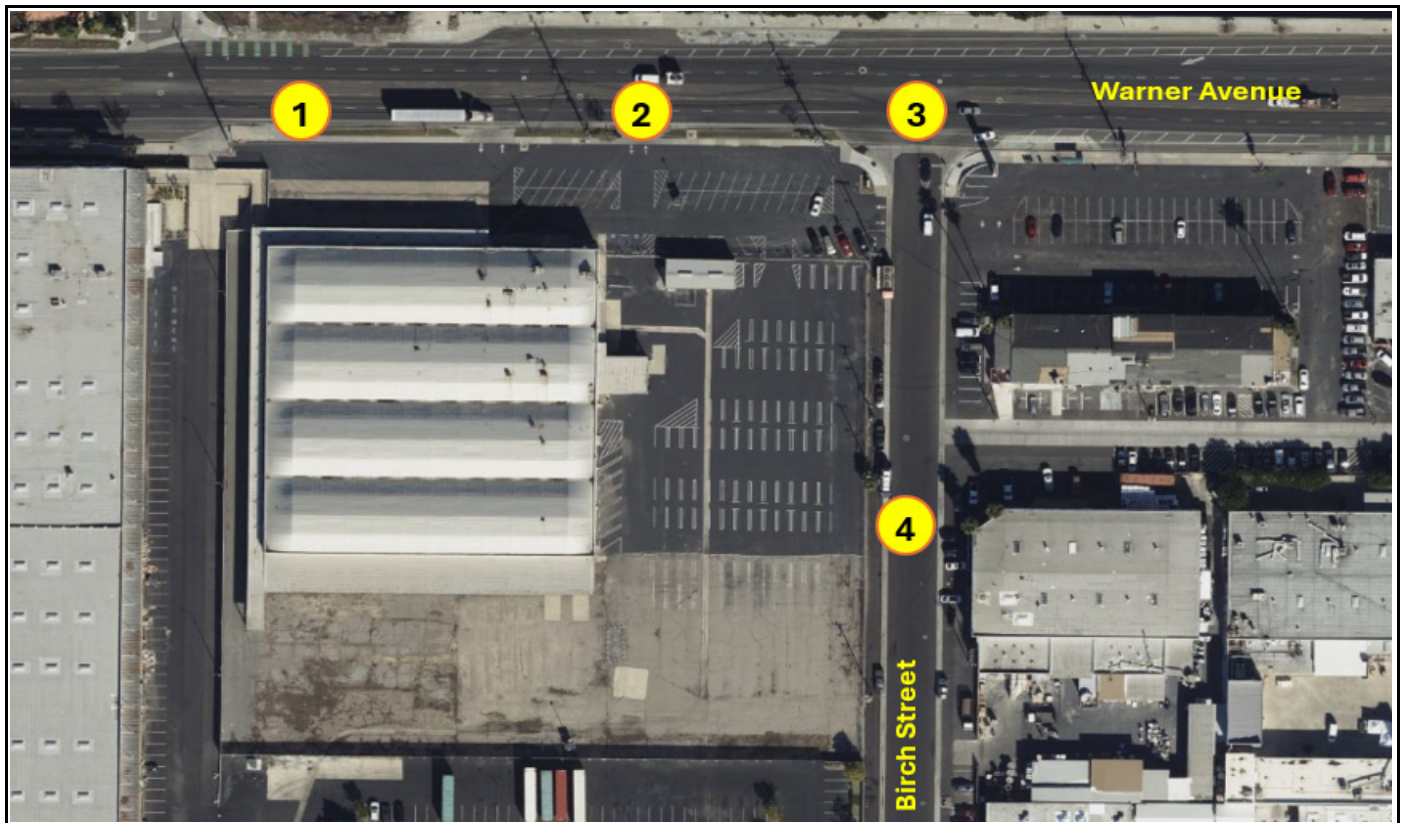


FIGURE 6

XXX / YYY AM / PM Peak Hour Trips



Footlab
Existing Plus Project Peak Hour Traffic Volumes



<p>Future Intersection</p>	<p>Future Intersection</p>	
<p>1 Project Dwy 1/Warner Ave</p>	<p>2 Project Dwy 2/Warner Ave</p>	<p>3 Birch St/Warner Ave</p>
<p>Future Intersection</p>		
<p>4 Project Dwy 3/Birch St</p>		

FIGURE 5

XXX / YYY AM / PM Peak Hour Trips



Footlab
Existing Peak Hour Traffic Volumes

Appendix A: Survey Data

Trip Generation Survey

LOCATION: Toca Costa Mesa
CITY: Costa Mesa

DATE: 12/3/2024
DAY: Tuesday

ENTERING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	0	0	0
7:15 AM	0	0	0
7:30 AM	0	0	0
7:45 AM	0	0	0
8:00 AM	0	0	0
8:15 AM	0	0	0
8:30 AM	1	0	1
8:45 AM	1	0	1

EXITING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	0	0	0
7:15 AM	0	0	0
7:30 AM	0	0	0
7:45 AM	0	0	0
8:00 AM	0	0	0
8:15 AM	0	0	0
8:30 AM	0	0	0
8:45 AM	0	0	0

ENTERING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	1	0	1
4:15 PM	1	0	1
4:30 PM	1	0	1
4:45 PM	3	0	3
5:00 PM	0	0	0
5:15 PM	0	0	0
5:30 PM	2	0	2
5:45 PM	0	0	0

EXITING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	0	3	3
4:15 PM	0	0	0
4:30 PM	0	0	0
4:45 PM	0	4	4
5:00 PM	0	4	4
5:15 PM	0	0	0
5:30 PM	0	0	0
5:45 PM	0	1	1

Trip Generation Survey

LOCATION: Momentous Sports Center
CITY: Irvine

DATE: 12/4/2024
DAY: Wednesday

ENTERING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	2	1	3
7:15 AM	3	0	3
7:30 AM	3	3	6
7:45 AM	2	0	2
8:00 AM	2	0	2
8:15 AM	1	1	2
8:30 AM	4	4	8
8:45 AM	4	4	8

EXITING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	0	0	0
7:15 AM	0	0	0
7:30 AM	0	0	0
7:45 AM	0	0	0
8:00 AM	0	0	0
8:15 AM	0	1	1
8:30 AM	3	0	3
8:45 AM	2	2	4

ENTERING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	1	30	31
4:15 PM	2	75	77
4:30 PM	2	31	33
4:45 PM	3	14	17
5:00 PM	1	10	11
5:15 PM	2	13	15
5:30 PM	2	37	39
5:45 PM	1	86	87

EXITING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	13	8	21
4:15 PM	19	30	49
4:30 PM	34	13	47
4:45 PM	11	7	18
5:00 PM	24	9	33
5:15 PM	11	3	14
5:30 PM	7	4	11
5:45 PM	14	19	33

Trip Generation Survey

LOCATION: The Map Sports Facility
CITY: Garden Grove

DATE: 12/4/2024
DAY: Wednesday

ENTERING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	0	0	0
7:15 AM	0	0	0
7:30 AM	0	0	0
7:45 AM	0	0	0
8:00 AM	0	0	0
8:15 AM	0	2	2
8:30 AM	0	3	3
8:45 AM	0	9	9

EXITING

Time	North Driveway	South Driveway	TOTAL
7:00 AM	0	0	0
7:15 AM	0	0	0
7:30 AM	0	0	0
7:45 AM	0	0	0
8:00 AM	0	0	0
8:15 AM	1	0	1
8:30 AM	1	0	1
8:45 AM	7	0	7

ENTERING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	0	9	9
4:15 PM	2	24	26
4:30 PM	3	11	14
4:45 PM	3	18	21
5:00 PM	5	15	20
5:15 PM	6	11	17
5:30 PM	2	9	11
5:45 PM	0	9	9

EXITING

Time	North Driveway	South Driveway	TOTAL
4:00 PM	4	1	5
4:15 PM	5	4	9
4:30 PM	11	30	41
4:45 PM	7	12	19
5:00 PM	13	9	22
5:15 PM	7	4	11
5:30 PM	12	12	24
5:45 PM	8	1	9

Appendix B:

Existing Use Trip Generation

Appendix B - Trip Generation of Existing Use

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	Per TSF	0.651	0.089	0.740	0.091	0.559	0.650	4.870
PCE Inbound/Outbound Splits		88%	12%	100%	14%	86%	100%	50%/50%
Passenger Car Equivalent Rates Calculations								
Passenger Cars								
Recommended Mix (%) ²		87.00%	87.00%	87.00%	87.00%	87.00%	87.00%	87.00%
PCE Factor ³		1.0	1.0	1.0	1.0	1.0	1.0	1.0
PCE Rates		0.766	0.077	0.644	0.079	0.486	0.566	4.237
2-Axle Trucks								
Recommended Mix (%) ²		1.03%	1.03%	1.03%	1.03%	1.03%	1.03%	1.03%
PCE Factor ³		1.5	1.5	1.5	1.5	1.5	1.5	1.5
PCE Rates		0.010	0.001	0.011	0.001	0.009	0.010	0.075
3-Axle Trucks								
Recommended Mix (%) ²		0.92%	0.92%	0.92%	0.92%	0.92%	0.92%	0.92%
PCE Factor ³		2.0	2.0	2.0	2.0	2.0	2.0	2.0
PCE Rates		0.012	0.002	0.014	0.002	0.010	0.012	0.090
4-Axle Trucks								
Recommended Mix (%) ²		11.05%	11.05%	11.05%	11.05%	11.05%	11.05%	11.05%
PCE Factor ³		3.0	3.0	3.0	3.0	3.0	3.0	3.0
PCE Rates		0.216	0.029	0.245	0.030	0.185	0.215	1.614
Warehouse Net PCE Rate		1.004	0.110	0.914	0.112	0.691	0.803	6.016
Total Project Trip Generation (Trips, By Vehicle Type)								
Warehouse	57.705 TSF							
Passenger Cars		33	5	38	4	29	33	245
2-Axle Trucks		0	1	1	0	1	1	3
3-Axle Trucks		0	1	1	0	1	1	3
4+ Axle Trucks		4	1	5	1	4	5	32
Total Vehicles		37	8	45	5	35	40	283
Total Project Trip Generation (Passenger Car Equivalent Trips, By Vehicle Type)								
Passenger Cars		33	5	38	4	29	33	245
Truck PCE								
2-Axle Trucks		0	2	2	0	2	2	5
3-Axle Trucks		0	2	2	0	2	2	6
4+ Axle Trucks		12	3	15	3	12	15	96
Total Truck PCE		12	7	19	3	16	19	107
Total PCE		45	12	57	7	45	52	352

Notes: Per TSF = Per Thousand Square Feet

¹ Rates based on Land Use 110 - "General Industrial" from Institute of Transportation Engineers (ITE) Trip Generation (11th Ed.).

² Recommended Truck Mix Percentages per City of Fontana Truck Trip Generation Study for Industrial Park uses, August 2003

³ Recommended PCE Factors per HCM and FHWA.

Appendix C:

Existing Traffic Count

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
Start Date : 12/4/2024
Page No : 1

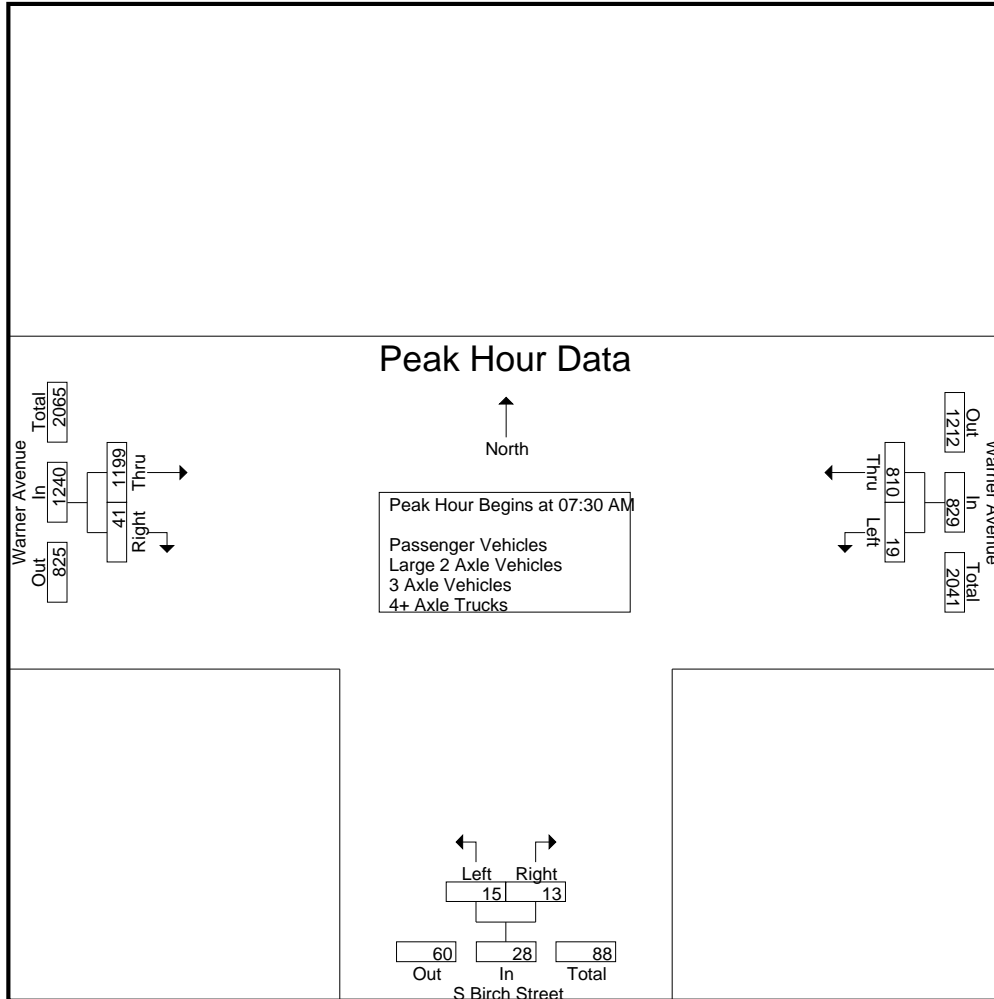
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	3	115	118	1	1	2	231	8	239	359
07:15 AM	3	167	170	3	2	5	287	4	291	466
07:30 AM	1	185	186	6	4	10	272	9	281	477
07:45 AM	8	248	256	6	4	10	347	16	363	629
Total	15	715	730	16	11	27	1137	37	1174	1931
08:00 AM	7	201	208	1	3	4	279	7	286	498
08:15 AM	3	176	179	2	2	4	301	9	310	493
08:30 AM	4	144	148	7	7	14	294	9	303	465
08:45 AM	4	149	153	6	3	9	239	4	243	405
Total	18	670	688	16	15	31	1113	29	1142	1861
Grand Total	33	1385	1418	32	26	58	2250	66	2316	3792
Apprch %	2.3	97.7		55.2	44.8		97.2	2.8		
Total %	0.9	36.5	37.4	0.8	0.7	1.5	59.3	1.7	61.1	
Passenger Vehicles	30	1302	1332	25	21	46	2159	62	2221	3599
% Passenger Vehicles	90.9	94	93.9	78.1	80.8	79.3	96	93.9	95.9	94.9
Large 2 Axle Vehicles	3	68	71	7	5	12	80	3	83	166
% Large 2 Axle Vehicles	9.1	4.9	5	21.9	19.2	20.7	3.6	4.5	3.6	4.4
3 Axle Vehicles	0	5	5	0	0	0	6	0	6	11
% 3 Axle Vehicles	0	0.4	0.4	0	0	0	0.3	0	0.3	0.3
4+ Axle Trucks	0	10	10	0	0	0	5	1	6	16
% 4+ Axle Trucks	0	0.7	0.7	0	0	0	0.2	1.5	0.3	0.4

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	185	186	6	4	10	272	9	281	477
07:45 AM	8	248	256	6	4	10	347	16	363	629
08:00 AM	7	201	208	1	3	4	279	7	286	498
08:15 AM	3	176	179	2	2	4	301	9	310	493
Total Volume	19	810	829	15	13	28	1199	41	1240	2097
% App. Total	2.3	97.7		53.6	46.4		96.7	3.3		
PHF	.594	.817	.810	.625	.813	.700	.864	.641	.854	.833

City of Santa Ana
 N/S: S Birch Street
 E/W: Warner Avenue
 Weather: Clear

File Name : SNA_Birch_Warn AM
 Site Code : 241066
 Start Date : 12/4/2024
 Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:45 AM			07:45 AM		
+0 mins.	1	185	186	6	4	10	347	16	363
+15 mins.	8	248	256	1	3	4	279	7	286
+30 mins.	7	201	208	2	2	4	301	9	310
+45 mins.	3	176	179	7	7	14	294	9	303
Total Volume	19	810	829	16	16	32	1221	41	1262
% App. Total	2.3	97.7		50	50		96.8	3.2	
PHF	.594	.817	.810	.571	.571	.571	.880	.641	.869

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
Start Date : 12/4/2024
Page No : 1

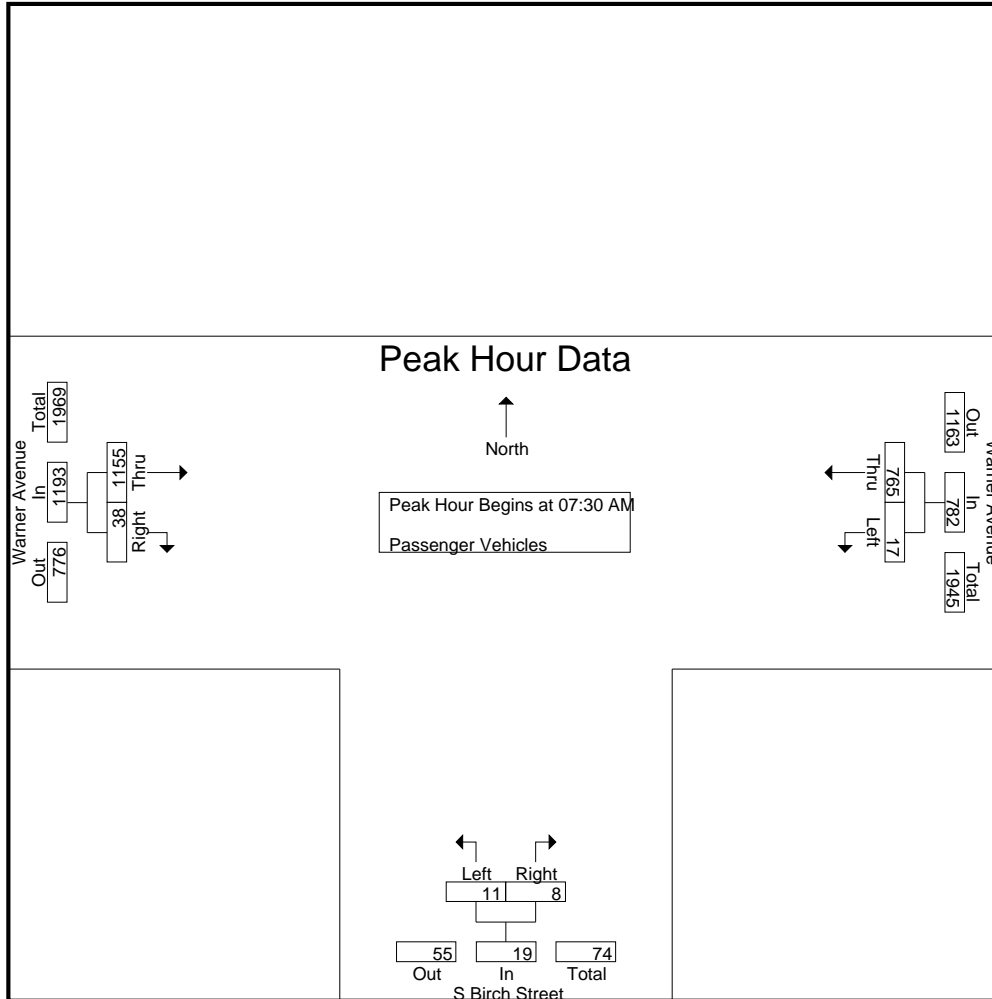
Groups Printed- Passenger Vehicles

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	3	108	111	1	1	2	220	7	227	340
07:15 AM	3	157	160	2	2	4	276	4	280	444
07:30 AM	1	172	173	4	2	6	263	9	272	451
07:45 AM	8	240	248	4	3	7	331	14	345	600
Total	15	677	692	11	8	19	1090	34	1124	1835
08:00 AM	5	184	189	1	2	3	274	7	281	473
08:15 AM	3	169	172	2	1	3	287	8	295	470
08:30 AM	4	135	139	6	7	13	284	9	293	445
08:45 AM	3	137	140	5	3	8	224	4	228	376
Total	15	625	640	14	13	27	1069	28	1097	1764
Grand Total	30	1302	1332	25	21	46	2159	62	2221	3599
Apprch %	2.3	97.7		54.3	45.7		97.2	2.8		
Total %	0.8	36.2	37	0.7	0.6	1.3	60	1.7	61.7	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	1	172	173	4	2	6	263	9	272	451
07:45 AM	8	240	248	4	3	7	331	14	345	600
08:00 AM	5	184	189	1	2	3	274	7	281	473
08:15 AM	3	169	172	2	1	3	287	8	295	470
Total Volume	17	765	782	11	8	19	1155	38	1193	1994
% App. Total	2.2	97.8		57.9	42.1		96.8	3.2		
PHF	.531	.797	.788	.688	.667	.679	.872	.679	.864	.831

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	1	172	173	4	2	6	263	9	272
+15 mins.	8	240	248	4	3	7	331	14	345
+30 mins.	5	184	189	1	2	3	274	7	281
+45 mins.	3	169	172	2	1	3	287	8	295
Total Volume	17	765	782	11	8	19	1155	38	1193
% App. Total	2.2	97.8		57.9	42.1		96.8	3.2	
PHF	.531	.797	.788	.688	.667	.679	.872	.679	.864

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
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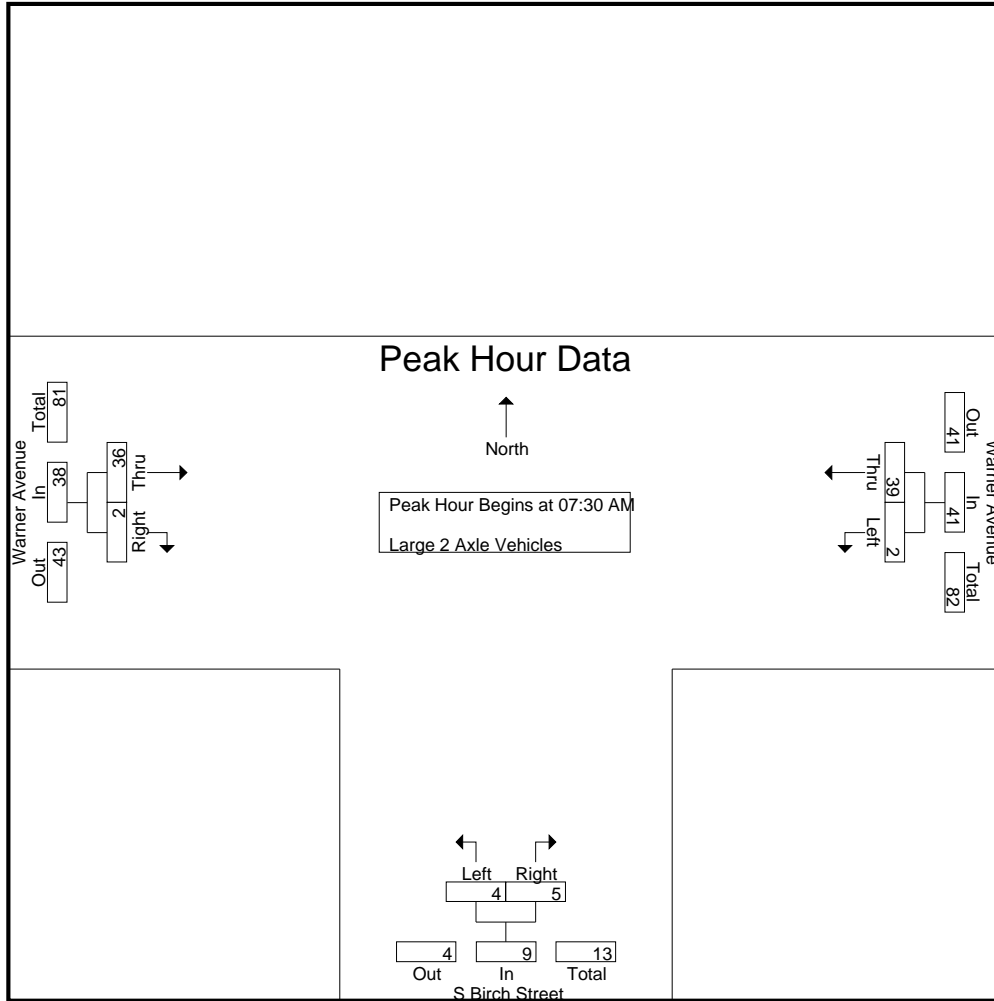
Groups Printed- Large 2 Axle Vehicles

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	5	5	0	0	0	11	1	12	17
07:15 AM	0	10	10	1	0	1	11	0	11	22
07:30 AM	0	12	12	2	2	4	6	0	6	22
07:45 AM	0	8	8	2	1	3	13	2	15	26
Total	0	35	35	5	3	8	41	3	44	87
08:00 AM	2	14	16	0	1	1	4	0	4	21
08:15 AM	0	5	5	0	1	1	13	0	13	19
08:30 AM	0	8	8	1	0	1	9	0	9	18
08:45 AM	1	6	7	1	0	1	13	0	13	21
Total	3	33	36	2	2	4	39	0	39	79
Grand Total	3	68	71	7	5	12	80	3	83	166
Apprch %	4.2	95.8		58.3	41.7		96.4	3.6		
Total %	1.8	41	42.8	4.2	3	7.2	48.2	1.8	50	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	12	12	2	2	4	6	0	6	22
07:45 AM	0	8	8	2	1	3	13	2	15	26
08:00 AM	2	14	16	0	1	1	4	0	4	21
08:15 AM	0	5	5	0	1	1	13	0	13	19
Total Volume	2	39	41	4	5	9	36	2	38	88
% App. Total	4.9	95.1		44.4	55.6		94.7	5.3		
PHF	.250	.696	.641	.500	.625	.563	.692	.250	.633	.846

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	12	12	2	2	4	6	0	6
+15 mins.	0	8	8	2	1	3	13	2	15
+30 mins.	2	14	16	0	1	1	4	0	4
+45 mins.	0	5	5	0	1	1	13	0	13
Total Volume	2	39	41	4	5	9	36	2	38
% App. Total	4.9	95.1		44.4	55.6		94.7	5.3	
PHF	.250	.696	.641	.500	.625	.563	.692	.250	.633

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
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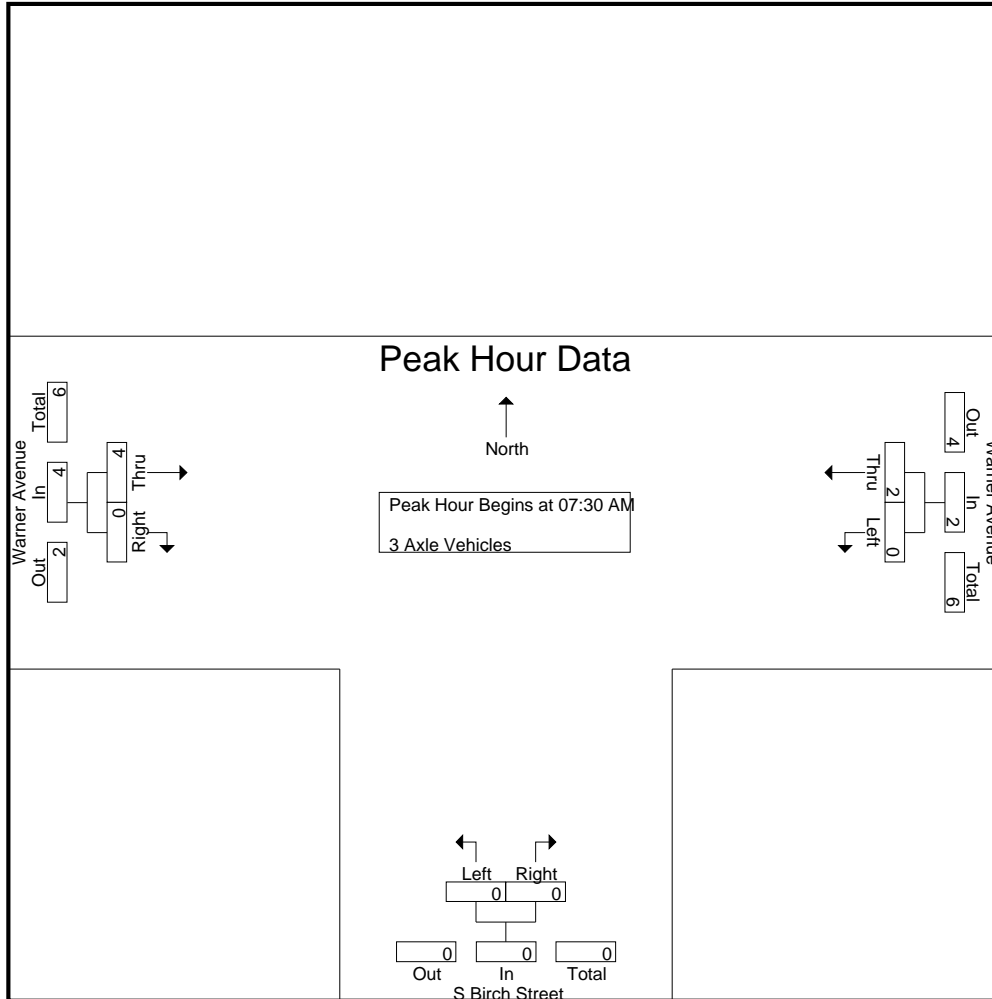
Groups Printed- 3 Axle Vehicles

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	2	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	2	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	2	2	0	0	0	2	0	2	4
08:00 AM	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	2	2	0	0	0	1	0	1	3
08:30 AM	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	1	1	0	0	0	1	0	1	2
Total	0	3	3	0	0	0	4	0	4	7
Grand Total	0	5	5	0	0	0	6	0	6	11
Apprch %	0	100		0	0		100	0		
Total %	0	45.5	45.5	0	0	0	54.5	0	54.5	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	0	0	0	0	0	2	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	2	2	0	0	0	1	0	1	3
Total Volume	0	2	2	0	0	0	4	0	4	6
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500	.500

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
Site Code : 241066
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	0	0	0	2	0	2
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	1	0	1
+45 mins.	0	2	2	0	0	0	1	0	1
Total Volume	0	2	2	0	0	0	4	0	4
% App. Total	0	100		0	0		100	0	
PHF	.000	.250	.250	.000	.000	.000	.500	.000	.500

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn AM
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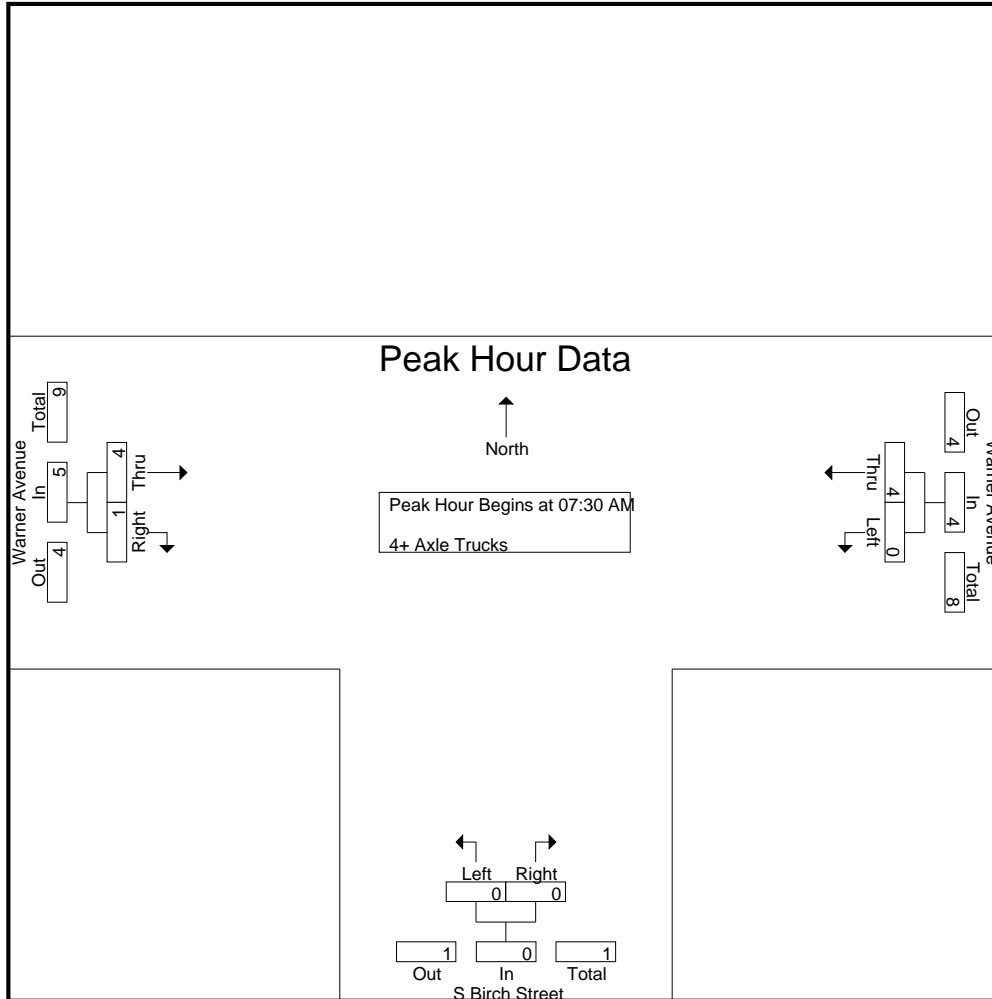
Groups Printed- 4+ Axle Trucks

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	1	1	0	0	0	1	0	1	2
07:45 AM	0	0	0	0	0	0	3	0	3	3
Total	0	1	1	0	0	0	4	0	4	5
08:00 AM	0	3	3	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	1	1	1
08:30 AM	0	1	1	0	0	0	0	0	0	1
08:45 AM	0	5	5	0	0	0	1	0	1	6
Total	0	9	9	0	0	0	1	1	2	11
Grand Total	0	10	10	0	0	0	5	1	6	16
Apprch %	0	100		0	0		83.3	16.7		
Total %	0	62.5	62.5	0	0	0	31.2	6.2	37.5	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	0	1	1	0	0	0	1	0	1	2
07:45 AM	0	0	0	0	0	0	3	0	3	3
08:00 AM	0	3	3	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	4	4	0	0	0	4	1	5	9
% App. Total	0	100		0	0		80	20		
PHF	.000	.333	.333	.000	.000	.000	.333	.250	.417	.750

City of Santa Ana
N/S: S Birch Street
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Weather: Clear

File Name : SNA_Birch_Warn AM
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Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:30 AM		
+0 mins.	0	1	1	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	3	0	3
+30 mins.	0	3	3	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	1	1
Total Volume	0	4	4	0	0	0	4	1	5
% App. Total	0	100		0	0		80	20	
PHF	.000	.333	.333	.000	.000	.000	.333	.250	.417

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn PM
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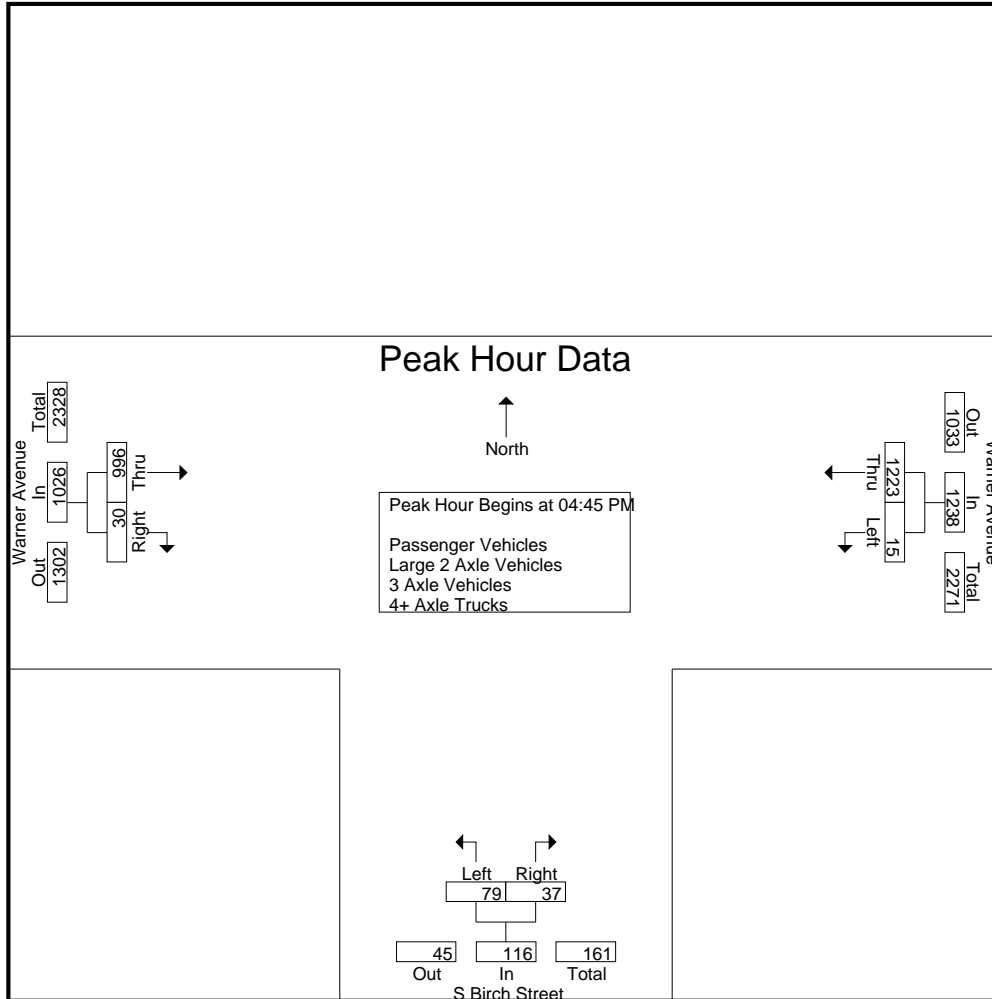
Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	2	270	272	31	12	43	230	6	236	551
04:15 PM	2	269	271	21	6	27	205	9	214	512
04:30 PM	3	295	298	25	13	38	242	9	251	587
04:45 PM	2	303	305	22	9	31	224	10	234	570
Total	9	1137	1146	99	40	139	901	34	935	2220
05:00 PM	5	316	321	16	15	31	247	5	252	604
05:15 PM	1	297	298	19	9	28	258	9	267	593
05:30 PM	7	307	314	22	4	26	267	6	273	613
05:45 PM	9	287	296	12	6	18	228	5	233	547
Total	22	1207	1229	69	34	103	1000	25	1025	2357
Grand Total	31	2344	2375	168	74	242	1901	59	1960	4577
Apprch %	1.3	98.7		69.4	30.6		97	3		
Total %	0.7	51.2	51.9	3.7	1.6	5.3	41.5	1.3	42.8	
Passenger Vehicles	30	2298	2328	162	64	226	1849	55	1904	4458
% Passenger Vehicles	96.8	98	98	96.4	86.5	93.4	97.3	93.2	97.1	97.4
Large 2 Axle Vehicles	1	41	42	6	10	16	47	4	51	109
% Large 2 Axle Vehicles	3.2	1.7	1.8	3.6	13.5	6.6	2.5	6.8	2.6	2.4
3 Axle Vehicles	0	2	2	0	0	0	1	0	1	3
% 3 Axle Vehicles	0	0.1	0.1	0	0	0	0.1	0	0.1	0.1
4+ Axle Trucks	0	3	3	0	0	0	4	0	4	7
% 4+ Axle Trucks	0	0.1	0.1	0	0	0	0.2	0	0.2	0.2

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	2	303	305	22	9	31	224	10	234	570
05:00 PM	5	316	321	16	15	31	247	5	252	604
05:15 PM	1	297	298	19	9	28	258	9	267	593
05:30 PM	7	307	314	22	4	26	267	6	273	613
Total Volume	15	1223	1238	79	37	116	996	30	1026	2380
% App. Total	1.2	98.8		68.1	31.9		97.1	2.9		
PHF	.536	.968	.964	.898	.617	.935	.933	.750	.940	.971

City of Santa Ana
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Weather: Clear

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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:

	04:45 PM			04:00 PM			04:45 PM		
+0 mins.	2	303	305	31	12	43	224	10	234
+15 mins.	5	316	321	21	6	27	247	5	252
+30 mins.	1	297	298	25	13	38	258	9	267
+45 mins.	7	307	314	22	9	31	267	6	273
Total Volume	15	1223	1238	99	40	139	996	30	1026
% App. Total	1.2	98.8		71.2	28.8		97.1	2.9	
PHF	.536	.968	.964	.798	.769	.808	.933	.750	.940

City of Santa Ana
N/S: S Birch Street
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Weather: Clear

File Name : SNA_Birch_Warn PM
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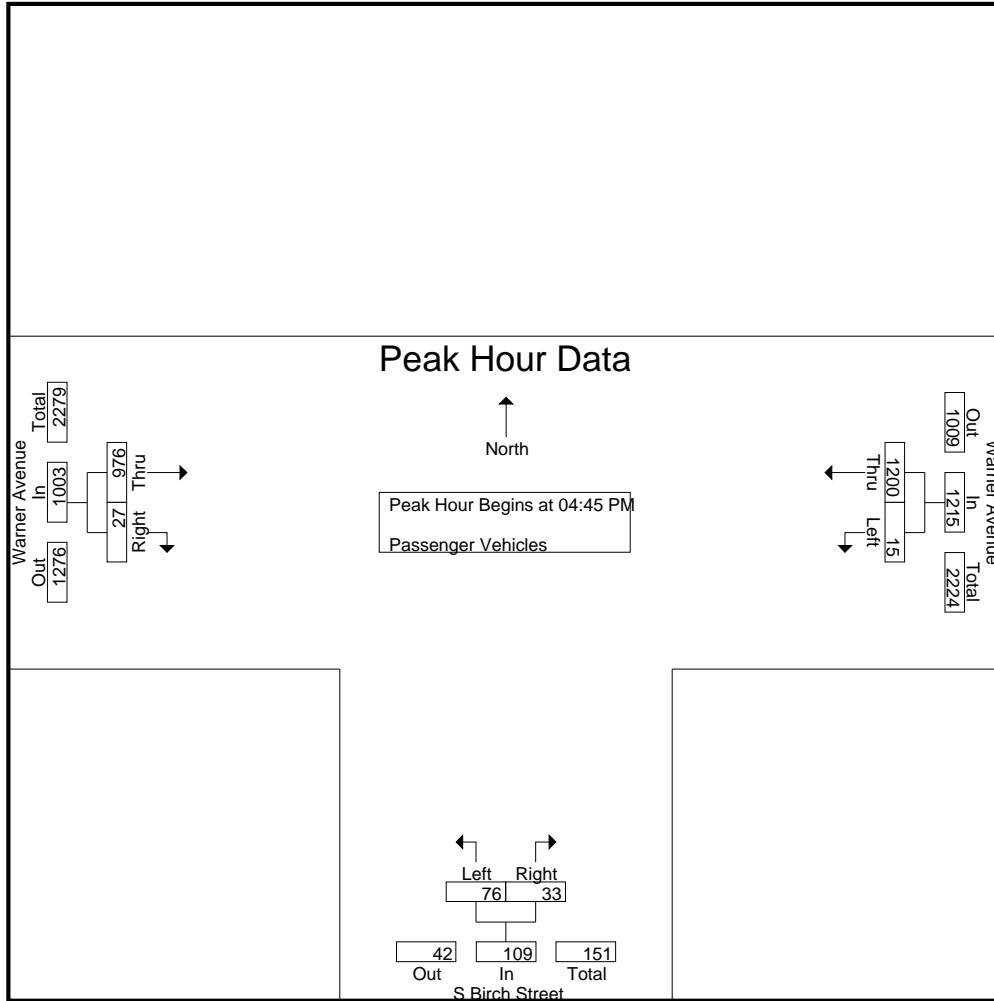
Groups Printed- Passenger Vehicles

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	2	265	267	30	10	40	222	6	228	535
04:15 PM	2	262	264	20	4	24	198	9	207	495
04:30 PM	3	286	289	24	12	36	231	8	239	564
04:45 PM	2	296	298	20	7	27	221	9	230	555
Total	9	1109	1118	94	33	127	872	32	904	2149
05:00 PM	5	314	319	16	14	30	238	4	242	591
05:15 PM	1	285	286	19	8	27	252	8	260	573
05:30 PM	7	305	312	21	4	25	265	6	271	608
05:45 PM	8	285	293	12	5	17	222	5	227	537
Total	21	1189	1210	68	31	99	977	23	1000	2309
Grand Total	30	2298	2328	162	64	226	1849	55	1904	4458
Apprch %	1.3	98.7		71.7	28.3		97.1	2.9		
Total %	0.7	51.5	52.2	3.6	1.4	5.1	41.5	1.2	42.7	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	2	296	298	20	7	27	221	9	230	555
05:00 PM	5	314	319	16	14	30	238	4	242	591
05:15 PM	1	285	286	19	8	27	252	8	260	573
05:30 PM	7	305	312	21	4	25	265	6	271	608
Total Volume	15	1200	1215	76	33	109	976	27	1003	2327
% App. Total	1.2	98.8		69.7	30.3		97.3	2.7		
PHF	.536	.955	.952	.905	.589	.908	.921	.750	.925	.957

City of Santa Ana
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Weather: Clear

File Name : SNA_Birch_Warn PM
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Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	2	296	298	20	7	27	221	9	230
+15 mins.	5	314	319	16	14	30	238	4	242
+30 mins.	1	285	286	19	8	27	252	8	260
+45 mins.	7	305	312	21	4	25	265	6	271
Total Volume	15	1200	1215	76	33	109	976	27	1003
% App. Total	1.2	98.8		69.7	30.3		97.3	2.7	
PHF	.536	.955	.952	.905	.589	.908	.921	.750	.925

City of Santa Ana
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E/W: Warner Avenue
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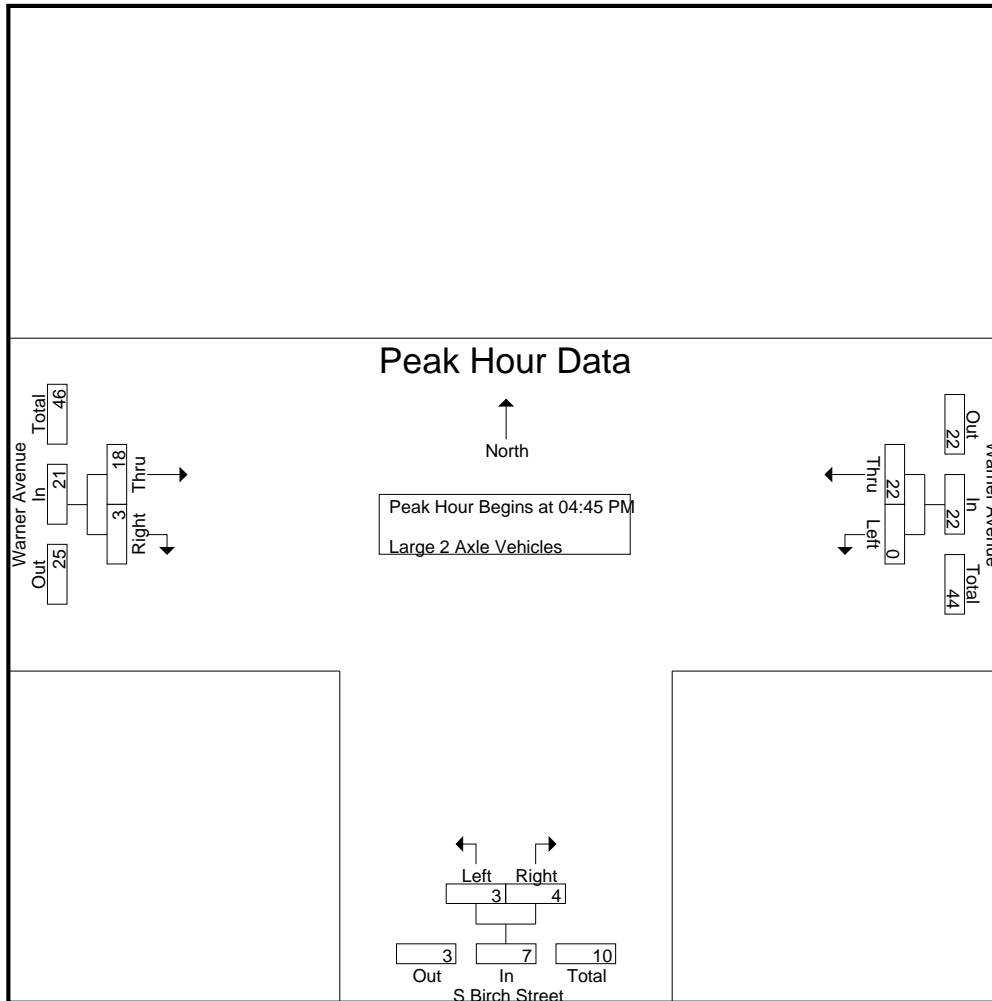
Groups Printed- Large 2 Axle Vehicles

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	4	4	1	2	3	7	0	7	14
04:15 PM	0	5	5	1	2	3	6	0	6	14
04:30 PM	0	8	8	1	1	2	10	1	11	21
04:45 PM	0	7	7	2	2	4	3	1	4	15
Total	0	24	24	5	7	12	26	2	28	64
05:00 PM	0	1	1	0	1	1	7	1	8	10
05:15 PM	0	12	12	0	1	1	6	1	7	20
05:30 PM	0	2	2	1	0	1	2	0	2	5
05:45 PM	1	2	3	0	1	1	6	0	6	10
Total	1	17	18	1	3	4	21	2	23	45
Grand Total	1	41	42	6	10	16	47	4	51	109
Apprch %	2.4	97.6		37.5	62.5		92.2	7.8		
Total %	0.9	37.6	38.5	5.5	9.2	14.7	43.1	3.7	46.8	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	7	7	2	2	4	3	1	4	15
05:00 PM	0	1	1	0	1	1	7	1	8	10
05:15 PM	0	12	12	0	1	1	6	1	7	20
05:30 PM	0	2	2	1	0	1	2	0	2	5
Total Volume	0	22	22	3	4	7	18	3	21	50
% App. Total	0	100		42.9	57.1		85.7	14.3		
PHF	.000	.458	.458	.375	.500	.438	.643	.750	.656	.625

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Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	7	7	2	2	4	3	1	4
+15 mins.	0	1	1	0	1	1	7	1	8
+30 mins.	0	12	12	0	1	1	6	1	7
+45 mins.	0	2	2	1	0	1	2	0	2
Total Volume	0	22	22	3	4	7	18	3	21
% App. Total	0	100		42.9	57.1		85.7	14.3	
PHF	.000	.458	.458	.375	.500	.438	.643	.750	.656

City of Santa Ana
N/S: S Birch Street
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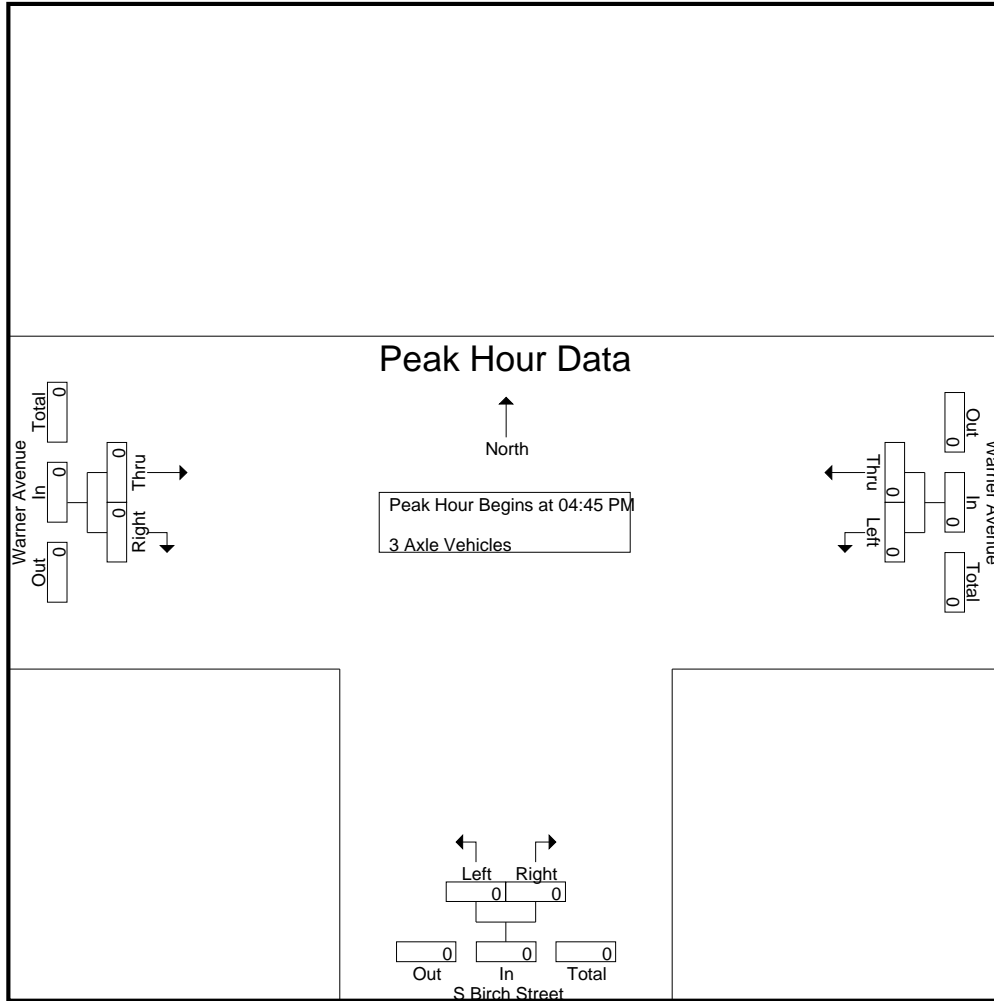
Groups Printed- 3 Axle Vehicles

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

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

City of Santa Ana
 N/S: S Birch Street
 E/W: Warner Avenue
 Weather: Clear

File Name : SNA_Birch_Warn PM
 Site Code : 241066
 Start Date : 12/4/2024
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Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:45 PM			04:45 PM			04:45 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

City of Santa Ana
N/S: S Birch Street
E/W: Warner Avenue
Weather: Clear

File Name : SNA_Birch_Warn PM
Site Code : 241066
Start Date : 12/4/2024
Page No : 1

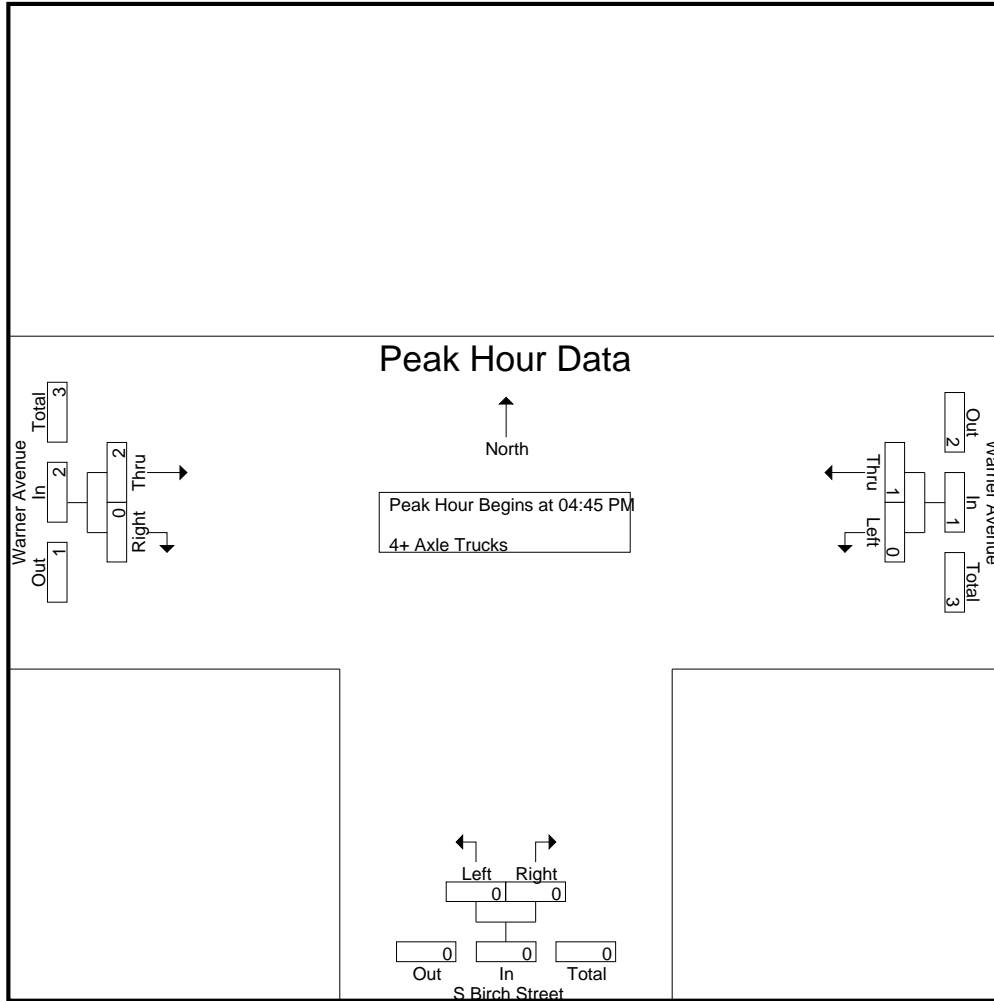
Groups Printed- 4+ Axle Trucks

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	1	1	0	0	0	1	0	1	2
04:30 PM	0	1	1	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	2	2	0	0	0	2	0	2	4
05:00 PM	0	1	1	0	0	0	2	0	2	3
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	0	0	0	2	0	2	3
Grand Total	0	3	3	0	0	0	4	0	4	7
Apprch %	0	100		0	0		100	0		
Total %	0	42.9	42.9	0	0	0	57.1	0	57.1	

	Warner Avenue Westbound			S Birch Street Northbound			Warner Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	1	1	0	0	0	2	0	2	3
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	0	0	0	2	0	2	3
% App. Total	0	100		0	0		100	0		
PHF	.000	.250	.250	.000	.000	.000	.250	.000	.250	.250

City of Santa Ana
 N/S: S Birch Street
 E/W: Warner Avenue
 Weather: Clear

File Name : SNA_Birch_Warn PM
 Site Code : 241066
 Start Date : 12/4/2024
 Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

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

Appendix D:

Volume Development Worksheets

Appendix D- Existing and With Project Conditions Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project
1 . Project Dwy 1/Warner Ave								
NBL	0	0	0	0	0	0	7	7
NBT	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	7	7
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	0	829	2	831	0	1,238	9	1247
EBR	0	0	2	2	0	0	9	9
WBL	0	0	1	1	0	0	5	5
WBT	0	1,214	1	1215	0	1,075	12	1087
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	0	0	0	0	14	14
Departure	0	0	3	3	0	0	14	14
Total	0	0	3	3	0	0	28	28
East Leg								
Approach	0	1,214	2	1,216	0	1,075	17	1,092
Departure	0	829	2	831	0	1,238	16	1,254
Total	0	2,043	4	2,047	0	2,313	33	2,346
West Leg								
Approach	0	829	4	833	0	1,238	18	1,256
Departure	0	1,214	1	1,215	0	1,075	19	1,094
Total	0	2,043	5	2,048	0	2,313	37	2,350
Total Approaches								
Approach	0	2,043	6	2,049	0	2,313	49	2,362
Departure	0	2,043	6	2,049	0	2,313	49	2,362
Total	0	4,086	12	4,098	0	4,626	98	4,724

Appendix D- Existing and With Project Conditions Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project
2 Project Dwy 2/Warner Ave								
NBL	0	0	0	0	0	0	7	7
NBT	0	0	0	0	0	0	0	0
NBR	0	0	0	0	0	0	7	7
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	0	829	0	829	0	1,238	7	1245
EBR	0	0	2	2	0	0	9	9
WBL	0	0	1	1	0	0	5	5
WBT	0	1,214	1	1215	0	1,075	10	1085
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	0	0	0	0	14	14
Departure	0	0	3	3	0	0	14	14
Total	0	0	3	3	0	0	28	28
East Leg								
Approach	0	1,214	2	1,216	0	1,075	15	1,090
Departure	0	829	0	829	0	1,238	14	1,252
Total	0	2,043	2	2,045	0	2,313	29	2,342
West Leg								
Approach	0	829	2	831	0	1,238	16	1,254
Departure	0	1,214	1	1,215	0	1,075	17	1,092
Total	0	2,043	3	2,046	0	2,313	33	2,346
Total Approaches								
Approach	0	2,043	4	2,047	0	2,313	45	2,358
Departure	0	2,043	4	2,047	0	2,313	45	2,358
Total	0	4,086	8	4,094	0	4,626	90	4,716

Appendix D- Existing and With Project Conditions Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project
3 Birch St/Warner Ave								
NBL	15	15	0	15	79	79	5	84
NBT	0	0	0	0	0	0	0	0
NBR	13	13	0	13	37	37	5	42
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	1,199	1,199	1	1200	996	996	10	1006
EBR	41	41	0	41	30	30	5	35
WBL	19	19	1	20	15	15	5	20
WBT	810	810	2	812	1,223	1,223	9	1232
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	28	28	0	28	116	116	10	126
Departure	60	60	1	61	45	45	10	55
Total	88	88	1	89	161	161	20	181
East Leg								
Approach	829	829	3	832	1,238	1,238	14	1,252
Departure	1,212	1,212	1	1,213	1,033	1,033	15	1,048
Total	2,041	2,041	4	2,045	2,271	2,271	29	2,300
West Leg								
Approach	1,240	1,240	1	1,241	1,026	1,026	15	1,041
Departure	825	825	2	827	1,302	1,302	14	1,316
Total	2,065	2,065	3	2,068	2,328	2,328	29	2,357
Total Approaches								
Approach	2,097	2,097	4	2,101	2,380	2,380	39	2,419
Departure	2,097	2,097	4	2,101	2,380	2,380	39	2,419
Total	4,194	4,194	8	4,202	4,760	4,760	78	4,838

Appendix D- Existing and With Project Conditions Peak Hour Volume Summary

	AM Peak Hour				PM Peak Hour			
	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project	Exist Traffic Counts	Exist Volumes	Project Trips	Exist Plus Project
4 Project Dwy 3/Birch St								
NBL	0	0	2	2	0	0	14	14
NBT	0	28	0	28	0	116	0	116
NBR	0	0	0	0	0	0	0	0
SBL	0	0	0	0	0	0	0	0
SBT	0	60	0	60	0	45	5	50
SBR	0	0	2	2	0	0	14	14
EBL	0	0	1	1	0	0	10	10
EBT	0	0	0	0	0	0	0	0
EBR	0	0	1	1	0	0	10	10
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	0	0
North Leg								
Approach	0	60	2	62	0	45	19	64
Departure	0	28	1	29	0	116	10	126
Total	0	88	3	91	0	161	29	190
South Leg								
Approach	0	28	2	30	0	116	14	130
Departure	0	60	1	61	0	45	15	60
Total	0	88	3	91	0	161	29	190
East 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
West Leg								
Approach	0	0	2	2	0	0	20	20
Departure	0	0	4	4	0	0	28	28
Total	0	0	6	6	0	0	48	48
Total Approaches								
Approach	0	88	6	94	0	161	53	214
Departure	0	88	6	94	0	161	53	214
Total	0	176	12	188	0	322	106	428

Appendix E:

Levels of Service Worksheets

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	829	0	0	1214	0	0
Future Vol, veh/h	829	0	0	1214	0	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	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	901	0	0	1320	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	901	0	1561
Stage 1	-	-	-	-	901
Stage 2	-	-	-	-	660
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	750	-	103
Stage 1	-	-	-	-	357
Stage 2	-	-	-	-	476
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	750	-	103
Mov Cap-2 Maneuver	-	-	-	-	232
Stage 1	-	-	-	-	357
Stage 2	-	-	-	-	476

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	750	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	829	0	0	1214	0	0
Future Vol, veh/h	829	0	0	1214	0	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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	901	0	0	1320	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	901	0	1561	451
Stage 1	-	-	-	-	901	-
Stage 2	-	-	-	-	660	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	750	-	103	556
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	476	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	750	-	103	556
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	476	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	750	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1199	41	19	810	15	13
Future Vol, veh/h	1199	41	19	810	15	13
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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1445	49	23	976	18	16




Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1494	0	2003	747
Stage 1	-	-	-	-	1469	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	445	-	52	355
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	445	-	49	355
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.31	24.64
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	217	-	-	445	-
HCM Lane V/C Ratio	0.156	-	-	0.051	-
HCM Control Delay (s/veh)	24.6	-	-	13.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-

4: S Birch St. & Dwy 3

Existing AM

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	28	60	0
Future Vol, veh/h	0	0	0	28	60	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	30	65	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	96	65	65	0	-	0
Stage 1	65	-	-	-	-	-
Stage 2	30	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	904	999	1537	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	904	999	1537	-	-	-
Mov Cap-2 Maneuver	904	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1537	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1238	0	0	1075	0	0
Future Vol, veh/h	1238	0	0	1075	0	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	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1346	0	0	1168	0	0




Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1346	0	1930
Stage 1	-	-	-	-	1346
Stage 2	-	-	-	-	584
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	508	-	58
Stage 1	-	-	-	-	207
Stage 2	-	-	-	-	520
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	508	-	58
Mov Cap-2 Maneuver	-	-	-	-	156
Stage 1	-	-	-	-	207
Stage 2	-	-	-	-	520

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	508	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	1238	0	0	1075	0	0
Future Vol, veh/h	1238	0	0	1075	0	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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1346	0	0	1168	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1346	0	1930	673
Stage 1	-	-	-	-	1346	-
Stage 2	-	-	-	-	584	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	508	-	58	398
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	520	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	508	-	58	398
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	207	-
Stage 2	-	-	-	-	520	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	508	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	996	30	15	1223	79	37
Future Vol, veh/h	996	30	15	1223	79	37
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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1027	31	15	1261	81	38
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1058	0	1704	529
Stage 1	-	-	-	-	1042	-
Stage 2	-	-	-	-	661	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	654	-	83	494
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	475	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	654	-	~ 81	494
Mov Cap-2 Maneuver	-	-	-	-	249	-
Stage 1	-	-	-	-	301	-
Stage 2	-	-	-	-	464	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0.13		25.17	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	296	-	-	654	-	
HCM Lane V/C Ratio	0.404	-	-	0.024	-	
HCM Control Delay (s/veh)	25.2	-	-	10.6	-	
HCM Lane LOS	D	-	-	B	-	
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-	
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	116	45	0
Future Vol, veh/h	0	0	0	116	45	0
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, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	126	49	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	175	49	49	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	815	1020	1558	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	815	1020	1558	-	-	-
Mov Cap-2 Maneuver	815	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	900	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1558	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	0	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	831	2	1	1215	0	0
Future Vol, veh/h	831	2	1	1215	0	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	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	903	2	1	1321	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	905	0	1567
Stage 1	-	-	-	-	904
Stage 2	-	-	-	-	663
Critical Hdwy	-	-	4.14	-	6.84
Critical Hdwy Stg 1	-	-	-	-	5.84
Critical Hdwy Stg 2	-	-	-	-	5.84
Follow-up Hdwy	-	-	2.22	-	3.52
Pot Cap-1 Maneuver	-	-	747	-	102
Stage 1	-	-	-	-	355
Stage 2	-	-	-	-	474
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	747	-	102
Mov Cap-2 Maneuver	-	-	-	-	230
Stage 1	-	-	-	-	355
Stage 2	-	-	-	-	474

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.01	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	747	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s/veh)	0	-	-	9.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↓	↑↑	↓	
Traffic Vol, veh/h	829	2	1	1215	0	0
Future Vol, veh/h	829	2	1	1215	0	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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	901	2	1	1321	0	0
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	903	0	1565	452
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	748	-	102	555
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	474	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	748	-	102	555
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	474	-
Approach	EB		WB		NB	
HCM Control Delay, s/v	0		0.01		0	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	748	-	
HCM Lane V/C Ratio	-	-	-	0.001	-	
HCM Control Delay (s/veh)	0	-	-	9.8	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection




Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1200	41	20	812	15	13
Future Vol, veh/h	1200	41	20	812	15	13
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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1237	42	21	837	15	13

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1279
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	538
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	538
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.29	19.76
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	273	-	-	538	-
HCM Lane V/C Ratio	0.106	-	-	0.038	-
HCM Control Delay (s/veh)	19.8	-	-	12	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	28	60	2
Future Vol, veh/h	1	1	2	28	60	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	1	2	30	65	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	101	66	67	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	35	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	897	997	1534	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	896	997	1534	-	-	-
Mov Cap-2 Maneuver	896	-	-	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	988	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	8.82	0.49		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1534	-	944	-	-	
HCM Lane V/C Ratio	0.001	-	0.002	-	-	
HCM Control Delay (s/veh)	7.4	-	8.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1247	9	5	1087	7	7
Future Vol, veh/h	1247	9	5	1087	7	7
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	0	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1355	10	5	1182	8	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1365
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	499
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	499
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.06	22.66
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	-	-	499	-
HCM Lane V/C Ratio	0.069	-	-	0.011	-
HCM Control Delay (s/veh)	22.7	-	-	12.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1245	9	5	1085	7	7
Future Vol, veh/h	1245	9	5	1085	7	7
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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1353	10	5	1179	8	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1363
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	500
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	500
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.06	20.36
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	250	-	-	500	-
HCM Lane V/C Ratio	0.061	-	-	0.011	-
HCM Control Delay (s/veh)	20.4	-	-	12.3	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	
Traffic Vol, veh/h	1006	35	20	1232	84	42
Future Vol, veh/h	1006	35	20	1232	84	42
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	-	0	-
Veh in Median Storage, #	0	-	-	0	2	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1037	36	21	1270	87	43




Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1073
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.22
Pot Cap-1 Maneuver	-	-	645
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	645
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.17	26.74
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	293	-	-	645	-
HCM Lane V/C Ratio	0.444	-	-	0.032	-
HCM Control Delay (s/veh)	26.7	-	-	10.8	-
HCM Lane LOS	D	-	-	B	-
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	10	14	116	50	14
Future Vol, veh/h	10	10	14	116	50	14
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, %	2	2	2	2	2	2
Mvmt Flow	11	11	15	126	54	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	218	62	70	0	-	0
Stage 1	62	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	770	1003	1531	-	-	-
Stage 1	961	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	761	1003	1531	-	-	-
Mov Cap-2 Maneuver	761	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	872	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s/v	9.27	0.79		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1531	-	866	-	-	
HCM Lane V/C Ratio	0.01	-	0.025	-	-	
HCM Control Delay (s/veh)	7.4	-	9.3	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

