



PORT 17 CHEHALIS
TRAFFIC IMPACT ANALYSIS

Chehalis UGA/ Lewis County, WA



04/27/2022

Prepared for: Mr. Darren Peugh
Panattoni Development Company, Inc.
1821 Dock Street, Suite 100
Tacoma, WA 98402

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PORT 17 CHEHALIS TRAFFIC IMPACT ANALYSIS

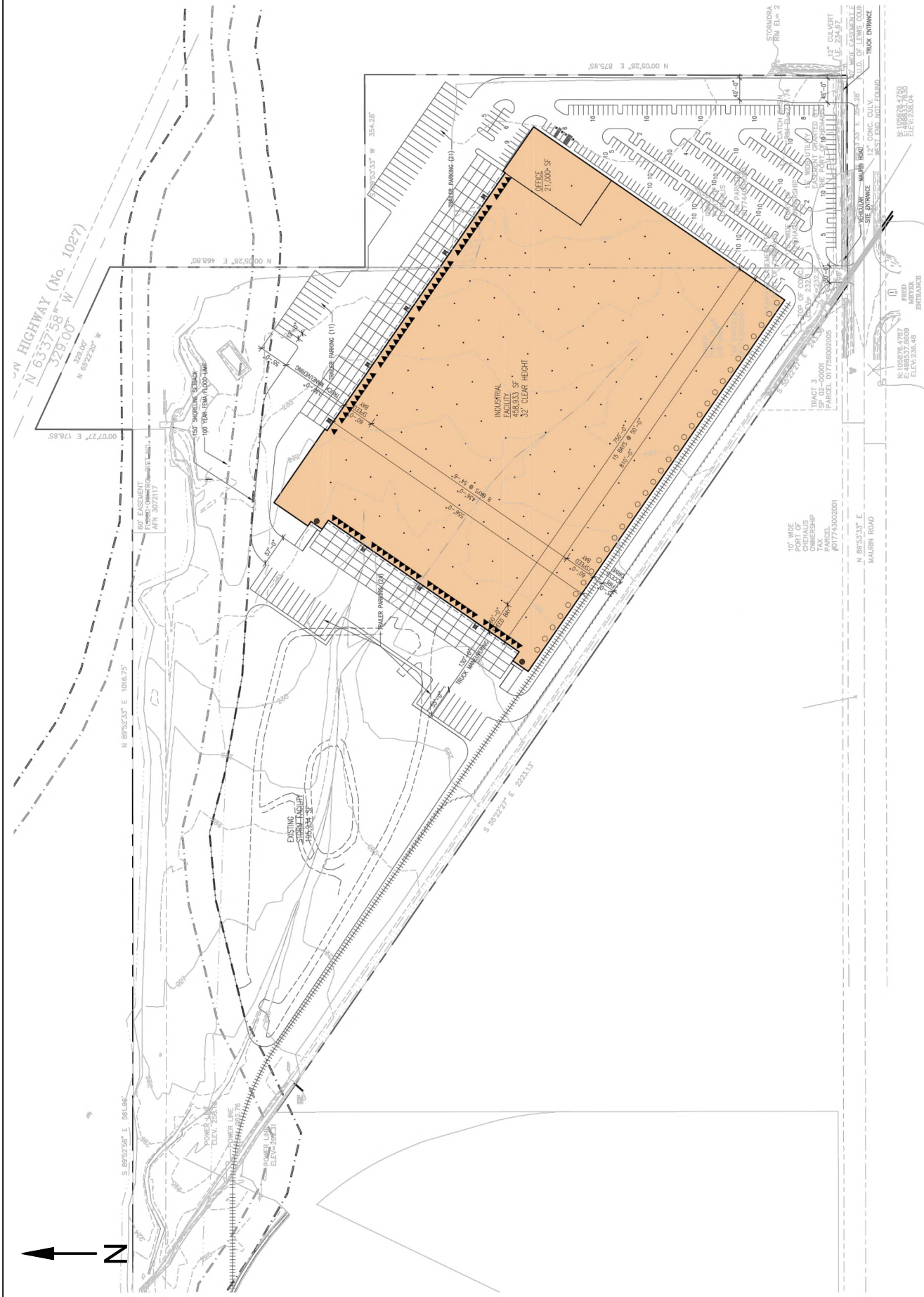
1. INTRODUCTION

The main goals of this study focus on the analysis of existing roadway conditions and forecasts of newly generated project traffic. The first task includes the review of general roadway information on the adjacent street system, baseline vehicular volumes, and entering sight distance data. Forecasts of future traffic and dispersion patterns on the street system are then determined using established trip generation and distribution techniques. As a final step, appropriate conclusions and mitigation measures are defined.

2. PROJECT DESCRIPTION

Port 17 Chehalis proposes for the construction of up to 516,240 square feet of industrial space, located within the Chehalis Urban Growth Area of Lewis County. The subject site is bordered to the south by Maurin Road and located south of Jackson Highway. The site area comprises approximately 17-acres within undeveloped tax parcel #'s: 017744004001, 017743004003, and a portion of 017743004002. At the time of this evaluation, there is no defined tenant so the use assumption includes a combination of manufacturing and warehouse. Site access is proposed via two new roadway connections. The first which would be utilized by trucks only, is proposed to extend north from Maurin Road. The second access which would support passenger vehicles is also proposed to extend north from Maurin Road, west of the truck only access, see provided site plan in Figure 2 on the following page. Site development would also include a new rail platform and extension to utilize rail hauling to and from the site. Figure 1 below depicts the subject site's vicinity and surrounding roadway network.





3. EXISTING CONDITIONS

3.1 Surrounding Roadways

The street network serving the proposed project consists of a variety of roadways. The major roadways and arterials defined in the study area are listed and described below.

Table 1: Roadway Network

Functional Classification	Roadway	Speed Limit	Lanes	Street Parking	Sidewalk	Bike Facilities
Principal Arterial	Jackson Highway	30-40 mph	2	No	No	No
Minor Arterial	Bishop Road	35 mph	2	No	No	No
Collectors	Maurin Road	35 mph	2	No	No	No
	Rush Road	35 mph	2	No	Westside	No

3.2 Existing Peak Hour Volumes and Patterns

Field data for this study was collected in March of 2022. Traffic counts were administered at the intersections listed below, which would receive the bulk of the anticipated vehicular demands.

- Labree Road & I-5 S Ramps
- Labree Road & 1-5 N Ramps
- Bishop Road & Maurin Road/Labree Road
- Maurin Road & Rush Road
- Jackson Highway & Rush Road
- Maurin Road & Fred Meyer Distribution Driveway

Data was obtained during the evening peak period between the hours of 3:00 PM – 6:00 PM, which generally translates to highest overall roadway volumes in a given 24-hour period. The one hour reflecting highest overall roadway volumes (peak hour) was then derived from these counts. Figure 3 illustrates existing PM peak hour volumes at the outlying study intersections. Full count sheets have been attached in the appendix.

Additionally, the WSDOT COVID-19 Transportation System Performance Multimodal Executive Summary showed that traffic volumes in the area along state facilities in Lewis County were on average 2% lower than typical baseline conditions on the date the count was taken (3/10/2022). To remain conservative in analysis, existing PM peak hour volumes were increased by 5%. Adjusted baseline 2022 PM peak hour volumes at the study intersections are illustrated in Figure 3. Full-count sheets have been included in the appendix.

3.3 Pedestrian and Bicycle Activity

During field observations, non-motorist transport was observed at two of the six study intersections. One pedestrian was noted crossing the north leg of the intersection of Jackson Highway & Rush Road. One pedestrian was noted crossing the west leg of the intersection of Maurin Road & Rush Road. Given the industrial area in which the subject site is located, little to no non-motorist transport is not expected to be generated from the development.

3.4 Public Transit

A review of the Twin Transit regional bus schedule indicates that transit service is provided within walking distance of the subject site. The nearest bus stop is located approximately 450 feet east of the subject site on the south side of Maurin Road, servicing the Red Line. The Red Line provides service north of I-5 throughout the city and port of Chehalis. Weekday service is provided from 6:00 AM – 7:00 PM and weekend service is provided from 7:00 AM – 4:00 PM. Refer to Twin Transit's Routes & Schedules for more detailed information. Given the nature of the proposed project, transit use will not be expected from the proposed Port 17 Chehalis project.

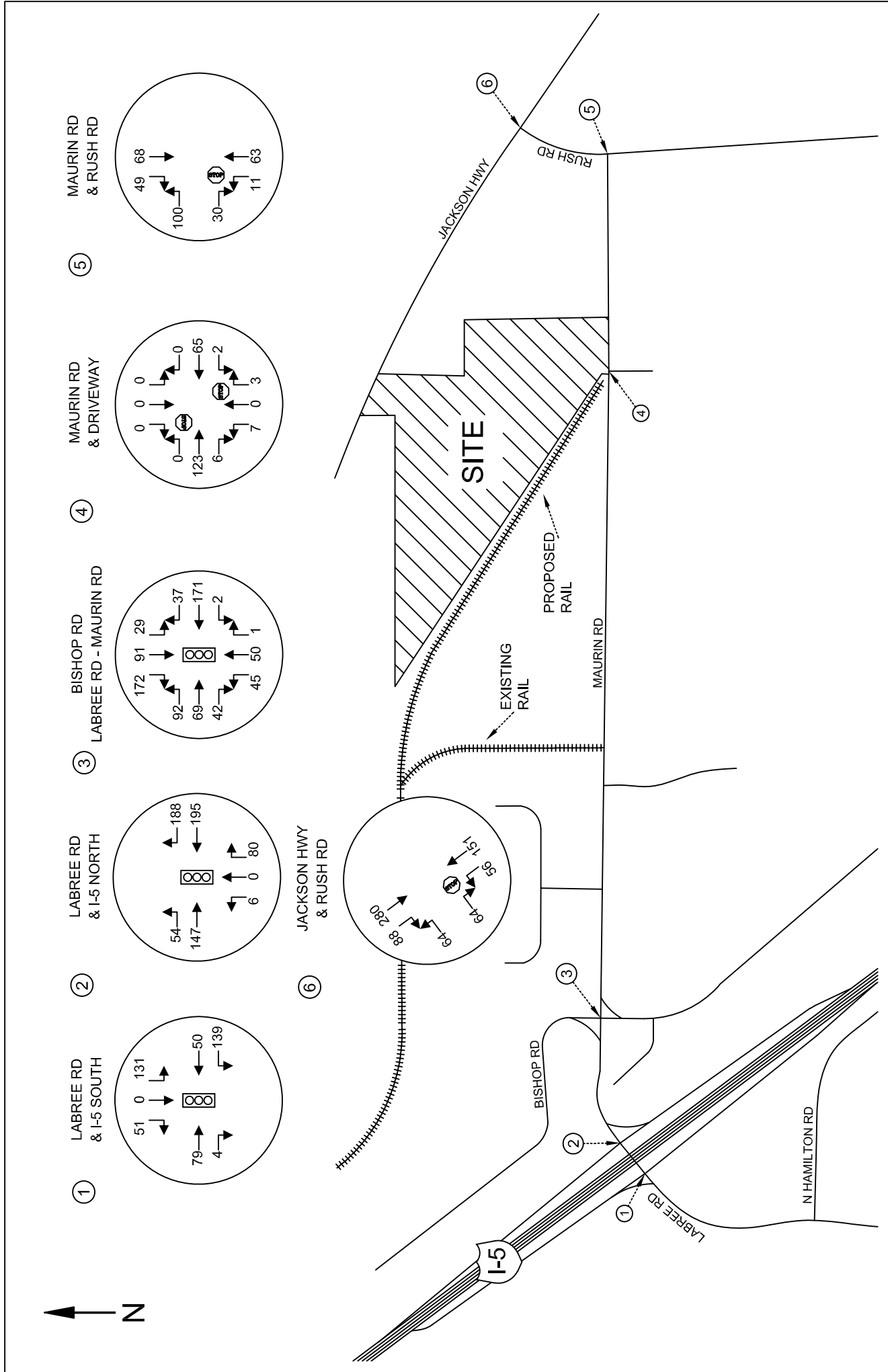
3.5 Roadway Improvements

A review of the City of Chehalis Six-Year (2022-2027) Transportation Improvement Program indicates no planned projects in the general vicinity of the proposed Port 17 Chehalis project.

3.6 Site Access & Roadway Design

As shown in Figure 2, site access is proposed via two new roadway connections by way of Maurin Road E. The easterly access, at 45-feet wide, is intended to support truck ingress/egress only. The westerly access, at 30-feet wide, is intended to provide access to passenger vehicles and is aligned roughly opposite the Fred Meyer Distribution Center driveway.

In accordance with AASHTO Standards, based on the 35-mph speed limit along Maurin Road, 390 feet of sight distance is needed for the passenger vehicle access and 595-feet for the truck access. Based on preliminary measurements for each driveway, sight lines are meet the aforementioned distances. Maurin Road is relatively flat in grade with no horizontal curvature offering clear visibility in both east/west directions for drivers leaving the site.



3.7 Level of Service

Existing intersection delays were determined through the use of the *Highway Capacity Manual* 6th Edition. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. The range¹ for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating the worst conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the 2016 Highway Capacity Manual. Level of service calculations were made through the use of the *Synchro 11* analysis program. For side-street, stop-controlled intersections, LOS is determined by the approach with the highest delay. Delays presented represent overall weighted average delays for signalized intersections. Table 2 below presents existing PM peak hour LOS delays for the key intersection of study.

Table 2: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Movement	LOS	Delay
Labree Rd & I-5 S Ramps	Signal	Overall	B	18.8
Labree Rd & I-5 N Ramps	Signal	Overall	B	12.2
Bishop Rd & Labree/Maurin Rd	Signal	Overall	B	14.4
Maurin Rd & Driveway	Stop	NB	B	11.2
Maurin Rd & Rush Rd	Stop	EB	B	11.8
Jackson Hwy & Rush Rd	Stop	NEB*	B	12.8

*NEB Northeast Bound

Existing PM peak hour conditions are shown to operate with minimal delays at LOS B or better indicating stable operations during the critical PM peak hour of travel.

¹ *Signalized Intersections - Level of Service*

Level of Service	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Highway Capacity Manual, 6th Edition

Stop Controlled Intersections – Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

4. FUTURE TRAFFIC CONDITIONS

4.1 Trip Generation

Trip generation is used to determine the magnitude of project impacts on the surrounding street system. This is usually denoted by the quantity or specific number of new trips that enter and exit a project during a designated time period, such as a specific peak hour (AM or PM) or an entire day. Data presented in this report was taken from the Institute of Transportation Engineer's publication *Trip Generation*, 11th Edition.

As previously mentioned, there is no defined tenant at the time of this evaluation. However, based on discussion with the applicant, users may range from warehouse distribution to manufacturing or a combination thereof. Therefore, 50 percent of the building has been classified under ITE's *LUC 140 – Manufacturing* and 50 percent under *LUC 150 – Warehouse* to account for a variety of potential users. Table 3 below summarizes project trip generation using ITE average rates to determine trips ends with square footage as the input variable. Included are the average weekday daily traffic (AWDT) and the AM and PM peak hours. Refer to the appendix for trip generation output.

Table 3: Project Trip Generation

Land Use	Size (Sq. Ft.)	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
LUC 140 - Manufacturing	258,120	1226	133	43	176	59	132	191
LUC 150 - Warehousing	258,120	441	34	10	44	13	33	46
Totals		1667	167	53	220	72	165	237

Based on ITE data, and assuming half manufacturing/half warehouse, the project could be estimated to generate 1,667 daily trips with 220 trips in the AM peak hour and 237 trips in the PM peak hour. Depending on the use, truck traffic may comprise between 10-35% of the site-generated traffic and would occur primarily off-peak hours.

It should also be taken into consideration that the site is constructing a rail platform and would utilize rail transport. ITE has no data available for industrial sites with rail accessibility so the influence on trip generation is unknown. However, rail transport may reduce overall truck traffic to and from the site given the efficiencies in hauling via rail. The numbers presented herein should therefore be considered as a conservative estimate.

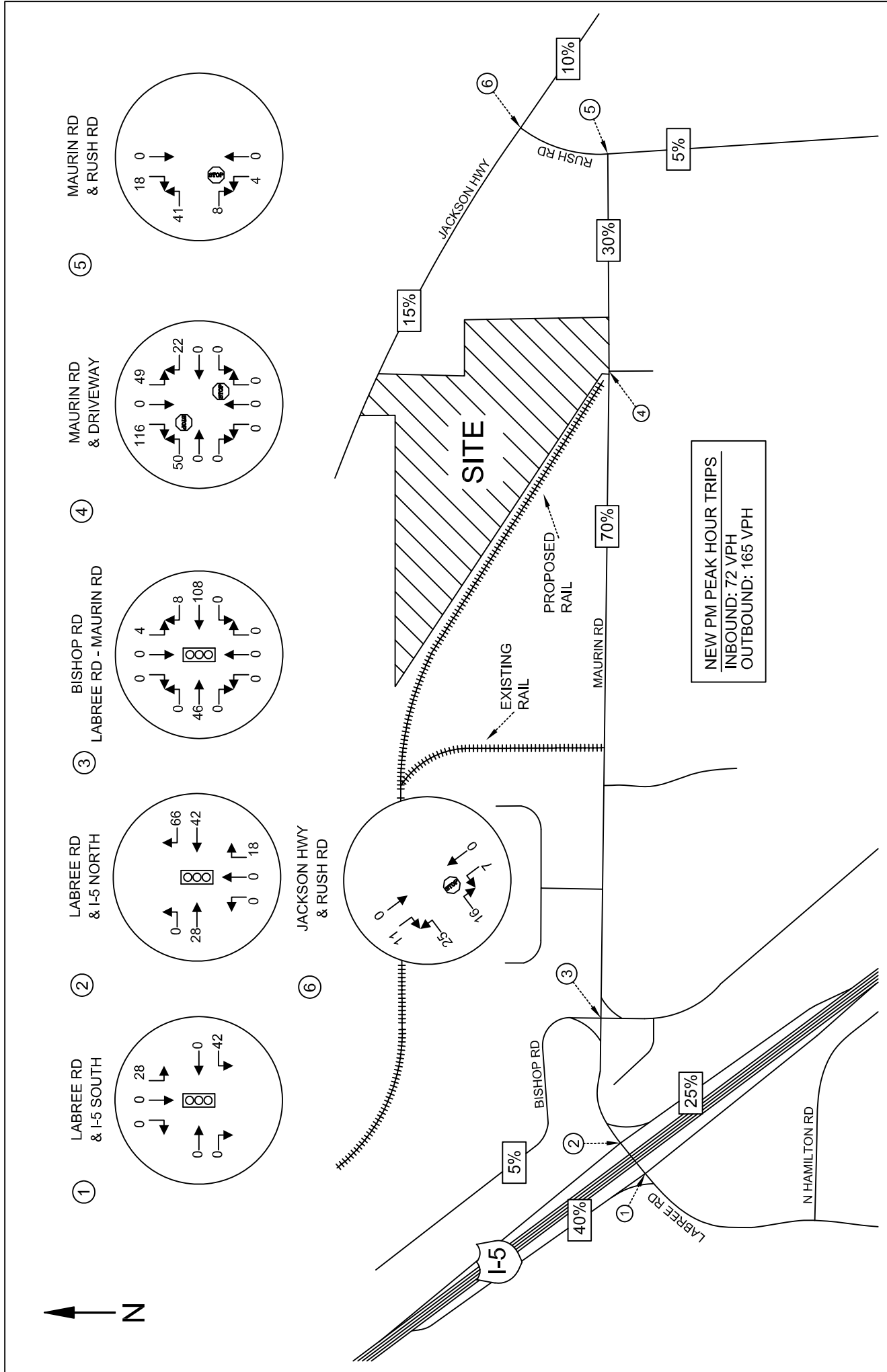
4.2 Trip Distribution and Assignment

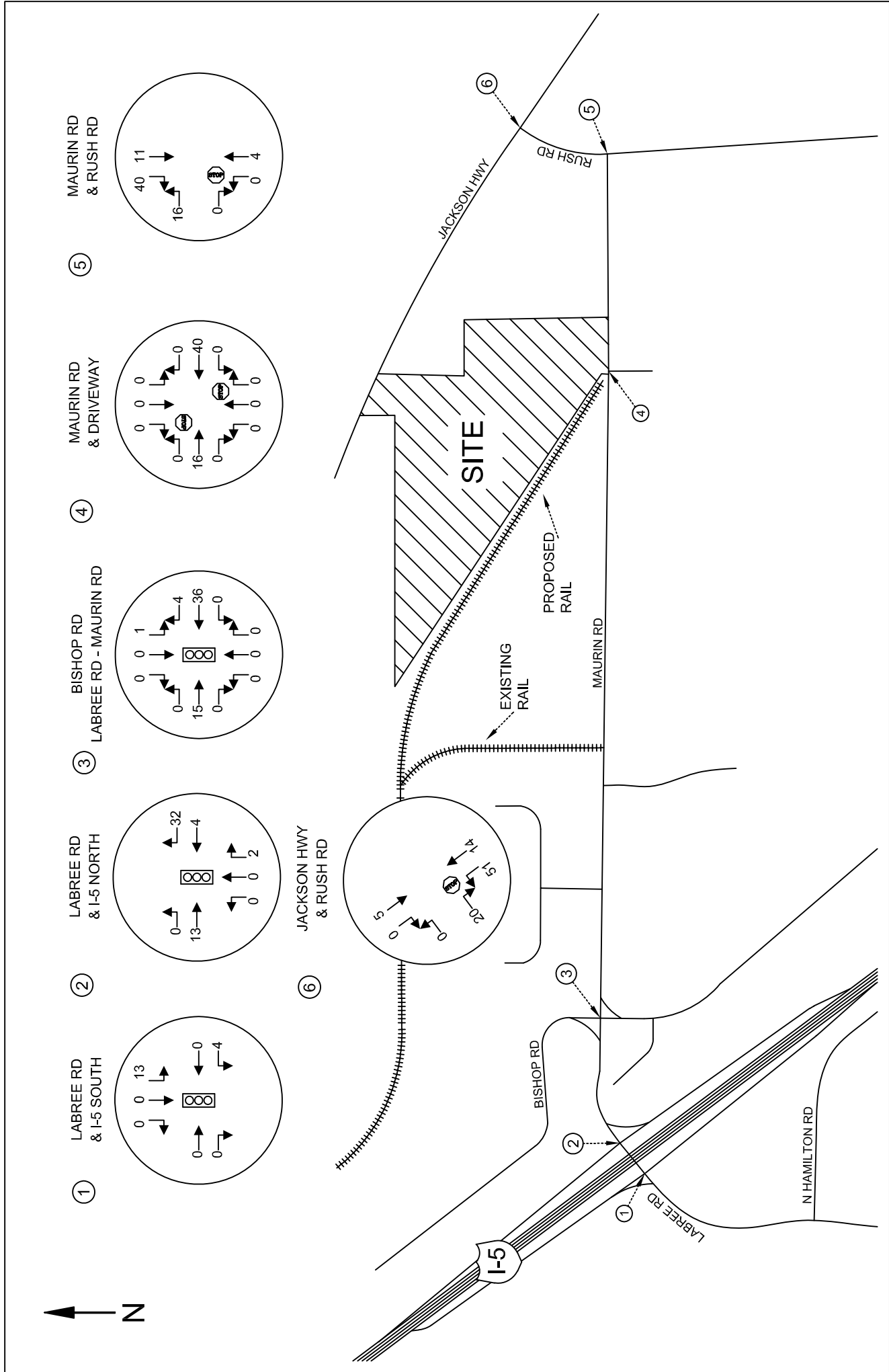
Trip distribution can be described as the travel routes to/from the subject site relative to the adjacent street system. The specific destinations and origins of the generated traffic primarily influence the key study intersections, which will effectively receive the bulk of project impacts. In review of the general vicinity and given the proximity to the I-5 Ramps to the west, project traffic has been assigned with a 70/30 west/east split by way of Maurin Road. All traffic has been originated from a single driveway opposite the Fred Meyers Distribution Center for analysis purposes. See Figure 4 for project trip distribution in the PM peak hour.

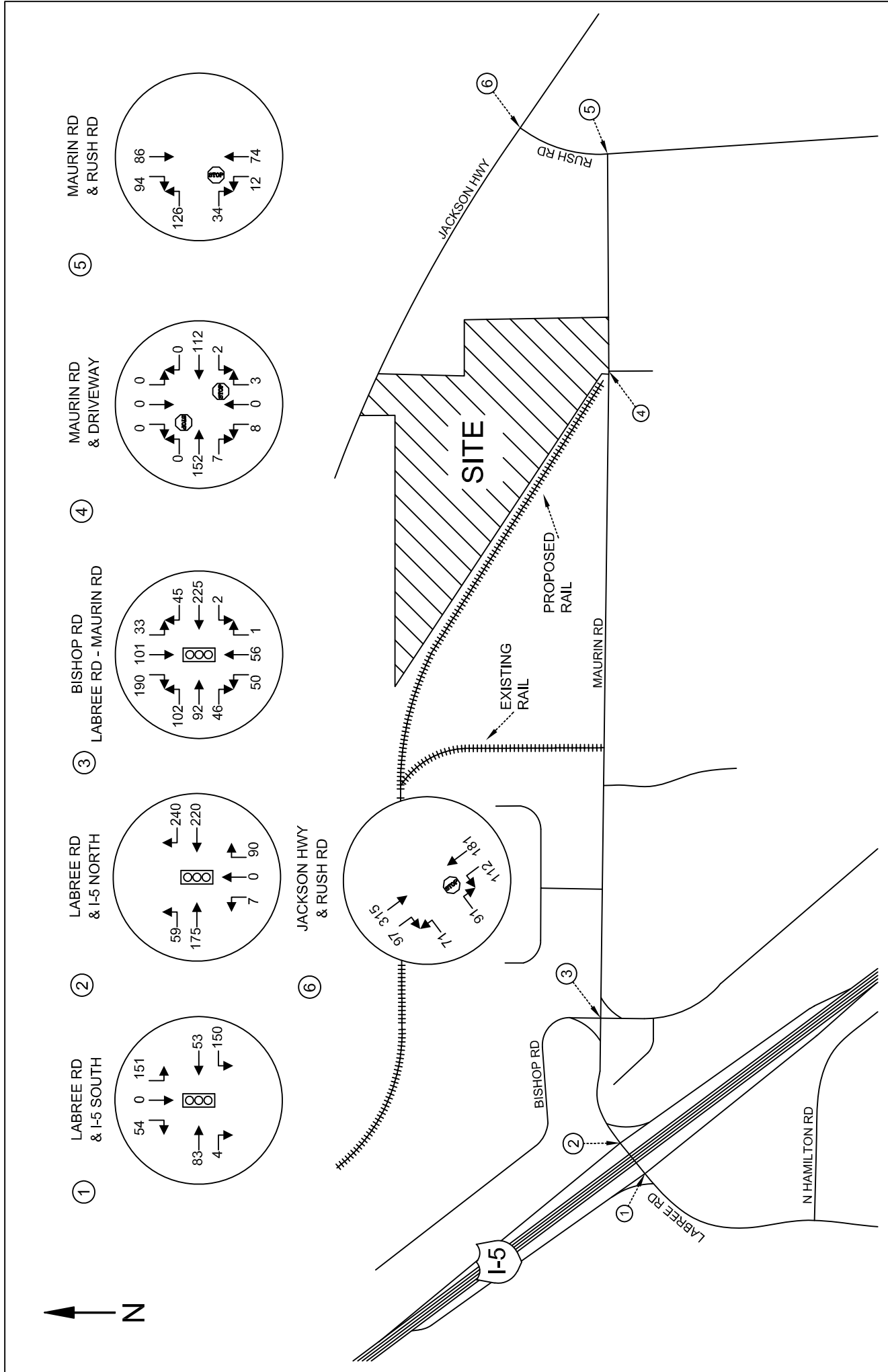
4.3 Future Peak Hour Volumes

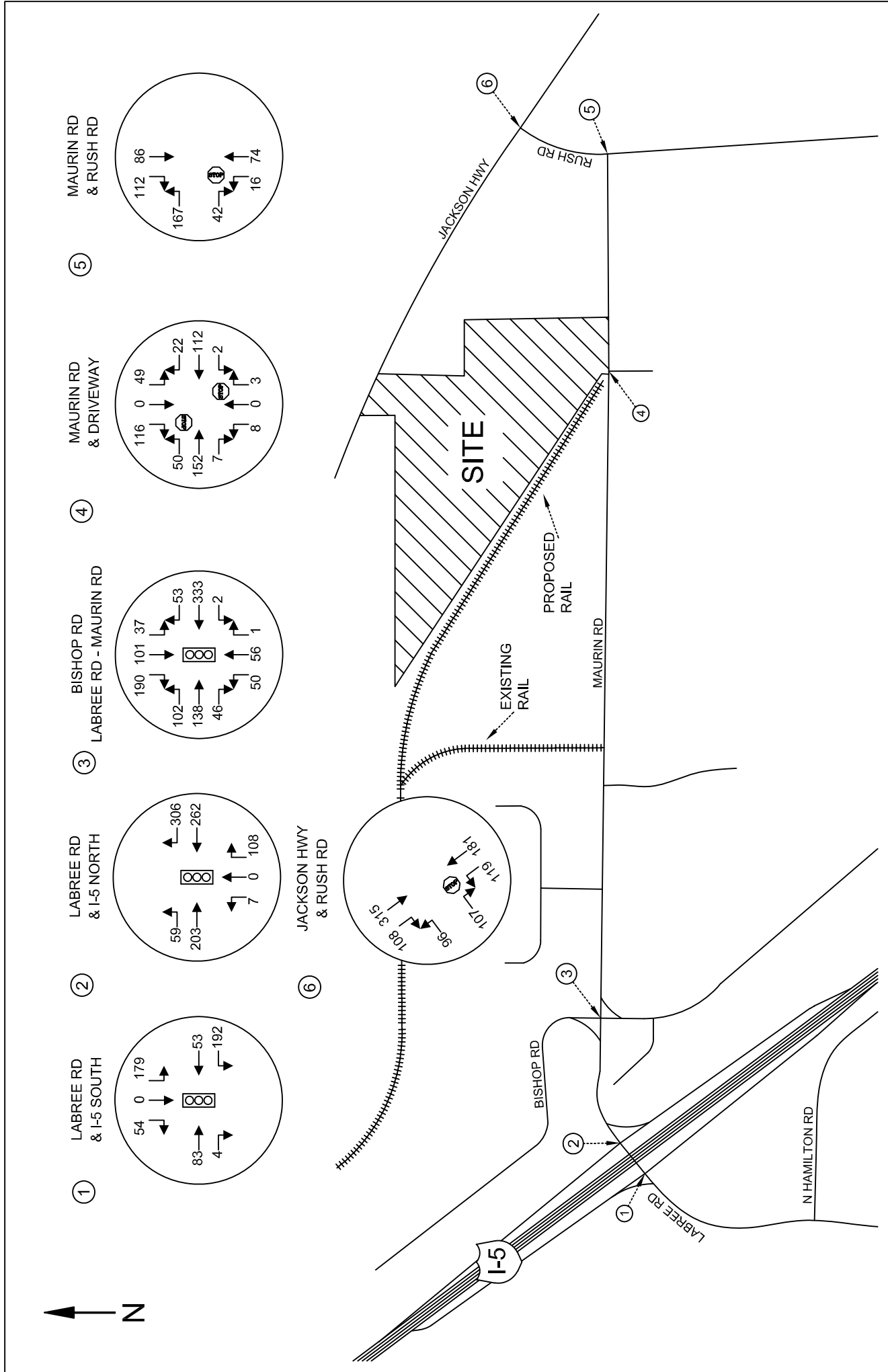
A 5-year horizon of 2027 was used for future traffic delay analysis. The proposed development is located within the Chehalis Urban Growth Area of Lewis County. The City is forecasted to grow at an annual rate of 1.50%² according to the Chehalis Comprehensive Plan (2017). Therefore, forecast 2027 background traffic volumes were derived by applying a 2.0 percent compound annual growth rate to the baseline 2022 PM peak hour volumes shown in Figure 3. Moreover, pipeline volumes associated with the nearby Jackson Highway Warehouse has been included in analysis and is displayed in Figure 5. Forecast 2027 PM peak hour volumes without and with the addition of project-generated traffic are shown in Figures 6 and 7, respectively.

² Chehalis Comprehensive Plan 2017: Chapter 3 Land Use, pg. 4









4.4 Future Level of Service

Level of service analyses were made of the future PM peak hour volumes without (background) and with project related trips added to the key roadways and intersections. This analysis once again involved the use of the *Synchro 11* analysis program. Delays for the study intersections under future conditions are shown below in Table 4 below.

Table 4: Forecast 2027 PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	<u>Without Project</u>		<u>With Project</u>	
		LOS	Delay	LOS	Delay
Labree Rd & I-5 S Ramps	Signal	B	19.1	B	19.3
Labree Rd & I-5 N Ramps	Signal	B	11.3	B	11.8
Bishop Rd & Labree/Maurin Rd	Signal	B	16.0	B	16.7
Maurin Rd & Driveway	Stop	B	12.2	C	17.2
Maurin Rd & Rush Rd	Stop	B	13.2	B	14.8
Jackson Hwy & Rush Rd	Stop	C	15.2	C	18.0

Forecast 2027 PM peak hour level of service at the outlying study intersections and the combined access intersection are all shown to operate with LOS C or better conditions. No operational deficiencies are identified as a result of the proposed development.

4.5 Left-Turn Lane Warrant

Left-turn lanes are a means of providing necessary storage space for left turning vehicles at intersections. For this impact study, procedures prescribed by the WSDOT Design Manual Exhibit 1310-7a were used to ascertain storage requirements at the access intersection of Maurin Road & Project Access. Based on forecast 2027 PM peak hour volumes with project traffic – a left-turn lane *would not be warranted* at the combined access intersection of Maurin Road & Access. Refer to the appendix for the warrant nomograph.

5. SUMMARY

Port 17 Chehalis proposes for the construction of an up to 516,240 square foot industrial building located within the Chehalis Urban Growth Area (UGA) of Lewis County. The subject site, located at 273 Maurin Road is bordered to the south by Maurin Road. Access to the site is proposed via two new access connections, a westerly driveway serving vehicles and an easterly driveway for trucks. Moreover, a rail extension to the Port 17 Chehalis project is also proposed. Rail access may reduce truck transport to and from the site as deliveries could come in the form of rail. A conceptual site plan is provided in Figure 2.

At the time of this evaluation, there are no known tenants. For trip estimates, the building was broken down to comprise 50 percent (258,120 square feet) of manufacturing space and 50 percent general warehouse space. ITE data suggests the project could generate 1,667 average weekday daily trips with 220 trips occurring in the AM peak hour and 237 in the PM peak hour. It should be noted that ITE had no available data quantifying the influence from rail accessibility in terms of trip generation. With rail access being proposed, truck traffic stemming from the site may be reduced in favor of rail transport. However, no trip reductions were accounted for do to the unknown effects.

For forecast analysis, a five-year horizon was evaluated to asses impacts under future conditions. Table 4 summarizes forecast 2027 PM peak hour LOS delays without and with the project. Forecast 2027 conditions are shown to continue to operate satisfactorily with LOS C or better conditions indicating no operational deficiencies. A left-turn lane was found not warranted under future PM peak hour conditions at the consolidated access via Maurin Road.

Based on the analysis above, no mitigation is identified at this time.

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APPENDIX

Heath & Associates

PO Box 397
Puyallup, WA 98371

File Name : 4858f
Site Code : 00004858
Start Date : 3/10/2022
Page No : 1

Groups Printed- Passenger + - Heavy

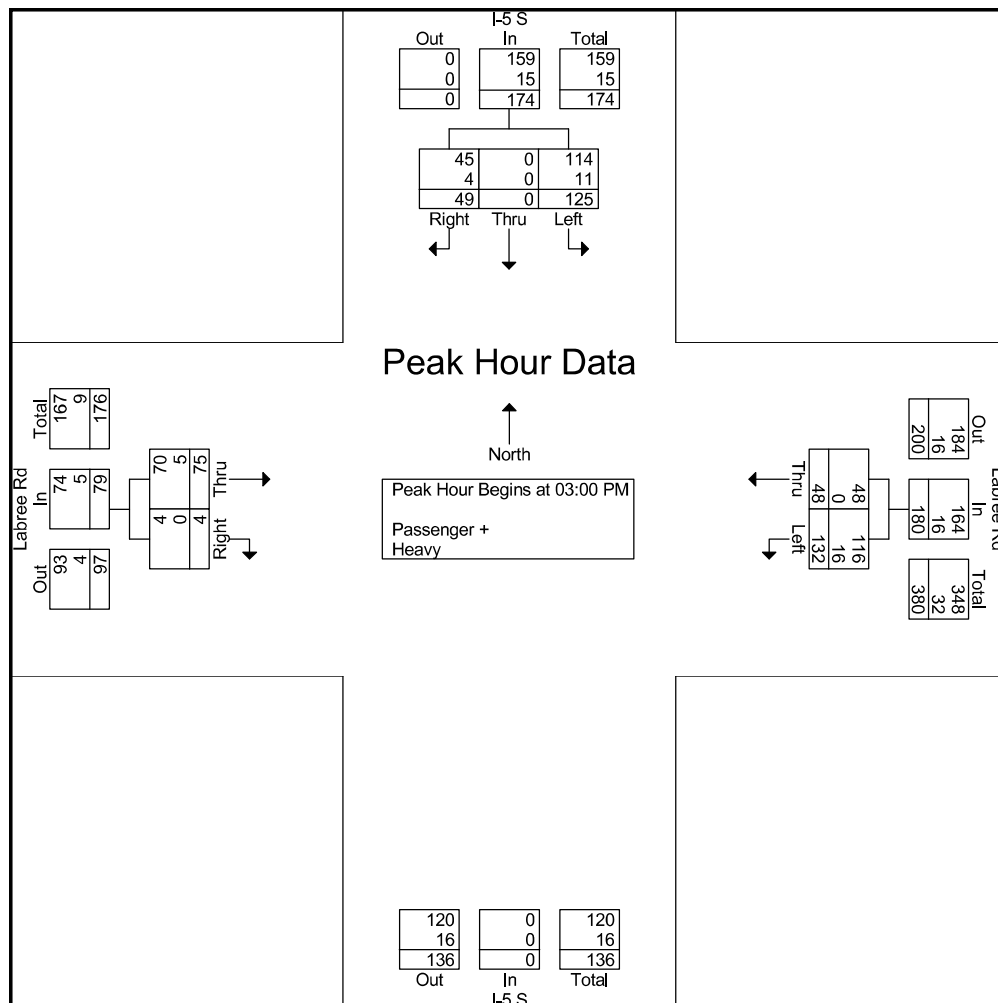
	I-5 S Southbound				Labree Rd Westbound			Labree Rd Eastbound			
Start Time	Right	Thru	Left	App. Total	Thru	Left	App. Total	Right	Thru	App. Total	Int. Total
03:00 PM	15	0	37	52	8	29	37	2	20	22	111
03:15 PM	8	0	32	40	20	35	55	0	16	16	111
03:30 PM	11	0	27	38	15	43	58	1	17	18	114
03:45 PM	15	0	29	44	5	25	30	1	22	23	97
Total	49	0	125	174	48	132	180	4	75	79	433
04:00 PM	10	0	33	43	11	23	34	5	12	17	94
04:15 PM	10	0	44	54	9	17	26	3	20	23	103
04:30 PM	23	0	40	63	15	35	50	0	12	12	125
04:45 PM	15	0	41	56	4	9	13	0	22	22	91
Total	58	0	158	216	39	84	123	8	66	74	413
05:00 PM	11	0	42	53	6	24	30	4	21	25	108
05:15 PM	10	2	47	59	9	9	18	3	23	26	103
05:30 PM	13	0	43	56	7	12	19	0	19	19	94
05:45 PM	7	0	33	40	5	8	13	2	13	15	68
Total	41	2	165	208	27	53	80	9	76	85	373
Grand Total	148	2	448	598	114	269	383	21	217	238	1219
Apprch %	24.7	0.3	74.9		29.8	70.2		8.8	91.2		
Total %	12.1	0.2	36.8	49.1	9.4	22.1	31.4	1.7	17.8	19.5	
Passenger +	128	2	429	559	114	241	355	17	207	224	1138
% Passenger +	86.5	100	95.8	93.5	100	89.6	92.7	81	95.4	94.1	93.4
Heavy	20	0	19	39	0	28	28	4	10	14	81
% Heavy	13.5	0	4.2	6.5	0	10.4	7.3	19	4.6	5.9	6.6

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File Name : 4858f
Site Code : 00004858
Start Date : 3/10/2022
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	I-5 S Southbound				Labree Rd Westbound			Labree Rd Eastbound			
Start Time	Right	Thru	Left	App. Total	Thru	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 03:00 PM											
03:00 PM	15	0	37	52	8	29	37	2	20	22	111
03:15 PM	8	0	32	40	20	35	55	0	16	16	111
03:30 PM	11	0	27	38	15	43	58	1	17	18	114
03:45 PM	15	0	29	44	5	25	30	1	22	23	97
Total Volume	49	0	125	174	48	132	180	4	75	79	433
% App. Total	28.2	0	71.8		26.7	73.3		5.1	94.9		
PHF	.817	.000	.845	.837	.600	.767	.776	.500	.852	.859	.950
Passenger +	45	0	114	159	48	116	164	4	70	74	397
% Passenger +	91.8	0	91.2	91.4	100	87.9	91.1	100	93.3	93.7	91.7
Heavy	4	0	11	15	0	16	16	0	5	5	36
% Heavy	8.2	0	8.8	8.6	0	12.1	8.9	0	6.7	6.3	8.3



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File Name : 4858e
Site Code : 00004858
Start Date : 3/10/2022
Page No : 1

Groups Printed- Passenger + - Heavy

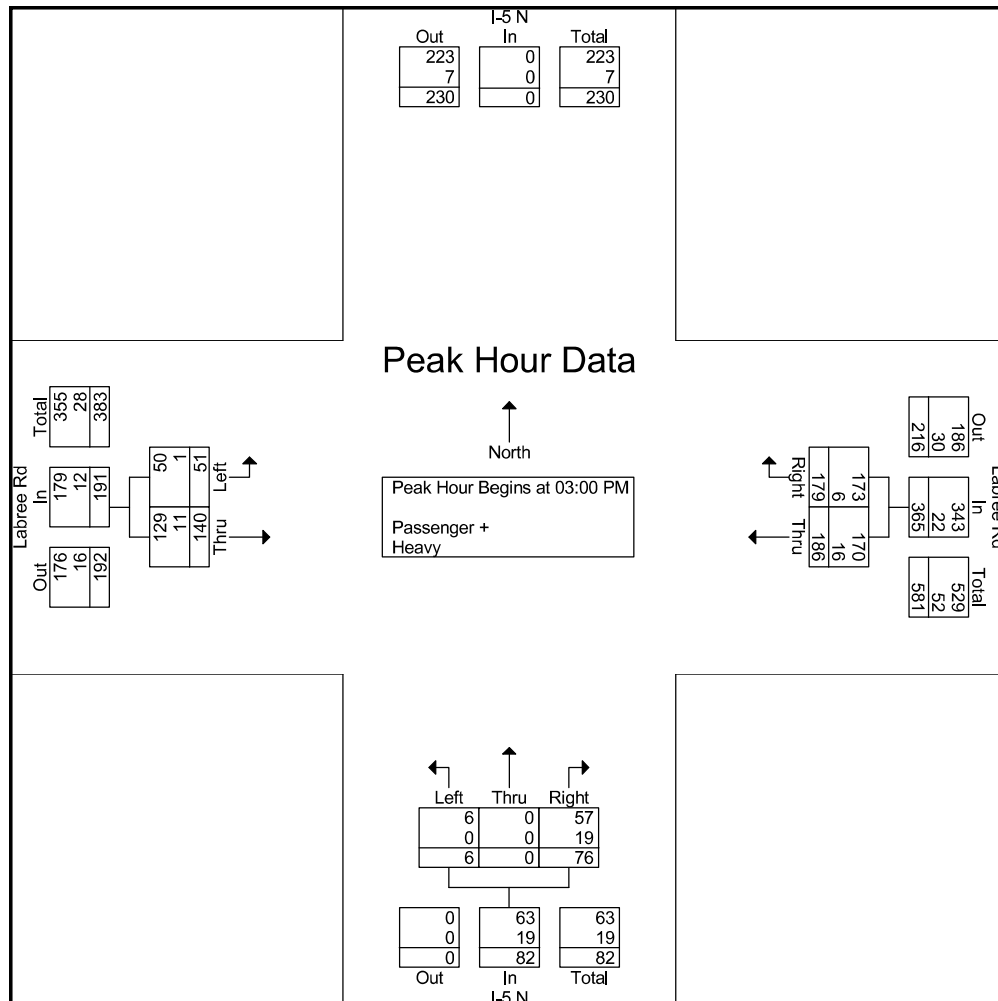
	Labree Rd Westbound			I-5 N Northbound				Labree Rd Eastbound			
Start Time	Right	Thru	App. Total	Right	Thru	Left	App. Total	Thru	Left	App. Total	Int. Total
03:00 PM	27	38	65	28	0	1	29	48	10	58	152
03:15 PM	46	57	103	17	0	2	19	36	13	49	171
03:30 PM	73	60	133	14	0	2	16	27	8	35	184
03:45 PM	33	31	64	17	0	1	18	29	20	49	131
Total	179	186	365	76	0	6	82	140	51	191	638
04:00 PM	35	31	66	7	1	1	9	44	14	58	133
04:15 PM	30	27	57	4	0	1	5	52	14	66	128
04:30 PM	39	58	97	10	1	3	14	46	11	57	168
04:45 PM	32	13	45	13	0	2	15	47	15	62	122
Total	136	129	265	34	2	7	43	189	54	243	551
05:00 PM	28	28	56	16	0	4	20	43	18	61	137
05:15 PM	33	20	53	17	1	0	18	53	19	72	143
05:30 PM	27	15	42	8	0	2	10	41	17	58	110
05:45 PM	12	11	23	11	1	1	13	39	10	49	85
Total	100	74	174	52	2	7	61	176	64	240	475
Grand Total	415	389	804	162	4	20	186	505	169	674	1664
Apprch %	51.6	48.4		87.1	2.2	10.8		74.9	25.1		
Total %	24.9	23.4	48.3	9.7	0.2	1.2	11.2	30.3	10.2	40.5	
Passenger +	400	362	762	128	3	16	147	486	165	651	1560
% Passenger +	96.4	93.1	94.8	79	75	80	79	96.2	97.6	96.6	93.8
Heavy	15	27	42	34	1	4	39	19	4	23	104
% Heavy	3.6	6.9	5.2	21	25	20	21	3.8	2.4	3.4	6.2

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	Labree Rd Westbound			I-5 N Northbound				Labree Rd Eastbound			
Start Time	Right	Thru	App. Total	Right	Thru	Left	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 03:00 PM											
03:00 PM	27	38	65	28	0	1	29	48	10	58	152
03:15 PM	46	57	103	17	0	2	19	36	13	49	171
03:30 PM	73	60	133	14	0	2	16	27	8	35	184
03:45 PM	33	31	64	17	0	1	18	29	20	49	131
Total Volume	179	186	365	76	0	6	82	140	51	191	638
% App. Total	49	51		92.7	0	7.3		73.3	26.7		
PHF	.613	.775	.686	.679	.000	.750	.707	.729	.638	.823	.867
Passenger +	173	170	343	57	0	6	63	129	50	179	585
% Passenger +	96.6	91.4	94.0	75.0	0	100	76.8	92.1	98.0	93.7	91.7
Heavy	6	16	22	19	0	0	19	11	1	12	53
% Heavy	3.4	8.6	6.0	25.0	0	0	23.2	7.9	2.0	6.3	8.3



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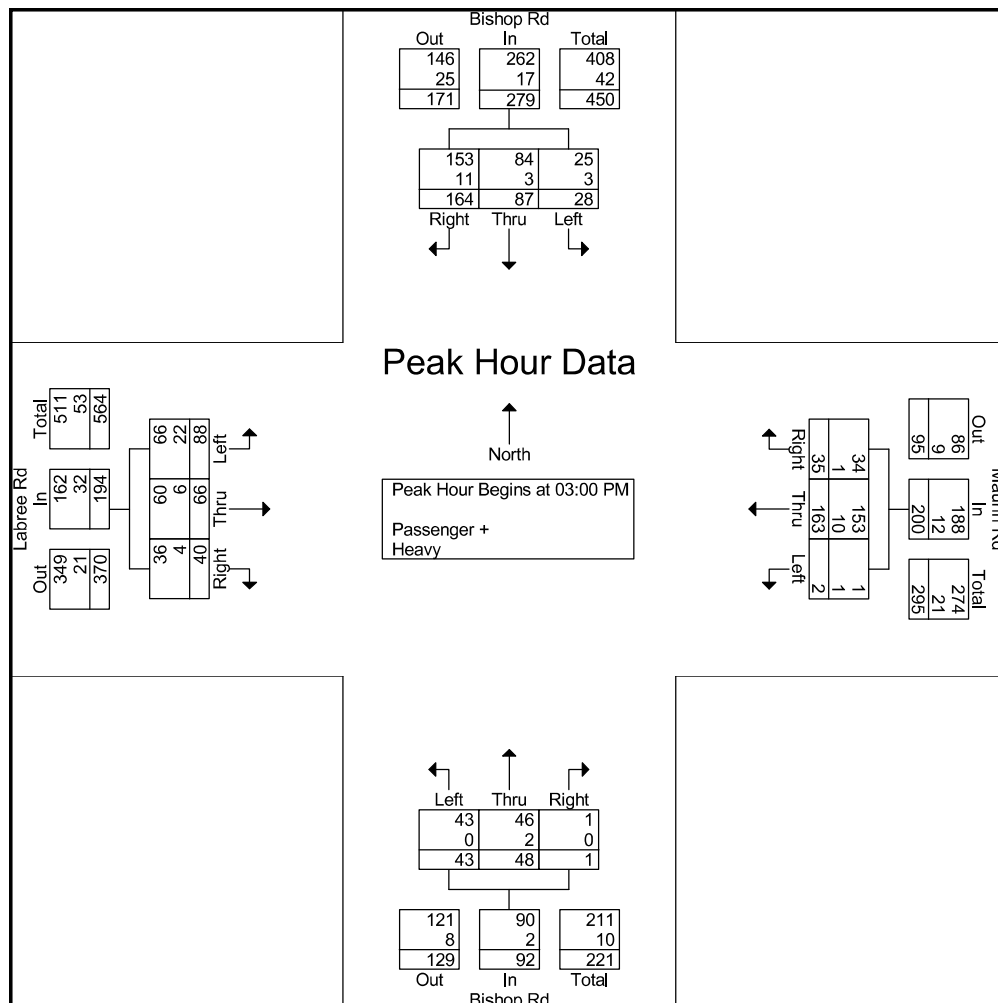
	Bishop Rd Southbound				Maurin Rd Westbound				Bishop Rd Northbound				Labree Rd Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
03:00 PM	37	19	10	66	5	17	1	23	0	17	11	28	5	23	30	58	175
03:15 PM	59	27	8	94	7	42	0	49	0	8	14	22	10	18	22	50	215
03:30 PM	45	27	4	76	13	79	1	93	0	8	9	17	16	10	19	45	231
03:45 PM	23	14	6	43	10	25	0	35	1	15	9	25	9	15	17	41	144
Total	164	87	28	279	35	163	2	200	1	48	43	92	40	66	88	194	765
04:00 PM	32	19	7	58	2	21	0	23	0	6	13	19	18	18	14	50	150
04:15 PM	17	13	3	33	9	25	0	34	2	4	13	19	19	30	10	59	145
04:30 PM	45	15	3	63	4	24	1	29	0	11	17	28	20	24	16	60	180
04:45 PM	11	13	5	29	1	18	1	20	0	3	10	13	23	20	15	58	120
Total	105	60	18	183	16	88	2	106	2	24	53	79	80	92	55	227	595
05:00 PM	17	10	6	33	1	22	0	23	1	3	13	17	17	26	16	59	132
05:15 PM	16	8	6	30	1	17	0	18	1	6	17	24	22	31	13	66	138
05:30 PM	10	5	0	15	6	18	0	24	0	5	13	18	14	19	9	42	99
05:45 PM	11	5	1	17	1	7	0	8	0	4	4	8	21	20	10	51	84
Total	54	28	13	95	9	64	0	73	2	18	47	67	74	96	48	218	453
Grand Total	323	175	59	557	60	315	4	379	5	90	143	238	194	254	191	639	1813
Apprch %	58	31.4	10.6		15.8	83.1	1.1		2.1	37.8	60.1		30.4	39.7	29.9		
Total %	17.8	9.7	3.3	30.7	3.3	17.4	0.2	20.9	0.3	5	7.9	13.1	10.7	14	10.5	35.2	
Passenger +	306	170	54	530	59	294	3	356	5	88	140	233	188	234	162	584	1703
% Passenger +	94.7	97.1	91.5	95.2	98.3	93.3	75	93.9	100	97.8	97.9	97.9	96.9	92.1	84.8	91.4	93.9
Heavy	17	5	5	27	1	21	1	23	0	2	3	5	6	20	29	55	110
% Heavy	5.3	2.9	8.5	4.8	1.7	6.7	25	6.1	0	2.2	2.1	2.1	3.1	7.9	15.2	8.6	6.1

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File Name : 4858b
Site Code : 00004858
Start Date : 3/10/2022
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	Bishop Rd Southbound				Maurin Rd Westbound				Bishop Rd Northbound				Labree Rd Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	37	19	10	66	5	17	1	23	0	17	11	28	5	23	30	58	175
03:15 PM	59	27	8	94	7	42	0	49	0	8	14	22	10	18	22	50	215
03:30 PM	45	27	4	76	13	79	1	93	0	8	9	17	16	10	19	45	231
03:45 PM	23	14	6	43	10	25	0	35	1	15	9	25	9	15	17	41	144
Total Volume	164	87	28	279	35	163	2	200	1	48	43	92	40	66	88	194	765
% App. Total	58.8	31.2	10		17.5	81.5	1		1.1	52.2	46.7		20.6	34	45.4		
PHF	.695	.806	.700	.742	.673	.516	.500	.538	.250	.706	.768	.821	.625	.717	.733	.836	.828
Passenger +	153	84	25	262	34	153	1	188	1	46	43	90	36	60	66	162	702
% Passenger +	93.3	96.6	89.3	93.9	97.1	93.9	50.0	94.0	100	95.8	100	97.8	90.0	90.9	75.0	83.5	91.8
Heavy	11	3	3	17	1	10	1	12	0	2	0	2	4	6	22	32	63
% Heavy	6.7	3.4	10.7	6.1	2.9	6.1	50.0	6.0	0	4.2	0	2.2	10.0	9.1	25.0	16.5	8.2



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File Name : 4858a
Site Code : 00004858
Start Date : 3/10/2022
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Groups Printed- Passenger + - Heavy

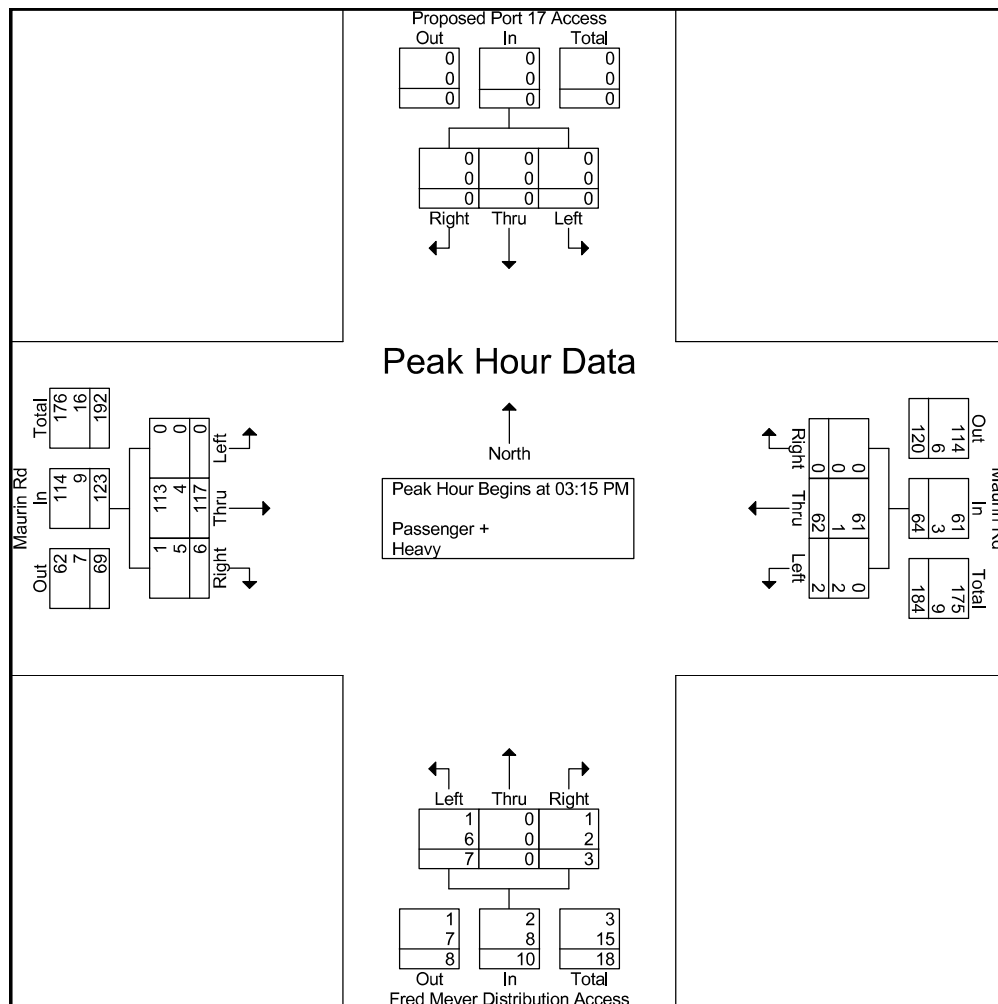
	Proposed Port 17 Access Southbound				Maurin Rd Westbound				Fred Meyer Distribution Access Northbound				Maurin Rd Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
03:00 PM	0	0	0	0	0	16	0	16	0	0	3	3	2	23	0	25	44
03:15 PM	0	0	0	0	0	13	1	14	0	0	2	2	4	29	0	33	49
03:30 PM	0	0	0	0	0	17	0	17	2	0	3	5	1	42	0	43	65
03:45 PM	0	0	0	0	0	16	1	17	0	0	1	1	0	19	0	19	37
Total	0	0	0	0	0	62	2	64	2	0	9	11	7	113	0	120	195
04:00 PM	0	0	0	0	0	16	0	16	1	0	1	2	1	27	0	28	46
04:15 PM	0	0	0	0	0	19	2	21	1	0	2	3	2	22	0	24	48
04:30 PM	0	0	0	0	0	16	1	17	0	0	3	3	1	23	0	24	44
04:45 PM	0	0	0	0	0	21	2	23	0	0	1	1	0	12	0	12	36
Total	0	0	0	0	0	72	5	77	2	0	7	9	4	84	0	88	174
05:00 PM	0	0	0	0	0	19	1	20	3	0	1	4	0	27	0	27	51
05:15 PM	0	0	0	0	0	19	0	19	0	0	2	2	2	21	0	23	44
05:30 PM	0	0	0	0	0	10	0	10	0	0	0	0	0	21	0	21	31
05:45 PM	0	0	0	0	0	12	1	13	0	0	1	1	2	20	0	22	36
Total	0	0	0	0	0	60	2	62	3	0	4	7	4	89	0	93	162
Grand Total	0	0	0	0	0	194	9	203	7	0	20	27	15	286	0	301	531
Apprch %	0	0	0	0	0	95.6	4.4		25.9	0	74.1		5	95	0		
Total %	0	0	0	0	0	36.5	1.7	38.2	1.3	0	3.8	5.1	2.8	53.9	0	56.7	
Passenger +	0	0	0	0	0	193	1	194	2	0	3	5	1	279	0	280	479
% Passenger +	0	0	0	0	0	99.5	11.1	95.6	28.6	0	15	18.5	6.7	97.6	0	93	90.2
Heavy	0	0	0	0	0	1	8	9	5	0	17	22	14	7	0	21	52
% Heavy	0	0	0	0	0	0.5	88.9	4.4	71.4	0	85	81.5	93.3	2.4	0	7	9.8

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File Name : 4858a
Site Code : 00004858
Start Date : 3/10/2022
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	Proposed Port 17 Access Southbound				Maurin Rd Westbound				Fred Meyer Distribution Access Northbound				Maurin Rd Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:15 PM																	
03:15 PM	0	0	0	0	0	13	1	14	0	0	2	2	4	29	0	33	49
03:30 PM	0	0	0	0	0	17	0	17	2	0	3	5	1	42	0	43	65
03:45 PM	0	0	0	0	0	16	1	17	0	0	1	1	0	19	0	19	37
04:00 PM	0	0	0	0	0	16	0	16	1	0	1	2	1	27	0	28	46
Total Volume	0	0	0	0	0	62	2	64	3	0	7	10	6	117	0	123	197
% App. Total	0	0	0	0	0	96.9	3.1		30	0	70		4.9	95.1	0		
PHF	.000	.000	.000	.000	.000	.912	.500	.941	.375	.000	.583	.500	.375	.696	.000	.715	.758
Passenger +	0	0	0	0	0	61	0	61	1	0	1	2	1	113	0	114	177
% Passenger +	0	0	0	0	0	98.4	0	95.3	33.3	0	14.3	20.0	16.7	96.6	0	92.7	89.8
Heavy	0	0	0	0	0	1	2	3	2	0	6	8	5	4	0	9	20
% Heavy	0	0	0	0	0	1.6	100	4.7	66.7	0	85.7	80.0	83.3	3.4	0	7.3	10.2



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Puyallup, WA 98371

File Name : 4858c
Site Code : 00004858
Start Date : 3/10/2022
Page No : 1

Groups Printed- Passenger + - Heavy

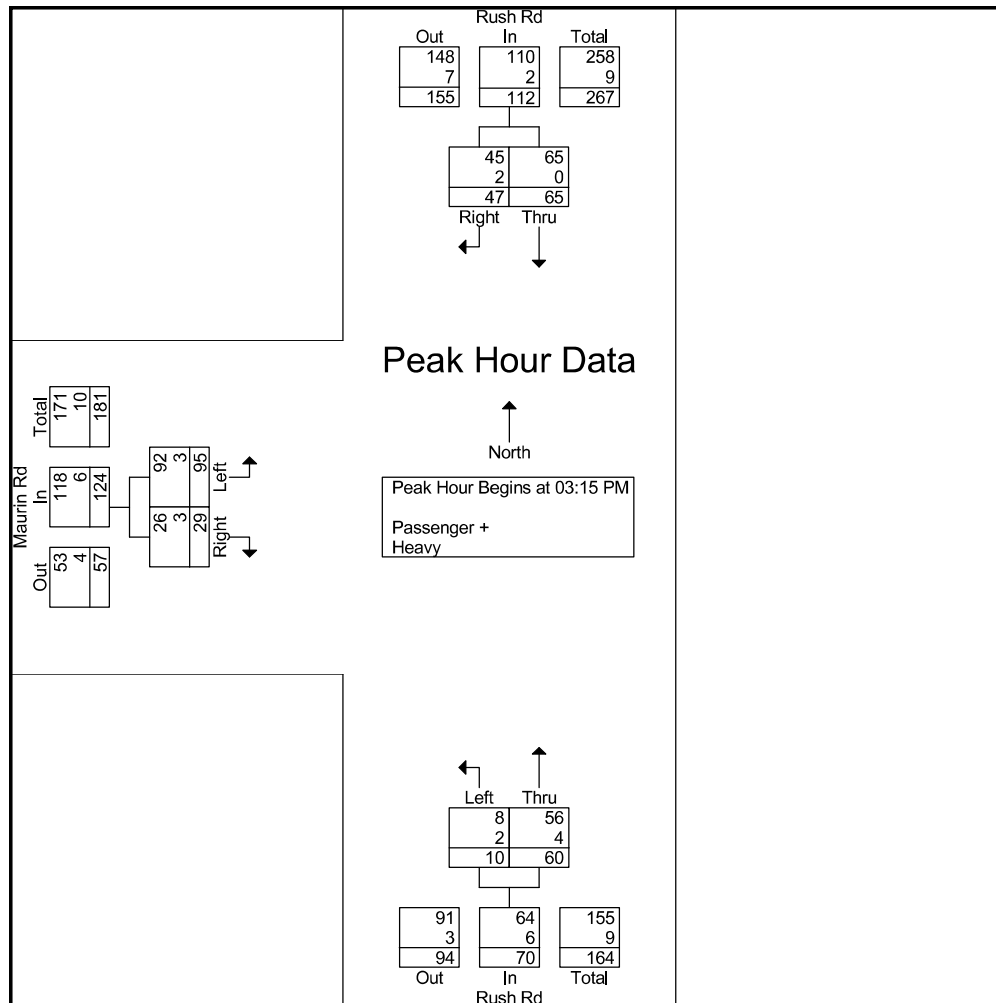
	Rush Rd Southbound			Rush Rd Northbound			Maurin Rd Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
03:00 PM	14	19	33	9	3	12	3	14	17	62
03:15 PM	9	12	21	17	3	20	3	26	29	70
03:30 PM	15	12	27	14	2	16	15	29	44	87
03:45 PM	13	24	37	14	3	17	5	13	18	72
Total	51	67	118	54	11	65	26	82	108	291
04:00 PM	10	17	27	15	2	17	6	27	33	77
04:15 PM	16	14	30	10	7	17	5	17	22	69
04:30 PM	12	27	39	12	5	17	4	20	24	80
04:45 PM	18	18	36	14	6	20	1	12	13	69
Total	56	76	132	51	20	71	16	76	92	295
05:00 PM	16	17	33	10	3	13	2	26	28	74
05:15 PM	16	12	28	15	4	19	6	13	19	66
05:30 PM	13	13	26	12	0	12	2	21	23	61
05:45 PM	11	16	27	13	1	14	0	17	17	58
Total	56	58	114	50	8	58	10	77	87	259
Grand Total	163	201	364	155	39	194	52	235	287	845
Apprch %	44.8	55.2		79.9	20.1		18.1	81.9		
Total %	19.3	23.8	43.1	18.3	4.6	23	6.2	27.8	34	
Passenger +	160	201	361	151	34	185	47	230	277	823
% Passenger +	98.2	100	99.2	97.4	87.2	95.4	90.4	97.9	96.5	97.4
Heavy	3	0	3	4	5	9	5	5	10	22
% Heavy	1.8	0	0.8	2.6	12.8	4.6	9.6	2.1	3.5	2.6

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File Name : 4858c
Site Code : 00004858
Start Date : 3/10/2022
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	Rush Rd Southbound			Rush Rd Northbound			Maurin Rd Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:15 PM										
03:15 PM	9	12	21	17	3	20	3	26	29	70
03:30 PM	15	12	27	14	2	16	15	29	44	87
03:45 PM	13	24	37	14	3	17	5	13	18	72
04:00 PM	10	17	27	15	2	17	6	27	33	77
Total Volume	47	65	112	60	10	70	29	95	124	306
% App. Total	42	58		85.7	14.3		23.4	76.6		
PHF	.783	.677	.757	.882	.833	.875	.483	.819	.705	.879
Passenger +	45	65	110	56	8	64	26	92	118	292
% Passenger +	95.7	100	98.2	93.3	80.0	91.4	89.7	96.8	95.2	95.4
Heavy	2	0	2	4	2	6	3	3	6	14
% Heavy	4.3	0	1.8	6.7	20.0	8.6	10.3	3.2	4.8	4.6



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Puyallup, WA 98371

File Name : 4858d
Site Code : 00004858
Start Date : 3/10/2022
Page No : 1

Groups Printed- Passenger + - Heavy

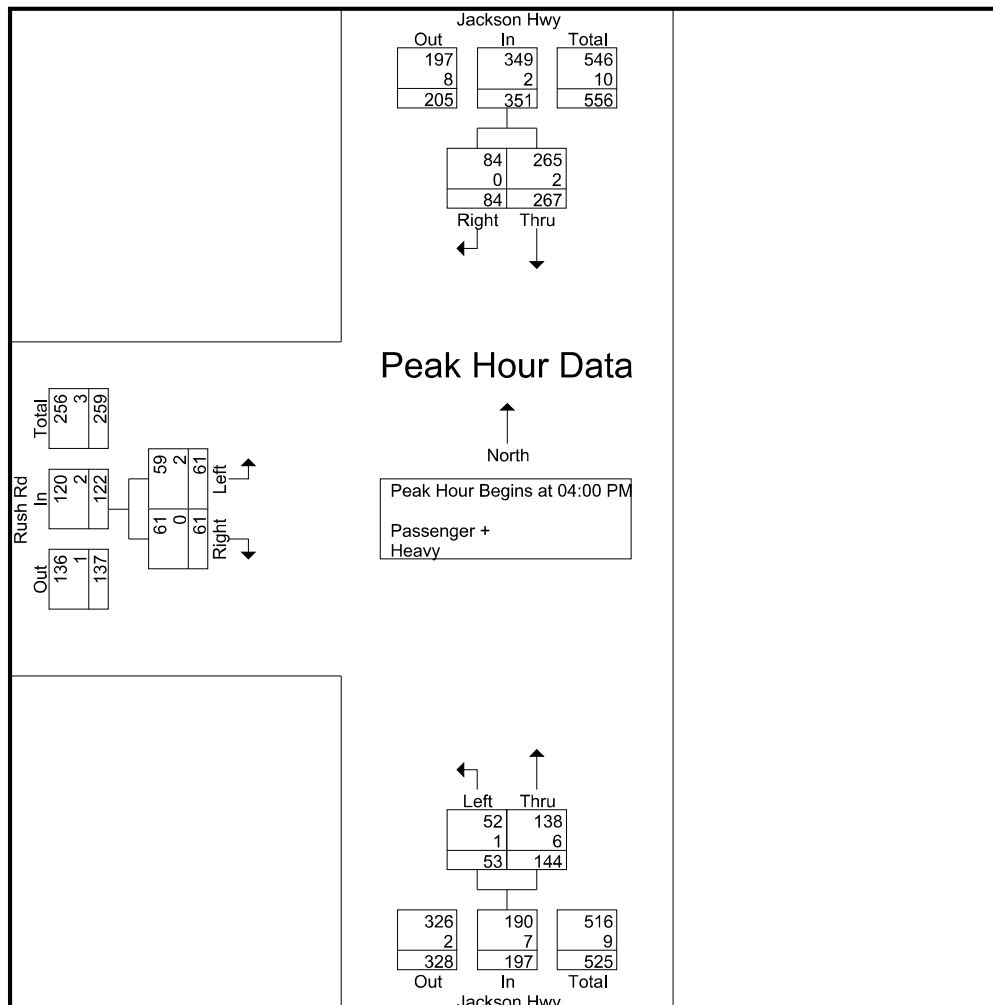
	Jackson Hwy Southbound			Jackson Hwy Northbound			Rush Rd Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
03:00 PM	20	56	76	27	13	40	14	21	35	151
03:15 PM	10	63	73	41	10	51	23	16	39	163
03:30 PM	12	49	61	37	13	50	22	22	44	155
03:45 PM	25	61	86	33	9	42	15	18	33	161
Total	67	229	296	138	45	183	74	77	151	630
04:00 PM	20	65	85	37	11	48	22	20	42	175
04:15 PM	16	71	87	29	15	44	12	14	26	157
04:30 PM	27	57	84	38	11	49	16	15	31	164
04:45 PM	21	74	95	40	16	56	11	12	23	174
Total	84	267	351	144	53	197	61	61	122	670
05:00 PM	19	54	73	31	13	44	17	16	33	150
05:15 PM	13	71	84	39	14	53	16	12	28	165
05:30 PM	12	49	61	36	14	50	17	10	27	138
05:45 PM	19	41	60	22	11	33	15	13	28	121
Total	63	215	278	128	52	180	65	51	116	574
Grand Total	214	711	925	410	150	560	200	189	389	1874
Apprch %	23.1	76.9		73.2	26.8		51.4	48.6		
Total %	11.4	37.9	49.4	21.9	8	29.9	10.7	10.1	20.8	
Passenger +	214	706	920	400	147	547	197	177	374	1841
% Passenger +	100	99.3	99.5	97.6	98	97.7	98.5	93.7	96.1	98.2
Heavy	0	5	5	10	3	13	3	12	15	33
% Heavy	0	0.7	0.5	2.4	2	2.3	1.5	6.3	3.9	1.8

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File Name : 4858d
Site Code : 00004858
Start Date : 3/10/2022
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	Jackson Hwy Southbound			Jackson Hwy Northbound			Rush Rd Eastbound			
Start Time	Right	Thru	App. Total	Thru	Left	App. Total	Right	Left	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	20	65	85	37	11	48	22	20	42	175
04:15 PM	16	71	87	29	15	44	12	14	26	157
04:30 PM	27	57	84	38	11	49	16	15	31	164
04:45 PM	21	74	95	40	16	56	11	12	23	174
Total Volume	84	267	351	144	53	197	61	61	122	670
% App. Total	23.9	76.1		73.1	26.9		50	50		
PHF	.778	.902	.924	.900	.828	.879	.693	.763	.726	.957
Passenger +	84	265	349	138	52	190	61	59	120	659
% Passenger +	100	99.3	99.4	95.8	98.1	96.4	100	96.7	98.4	98.4
Heavy	0	2	2	6	1	7	0	2	2	11
% Heavy	0	0.7	0.6	4.2	1.9	3.6	0	3.3	1.6	1.6



Manufacturing

(140)

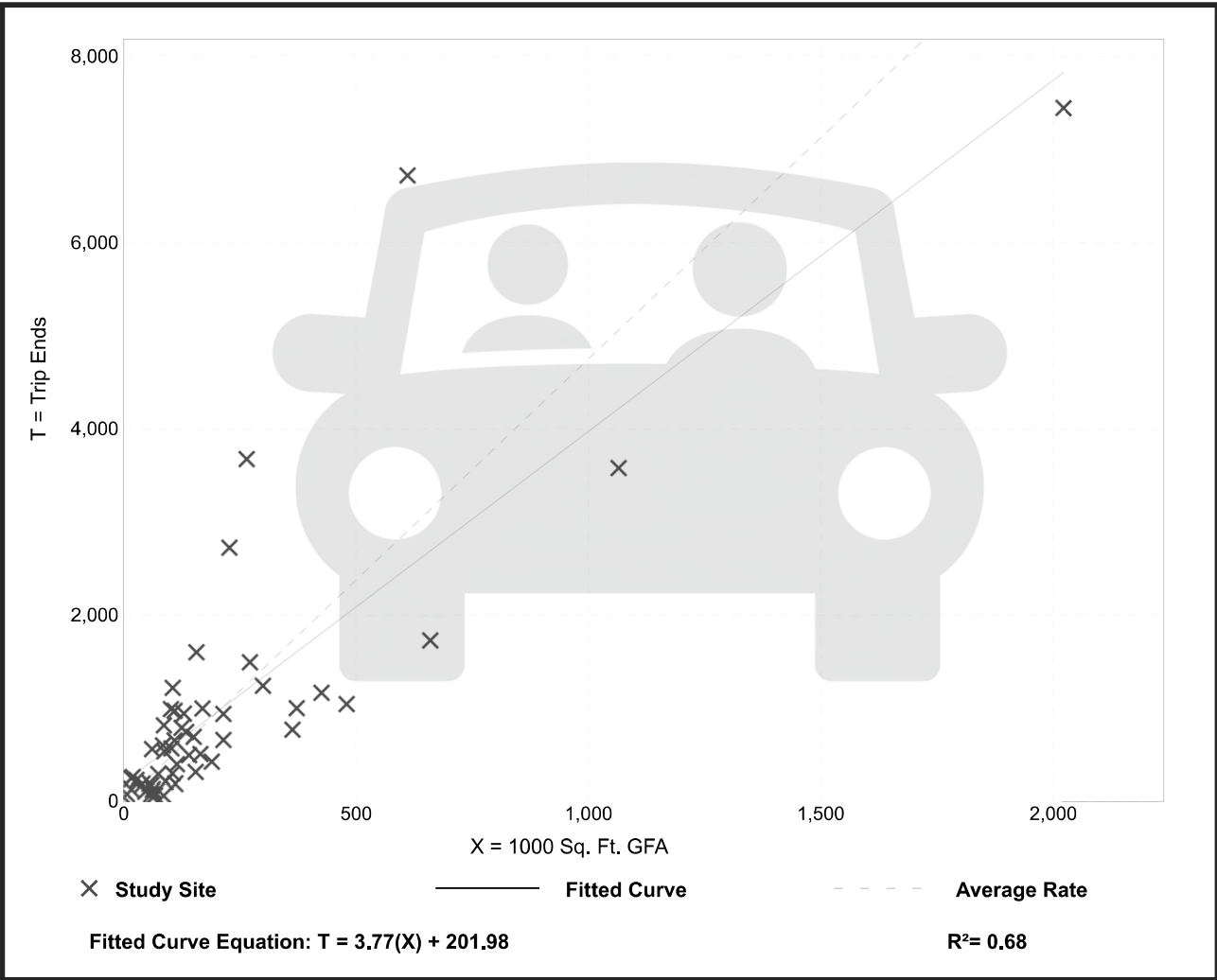
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 53
Avg. 1000 Sq. Ft. GFA: 208
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.75	0.83 - 49.50	3.20

Data Plot and Equation



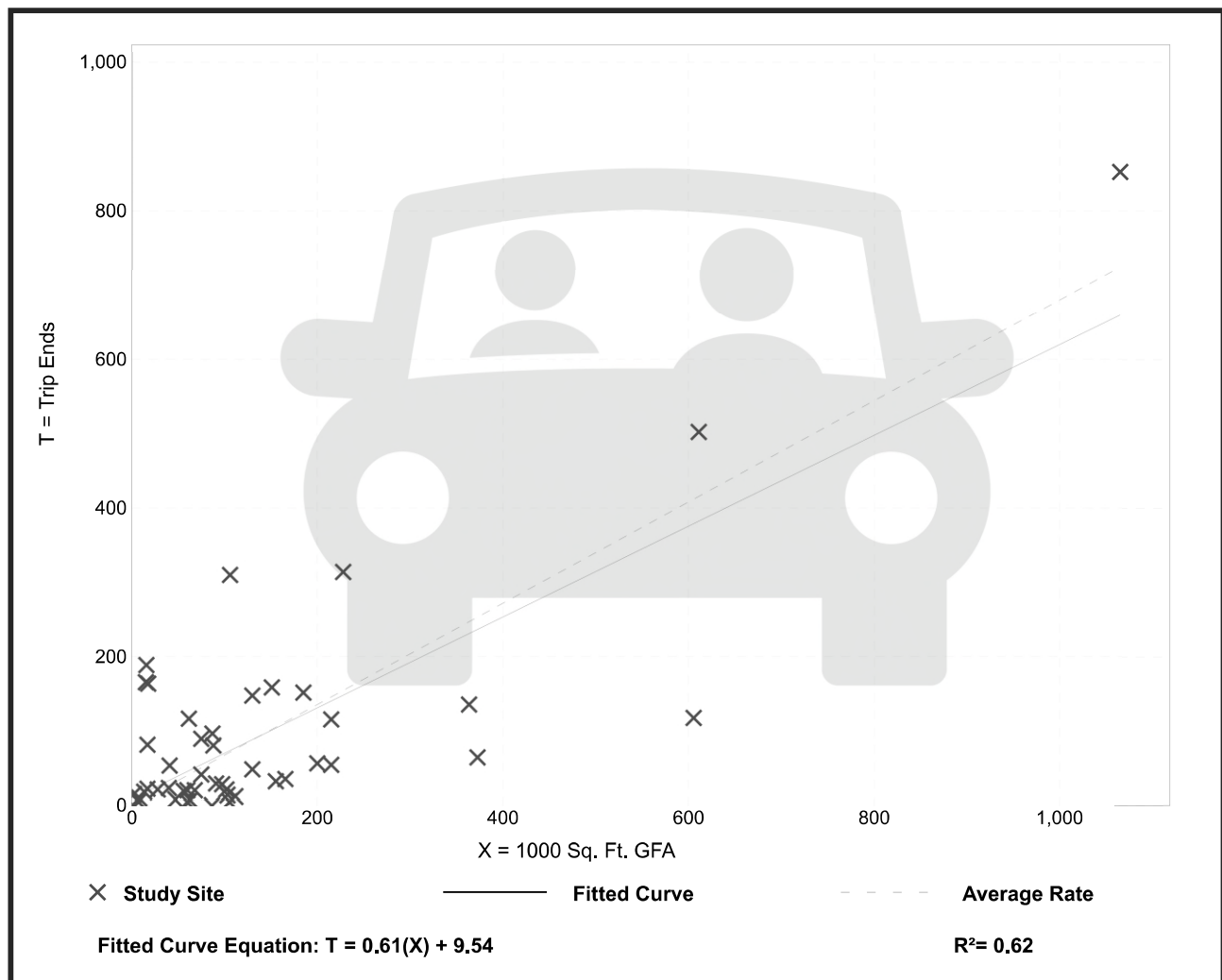
Manufacturing (140)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 48
 Avg. 1000 Sq. Ft. GFA: 138
 Directional Distribution: 76% entering, 24% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.68	0.01 - 11.93	1.03

Data Plot and Equation



Manufacturing

(140)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 55

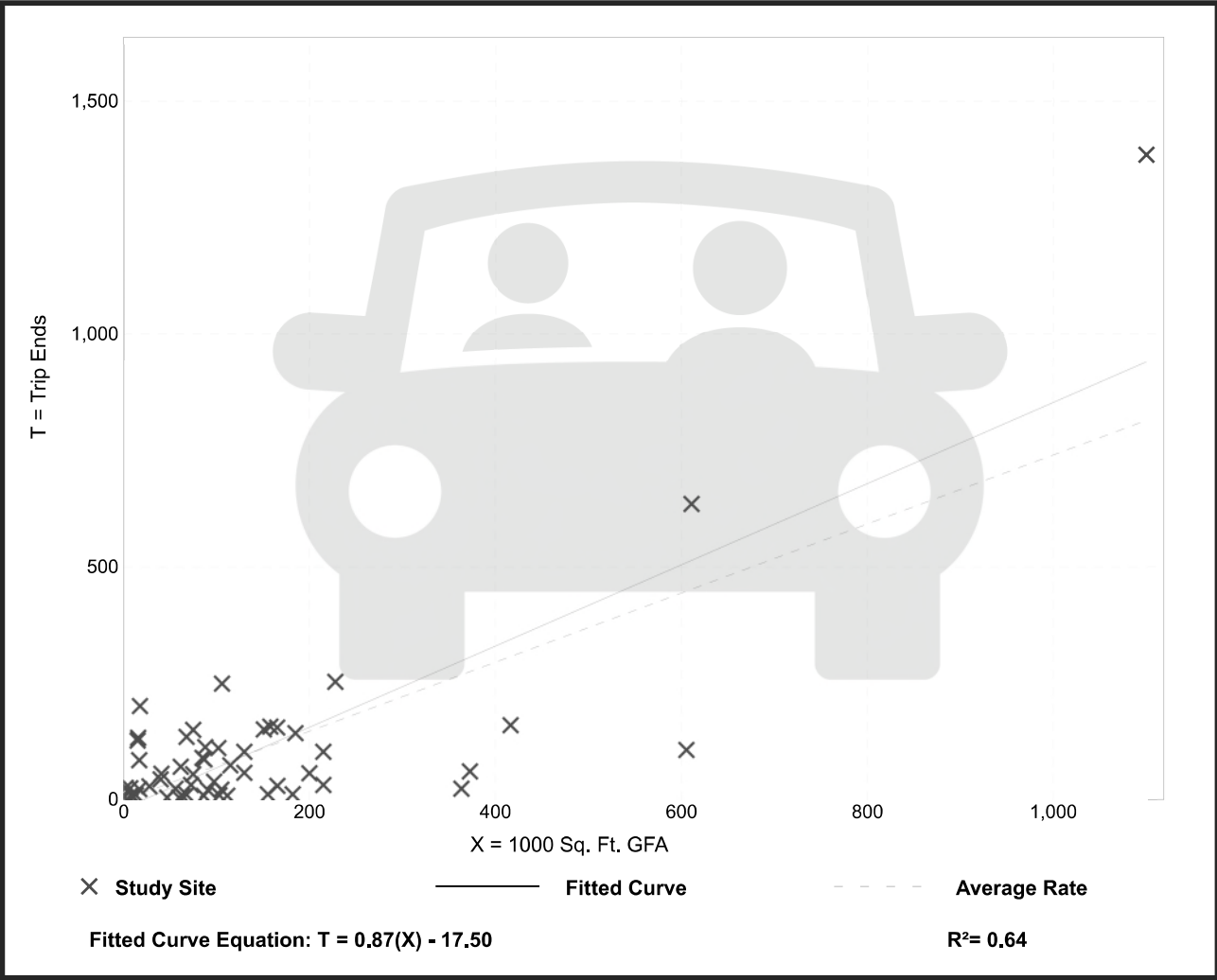
Avg. 1000 Sq. Ft. GFA: 142

Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.74	0.07 - 11.37	0.93

Data Plot and Equation



Warehousing

(150)

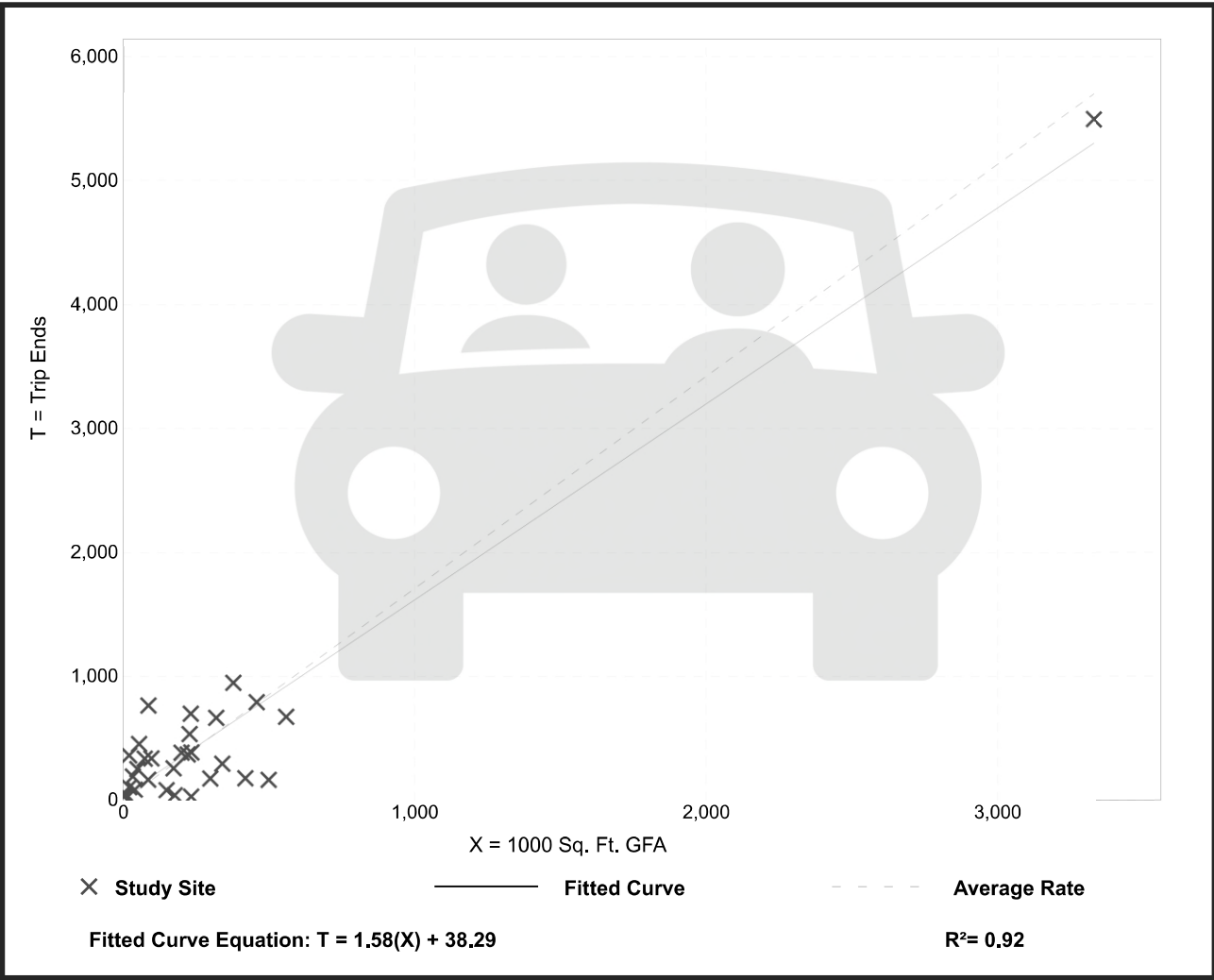
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 31
Avg. 1000 Sq. Ft. GFA: 292
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.71	0.15 - 16.93	1.48

Data Plot and Equation



Warehousing (150)

Vehicle Trip Ends vs:

1000 Sq. Ft. GFA

On a:

Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location:

General Urban/Suburban

Number of Studies:

36

Avg. 1000 Sq. Ft. GFA:

448

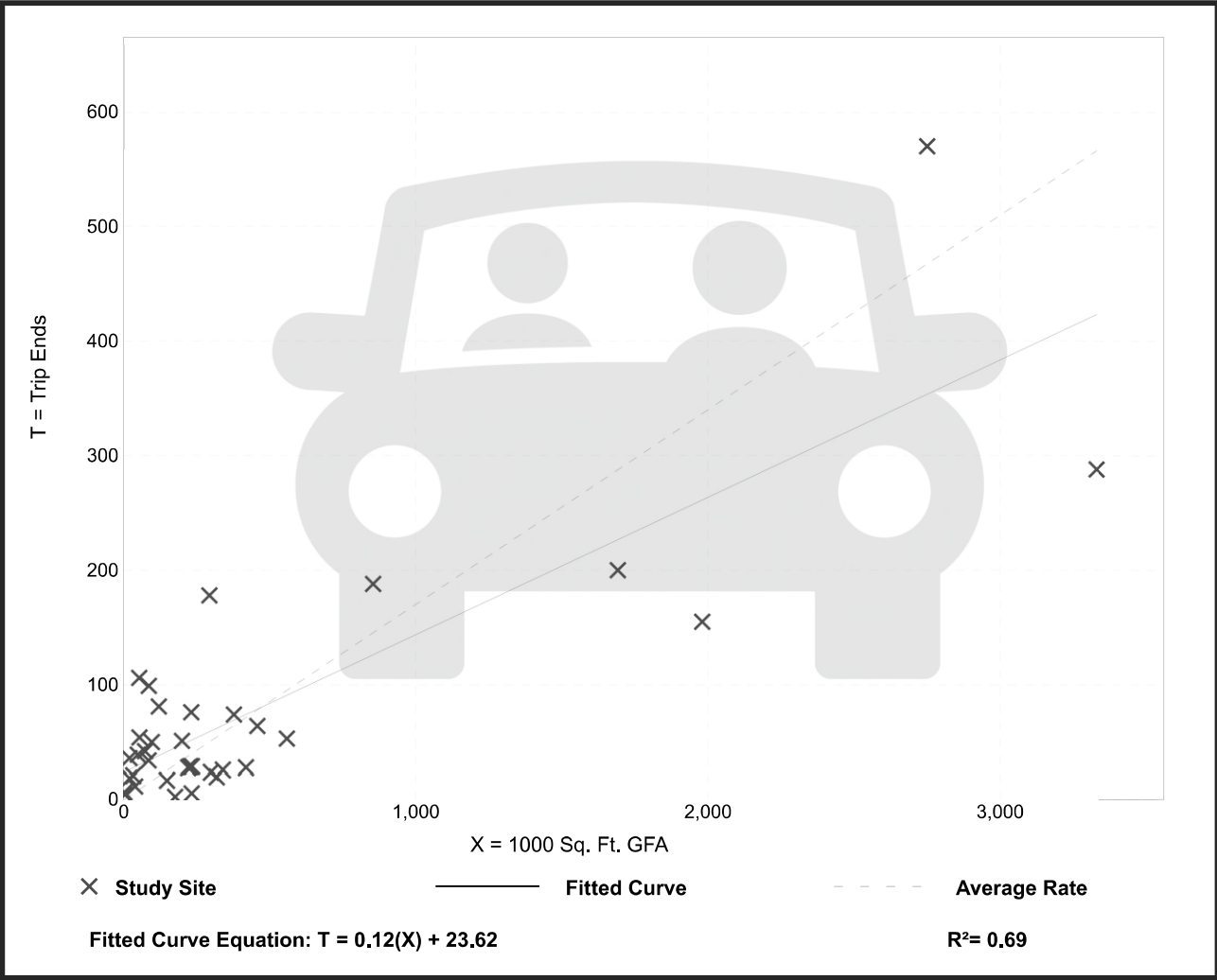
Directional Distribution:

77% entering, 23% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.19

Data Plot and Equation



Warehousing

(150)

Vehicle Trip Ends vs:

1000 Sq. Ft. GFA

On a:

Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Number of Studies:

49

Avg. 1000 Sq. Ft. GFA:

400

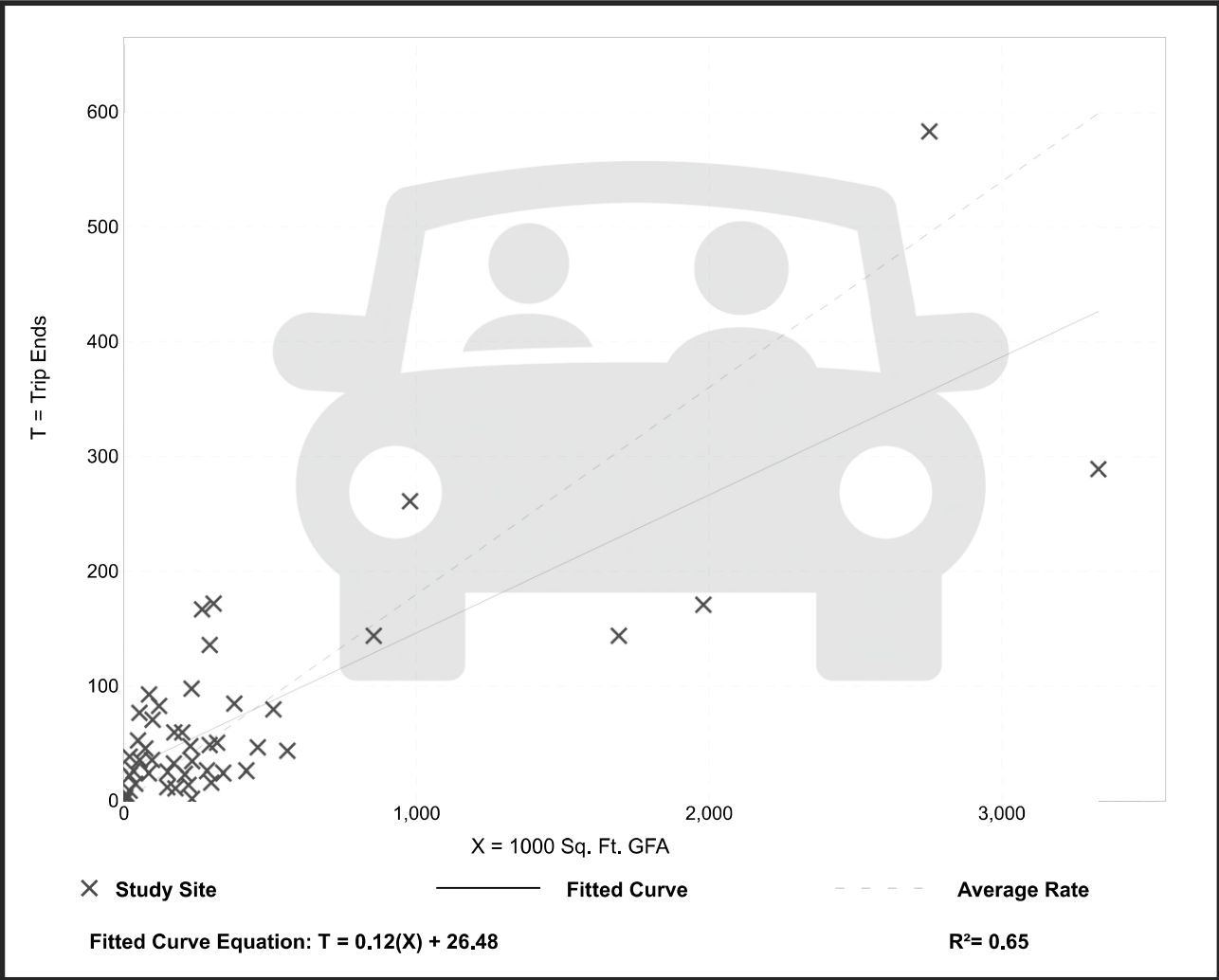
Directional Distribution:

28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.18	0.01 - 1.80	0.18

Data Plot and Equation



Peak Hour Forecast Intersection Volumes

Annual Growth Rate: 2 % 0.05 Covid Adjust. 2027
of Years to Horizon: 5

PM

*Pipeline Projects

1. Jackson Highway Warehouse (No Easement)

1. Labree Road & I-5 S Ramp

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	49	0	125	0	48	132	0	0	0	4	75	0
Baseline 2022	51	0	131	0	50	139	0	0	0	4	79	0
Project Trips	0	0	28	0	0	42	0	0	0	0	0	0
Pipeline	0	0	13	0	0	4	0	0	0	0	0	0
Without	54	0	151	0	53	150	0	0	0	4	83	0
With	54	0	179	0	53	192	0	0	0	4	83	0

2. Labree Road & I-5 N Ramp

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	0	0	0	179	186	0	76	0	6	0	140	51
Baseline 2022	0	0	0	188	195	0	80	0	6	0	147	54
Project Trips	0	0	0	66	42	0	18	0	0	0	28	0
Pipeline	0	0	0	32	4	0	2	0	0	0	13	0
Without	0	0	0	240	220	0	90	0	7	0	175	59
With	0	0	0	306	262	0	108	0	7	0	203	59

3. Bishop Road & Labree Road/Maurin Road

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	164	87	28	35	163	2	1	48	43	40	66	88
Baseline 2022	172	91	29	37	171	2	1	50	45	42	69	92
Project Trips	0	0	4	8	108	0	0	0	0	0	46	0
Pipeline	0	0	1	4	36	0	0	0	0	0	15	0
Without	190	101	33	45	225	2	1	56	50	46	92	102
With	190	101	37	53	333	2	1	56	50	46	138	102

5. Maurin Road & Rush Road

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	47	65	0	0	0	0	0	60	10	29	0	95
Baseline 2022	49	68	0	0	0	0	0	63	11	30	0	100
Project Trips	18	0	0	0	0	0	0	0	4	8	0	41
Pipeline	40	11	0	0	0	0	0	4	0	0	0	16
Without	94	86	0	0	0	0	0	74	12	34	0	126
With	112	86	0	0	0	0	0	74	16	42	0	167

6. Jackson Highway & Rush Road

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	84	267	0	0	0	0	0	144	53	61	0	61
Baseline 2022	88	280	0	0	0	0	0	151	56	64	0	64
Project Trips	11	0	0	0	0	0	0	0	7	16	0	25
Pipeline	0	5	0	0	0	0	0	14	51	20	0	0
Without	97	315	0	0	0	0	0	181	112	91	0	71
With	108	315	0	0	0	0	0	181	119	107	0	96

4. Maurin Road & Driveway

	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
Existing 2022	0	0	0	0	62	2	3	0	7	6	117	0
Baseline 2022	0	0	0	0	65	2	3	0	7	6	123	0
Project Trips	116	0	49	22	0	0	0	0	0	0	0	50
Pipeline	0	0	0	0	40	0	0	0	0	0	16	0
Without	0	0	0	0	112	2	3	0	8	7	152	0
With	116	0	49	22	112	2	3	0	8	7	152	50

Lanes, Volumes, Timings

Existing PM Peak Hour

1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	79	4	139	50	0	0	0	0	131	0	51
Future Volume (vph)	0	79	4	139	50	0	0	0	0	131	0	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00		1.00						1.00	1.00	0.99
Frt		0.993										0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	6075	0	3127	3539	0	0	0	0	1573	1573	1495
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	6075	0	3117	3539	0	0	0	0	1572	1570	1474
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4										55
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		715			308			906			529	
Travel Time (s)		13.9			6.0			17.6			10.3	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	7%	2%	12%	2%	2%	2%	2%	2%	9%	2%	8%
Adj. Flow (vph)	0	83	4	146	53	0	0	0	0	138	0	54
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	87	0	146	53	0	0	0	0	69	69	54
Turn Type		NA		Prot	NA					Prot	NA	Perm
Protected Phases		2		1	6					7	4	
Permitted Phases												4
Total Split (s)		29.0		39.0	68.0					52.0	52.0	52.0
Total Lost Time (s)		4.5		4.5	4.5					4.5	4.5	4.5
Act Effect Green (s)		34.9		34.5	74.8					39.3	38.0	47.5
Actuated g/C Ratio		0.29		0.29	0.62					0.33	0.32	0.40
v/c Ratio		0.05		0.16	0.02					0.13	0.14	0.09
Control Delay		35.7		14.2	1.9					24.8	23.9	6.2
Queue Delay		0.0		0.0	0.0					0.0	0.0	0.0
Total Delay		35.7		14.2	1.9					24.8	23.9	6.2
LOS		D		B	A					C	C	A
Approach Delay		35.7			10.9						19.2	
Approach LOS		D			B						B	
Queue Length 50th (ft)		15		44	1					34	34	0
Queue Length 95th (ft)		27		71	2					69	69	25
Internal Link Dist (ft)		635			228			826			449	
Turn Bay Length (ft)												
Base Capacity (vph)		1769		899	2205					622	498	616
Starvation Cap Reductn		0		0	0					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.05		0.16	0.02					0.11	0.14	0.09

Intersection Summary

Area Type: Other

Cycle Length: 120

1. Existing PM Peak Hour 9:31 am 11/25/2020 Baseline

Synchro 11 Light Report

Page 1

Lanes, Volumes, Timings
 1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd

Existing PM Peak Hour

04/08/2022

Actuated Cycle Length: 120

Offset: 94 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.16

Intersection Signal Delay: 18.8

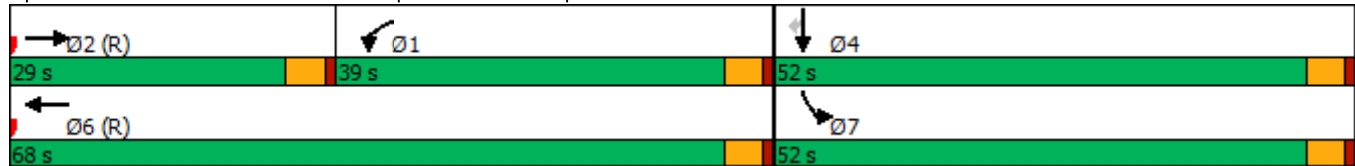
Intersection LOS: B

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd



Lanes, Volumes, Timings

2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd

Existing PM Peak Hour

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	147	0	0	195	188	6	0	80	0	0	0
Future Volume (vph)	54	147	0	0	195	188	6	0	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		325	325		250	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.86	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00	1.00				
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3433	3343	0	0	5996	1568	1681	1681	1292	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3425	3343	0	0	5996	1546	1679	1678	1292	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						216			92			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		308			1105			711			460	
Travel Time (s)		6.0			21.5			16.2			10.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	8%	2%	2%	9%	3%	2%	2%	25%	2%	2%	2%
Adj. Flow (vph)	62	169	0	0	224	216	7	0	92	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	62	169	0	0	224	216	3	4	92	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Prot			
Protected Phases	5	2			6		3	8	8			
Permitted Phases						6						
Total Split (s)	27.0	83.0			56.0	56.0	37.0	37.0	37.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Act Effct Green (s)	19.1	78.5			56.9	56.9	11.0	6.5	32.5			
Actuated g/C Ratio	0.16	0.65			0.47	0.47	0.09	0.05	0.27			
v/c Ratio	0.11	0.08			0.08	0.26	0.02	0.04	0.22			
Control Delay	37.5	6.0			19.1	3.5	41.7	33.0	8.1			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	37.5	6.0			19.1	3.5	41.7	33.0	8.1			
LOS	D	A			B	A	D	C	A			
Approach Delay		14.5			11.5			10.1				
Approach LOS		B			B			B				
Queue Length 50th (ft)	14	14			29	0	2	~6	0			
Queue Length 95th (ft)	28	20			41	40	10	11	37			
Internal Link Dist (ft)		228			1025			631			380	
Turn Bay Length (ft)						325	325		250			
Base Capacity (vph)	643	2186			2843	846	455	91	417			
Starvation Cap Reductn	0	0			0	0	0	0	0			
Spillback Cap Reductn	0	0			0	0	0	0	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.10	0.08			0.08	0.26	0.01	0.04	0.22			

1. Existing PM Peak Hour 9:31 am 11/25/2020 Baseline

Synchro 11 Light Report
Page 3

Lanes, Volumes, Timings

2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd

Existing PM Peak Hour

04/08/2022

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 103 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.26

Intersection Signal Delay: 12.2

Intersection LOS: B

Intersection Capacity Utilization 45.4%

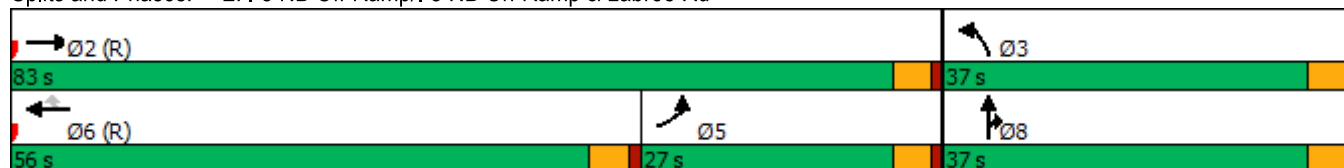
ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

Splits and Phases: 2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd



Lanes, Volumes, Timings
3: Bishop Rd & Labree Rd/Maurin Rd

Existing PM Peak Hour
04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	69	42	2	171	37	45	50	1	29	91	172
Future Volume (vph)	92	69	42	2	171	37	45	50	1	29	91	172
Satd. Flow (prot)	1444	3312	1468	1203	3406	1568	1770	1827	1583	1626	1845	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1442	3312	1436	1201	3406	1534	1768	1827	1563	1625	1845	1490
Satd. Flow (RTOR)			176			176			176			207
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	25%	9%	10%	50%	6%	3%	2%	4%	2%	11%	3%	7%
Adj. Flow (vph)	111	83	51	2	206	45	54	60	1	35	110	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	83	51	2	206	45	54	60	1	35	110	207
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Total Split (s)	10.5	23.5	23.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Act Effct Green (s)	6.2	19.0	19.0	5.1	9.8	9.8	5.1	8.2	8.2	5.1	8.2	8.2
Actuated g/C Ratio	0.15	0.46	0.46	0.12	0.24	0.24	0.12	0.20	0.20	0.12	0.20	0.20
v/c Ratio	0.51	0.05	0.07	0.01	0.26	0.09	0.25	0.17	0.00	0.17	0.30	0.45
Control Delay	31.1	10.6	0.2	20.0	15.9	0.4	22.0	15.9	0.0	21.4	17.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	10.6	0.2	20.0	15.9	0.4	22.0	15.9	0.0	21.4	17.3	6.8
LOS	C	B	A	B	B	A	C	B	A	C	B	A
Approach Delay		17.7			13.1			18.6			11.5	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	20	3	0	0	17	0	9	9	0	6	18	0
Queue Length 95th (ft)	#84	22	0	5	47	0	39	35	0	29	56	33
Internal Link Dist (ft)		1447			605			768			523	
Turn Bay Length (ft)	205		250	330		330	200		200	400		400
Base Capacity (vph)	216	1671	811	149	1529	785	220	820	798	202	828	783
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.05	0.06	0.01	0.13	0.06	0.25	0.07	0.00	0.17	0.13	0.26

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 41.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 31.4%

ICU Level of Service A

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
 3: Bishop Rd & Labree Rd/Maurin Rd

Existing PM Peak Hour
 04/08/2022

Splits and Phases: 3: Bishop Rd & Labree Rd/Maurin Rd

 Ø1 9.5 s	 Ø2 23.5 s	 Ø3 9.5 s	 Ø4 22.5 s
 Ø5 10.5 s	 Ø6 22.5 s	 Ø7 9.5 s	 Ø8 22.5 s

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	123	6	2	65	0	7	0	3	0	0	0
Future Vol, veh/h	0	123	6	2	65	0	7	0	3	0	0	0
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	76	76	76	76	92	76	92	76	92	92	92
Heavy Vehicles, %	2	3	83	100	2	2	86	2	67	2	2	2
Mvmt Flow	0	162	8	3	86	0	9	0	4	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	86	0	0	171	0	0	260	259	168	261	263	87
Stage 1	-	-	-	-	-	-	167	167	-	92	92	-
Stage 2	-	-	-	-	-	-	93	92	-	169	171	-
Critical Hdwy	4.12	-	-	5.1	-	-	7.96	6.52	6.87	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	3.1	-	-	4.274	4.018	3.903	3.518	4.018	3.318
Pot Cap-1 Maneuver	1510	-	-	980	-	-	551	645	732	692	642	971
Stage 1	-	-	-	-	-	-	672	760	-	915	819	-
Stage 2	-	-	-	-	-	-	743	819	-	833	757	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1510	-	-	979	-	-	549	642	731	686	639	970
Mov Cap-2 Maneuver	-	-	-	-	-	-	549	642	-	686	639	-
Stage 1	-	-	-	-	-	-	671	759	-	915	817	-
Stage 2	-	-	-	-	-	-	740	817	-	828	756	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.3			11.2			0		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	549		731	1510	-	-	979	-	-	-		
HCM Lane V/C Ratio	0.017		0.005	-	-	-	0.003	-	-	-		
HCM Control Delay (s)	11.7		10	0	-	-	8.7	0	-	0		
HCM Lane LOS	B		B	A	-	-	A	A	-	A		
HCM 95th %tile Q(veh)	0.1		0	0	-	-	0	-	-	-		

Intersection						
Int Delay, s/veh	5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	30	11	63	68	49
Future Vol, veh/h	100	30	11	63	68	49
Conflicting Peds, #/hr	1	1	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	100	2	12	2	2	4
Mvmt Flow	108	32	12	68	73	53

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	194	102	127
Stage 1	101	-	-
Stage 2	93	-	-
Critical Hdwy	7.4	6.22	4.22
Critical Hdwy Stg 1	6.4	-	-
Critical Hdwy Stg 2	6.4	-	-
Follow-up Hdwy	4.4	3.318	2.308
Pot Cap-1 Maneuver	617	953	1399
Stage 1	727	-	-
Stage 2	734	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	610	951	1398
Mov Cap-2 Maneuver	610	-	-
Stage 1	720	-	-
Stage 2	733	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1398	-	665	-	-
HCM Lane V/C Ratio	0.008	-	0.21	-	-
HCM Control Delay (s)	7.6	0	11.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	64	64	56	151	280	88
Future Vol, veh/h	64	64	56	151	280	88
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	67	67	58	157	292	92
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	613	340	385	0	-	0
Stage 1	339	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	454	702	1173	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	429	701	1172	-	-	-
Mov Cap-2 Maneuver	429	-	-	-	-	-
Stage 1	679	-	-	-	-	-
Stage 2	769	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.8	2.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1172	-	429	701	-	-
HCM Lane V/C Ratio	0.05	-	0.155	0.095	-	-
HCM Control Delay (s)	8.2	0	14.9	10.7	-	-
HCM Lane LOS	A	A	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.5	0.3	-	-

Lanes, Volumes, Timings

Forecast 2027 PM Peak Hour Without Project

1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑		↔↔	↑↑					↔	↑↑	↔
Traffic Volume (vph)	0	83	4	150	53	0	0	0	0	151	0	54
Future Volume (vph)	0	83	4	150	53	0	0	0	0	151	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00		1.00						1.00	1.00	0.99
Frt		0.993										0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	6074	0	3127	3539	0	0	0	0	1573	1573	1495
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	6074	0	3117	3539	0	0	0	0	1572	1570	1474
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4										57
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		715			308			906			529	
Travel Time (s)		13.9			6.0			17.6			10.3	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	7%	2%	12%	2%	2%	2%	2%	2%	9%	2%	8%
Adj. Flow (vph)	0	87	4	158	56	0	0	0	0	159	0	57
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	91	0	158	56	0	0	0	0	79	80	57
Turn Type		NA		Prot	NA					Prot	NA	Perm
Protected Phases		2		1	6					7	4	
Permitted Phases												4
Total Split (s)		29.0		39.0	68.0					52.0	52.0	52.0
Total Lost Time (s)		4.5		4.5	4.5					4.5	4.5	4.5
Act Effect Green (s)		34.9		34.5	74.8					39.3	38.0	47.5
Actuated g/C Ratio		0.29		0.29	0.62					0.33	0.32	0.40
v/c Ratio		0.05		0.18	0.03					0.15	0.16	0.09
Control Delay		35.7		14.4	2.0					25.4	24.2	6.2
Queue Delay		0.0		0.0	0.0					0.0	0.0	0.0
Total Delay		35.7		14.4	2.0					25.4	24.2	6.2
LOS		D		B	A					C	C	A
Approach Delay		35.7			11.2						19.9	
Approach LOS		D			B						B	
Queue Length 50th (ft)		15		47	1					40	41	0
Queue Length 95th (ft)		28		76	2					76	77	27
Internal Link Dist (ft)		635			228			826			449	
Turn Bay Length (ft)												
Base Capacity (vph)		1769		899	2205					622	498	617
Starvation Cap Reductn		0		0	0					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.05		0.18	0.03					0.13	0.16	0.09
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

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Synchro 11 Light Report
Page 1

Actuated Cycle Length: 120

Offset: 94 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 19.1

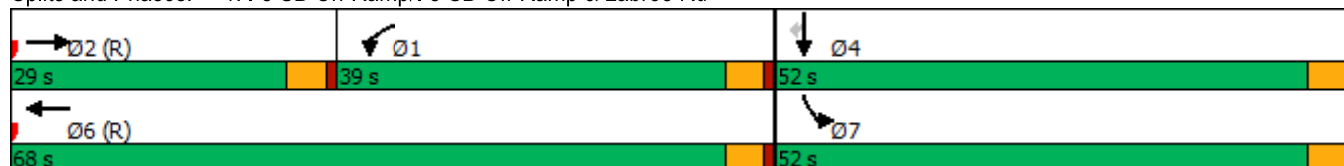
Intersection LOS: B

Intersection Capacity Utilization 45.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd



Lanes, Volumes, Timings

Forecast 2027 PM Peak Hour Without Project

2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	175	0	0	220	240	7	0	90	0	0	0
Future Volume (vph)	59	175	0	0	220	240	7	0	90	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		325	325		250	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.86	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00	1.00				
Fr t						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3433	3343	0	0	5996	1568	1681	1681	1292	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3425	3343	0	0	5996	1546	1679	1678	1292	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						276			103			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		308			1105			711			460	
Travel Time (s)		6.0			21.5			16.2			10.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	8%	2%	2%	9%	3%	2%	2%	25%	2%	2%	2%
Adj. Flow (vph)	68	201	0	0	253	276	8	0	103	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	68	201	0	0	253	276	4	4	103	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Prot			
Protected Phases	5	2			6		3	8	8			
Permitted Phases						6						
Total Split (s)	27.0	83.0			56.0	56.0	37.0	37.0	37.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Act Effct Green (s)	19.2	78.5			56.9	56.9	11.1	6.5	32.5			
Actuated g/C Ratio	0.16	0.65			0.47	0.47	0.09	0.05	0.27			
v/c Ratio	0.12	0.09			0.09	0.31	0.03	0.04	0.24			
Control Delay	37.4	6.3			19.1	3.5	42.3	33.0	7.9			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	37.4	6.3			19.1	3.5	42.3	33.0	7.9			
LOS	D	A			B	A	D	C	A			
Approach Delay		14.2			11.0			10.0				
Approach LOS		B			B			B				
Queue Length 50th (ft)	16	17			33	0	3	~6	0			
Queue Length 95th (ft)	29	24			46	44	11	11	39			
Internal Link Dist (ft)		228			1025			631			380	
Turn Bay Length (ft)						325	325		250			
Base Capacity (vph)	643	2186			2843	878	455	91	425			
Starvation Cap Reductn	0	0			0	0	0	0	0			
Spillback Cap Reductn	0	0			0	0	0	0	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.11	0.09			0.09	0.31	0.01	0.04	0.24			

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Synchro 11 Light Report
Page 1

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 103 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 45.4%

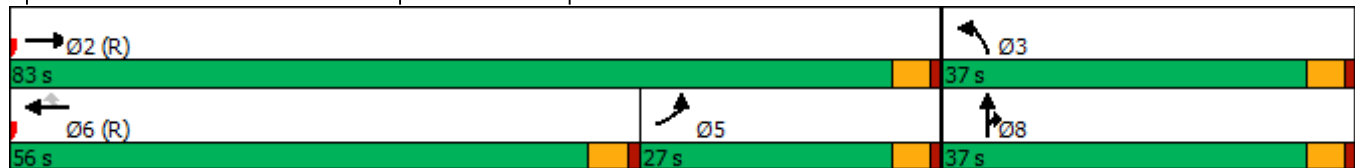
ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

Splits and Phases: 2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd



Lanes, Volumes, Timings
3: Bishop Rd & Labree Rd/Maurin Rd

Forecast 2027 PM Peak Hour Without Project

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	92	46	2	225	45	50	56	1	33	101	190
Future Volume (vph)	102	92	46	2	225	45	50	56	1	33	101	190
Satd. Flow (prot)	1444	3312	1468	1203	3406	1568	1770	1827	1583	1626	1845	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1442	3312	1436	1201	3406	1534	1768	1827	1563	1625	1845	1490
Satd. Flow (RTOR)			176			176			176			229
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	25%	9%	10%	50%	6%	3%	2%	4%	2%	11%	3%	7%
Adj. Flow (vph)	123	111	55	2	271	54	60	67	1	40	122	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	111	55	2	271	54	60	67	1	40	122	229
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Total Split (s)	10.5	23.5	23.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Act Effct Green (s)	6.2	18.9	18.9	5.2	9.5	9.5	5.2	10.3	10.3	5.2	8.5	8.5
Actuated g/C Ratio	0.14	0.44	0.44	0.12	0.22	0.22	0.12	0.24	0.24	0.12	0.20	0.20
v/c Ratio	0.59	0.08	0.08	0.01	0.36	0.11	0.28	0.15	0.00	0.21	0.34	0.48
Control Delay	37.5	11.1	0.2	22.0	17.4	0.5	24.8	15.9	0.0	23.9	19.4	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.5	11.1	0.2	22.0	17.4	0.5	24.8	15.9	0.0	23.9	19.4	7.0
LOS	D	B	A	C	B	A	C	B	A	C	B	A
Approach Delay		20.3			14.7			19.9			12.6	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)	32	8	0	1	33	0	15	11	0	10	29	0
Queue Length 95th (ft)	#103	28	0	5	60	0	44	40	0	33	63	35
Internal Link Dist (ft)		1447			605			768			523	
Turn Bay Length (ft)	205		250	330		330	200		200	400		400
Base Capacity (vph)	208	1540	762	144	1473	763	212	790	776	195	798	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.07	0.07	0.01	0.18	0.07	0.28	0.08	0.00	0.21	0.15	0.30

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 43.3

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 33.9%

ICU Level of Service A

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Bishop Rd & Labree Rd/Maurin Rd

 Ø1 9.5 s	 Ø2 23.5 s	 Ø3 9.5 s	 Ø4 22.5 s
 Ø5 10.5 s	 Ø6 22.5 s	 Ø7 9.5 s	 Ø8 22.5 s

HCM 6th TWSC
4: Driveway/Project Access & Maurin Rd

Forecast 2027 PM Peak Hour Without Project

04/04/2022

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	0	152	7	2	112	0	8	0	3	0	0	0
Future Vol, veh/h	0	152	7	2	112	0	8	0	3	0	0	0
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	76	76	76	76	92	76	92	76	92	92	92
Heavy Vehicles, %	2	3	83	100	2	2	86	2	67	2	2	2
Mvmt Flow	0	200	9	3	147	0	11	0	4	0	0	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	210	0	0	360	359	207	361	363	148
Stage 1	-	-	-	-	-	-	206	206	-	153	153	-
Stage 2	-	-	-	-	-	-	154	153	-	208	210	-
Critical Hdwy	4.12	-	-	5.1	-	-	7.96	6.52	6.87	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	3.1	-	-	4.274	4.018	3.903	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	943	-	-	467	568	694	595	565	899
Stage 1	-	-	-	-	-	-	638	731	-	849	771	-
Stage 2	-	-	-	-	-	-	684	771	-	794	728	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1435	-	-	942	-	-	465	566	693	590	563	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	465	566	-	590	563	-
Stage 1	-	-	-	-	-	-	637	730	-	849	769	-
Stage 2	-	-	-	-	-	-	681	769	-	789	727	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			12.2			0		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	465	693	1435	-	-	942	-	-	-			
HCM Lane V/C Ratio	0.023	0.006	-	-	-	0.003	-	-	-			
HCM Control Delay (s)	12.9	10.2	0	-	-	8.8	0	-	0			
HCM Lane LOS	B	B	A	-	-	A	A	-	A			
HCM 95th %tile Q(veh)	0.1	0	0	-	-	0	-	-	-			

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	126	34	12	74	86	94
Future Vol, veh/h	126	34	12	74	86	94
Conflicting Peds, #/hr	1	1	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	100	2	12	2	2	4
Mvmt Flow	135	37	13	80	92	101

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	251	145	194	0	-	0
Stage 1	144	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	7.4	6.22	4.22	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.308	-	-	-
Pot Cap-1 Maneuver	567	902	1321	-	-	-
Stage 1	691	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	560	900	1320	-	-	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	721	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	1.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1320	-	609	-	-
HCM Lane V/C Ratio	0.01	-	0.283	-	-
HCM Control Delay (s)	7.8	0	13.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	91	112	181	315	97
Future Vol, veh/h	71	91	112	181	315	97
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	74	95	117	189	328	101
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	804	381	430	0	-	0
Stage 1	380	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	351	666	1129	-	-	-
Stage 1	689	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	665	1128	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.2	3.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1128	-	310	665	-	-
HCM Lane V/C Ratio	0.103	-	0.239	0.143	-	-
HCM Control Delay (s)	8.6	0	20.2	11.3	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	0.5	-	-

Lanes, Volumes, Timings

Forecast 2027 PM Peak Hour With Project

1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	83	4	192	53	0	0	0	0	179	0	54
Future Volume (vph)	0	83	4	192	53	0	0	0	0	179	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.86	0.86	0.97	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00		1.00						1.00	1.00	0.99
Frt		0.993										0.850
Flt Protected				0.950						0.950	0.950	
Satd. Flow (prot)	0	6074	0	3127	3539	0	0	0	0	1573	1573	1495
Flt Permitted				0.950						0.950	0.950	
Satd. Flow (perm)	0	6074	0	3117	3539	0	0	0	0	1572	1570	1474
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4										57
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		715			308			906			529	
Travel Time (s)		13.9			6.0			17.6			10.3	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	7%	2%	12%	2%	2%	2%	2%	2%	9%	2%	8%
Adj. Flow (vph)	0	87	4	202	56	0	0	0	0	188	0	57
Shared Lane Traffic (%)										50%		
Lane Group Flow (vph)	0	91	0	202	56	0	0	0	0	94	94	57
Turn Type		NA		Prot	NA					Prot	NA	Perm
Protected Phases		2		1	6					7	4	
Permitted Phases												4
Total Split (s)		29.0		39.0	68.0					52.0	52.0	52.0
Total Lost Time (s)		4.5		4.5	4.5					4.5	4.5	4.5
Act Effect Green (s)		24.5		34.5	63.5					47.5	47.5	47.5
Actuated g/C Ratio		0.20		0.29	0.53					0.40	0.40	0.40
v/c Ratio		0.07		0.22	0.03					0.15	0.15	0.09
Control Delay		37.1		14.9	1.9					24.2	24.2	6.2
Queue Delay		0.0		0.0	0.0					0.0	0.0	0.0
Total Delay		37.1		14.9	1.9					24.2	24.2	6.2
LOS		D		B	A					C	C	A
Approach Delay		37.1			12.1						20.0	
Approach LOS		D			B						C	
Queue Length 50th (ft)		15		62	1					48	48	0
Queue Length 95th (ft)		28		94	2					88	88	27
Internal Link Dist (ft)		635			228			826			449	
Turn Bay Length (ft)												
Base Capacity (vph)		1243		899	1872					622	622	617
Starvation Cap Reductn		0		0	0					0	0	0
Spillback Cap Reductn		0		0	0					0	0	0
Storage Cap Reductn		0		0	0					0	0	0
Reduced v/c Ratio		0.07		0.22	0.03					0.15	0.15	0.09
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												

3. 2027 With 9:30 am 04/04/2022

Synchro 11 Light Report
Page 1

Lanes, Volumes, Timings 1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd

Forecast 2027 PM Peak Hour With Project
04/08/2022

Actuated Cycle Length: 120

Offset: 94 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.22

Intersection Signal Delay: 19.2

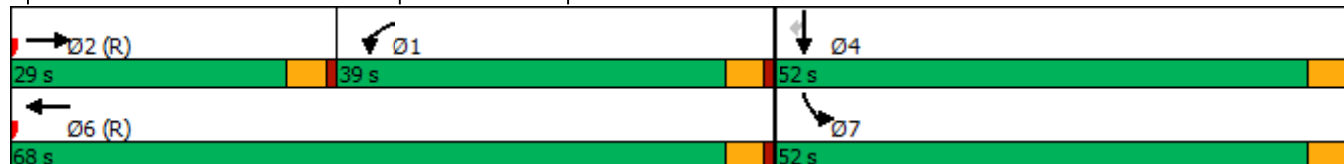
Intersection LOS: B

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: I-5 SB On-Ramp/I-5 SB Off-Ramp & Labree Rd



Lanes, Volumes, Timings

Forecast 2027 PM Peak Hour With Project

2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	203	0	0	262	306	7	0	108	0	0	0
Future Volume (vph)	59	203	0	0	262	306	7	0	108	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		325	325		250	0		0
Storage Lanes	2		0	0		1	1		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.86	1.00	0.95	0.95	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.99	1.00	1.00				
Frt						0.850			0.850			
Flt Protected	0.950						0.950	0.950				
Satd. Flow (prot)	3433	3343	0	0	5996	1568	1681	1681	1292	0	0	0
Flt Permitted	0.950						0.950	0.950				
Satd. Flow (perm)	3426	3343	0	0	5996	1546	1679	1678	1292	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						352			124			
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		308			1105			711			460	
Travel Time (s)		6.0			21.5			16.2			10.5	
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	2%	8%	2%	2%	9%	3%	2%	2%	25%	2%	2%	2%
Adj. Flow (vph)	68	233	0	0	301	352	8	0	124	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	68	233	0	0	301	352	4	4	124	0	0	0
Turn Type	Prot	NA			NA	Perm	Prot	NA	Prot			
Protected Phases	5	2			6		3	8	8			
Permitted Phases						6						
Total Split (s)	27.0	83.0			56.0	56.0	37.0	37.0	37.0			
Total Lost Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Act Effct Green (s)	19.2	78.5			56.9	56.9	11.1	6.5	32.5			
Actuated g/C Ratio	0.16	0.65			0.47	0.47	0.09	0.05	0.27			
v/c Ratio	0.12	0.11			0.11	0.38	0.03	0.04	0.28			
Control Delay	36.4	6.6			19.2	3.5	42.3	33.0	7.6			
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0			
Total Delay	36.4	6.6			19.2	3.5	42.3	33.0	7.6			
LOS	D	A			B	A	D	C	A			
Approach Delay		13.3			10.7			9.4				
Approach LOS		B			B			A				
Queue Length 50th (ft)	15	21			40	0	3	~6	0			
Queue Length 95th (ft)	28	29			53	47	11	11	43			
Internal Link Dist (ft)		228			1025			631			380	
Turn Bay Length (ft)						325	325		250			
Base Capacity (vph)	643	2186			2843	918	455	91	440			
Starvation Cap Reductn	0	0			0	0	0	0	0			
Spillback Cap Reductn	0	0			0	0	0	0	0			
Storage Cap Reductn	0	0			0	0	0	0	0			
Reduced v/c Ratio	0.11	0.11			0.11	0.38	0.01	0.04	0.28			

3. 2027 With 9:30 am 04/04/2022

Synchro 11 Light Report
Page 3

Lanes, Volumes, Timings

2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd

Forecast 2027 PM Peak Hour With Project

04/08/2022

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 103 (86%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38

Intersection Signal Delay: 11.8

Intersection LOS: B

Intersection Capacity Utilization 49.5%

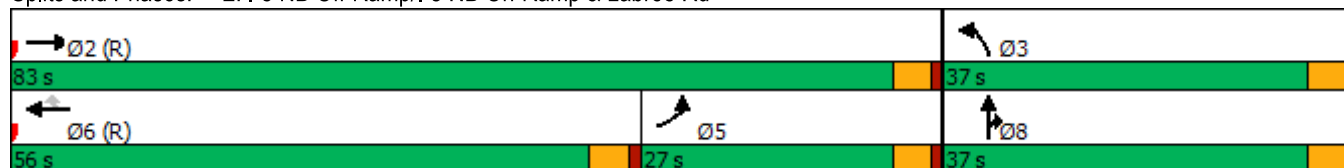
ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

Splits and Phases: 2: I-5 NB Off-Ramp/I-5 NB On-Ramp & Labree Rd



Lanes, Volumes, Timings
3: Bishop Rd & Labree Rd/Maurin Rd

Forecast 2027 PM Peak Hour With Project

04/08/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	138	46	2	333	53	50	56	1	37	101	190
Future Volume (vph)	102	138	46	2	333	53	50	56	1	37	101	190
Satd. Flow (prot)	1444	3312	1468	1203	3406	1568	1770	1827	1583	1626	1845	1509
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1443	3312	1436	1202	3406	1534	1768	1827	1563	1625	1845	1490
Satd. Flow (RTOR)			176			176			176			229
Confl. Peds. (#/hr)	1		1	1		1	1		1	1		1
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	25%	9%	10%	50%	6%	3%	2%	4%	2%	11%	3%	7%
Adj. Flow (vph)	123	166	55	2	401	64	60	67	1	45	122	229
Shared Lane Traffic (%)												
Lane Group Flow (vph)	123	166	55	2	401	64	60	67	1	45	122	229
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Total Split (s)	10.5	23.5	23.5	9.5	22.5	22.5	9.5	22.5	22.5	9.5	22.5	22.5
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Act Effct Green (s)	6.3	21.2	21.2	5.2	11.6	11.6	5.2	10.6	10.6	5.2	8.8	8.8
Actuated g/C Ratio	0.14	0.46	0.46	0.11	0.25	0.25	0.11	0.23	0.23	0.11	0.19	0.19
v/c Ratio	0.62	0.11	0.07	0.01	0.46	0.12	0.30	0.16	0.00	0.24	0.35	0.49
Control Delay	41.8	10.5	0.2	24.0	17.6	0.5	27.1	17.3	0.0	26.5	21.0	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	10.5	0.2	24.0	17.6	0.5	27.1	17.3	0.0	26.5	21.0	7.4
LOS	D	B	A	C	B	A	C	B	A	C	C	A
Approach Delay		20.1			15.3			21.8			13.8	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	34	13	0	1	52	0	16	12	0	12	31	0
Queue Length 95th (ft)	#113	38	0	6	86	0	48	43	0	39	69	37
Internal Link Dist (ft)		1447			605			768			523	
Turn Bay Length (ft)	205		250	330		330	200		200	400		400
Base Capacity (vph)	198	1543	763	137	1403	735	202	752	747	186	760	748
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.11	0.07	0.01	0.29	0.09	0.30	0.09	0.00	0.24	0.16	0.31

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 45.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 16.7

Intersection LOS: B

Intersection Capacity Utilization 36.8%

ICU Level of Service A

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Bishop Rd & Labree Rd/Maurin Rd

 Ø1 9.5 s	 Ø2 23.5 s	 Ø3 9.5 s	 Ø4 22.5 s
 Ø5 10.5 s	 Ø6 22.5 s	 Ø7 9.5 s	 Ø8 22.5 s

HCM 6th TWSC
4: Driveway/Project Access & Maurin Rd

Forecast 2027 PM Peak Hour With Project

04/04/2022

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Vol, veh/h	50	152	7	2	112	22	8	0	3	49	0	116
Future Vol, veh/h	50	152	7	2	112	22	8	0	3	49	0	116
Conflicting Peds, #/hr	0	0	1	1	0	0	1	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	2	3	83	100	2	2	86	2	67	2	2	2
Mvmt Flow	66	200	9	3	147	29	11	0	4	64	0	153
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	176	0	0	210	0	0	583	520	207	508	510	163
Stage 1	-	-	-	-	-	-	338	338	-	168	168	-
Stage 2	-	-	-	-	-	-	245	182	-	340	342	-
Critical Hdwy	4.12	-	-	5.1	-	-	7.96	6.52	6.87	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.96	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	3.1	-	-	4.274	4.018	3.903	3.518	4.018	3.318
Pot Cap-1 Maneuver	1400	-	-	943	-	-	322	461	694	475	467	882
Stage 1	-	-	-	-	-	-	532	641	-	834	759	-
Stage 2	-	-	-	-	-	-	604	749	-	675	638	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1400	-	-	942	-	-	254	434	693	451	440	881
Mov Cap-2 Maneuver	-	-	-	-	-	-	254	434	-	451	440	-
Stage 1	-	-	-	-	-	-	503	606	-	790	756	-
Stage 2	-	-	-	-	-	-	497	746	-	635	604	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.8			0.1			17.2			12.6		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	254	693	1400	-	-	942	-	-	687			
HCM Lane V/C Ratio	0.041	0.006	0.047	-	-	0.003	-	-	0.316			
HCM Control Delay (s)	19.8	10.2	7.7	0	-	8.8	0	-	12.6			
HCM Lane LOS	C	B	A	A	-	A	A	-	B			
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	1.4			

Intersection						
Int Delay, s/veh	6.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	167	42	16	74	86	112
Future Vol, veh/h	167	42	16	74	86	112
Conflicting Peds, #/hr	1	1	1	0	0	1
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	93	93	93	93	93	93
Heavy Vehicles, %	100	2	12	2	2	4
Mvmt Flow	180	45	17	80	92	120

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	268	154	213	0	-	0
Stage 1	153	-	-	-	-	-
Stage 2	115	-	-	-	-	-
Critical Hdwy	7.4	6.22	4.22	-	-	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.318	2.308	-	-	-
Pot Cap-1 Maneuver	553	892	1300	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	544	890	1299	-	-	-
Mov Cap-2 Maneuver	544	-	-	-	-	-
Stage 1	673	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	1.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1299	-	590	-	-
HCM Lane V/C Ratio	0.013	-	0.381	-	-
HCM Control Delay (s)	7.8	0	14.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.8	-	-

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	96	107	119	181	315	180
Future Vol, veh/h	96	107	119	181	315	180
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	2	2	4	2	2
Mvmt Flow	100	111	124	189	328	188
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	861	424	517	0	-	0
Stage 1	423	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	325	630	1049	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	648	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	281	629	1048	-	-	-
Mov Cap-2 Maneuver	281	-	-	-	-	-
Stage 1	571	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18	3.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1048	-	281	629	-	-
HCM Lane V/C Ratio	0.118	-	0.356	0.177	-	-
HCM Control Delay (s)	8.9	0	24.7	12	-	-
HCM Lane LOS	A	A	C	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.6	0.6	-	-

Exhibit 1310-7a Left-Turn Storage Guidelines: Two-Lane, Unsignalized

