SMITH MEDICAL
TRAFFIC IMPACT ANALYSIS

Chehalis, WA

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May 2021

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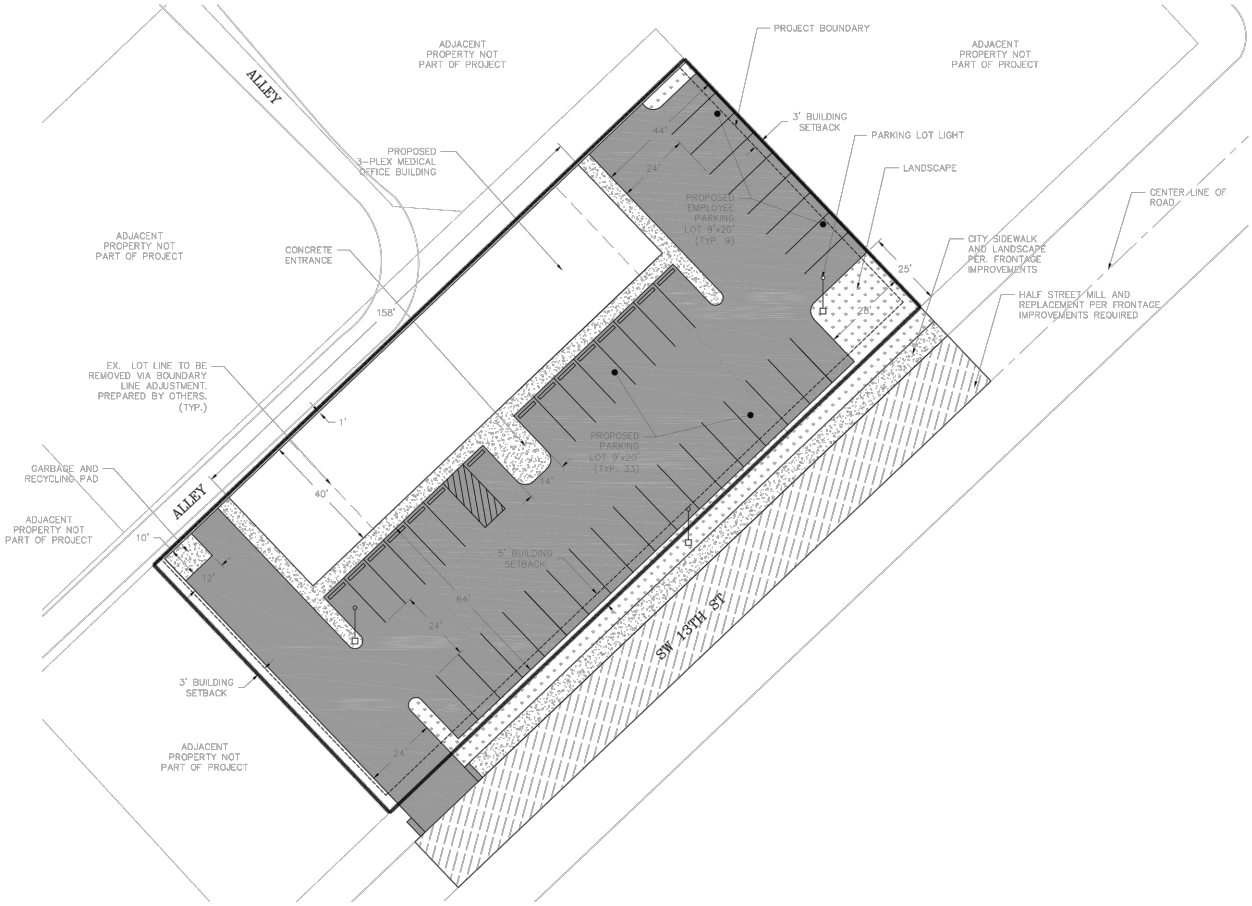
1. INTRODUCTION

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

Smith Medical is a proposed 6,320 square foot medical office building located in the city of Chehalis. The subject site is bordered to the southeast by SW 13th Street and is located southwest of S Market Boulevard on a cumulative 0.61-acres within tax parcel #'s: 00541100-6000 ; -5001; & -2000. Three single-family structures currently exist on-site, which are to be demolished prior to new construction. Site access is proposed via one new driveway extending northwest from SW 13th Street with connection to the alley, which is illustrated in the conceptual site plan provided in Figure 2. Figure 1 below depicts the subject site's vicinity and surrounding roadway network.

Figure 1 – Vicinity Map



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SITE PLAN
FIGURE 2

3. EXISTING CONDITIONS

3.1 Existing Street System

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.

S Market Boulevard: is a 2- to 3- lane, northwest-southeast principal arterial located northeast of the subject site. Travel lanes vary in width with cross-walks and turn-lanes provided at major intersections. On-street parking is permitted along either side of the road in designated locations. Curb, gutter and sidewalk are generally provided along the southwest side of the roadway. Curb and gutter are generally provided along the northeast side, with discontinuous sidewalk segments. The posted speed limit in the subject site vicinity is 25- to 30-mph.

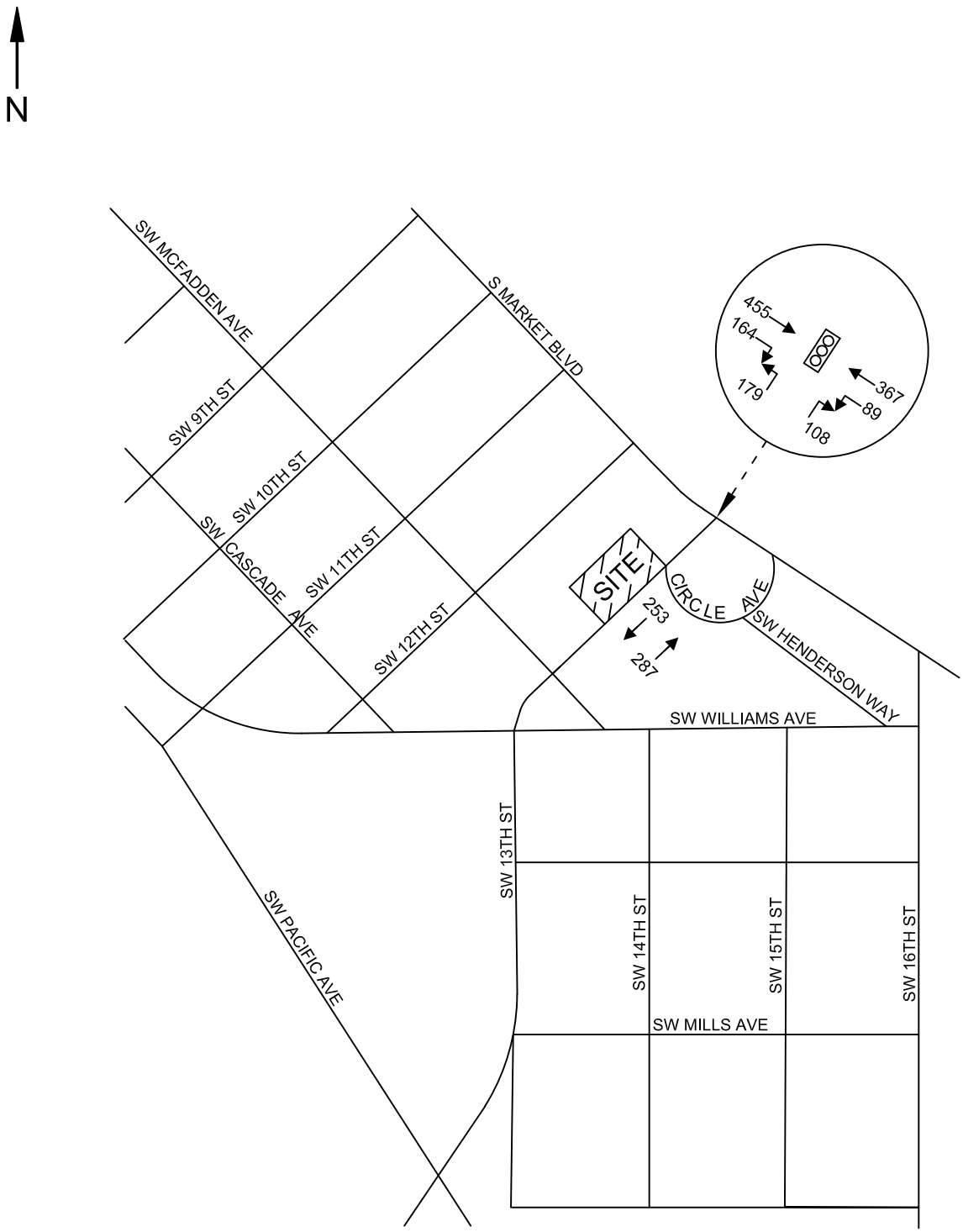
SW 13th Street: is a 2-lane, northeast-southwest local roadway bordering the subject site to the southeast. Total roadway width varies but accommodates on-street parking in designated locations along both sides of the roadway. Curb is generally available, with discontinuous sidewalk segments provided along the project frontage and to the southwest. Crosswalks are provided at major intersections. The posted speed limit in the subject site vicinity is 25-mph.

3.2 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 stops are located at the S Market Boulevard Safeway located 550 feet north of the subject site, servicing the Red Line. The Red Line provides service north of I-5 throughout the city 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.

3.3 Existing Peak Hour Volumes and Patterns

Field data for this study was collected in May of 2021. Traffic counts were taken at the intersection of S Market Boulevard & SW 13th St, which would receive the bulk of the anticipated vehicular demands. Data was obtained during the evening peak period between the hours of 4:00 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 study intersection and through-volumes along the project frontage. Full count sheets have been attached in the appendix.



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EXISTING PM PEAK HOUR VOLUMES
FIGURE 3

3.4 Roadway Improvements

A review of the City of Chehalis Six-Year (2022-2027) Transportation Improvement Program indicates the following planned projects in the general area.

> *13th Street Improvements (S Market Boulevard to I-5):* This project entails grind and overlay roadway improvements and ADA compliant pedestrian facility renovations. The total estimated cost is $600,000 with an undetermined start date.
>
> *Market Boulevard Improvements (Park Avenue to S City limits):* This project entails roadway reconstruction and pedestrian facility improvements along S Market Boulevard. The start date for the project is 2022-2023 with a total estimated cost of $9,800,000.

3.5 Pedestrian and Bicycle Activity

During field observations, no non-motorist transport was observed along the project frontage on SW 13th Street. Frontage improvements are to be constructed along SW 13th Street in accordance with City standards. Moreover, planned City improvements outlined in the proposed TIP indicate pedestrian infrastructure projects that will increase non-motorist accessibility in the vicinity of the subject site.

3.6 Site Access & Roadway Design

As shown in the provided site plan, one driveway extending north from SW 13th Street is proposed for primary access to the site. Alley access bordering the subject site to the northwest is additionally provided. The posted speed limit on SW 13th Street at the proposed project driveway location is 25-mph. In accordance with established AASHTO standards, a minimum entering sight distance of 280 feet is required. Based on preliminary measurements at the access location, no sight deficiencies are identified. Sight lines are clear in excess of 300 feet looking either direction.

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 range[1] 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 10* 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 1 below presents existing PM peak hour LOS delays for the key intersection of study.

Table 1: Existing PM Peak Hour Level of Service

Delays given in seconds per vehicle

Intersection	Control	Movement	LOS	Delay
S Market Blvd & SW 13th St	Signal	Overall	B	10.1

Existing PM peak hour conditions are shown to operate with minimal delays at LOS B 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

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

Highway Capacity Manual, 6th Edition

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,* 10th Edition. The designated land use for this project is defined as Medical-Dental Office Building (LUC 720). Table 2 below summarizes the estimated 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 2: Project Trip Generation

Land Use	Size	AWDT	AM Peak-Hour Trips			PM Peak-Hour Trips		
			In	Out	Total	In	Out	Total
Medical-Dental Office Building	6,320 sq. ft.	**220**	14	4	**18**	6	16	**22**

Based on ITE data, the project is anticipated to generate 220 new daily weekday trips with 18 trips (14 inbound / 4 outbound) occurring in the AM peak hour and 22 trips (6 inbound / 16 outbound) in the PM peak hour.

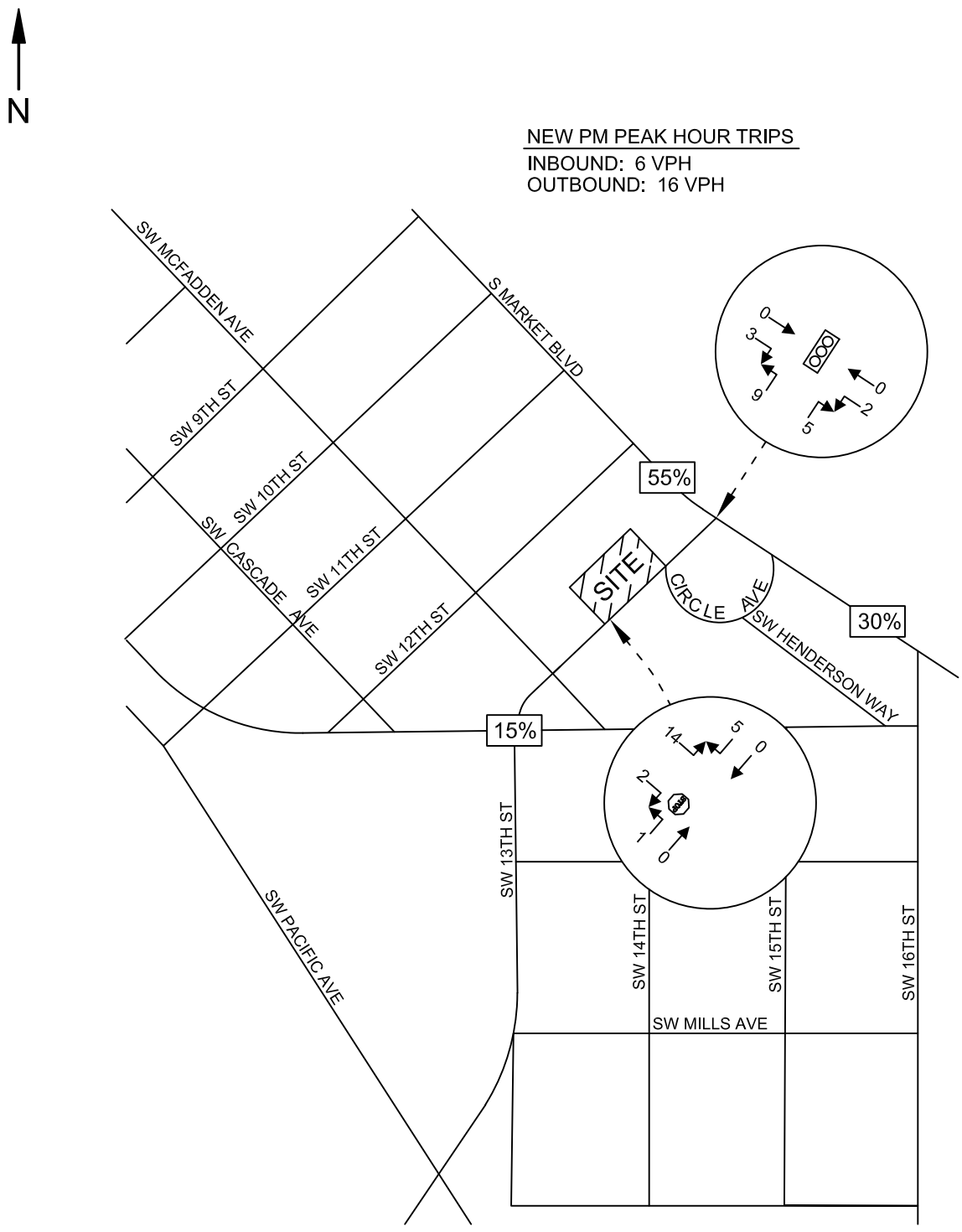
4.2 Trip Distribution and Assignment

Trip distribution describes the process by which project generated trips are dispersed on the street network surrounding the site. PM peak hour trips generated by the project are expected to follow the general trip pattern as shown on Figure 4. Percentages are generally based on locations of nearby roadways and the service catchment area of the proposed development.

4.3 Future Peak Hour Volumes

A 5-year horizon of 2026 was used for future traffic delay analysis. The proposed development is located within the Chehalis city limits. The City is forecasted to grow at an annual rate of 1.50%[2] according to the Chehalis Comprehensive Plan (2017). A compound annual growth rate of 2.0% was utilized to present a conservative analysis. Additionally, pipeline volumes associated with the nearby Jackson Highway Warehouse and Jackson Villas 4 projects were added to the roadway network and included in forecast analysis. PM peak hour pipeline volumes are illustrated in Figure 5. Forecast 2026 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



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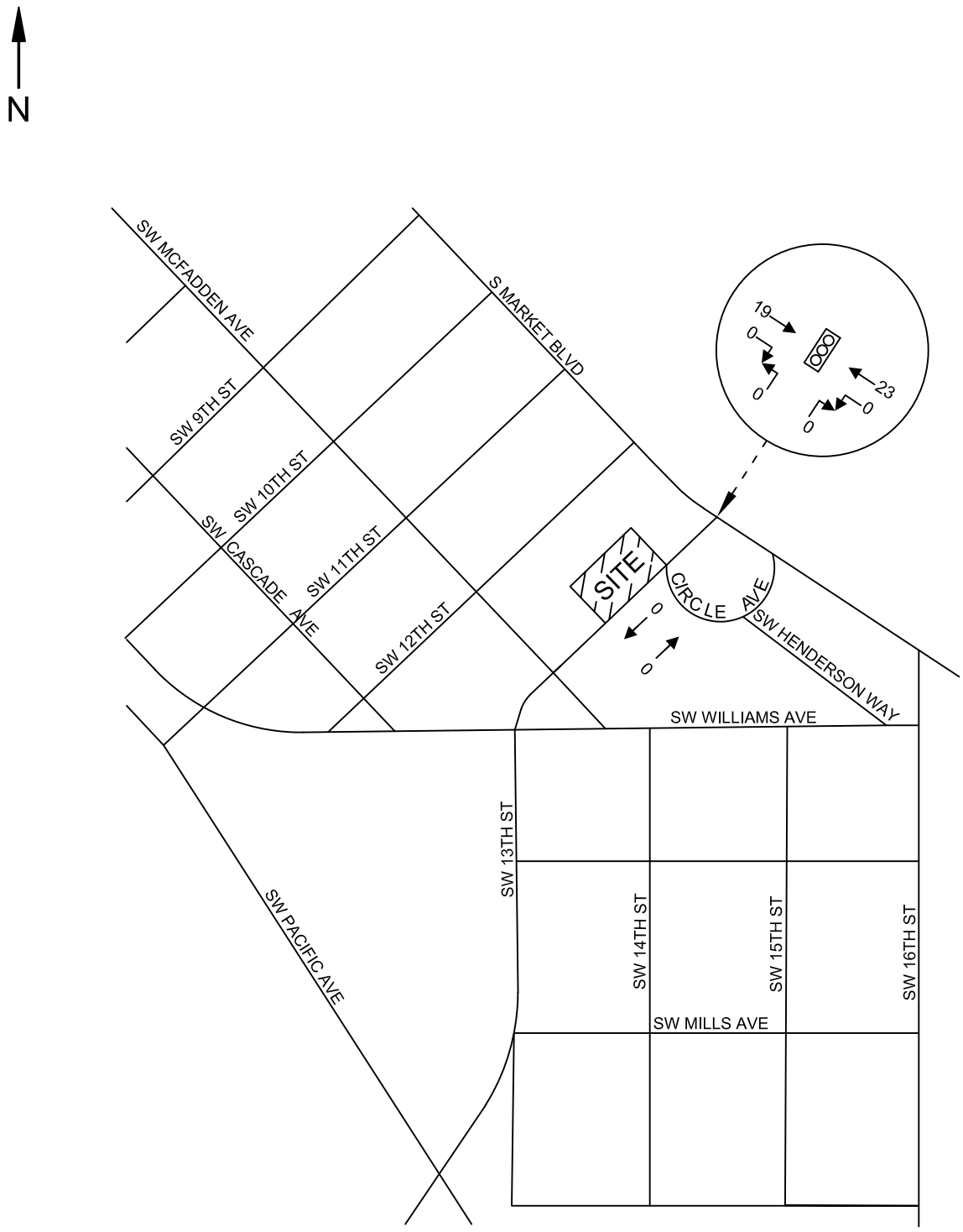
PM PEAK HOUR TRIP DISTRIBUTION & ASSIGNMENT
FIGURE 4



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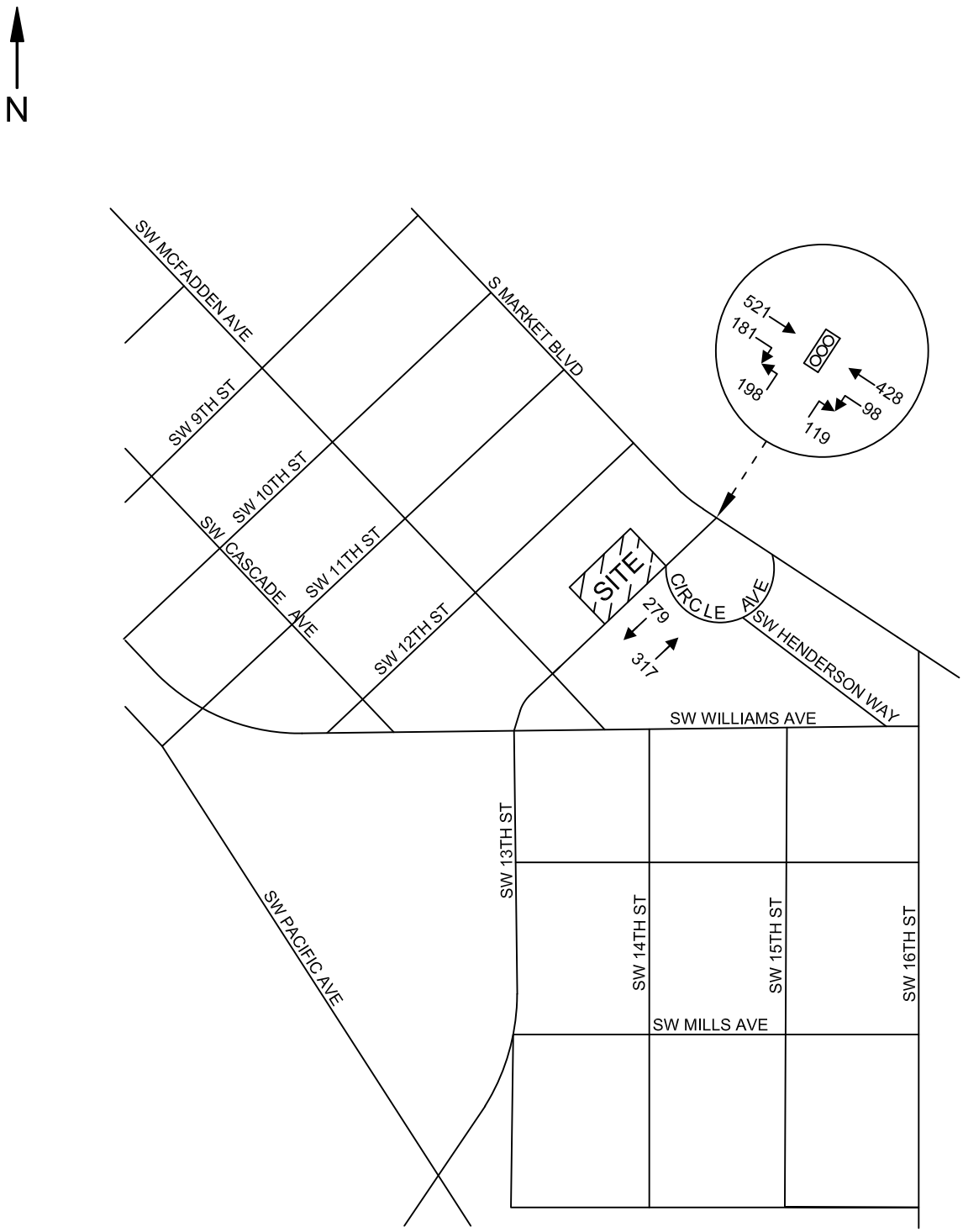
PM PEAK HOUR PIPELINE VOLUMES
FIGURE 5



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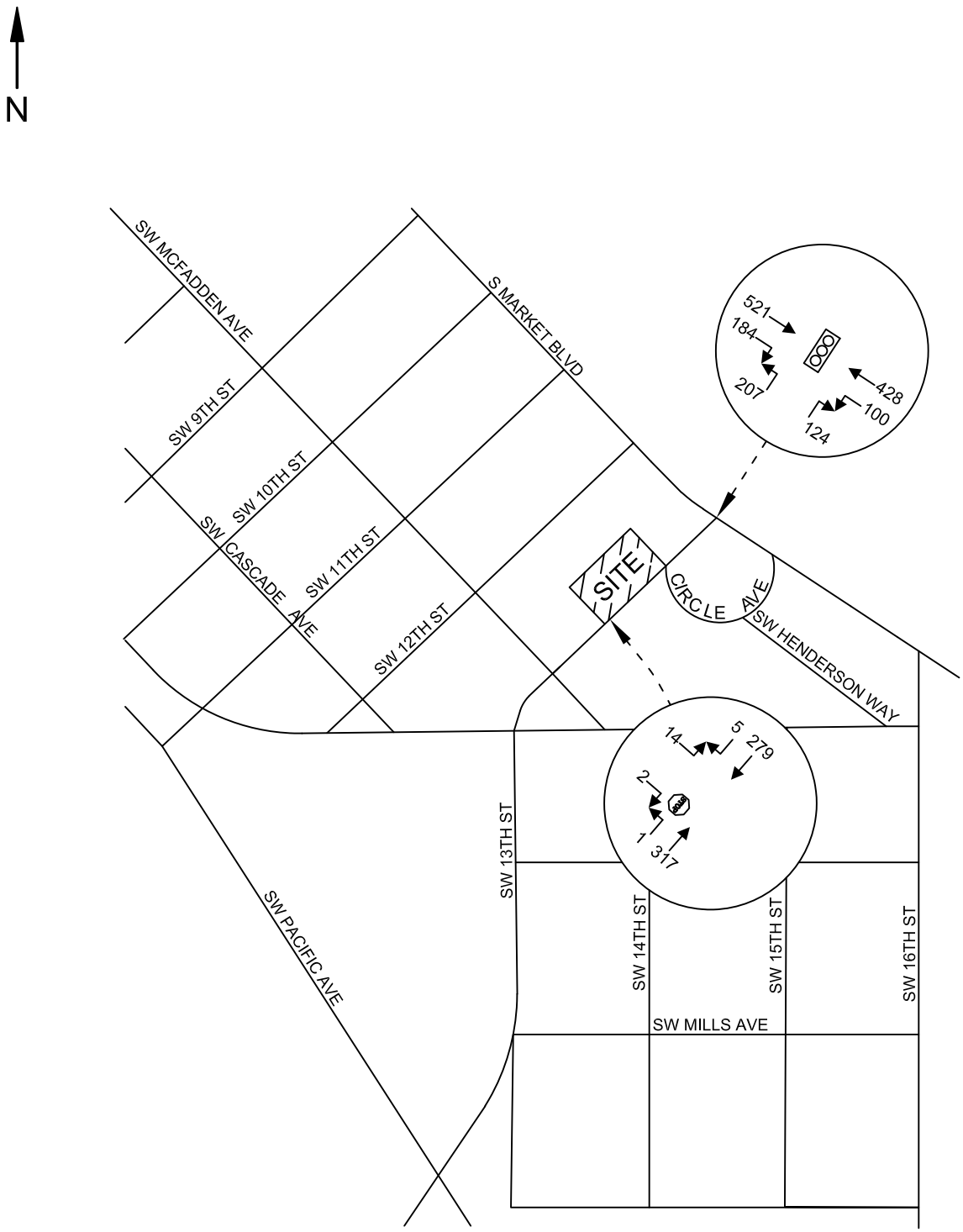
FORECAST 2026 PM PEAK HOUR VOLUMES WITHOUT PROJECT
FIGURE 6



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FORECAST 2026 PM PEAK HOUR VOLUMES WITH PROJECT
FIGURE 7

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 10* analysis program. Delays for the study intersections under future conditions are shown below in Table 3.

Table 3: Forecast 2026 PM Peak Hour Level of Service

Delays given in seconds per vehicle

			Background		*With Project*	
Intersection	**Control**	**Movement**	**LOS**	**Delay**	**LOS**	**Delay**
S Market Blvd & SW 13th St	Signal	Overall	B	10.9	B	11.1
Access & SW 13th St	Stop	SB	-	-	B	13.2

SWB: Southwest-bound NWB: Northwest-bound

Forecast 2026 PM peak hour Level of Service at the proposed access and study intersection are shown to continue operating at LOS B. No operational deficiencies are identified as a result of the proposed development.

4.5 Left Turn Lane Warrants

Left turn lanes are a means of providing necessary storage space for left turning vehicles at intersections. For this impact study, procedures described by the WSDOT Design Manual Exhibit 1310-7a were used to ascertain storage requirements at the intersection of SW 1th Street & the primary site access. Requirements are based on a function of vehicular volumes, number of left-turning vehicles from the major roadway, and posted speed limits. Based on forecast 2026 PM peak hour volumes with project traffic, a left turn lane *would not be warranted* at the access intersection. Refer to the appendix for the warrant nomographs.

5. SUMMARY

Smith Medical is a proposed medical office comprising approximately 6,320 square feet located in the city of Chehalis. The subject site is located on a cumulative 0.61-acres within tax parcel #'s: 00541100-6000 ; -5001; & -2000. Primary access to the site is proposed via one new driveway extending northwest from SW 13th Street. Alley access is to be provided for garbage and recycling pick-up. A conceptual site plan is illustrated in Figure 2. Existing level of service (LOS) is summarized in Table 1 and indicates the study intersection of S Market Boulevard & SW 13th Street operating with delays of LOS B.

Based on ITE data the project would be anticipated to generate 18 new AM peak hour trips (14 inbound / 4 outbound) and 22 new PM peak hour trips (6 inbound / 16 outbound). For forecast analyses, a five-year horizon was evaluated to asses impacts under future conditions. Table 3 summarizes forecast 2026 PM peak hour LOS delays without and with the project. Forecast 2026 conditions are shown to continue to operate satisfactorily with LOS B conditions indicating no operational deficiencies. A left turn lane was found to not be warranted at the study access on SW 13th Street under forecast 2026 PM peak hour conditions.

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

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APPENDIX

LEVEL OF SERVICE

The following are excerpts from the *2016 Highway Capacity Manual - Transportation Research Board Special Report 209.*

Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions.

Level-of-Service definitions

Level of service A represents primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delay at signalized intersections is minimal.

Level of service B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver in the traffic stream is only slightly restricted and delays are not bothersome.

Level of service C represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.

Level of service D borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free-flow speed.

Level of service E is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level of service F characterizes arterial flow at extremely low speeds, from less than one-third to one-quarter of the free-flow speed. Intersection congestion is likely at critical signalized locations, with long delays and extensive queuing.

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File Name : 4642a
Site Code : 00004642
Start Date : 5/13/2021
Page No : 1

Groups Printed- Passenger + - Heavy

	S Market Blvd Westbound			S 13th St Northbound			S Market Blvd Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
04:00 PM	95	24	119	25	49	74	38	121	159	352
04:15 PM	100	28	128	26	52	78	36	103	139	345
04:30 PM	99	23	122	33	33	66	47	112	159	347
04:45 PM	73	14	87	24	45	69	43	119	162	318
Total	367	89	456	108	179	287	164	455	619	1362
05:00 PM	68	30	98	26	40	66	50	138	188	352
05:15 PM	77	32	109	27	42	69	49	116	165	343
05:30 PM	66	24	90	26	32	58	23	77	100	248
05:45 PM	38	19	57	23	42	65	44	71	115	237
Total	249	105	354	102	156	258	166	402	568	1180
Grand Total	616	194	810	210	335	545	330	857	1187	2542
Apprch %	76	24		38.5	61.5		27.8	72.2		
Total %	24.2	7.6	31.9	8.3	13.2	21.4	13	33.7	46.7	
Passenger +	612	194	806	204	328	532	330	850	1180	2518
% Passenger +	99.4	100	99.5	97.1	97.9	97.6	100	99.2	99.4	99.1
Heavy	4	0	4	6	7	13	0	7	7	24
% Heavy	0.6	0	0.5	2.9	2.1	2.4	0	0.8	0.6	0.9

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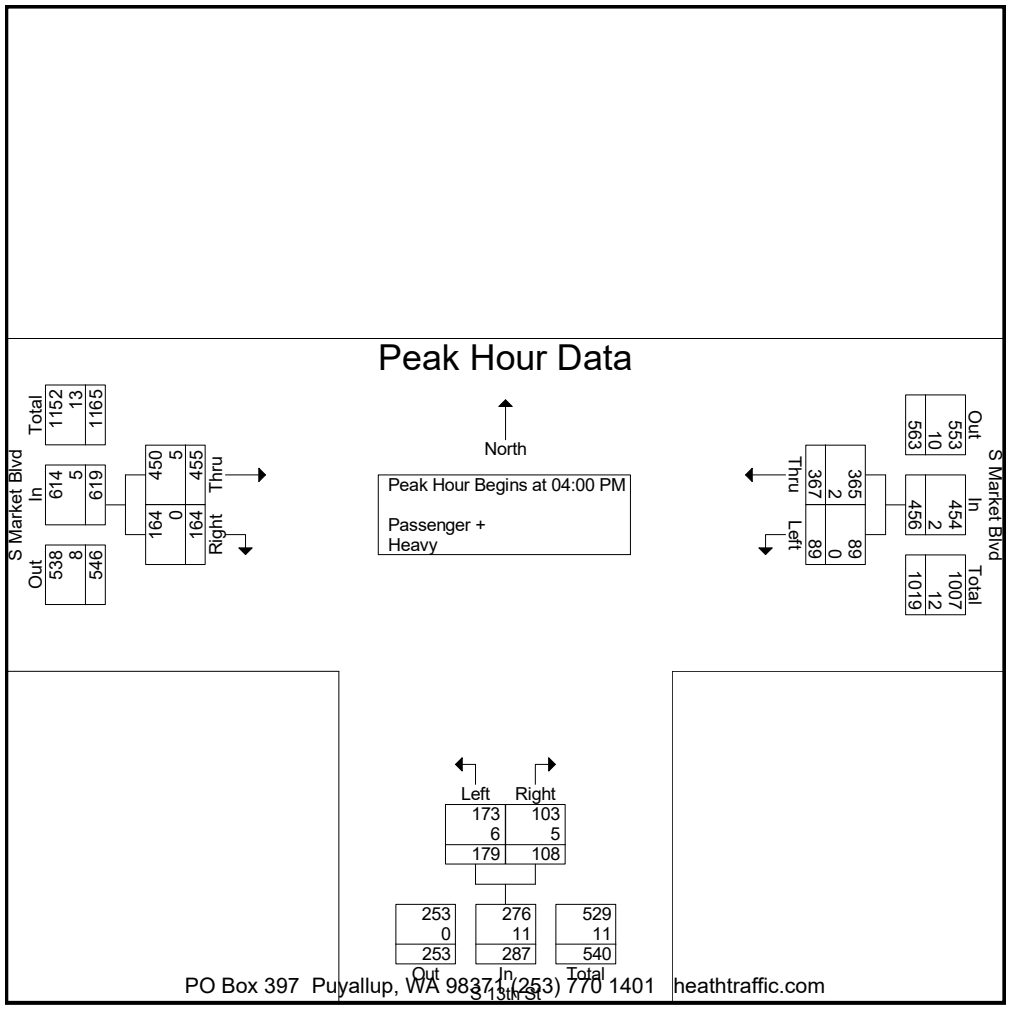
File Name : 4642a
Site Code : 00004642
Start Date : 5/13/2021
Page No : 2

	S Market Blvd Westbound			S 13th St Northbound			S Market Blvd Eastbound			
Start Time	Thru	Left	App. Total	Right	Left	App. Total	Right	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	95	24	119	25	49	74	38	**121**	159	**352**
04:15 PM	**100**	**28**	**128**	26	**52**	**78**	36	103	139	345
04:30 PM	99	23	122	**33**	33	66	**47**	112	159	347
04:45 PM	73	14	87	24	45	69	43	119	**162**	318
Total Volume	367	89	456	108	179	287	164	455	619	1362
% App. Total	80.5	19.5		37.6	62.4		26.5	73.5		
PHF	.918	.795	.891	.818	.861	.920	.872	.940	.955	.967
Passenger +	365	89	454	103	173	276	164	450	614	1344
% Passenger +	99.5	100	99.6	95.4	96.6	96.2	100	98.9	99.2	98.7
Heavy	2	0	2	5	6	11	0	5	5	18
% Heavy	0.5	0	0.4	4.6	3.4	3.8	0	1.1	0.8	1.3



Medical-Dental Office Building
(720)

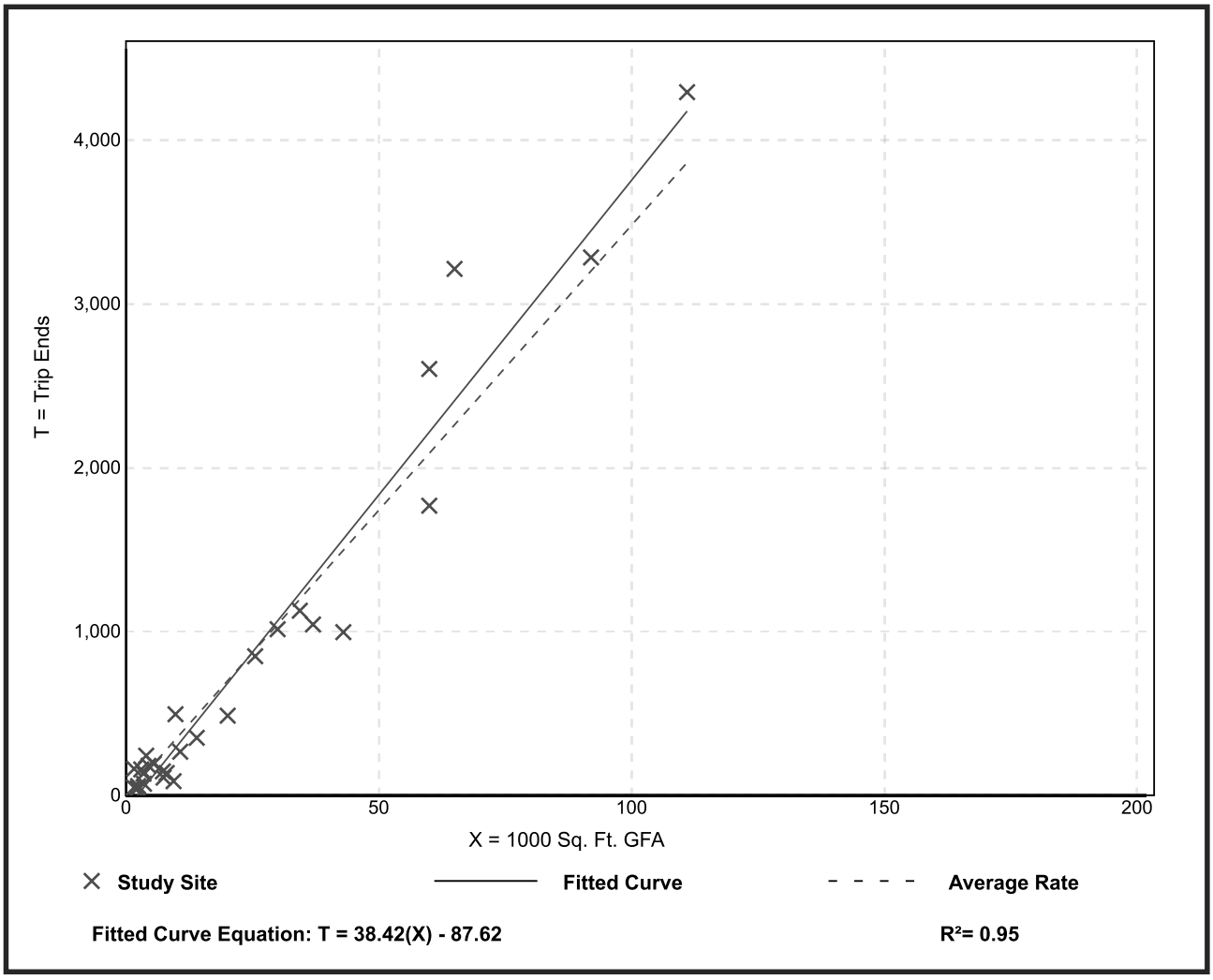
Vehicle Trip Ends vs: **1000 Sq. Ft. GFA**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 28
Avg. 1000 Sq. Ft. GFA: 24
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
34.80	9.14 - 100.75	9.79

Data Plot and Equation



Trip Generation Manual, 10th Edition ● Institute of Transportation Engineers

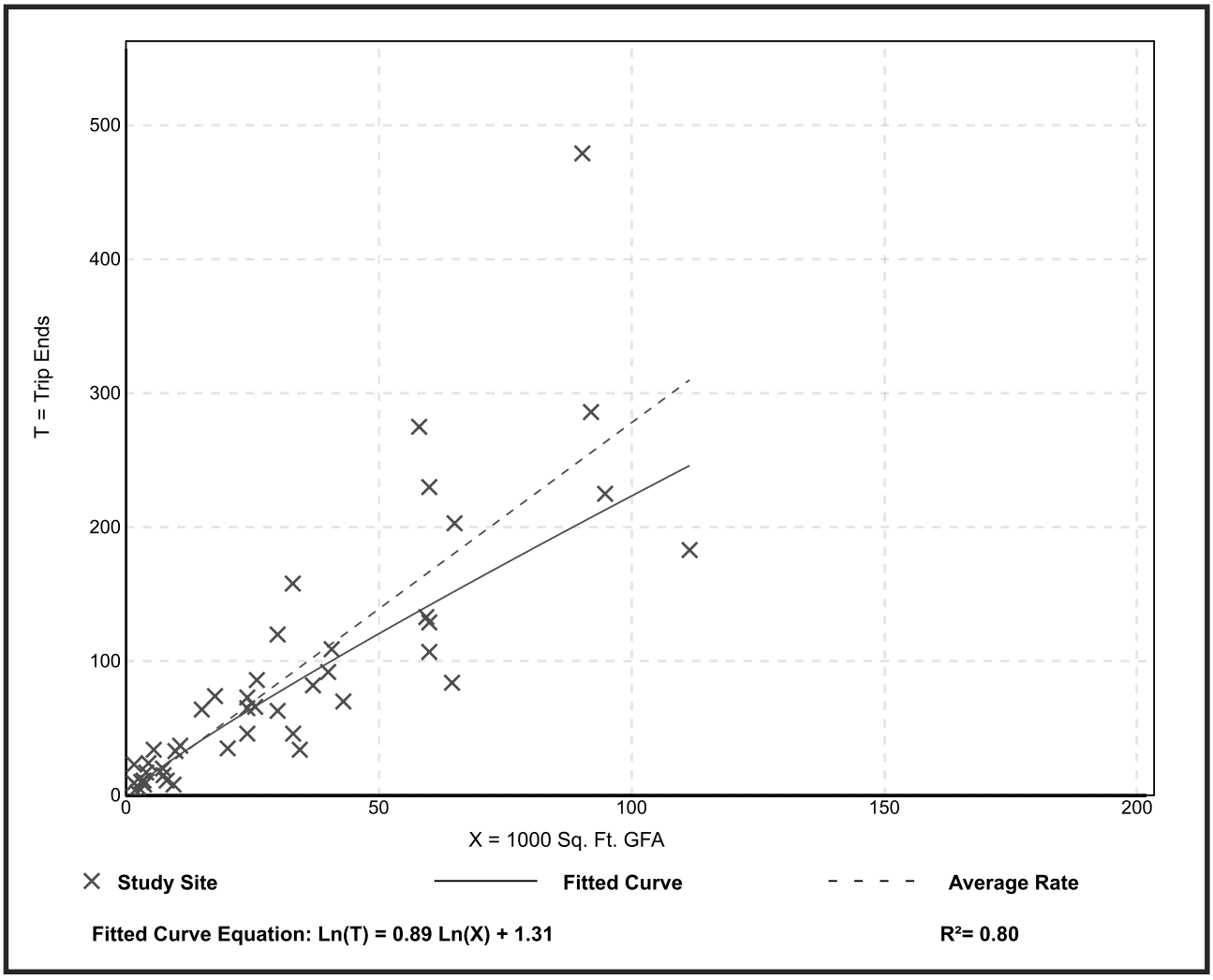
Medical-Dental Office Building
(720)

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: 44
Avg. 1000 Sq. Ft. GFA: 32
Directional Distribution: 78% entering, 22% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.78	0.85 - 14.30	1.28

Data Plot and Equation



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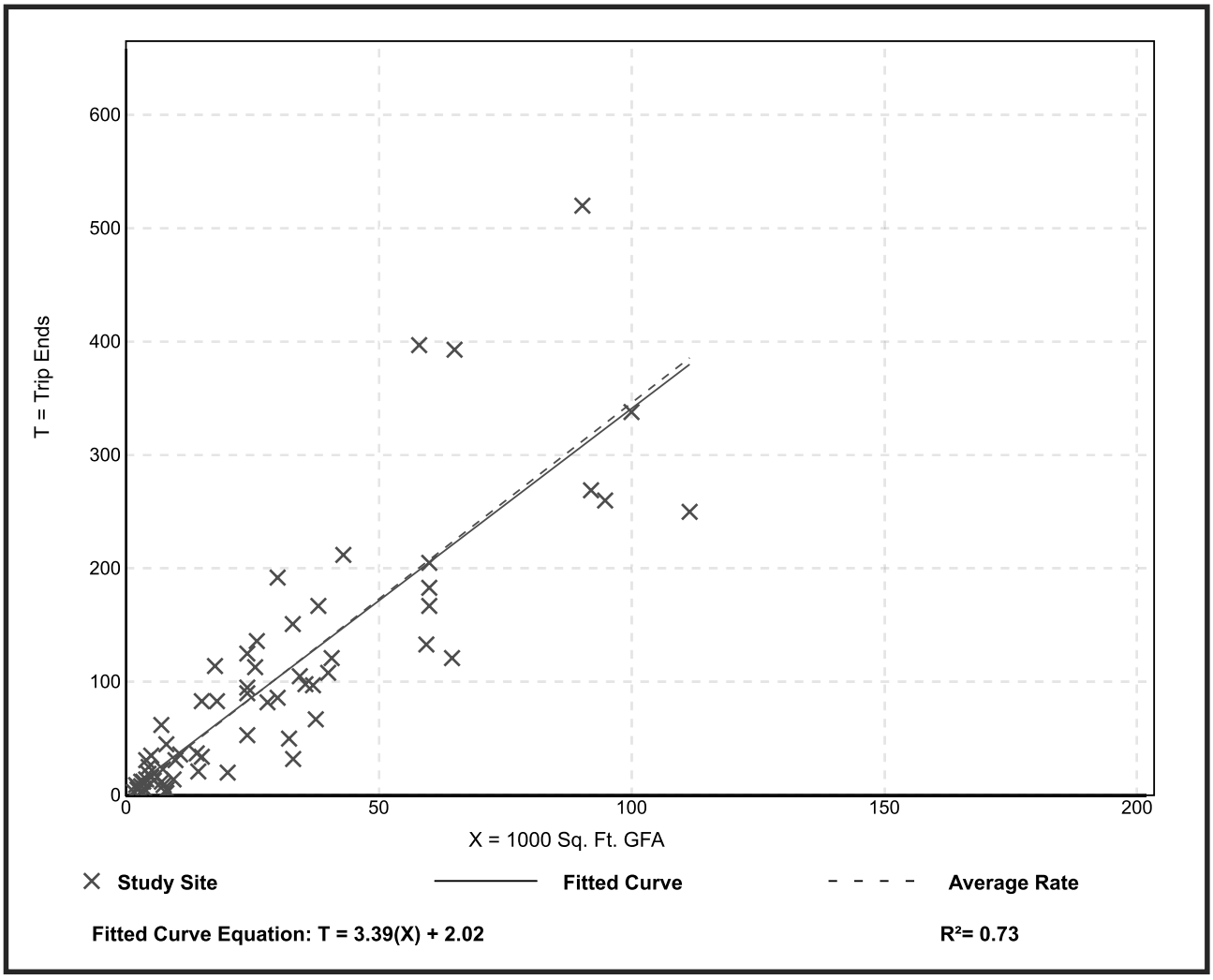
Medical-Dental Office Building
(720)

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: 65
Avg. 1000 Sq. Ft. GFA: 28
Directional Distribution: 28% entering, 72% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.46	0.25 - 8.86	1.58

Data Plot and Equation



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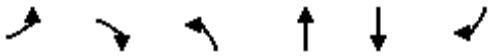
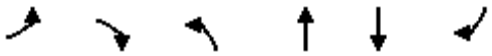


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	179	108	89	367	455	164
Future Volume (veh/h)	179	108	89	367	455	164
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1826	1885	1885	1885	1885
Adj Flow Rate, veh/h	185	111	92	378	469	178
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.92
Percent Heavy Veh, %	3	5	1	1	1	1
Cap, veh/h	294	257	150	1098	703	596
Arrive On Green	0.17	0.17	0.08	0.58	0.37	0.37
Sat Flow, veh/h	1767	1547	1795	1885	1885	1598
Grp Volume(v), veh/h	185	111	92	378	469	178
Grp Sat Flow(s),veh/h/ln	1767	1547	1795	1885	1885	1598
Q Serve(g_s), s	3.5	2.3	1.8	3.8	7.4	2.8
Cycle Q Clear(g_c), s	3.5	2.3	1.8	3.8	7.4	2.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	294	257	150	1098	703	596
V/C Ratio(X)	0.63	0.43	0.61	0.34	0.67	0.30
Avail Cap(c_a), veh/h	1061	929	627	3132	2237	1896
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.9	13.4	15.8	3.9	9.4	7.9
Incr Delay (d2), s/veh	2.2	1.1	4.0	0.2	1.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.1	0.8	0.7	2.3	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.1	14.5	19.8	4.1	10.5	8.2
LnGrp LOS	B	B	B	A	B	A
Approach Vol, veh/h	296			470	647	
Approach Delay, s/veh	15.5			7.2	9.8	
Approach LOS	B			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		25.4		10.5	7.5	17.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		59.5		21.5	12.5	42.5
Max Q Clear Time (g_c+I1), s		5.8		5.5	3.8	9.4
Green Ext Time (p_c), s		2.6		0.8	0.1	3.9

Intersection Summary		
HCM 6th Ctrl Delay		10.1
HCM 6th LOS		B

PO Box 397 Puyallup, WA 98371 (253) 770 1401 heathtraffic.com



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	198	119	98	428	521	181
Future Volume (veh/h)	198	119	98	428	521	181
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1826	1885	1885	1885	1885
Adj Flow Rate, veh/h	204	123	101	441	537	197
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.92
Percent Heavy Veh, %	3	5	1	1	1	1
Cap, veh/h	308	270	151	1132	761	645
Arrive On Green	0.17	0.17	0.08	0.60	0.40	0.40
Sat Flow, veh/h	1767	1547	1795	1885	1885	1598
Grp Volume(v), veh/h	204	123	101	441	537	197
Grp Sat Flow(s),veh/h/ln	1767	1547	1795	1885	1885	1598
Q Serve(g_s), s	4.3	2.8	2.2	4.9	9.5	3.4
Cycle Q Clear(g_c), s	4.3	2.8	2.2	4.9	9.5	3.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	308	270	151	1132	761	645
V/C Ratio(X)	0.66	0.46	0.67	0.39	0.71	0.31
Avail Cap(c_a), veh/h	906	793	561	2853	2051	1738
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	14.8	17.8	4.2	9.9	8.1
Incr Delay (d2), s/veh	2.4	1.2	5.0	0.2	1.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.6	1.0	1.0	3.1	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.8	16.0	22.7	4.4	11.2	8.4
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	327			542	734	
Approach Delay, s/veh	17.1			7.8	10.4	
Approach LOS	B			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		28.5		11.5	7.9	20.6
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		60.5		20.5	12.5	43.5
Max Q Clear Time (g_c+I1), s		6.9		6.3	4.2	11.5
Green Ext Time (p_c), s		3.1		0.9	0.1	4.6

Intersection Summary		
HCM 6th Ctrl Delay		10.9
HCM 6th LOS		B

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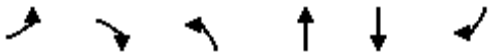

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	207	124	100	428	521	184
Future Volume (veh/h)	207	124	100	428	521	184
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1826	1885	1885	1885	1885
Adj Flow Rate, veh/h	213	128	103	441	537	200
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.92
Percent Heavy Veh, %	3	5	1	1	1	1
Cap, veh/h	318	278	152	1127	758	642
Arrive On Green	0.18	0.18	0.08	0.60	0.40	0.40
Sat Flow, veh/h	1767	1547	1795	1885	1885	1598
Grp Volume(v), veh/h	213	128	103	441	537	200
Grp Sat Flow(s),veh/h/ln	1767	1547	1795	1885	1885	1598
Q Serve(g_s), s	4.6	3.0	2.3	5.0	9.6	3.5
Cycle Q Clear(g_c), s	4.6	3.0	2.3	5.0	9.6	3.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	318	278	152	1127	758	642
V/C Ratio(X)	0.67	0.46	0.68	0.39	0.71	0.31
Avail Cap(c_a), veh/h	894	783	554	2815	2024	1716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.5	14.8	18.0	4.3	10.1	8.3
Incr Delay (d2), s/veh	2.4	1.2	5.2	0.2	1.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.1	1.0	1.0	3.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.9	16.0	23.2	4.5	11.4	8.6
LnGrp LOS	B	B	C	A	B	A
Approach Vol, veh/h	341			544	737	
Approach Delay, s/veh	17.2			8.0	10.6	
Approach LOS	B			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		28.7		11.8	7.9	20.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		60.5		20.5	12.5	43.5
Max Q Clear Time (g_c+I1), s		7.0		6.6	4.3	11.6
Green Ext Time (p_c), s		3.1		0.9	0.1	4.6

Intersection Summary	
HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

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Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	317	279	5	14	2
Future Vol, veh/h	1	317	279	5	14	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	345	303	5	15	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	308	0	-	0	653	306
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1253	-	-	-	432	734
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	716	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1253	-	-	-	432	734
Mov Cap-2 Maneuver	-	-	-	-	432	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	716	-

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1253	-	-	-	455
HCM Lane V/C Ratio	0.001	-	-	-	0.038
HCM Control Delay (s)	7.9	0	-	-	13.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

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