

REPORT

Valley View Estates Traffic Impact Study

March 16, 2018

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VALLEY VIEW ESTATES TRAFFIC IMPACT STUDY



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SECTION I STUDY SUMMARY

INTRODUCTION

This traffic impact analysis has been prepared to assess transportation impacts related to the proposed Valley View Estates subdivision. The project site is located at 20109 SE 40th Street in Camas, Washington and is comprised of tax lots 125646-000 and 125635-000. Figure 1 shows the project vicinity.

Project Description

The proposed project will subdivide approximately 9.26 acres into 36 single-family detached lots. One single-family detached home exists on-site and will be demolished upon construction of the subdivision. Access to the proposed project will be from connections to SE 40th Street and NW Goodwin Street. Figure 2 shows the project site plan.

Scope of Traffic Impact Study

The scope of the traffic impact study was developed from known City of Camas traffic study requirements. From these requirements, the following intersections were analyzed:

- NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street
- NW Brady Road/NW 16th Avenue
- NW Brady Road/NW McIntosh Road
- SE Brady Road/SE Grand Ridge Drive
- SE 40th Street/Project Access

The remainder of this report presents the following analysis:

- Existing traffic conditions in the project study area.
- 2023 “Without Project” condition to establish the baseline condition by which the project impacts are determined.
- Trip generation estimates for the proposed development.
- 2023 “With Project” condition to determine project traffic impacts.

SUMMARY OF FINDINGS

Findings

The following are the findings from the traffic analysis:

- The proposed development is expected to generate 333 daily, 26 A.M. peak hour (7 in, 19 out), and 35 P.M. peak hour (22 in, 13 out) net new trips.
- All of the study area intersections are projected to meet the City of Camas' level of service standards in the 2023 "Without Project" and 2023 "With Project" condition.
- Turn lane warrants at the SE 40th Street/Project Access intersection were not conducted because a westbound left turn lane into the site will be constructed with the subdivision.
- Based on field measurements conducted by H. Lee & Associates, PLLC, the project access intersection should be able to meet the sight distance requirements as long as any vegetation within the sight distance triangles are properly maintained after construction and no obstructions are placed within the sight distance triangles that could impede a driver's vision. Because the access into the project site is not built, the corner sight distance should be re-verified in the final engineering/construction stages of development.

Recommendations

- Based on the traffic impact analysis documented in this report, no physical, off-site mitigation would be needed.

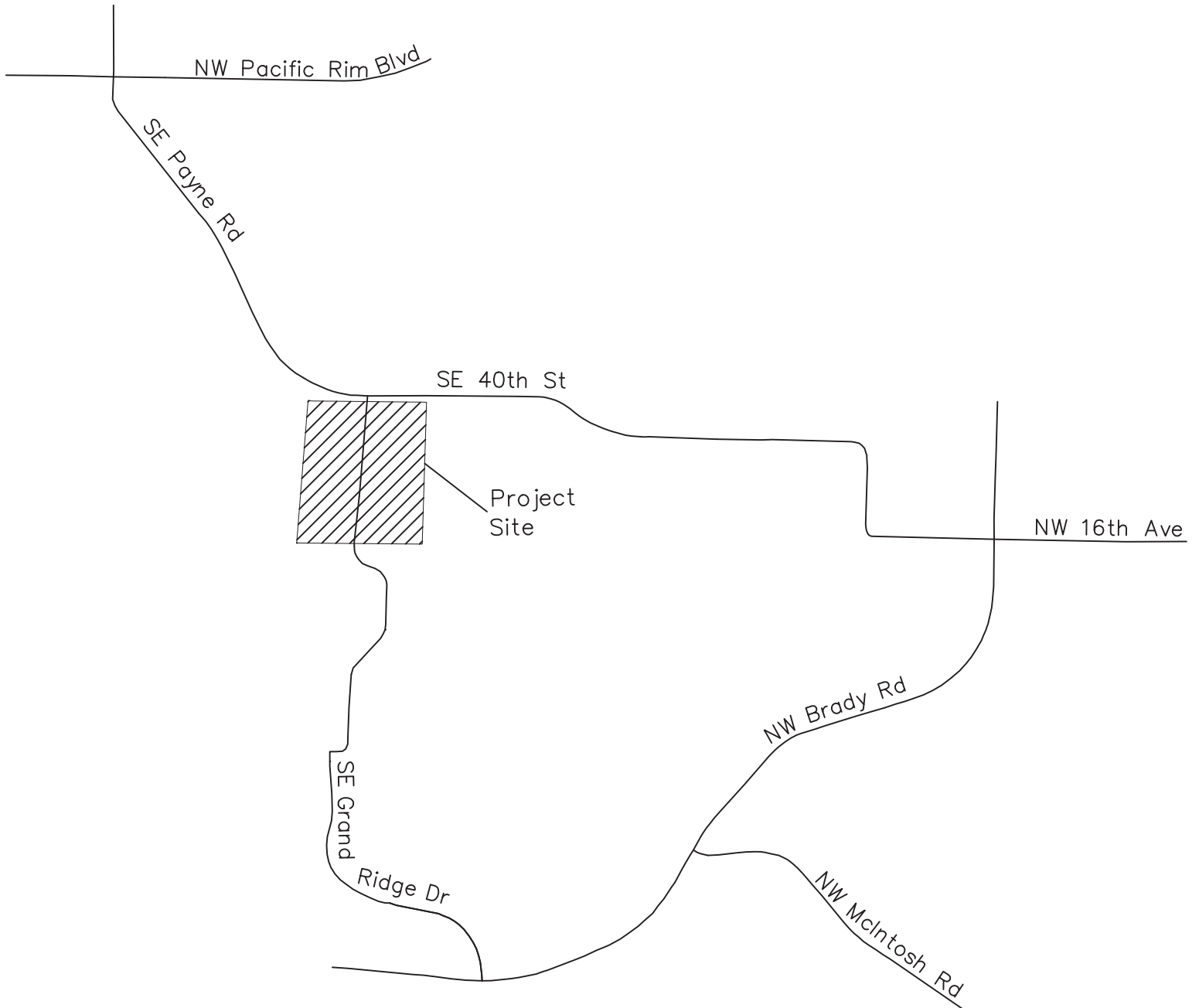


FIGURE 1
Site Vicinity Map





FIGURE 2
Site Plan

SECTION II EXISTING CONDITIONS

SITE CONDITION AND ADJACENT LAND USE

One existing single-family detached home exists on-site and will be demolished upon construction of the subdivision.

TRANSPORTATION FACILITIES

The following provides a description of the existing street system in the study area.

SE Brady Road: SE Brady Road is a two-lane minor arterial roadway. A small section of sidewalk exists along the north side of the roadway east of SE Grand Ridge Drive. The posted speed limit is 40 mph.

NW Brady Road: NW Brady Road is a two-lane minor arterial roadway north of NW 16th Avenue with a posted speed limit of 35 mph. Between NW 16th Avenue and NW McIntosh Road, NW Brady road is a two-lane collector roadway with intermittent sidewalks along both sides of the roadway and a posted speed limit of 35 mph. South of NW McIntosh Road, NW Brady Road is a two-lane minor arterial roadway and has a posted speed limit of 40 mph.

SE Grand Ridge Drive: SE Grand Ridge Drive is a two-lane local roadway. Sidewalks exist along both sides of the roadway in developed areas. The posted speed limit is 25 mph.

NW McIntosh Road: NW McIntosh Road is a two-lane collector roadway. Intermittent sidewalks exist along both sides of the roadway. The posted speed limit is 35 mph.

NW Pacific Rim Boulevard: NW Pacific Rim Boulevard is a four lane minor arterial roadway with a center turn lane/median and additional turn lanes at major intersections. Sidewalks exist on both sides of the roadway. The posted speed limit is 40 mph.

SE Payne Road: SE Payne Road is a two-lane minor arterial roadway. Sidewalks exist along the west side of the roadway. The posted speed limit is 35 mph.

NW 16th Avenue: NW 16th Avenue is a two-to-three lane minor arterial roadway. Intermittent sidewalks exist along both sides of the roadway. The posted speed limit is 25 mph.

SE 40th Street: SE 40th Street is a two-lane collector roadway. A detached non-motorized pedestrian pathway exists along the south side of the roadway. The posted speed limit is 35 mph.

The scope of the traffic impact study was developed from known City of Camas traffic study requirements. From these requirements, the following intersections were analyzed:

- NW Pacific Rim Boulevard/SE Payne Road
- NW Brady Road/NW 16th Avenue
- NW Brady Road/NW McIntosh Road
- SE Brady Road/SE Grand Ridge Drive
- SE 40th Street/Project Access

All of the study area intersections are unsignalized and stop sign controlled. Figure 3 shows the existing lane configurations and traffic control at these intersections.

EXISTING TRAFFIC VOLUMES

A.M. and P.M. peak hour traffic counts were obtained at the study area intersections by HLA in June of 2017 and February 2018. Per the 2010 HCM¹, peak 15-minute traffic volumes were multiplied by four (4) to arrive at the peak hour traffic volumes. With this methodology of developing peak hour traffic volumes, the peak hour factor (PHF) is set to 1.00 because the peaking has already occurred by multiplying the peak 15-minute traffic volume by four (4). The existing condition traffic volumes are presented in Figure 4. The existing traffic counts can be referenced in Appendix A.

A speed study along SE 40th Street was conducted between 5:00 P.M. on March 7, 2018 and 5:00 P.M. on March 8, 2018. The 85th percentile speed eastbound was 40 mph. The 85th percentile westbound was 42 mph. The data can be referenced in Appendix A.

¹ 2010 Highway Capacity Manual (HCM), Volume 3, Transportation Research Board, 2010, page 18-2 and 18-3.

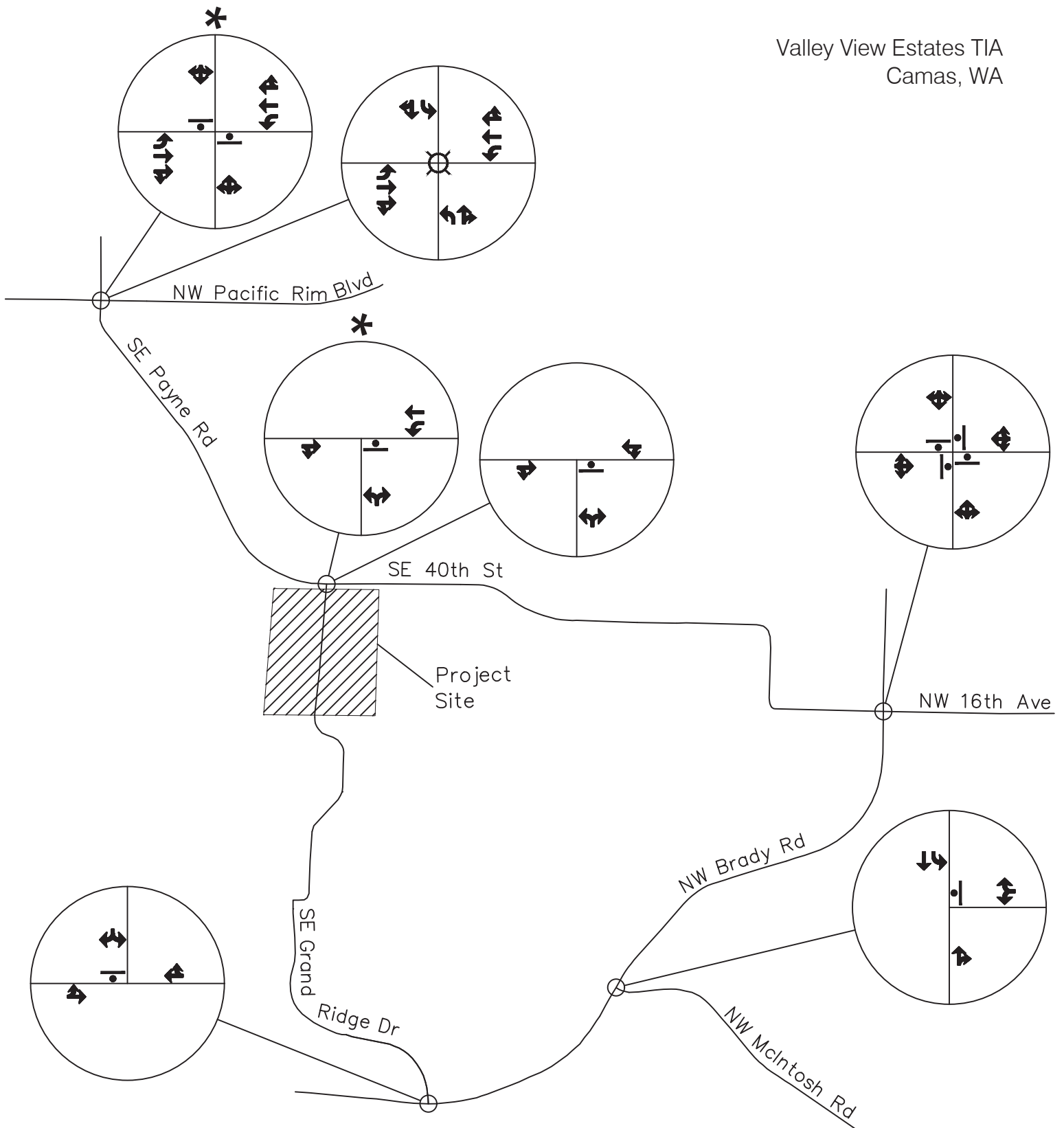
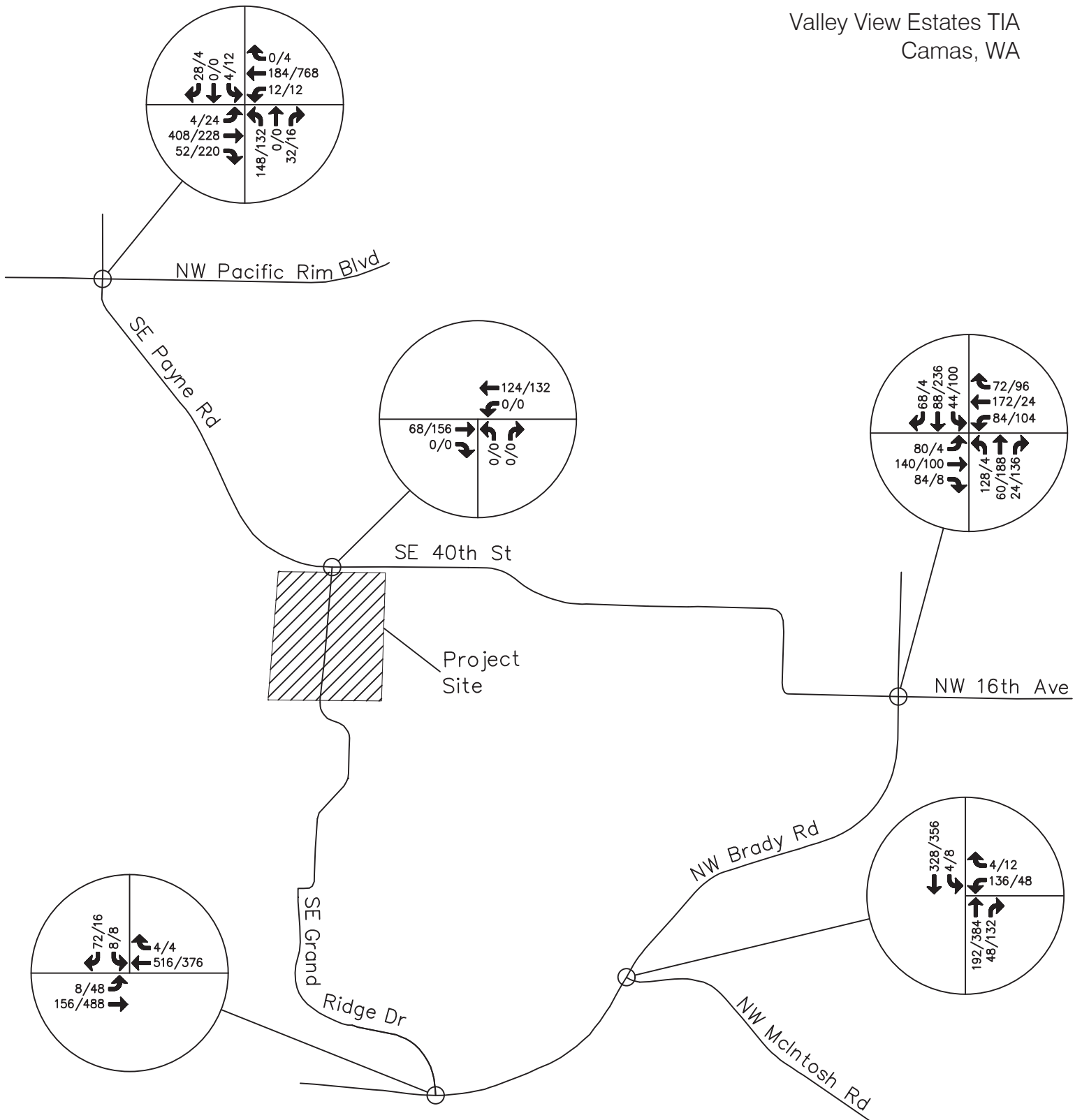


FIGURE 3
Existing Lane Configuration and Traffic Control



LEGEND

128/200

A.M./P.M. Peak Hour
Traffic Volume

FIGURE 4
Existing A.M. and P.M.
Peak Hour Traffic Volumes

EXISTING LEVEL OF SERVICE

Based on the traffic volumes in Figure 4 and the existing lane configurations presented in Figure 3, peak hour traffic operations were analyzed at the study area intersections using the methodologies outlined in the 2010 Highway Capacity Manual (HCM). According to the HCM, there are six levels of service (LOS) by which the operational performance of an intersection may be described. These levels of service range between LOS "A" which indicates a relatively free-flowing condition and LOS "F" which indicates operational breakdown.

LOS D is the City of Camas' adopted level of service standard for arterial/collector intersections. For non-arterial/collector intersections, LOS C is the adopted level of service standard.

Existing A.M. and P.M. peak hour levels of service at the study area intersections are summarized in Table 1. As shown in Table 1, all of the study area intersections are operating within the acceptable levels of service standards or better in the existing condition.

Table 1. Existing Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
All-Way Stop Intersection				
NW Brady Road/NW 16 th Avenue	B	14.0	B	13.0
Unsignalized Intersection				
NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street				
Eastbound Left	A	7.6	A	9.4
Westbound Left	A	8.4	A	8.3
Northbound Approach	C	19.0	D	29.2
Southbound Approach	A	9.4	C	20.7
NW Brady Road/NW McIntosh Road				
Westbound Approach	B	14.9	C	16.4
Southbound Left	A	7.7	A	8.5
SE Brady Road/SE Grand Ridge Road				
Eastbound Left	A	8.6	A	8.2
Southbound Approach	B	12.8	B	13.5
SE 40 th Street/Project Access				
Westbound Left	A	0.0	A	0.0
Northbound Approach	A	0.0	A	0.0

ACCIDENT HISTORY

Accident data was obtained from the Washington State Department of Transportation (WSDOT) for the five year and two month period between January 1, 2013 and February 28, 2018. The data includes total accidents and accidents by severity (i.e. fatal, injury or property damage only). This accident data is summarized in Table 2. Appendix C contains the accident data.

As shown in Table 2, none of the study area intersections have accident rates above 1.00 accidents per million entering vehicles. Accident rates above 1.00 accident per million entering vehicles do not necessarily indicate there is a safety problem, but it is an indicator that further analysis should be conducted. Intersections with accident rates of less than 1.00 accidents per million entering vehicles are considered acceptable and therefore no further analysis is required.

It should be noted that there was a fatality at the NW Brady Road/NW 16th Avenue intersection on July 30, 2017. The crash involved a passenger car and motorcycle. The cause of accident was due to the passenger car running the stop sign and the motorcycle exceeding reasonable safe speed.

Table 2. Summary of Traffic Accident History in Study Area

Intersection	Average Annual Accidents				acc/mev ²
	PDO ¹	Injury	Fatal	Total	
NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz St	1.2	0.6	0.0	1.8	0.28
NW Brady Road/NW 16 th Avenue	1.0	0.2	0.2	1.4	0.31
NW Brady Road/NW McIntosh Road	0.6	0.2	0.0	0.8	0.19
SE Brady Road/SE Grand Ridge Drive	0.4	0.0	0.0	0.4	0.09
SE 40 th Street/Project Access	0.0	0.0	0.0	0.0	0.00

¹ PDO = property damage only

² acc/mev = accidents per million entering vehicles

EXISTING PUBLIC TRANSIT SERVICE

C-Tran provides public transit service in the City of Camas. Currently there are no routes that provide service adjacent to the project site. The closest route to the project site is Route #37 (Mill Plain/Fisher's), which is approximately 0.67 miles from the project site at the intersection of SE 192nd Avenue/SE 34th Street.

NON-MOTORIZED TRANSPORTATION

There is a detached non-motorized pedestrian path along the south side of SE 40th Street directly adjacent to the project site.

PLANNED TRANSPORTATION IMPROVEMENTS

There are seven known transportation improvement projects planned by the City of Camas in the project vicinity based on the City of Camas' 2018-2023 Six Year Transportation Program. These projects are listed below:

NW Brady Road – NW 16th Avenue to NW 25th Avenue

This project will widen the roadway and add bike lanes. Construction is anticipated to begin in 2019. This project has a priority number of 1.

NW Pacific Rim Boulevard at SE Payne Road

This project is the installation of a traffic signal. This project is in its design phase and has a priority number of 6.

NW Brady Road at NW 16th Avenue

This project is the installation of a traffic signal. This project is in its design phase and has a priority number of 7.

NW 18th Avenue – NW Whitman Street to NW Brady Road

This project will reconstruct the roadway and add bike lanes. Construction is anticipated to begin in 2022. This project has a priority number of 24.

NW 18th Avenue – NW Whitman Street to West to City Limits

This project will widen the roadway and add bike lanes. Construction is anticipated to begin in 2022. This project has a priority number of 25.

NW Brady Road – NW McIntosh Road to West City Limits

This project will improve bike and pedestrian facilities. Construction is anticipated to begin in 2023. The priority number for this project is 28.

NW McIntosh Road – NW Brady Road to NW 11th Avenue

This project will widen the roadway and add bike lanes. Construction is anticipated to begin in 2023. The priority number for this project is 32.

SECTION III TRAFFIC IMPACT ANALYSIS

ANALYSIS METHODOLOGY

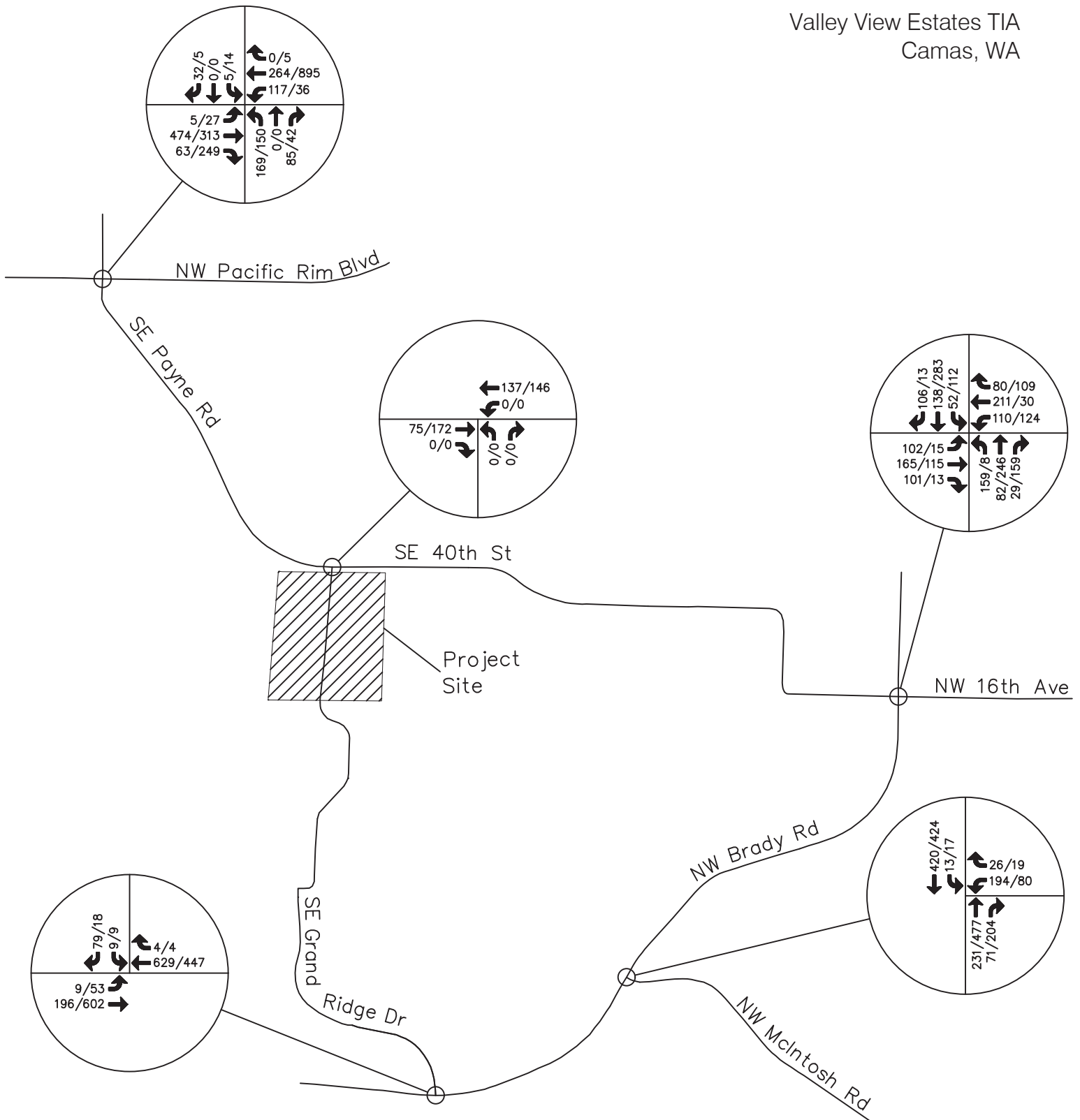
The A.M. and P.M. peak hour traffic impacts generated by the proposed Valley View Estates were analyzed as follows:

- The 2023 “Without Project” traffic volumes were established as the future baseline condition for the traffic analysis and to define a baseline by which project impacts are determined. The 2023 “Without Project” condition traffic volumes were derived by using a 2.0 percent annual, compounded growth factor and adding traffic generated by “in process” developments. The “in-process” traffic volumes were obtained from the City of Camas staff
- A.M., P.M., and daily trip generation were estimated for the proposed development using the rates in "Trip Generation, 10th Edition," (Institute of Transportation Engineers, 2017).
- Trip distribution of site-generated traffic was developed from existing count information, previous traffic studies, locations of major employment centers, and logical travel paths to and from major travel corridors.
- Predicted A.M. and P.M. peak hour site-generated traffic from the proposed development was assigned to the roadway network and added to the 2023 “Without Project” traffic volumes to develop the 2023 “With Project” traffic volumes.

A detailed discussion of the methodology summarized above and the analysis results are contained in the remainder of this section.

2023 “WITHOUT PROJECT” TRAFFIC VOLUMES AND LEVELS OF SERVICE

The 2023 “Without Project” condition was analyzed as the future baseline condition for the traffic analysis and to define a baseline by which project impacts are determined. The 2023 “Without Project” condition traffic volumes were derived by using a 2.0 percent annual, compounded growth factor and adding traffic generated by “in process” developments. The “in-process” traffic volumes were obtained from the City of Camas staff and can be referenced in Appendix D. Figure 5 shows the 2023 “Without Project” traffic volumes.



LEGEND

128/200

A.M./P.M. Peak Hour
Traffic Volume

FIGURE 5
2023 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes



NOT TO SCALE

Levels of service were calculated at the study area intersections with the 2023 “Without Project” traffic volumes shown in Figure 5 and the lane configurations shown earlier in Figure 3. Appendix E contains the level of service worksheets for the 2023 “Without Project” condition.

The 2023 “Without Project” A.M. and P.M. peak hour levels of service at the study area intersections are summarized in Table 3. As shown in Table 3, all of the study area intersections are projected to operate within the acceptable levels of service standards or better in the 2023 “Without Project” condition.

Table 3. 2023 “Without Project” Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersection				
NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street	B	13.0	B	12.3
All-Way Stop Intersection				
NW Brady Road/NW 16 th Avenue	D	28.3	C	19.3
Unsignalized Intersection				
NW Brady Road/NW McIntosh Road				
Westbound Approach	C	22.5	C	24.6
Southbound Left	A	7.9	A	9.0
SE Brady Road/SE Grand Ridge Road				
Eastbound Left	A	9.0	A	8.4
Southbound Approach	B	14.6	C	15.6
SE 40 th Street/Project Access				
Westbound Left	A	0.0	A	0.0
Northbound Approach	A	0.0	A	0.0

DEVELOPMENT PLANS

As previously stated, the proposed project will subdivide approximately 9.26 acres into 36 single-family detached lots. One single-family detached home exists on-site and will be demolished upon construction of the subdivision. Access to the proposed project will be from connections to SE 40th Street and NW Goodwin Street. As previously shown, Figure 2 shows the project site plan.

TRIP GENERATION

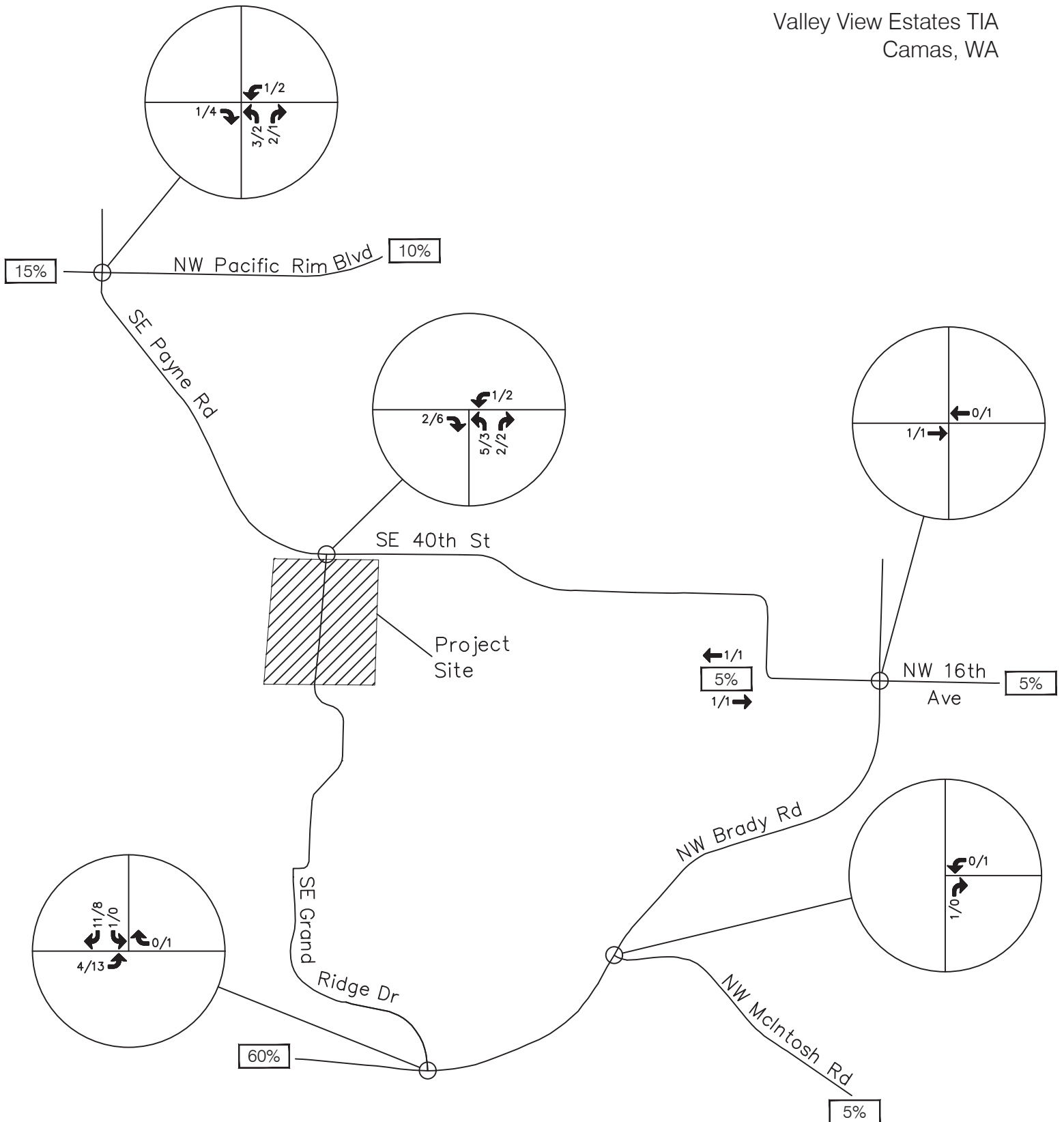
Estimates of daily, A.M. peak hour, and P.M. peak hour trips generated by the proposed project were developed from rates published in “Trip Generation, 10th Edition” (Institute of Transportation Engineers, 2017). The proposed development is expected to generate 333 daily, 26 A.M. peak hour (7 in, 19 out), and 35 P.M. peak hour (28 in, 16 out) net new trips. Table 4 summarizes the project’s trip generation.

Table 4. Trip Generation Summary for Valley View Estates Subdivision

	Amount	Average Daily	A.M. Peak			P.M. Peak		
			In	Out	Total	In	Out	Total
Single-Family Detached Homes (ITE Code 210)								
Rate per dwelling Unit		9.52	0.19	0.56	0.75	0.63	0.37	1.00
Trips	36 units	343	7	20	27	23	13	36
Existing Single-Family Detached Home (ITE Code 210)								
Rate per dwelling Unit		9.52	0.19	0.56	0.75	0.63	0.37	1.00
Trips	1 unit	(10)	-	(1)	(1)	(1)	-	(1)
Net Total Trips		333	7	19	26	22	13	35

TRIP DISTRIBUTION AND ASSIGNMENT

A generalized trip distribution for the A.M. and P.M. peak hour was developed from the existing traffic counts, previous traffic studies, locations of major employment centers, and logical travel paths to and from major travel corridors. Figure 6 shows the resulting trip distribution pattern and assignment of project-generated trips.



LEGEND

128/200

10%

A.M./P.M. Peak Hour
Traffic Volume

Peak Hour Trip Distribution

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

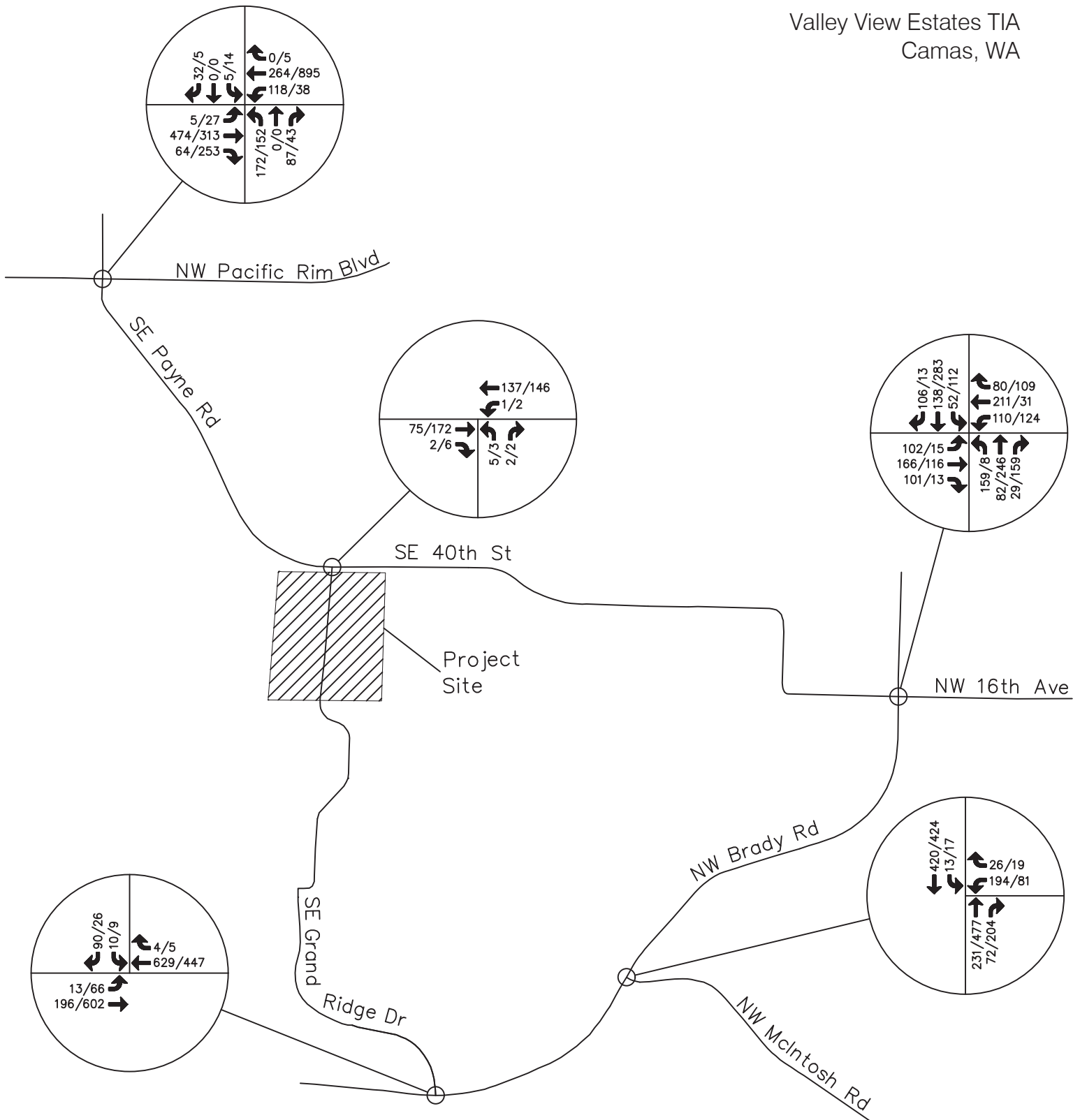
2023 “WITH PROJECT” TRAFFIC VOLUMES AND LEVELS OF SERVICE

The traffic volumes shown in Figures 5 and 6 were combined to arrive at the 2023 “With Project” A.M. and P.M. peak hour traffic volumes. Figure 7 shows these traffic volumes. Levels of service were calculated for the 2023 “With Project” condition based on the traffic volumes shown in Figure 7 and the lane configurations previously shown in Figure 3. Appendix F contains the level of service worksheets for the 2023 “With Project” condition.

The 2023 “With Project” A.M. and P.M. peak hour levels of service at the study area intersections are summarized in Table 5a. As shown in Table 5, all of the study area intersections are projected to operate within the acceptable levels of service standards in the 2023 “With Project” condition.

Table 5. 2023 “With Project” Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersection				
NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street	B	13.0	B	12.3
All-Way Stop Intersection				
NW Brady Road/NW 16 th Avenue	D	28.4	C	19.4
Unsignalized Intersection				
NW Brady Road/NW McIntosh Road				
Westbound Approach	C	22.5	C	24.8
Southbound Left	A	7.9	A	9.0
SE Brady Road/SE Grand Ridge Road				
Eastbound Left	A	9.0	A	8.4
Southbound Approach	B	14.9	C	15.1
SE 40 th Street/Project Access				
Westbound Left	A	7.4	A	7.6
Northbound Approach	A	9.4	A	9.9



LEGEND

128/200

A.M./P.M. Peak Hour
Traffic Volume

FIGURE 7
2023 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes



NOT TO SCALE

CORNER SIGHT DISTANCE

The minimum corner sight distance was analyzed for the proposed Valley View Estates subdivision. The minimum corner sight distance required for the proposed SE 40th Street/Project Access intersection is based on the City of Camas' Design Standard Manual. Per the City of Camas' Design Standard Manual, public and private streets must comply with the sight distance requirements contained in the current "A Policy on Geometric Design on Highways and Streets," published by AASHTO (American Association of State Highway and Transportation Officials.) The most recent edition of this reference is the 2011 – 6th Edition.

From AASHTO, the following intersection sight distances are relevant to the project's site access intersection:

- Case B1 – left turn from minor road
- Case B2 – right turn from minor road
- Case F – left from major road

The required sight distance for Case B1 based on a posted speed limit of 35 mph along SE 40th Street is 390 feet. This requirement can be found in Table 9-6 of the "A Policy on Geometric Design on Highways and Streets," page 9-38.

The required sight distance for Case B2 based on a posted speed limit of 35 mph along SE 40th Street is 335 feet. This requirement can be found in Table 9-8 of the "A Policy on Geometric Design on Highways and Streets," page 9-41.

The required sight distance for Case F based on a posted speed limit of 35 mph along SE 40th Street is 285 feet. This requirement can be found in Table 9-14 of the "A Policy on Geometric Design on Highways and Streets," page 9-52.

The corner sight distance at the proposed SE 40th Street/Project Access intersection was field measured and compared to the minimum acceptable AASHTO standards described above. Based on field measurements conducted by H. Lee & Associates, PLLC, all of the AASHTO sight distance requirements can be met at the proposed SE 40th Street/Project Access intersection as long as any vegetation within the sight distance triangles is properly maintained and no obstructions that obscure the driver's sight distance are located within the sight distance triangles. Since the intersection is not yet built, the intersection corner sight distance should be re-verified at the final engineering stage of the project.

LANE WARRANT ANALYSIS

Turn lane warrants at the SE 40th Street/Project Access intersection were not conducted because a westbound left turn lane into the site will be constructed with the subdivision.

CONCLUSIONS

Findings

The following are the findings from the traffic analysis:

- The proposed development is expected to generate 333 daily, 26 A.M. peak hour (7 in, 19 out), and 35 P.M. peak hour (22 in, 13 out) net new trips.
- All of the study area intersections are projected to meet the City of Camas' level of service standards in the 2023 "Without Project" and 2023 "With Project" condition.
- Turn lane warrants at the SE 40th Street/Project Access intersection were not conducted because a westbound left turn lane into the site will be constructed with the subdivision.
- Based on field measurements conducted by H. Lee & Associates, PLLC, the project access intersection should be able to meet the sight distance requirements as long as any vegetation within the sight distance triangles are properly maintained after construction and no obstructions are placed within the sight distance triangles that could impede a driver's vision. Because the access into the project site is not built, the corner sight distance should be re-verified in the final engineering/construction stages of development.

Recommendations

- Based on the traffic impact analysis documented in this report, no physical, off-site mitigation would be needed.

APPENDIX A
TRAFFIC COUNTS & SPEED STUDY

Intersection: NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street
 AM Peak Hour Turning Movement Volumes

Date: 06/22/17

Time	SB				WB				NB				EB				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
15 Minute Totals																		
7:00 - 7:15 AM	3	0	1	0	0	51	0	1	1	0	13	1	4	141	0	0	214	
7:15 - 7:30 AM	5	0	2	0	0	49	1	5	0	0	24	1	10	71	1	2	163	
7:30 - 7:45 AM	5	0	0	0	1	43	0	0	5	0	21	0	8	88	2	3	173	
7:45 - 8:00 AM	7	0	1	0	0	46	3	2	8	0	37	1	13	102	1	4	218	
8:00 - 8:15 AM	5	0	1	0	0	46	6	0	5	0	20	0	10	69	1	1	163	
8:15 - 8:30 AM	3	0	0	0	0	42	2	6	3	0	22	0	13	48	2	3	135	
8:30 - 8:45 AM	3	2	1	1	0	50	3	2	6	0	42	2	11	50	2	6	170	
8:45 - 9:00 AM	5	0	2	0	2	52	2	3	18	0	40	0	16	56	0	6	193	
																Peak 15 Total		218
Hourly Total by 15 minutes																		
7:00 - 8:00 AM	20	0	4	0	1	189	4	8	14	0	95	3	35	402	4	9	768	
7:15 - 8:15 AM	22	0	4	0	1	184	10	7	18	0	102	2	41	330	5	10	717	
7:30 - 8:30 AM	20	0	2	0	1	177	11	8	21	0	100	1	44	307	6	11	689	
7:45 - 8:45 AM	18	2	3	1	0	184	14	10	22	0	121	3	47	269	6	14	686	
8:00 - 9:00 AM	16	2	4	1	2	190	13	11	32	0	124	2	50	223	5	16	661	
Peak Hour 7:00 - 8:00 AM	20	0	4	0	1	189	4	8	14	0	95	3	35	402	4	9	768	
Peak Hour Factor	0.75				0.95				0.61				0.76				0.88	
Peak Hour % Trucks	0%				4%				3%				2%					
Peak 15 Min % Trucks	0%				4%				2%				3%					

Intersection: NW Pacific Rim Boulevard/SE Payne Road/NW Lorenz Street
 PM Peak Hour Turning Movement Volumes

Date: 06/22/17

Time	SB				WB				NB				EB				Total
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	
15 Minute Totals																	
4:00 - 4:15 PM	4	0	0	0	2	123	2	2	4	0	34	1	39	49	5	2	262
4:15 - 4:30 PM	3	0	0	0	2	102	4	2	1	0	31	0	46	61	3	1	253
4:30 - 4:45 PM	1	0	1	0	0	121	4	3	2	0	23	0	34	52	4	3	242
4:45 - 5:00 PM	1	0	1	0	1	87	0	1	0	0	32	0	50	53	2	2	227
5:00 - 5:15 PM	1	0	3	0	1	192	3	2	4	0	33	0	55	57	6	1	355
5:15 - 5:30 PM	6	0	1	0	5	123	3	1	11	0	29	0	46	79	9	1	312
5:30 - 5:45 PM	4	0	0	0	2	92	3	2	5	0	29	0	43	60	4	1	242
5:45 - 6:00 PM	1	0	0	0	0	60	7	0	5	1	33	1	49	43	3	1	202
Peak 15 Total																355	
Hourly Total by 15 minutes																	
4:00 - 5:00 PM	9	0	2	0	5	433	10	8	7	0	120	1	169	215	14	8	984
4:15 - 5:15 PM	6	0	5	0	4	502	11	8	7	0	119	0	185	223	15	7	1,077
4:30 - 5:30 PM	9	0	6	0	7	523	10	7	17	0	117	0	185	241	21	7	1,136
4:45 - 5:45 PM	12	0	5	0	9	494	9	6	20	0	123	0	194	249	21	5	1,136
5:00 - 6:00 PM	12	0	4	0	8	467	16	5	25	1	124	1	193	239	22	4	1,111
Peak Hour 4:30 - 5:30 PM	9	0	6	0	7	523	10	7	17	0	117	0	185	241	21	7	1,136
Peak Hour Factor	0.54				0.69				0.84				0.83				0.80
Peak Hour % Trucks	0%				1%				0%				2%				
Peak 15 Min % Trucks	0%				1%				0%				1%				

Intersection: NW Brady Road/NW 16th Avenue
 AM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	SB				WB				NB				EB				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
<u>15 Minute Totals</u>																		
7:00 - 7:15 AM	1	30	7	0	16	13	40	1	9	22	2	3	4	10	4	3	158	
7:15 - 7:30 AM	2	39	8	1	25	8	53	2	13	24	0	4	0	7	4	0	183	
7:30 - 7:45 AM	4	38	6	2	42	14	33	5	10	31	3	3	1	5	5	2	192	
7:45 - 8:00 AM	8	31	18	0	25	17	36	1	12	35	5	1	7	9	9	1	212	
8:00 - 8:15 AM	8	29	14	1	30	20	48	0	13	25	5	3	5	13	3	0	213	
8:15 - 8:30 AM	7	27	6	2	27	15	41	4	16	23	7	5	1	5	1	0	176	
8:30 - 8:45 AM	8	30	12	4	16	23	22	0	14	22	11	5	1	6	2	0	167	
8:45 - 9:00 AM	17	22	11	1	18	43	21	2	6	15	32	2	21	35	20	7	261	
																Peak 15 Total		261
<u>Hourly Total by 15 minutes</u>																		
7:00 - 8:00 AM	15	138	39	3	108	52	162	9	44	112	10	11	12	31	22	6	745	
7:15 - 8:15 AM	22	137	46	4	122	59	170	8	48	115	13	11	13	34	21	3	800	
7:30 - 8:30 AM	27	125	44	5	124	66	158	10	51	114	20	12	14	32	18	3	793	
7:45 - 8:45 AM	31	117	50	7	98	75	147	5	55	105	28	14	14	33	15	1	768	
8:00 - 9:00 AM	40	108	43	8	91	101	132	6	49	85	55	15	28	59	26	7	817	
Peak Hour 8:00 - 9:00 AM	40	108	43	8	91	101	132	6	49	85	55	15	28	59	26	7	817	
Peak Hour Factor				0.94	0.83				0.89				0.37				0.78	
Peak Hour % Trucks		4%		2%				8%				6%						
Peak 15 Min % Trucks		2%		2%				4%				9%						

Intersection: NW Brady Road/NW 16th Avenue
 PM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	SB				WB				NB				EB				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
15 Minute Totals																		
4:00 - 4:15 PM	6	23	25	3	25	21	26	0	26	28	1	0	7	33	7	0	228	
4:15 - 4:30 PM	7	36	27	0	20	19	9	0	23	41	4	0	7	28	7	0	228	
4:30 - 4:45 PM	8	25	23	1	24	13	23	1	26	27	2	0	25	20	4	0	220	
4:45 - 5:00 PM	2	29	22	0	22	13	15	0	34	24	3	0	7	24	4	0	199	
5:00 - 5:15 PM	1	59	25	2	24	6	26	0	34	47	1	0	2	25	1	0	251	
5:15 - 5:30 PM	4	42	23	0	17	8	15	0	36	43	0	1	3	28	1	0	220	
5:30 - 5:45 PM	4	31	32	0	20	12	30	0	34	42	1	1	5	27	0	0	238	
5:45 - 6:00 PM	6	25	21	1	30	20	22	1	43	44	2	0	1	24	5	0	243	
																Peak 15 Total		251
Hourly Total by 15 minutes																		
4:00 - 5:00 PM	23	113	97	4	91	66	73	1	109	120	10	0	46	105	22	0	875	
4:15 - 5:15 PM	18	149	97	3	90	51	73	1	117	139	10	0	41	97	16	0	898	
4:30 - 5:30 PM	15	155	93	3	87	40	79	1	130	141	6	1	37	97	10	0	890	
4:45 - 5:45 PM	11	161	102	2	83	39	86	0	138	156	5	2	17	104	6	0	908	
5:00 - 6:00 PM	15	157	101	3	91	46	93	1	147	176	4	2	11	104	7	0	952	
Peak Hour 5:00 - 6:00 PM	15	157	101	3	91	46	93	1	147	176	4	2	11	104	7	0	952	
Peak Hour Factor																		
Peak Hour % Trucks																		
Peak 15 Min % Trucks																		

Intersection: NW Brady Road/NW McIntosh Road
AM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	<u>SB</u>				<u>WB</u>				<u>NB</u>				<u>EB</u>				Total
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	
<u>15 Minute Totals</u>																	
7:00 - 7:15 AM	0	73	1	1	3	0	26	0	5	26	0	2	0	0	0	0	134
7:15 - 7:30 AM	0	101	0	0	4	0	27	1	8	31	0	5	0	0	0	0	171
7:30 - 7:45 AM	0	84	2	1	1	0	33	0	8	35	0	2	0	0	0	0	163
7:45 - 8:00 AM	0	82	1	2	1	0	34	0	12	48	0	3	0	0	0	0	178
8:00 - 8:15 AM	0	87	1	0	1	0	26	3	13	40	0	6	0	0	0	0	168
8:15 - 8:30 AM	0	71	2	1	2	0	29	0	7	38	0	5	0	0	0	0	149
8:30 - 8:45 AM	0	65	2	3	4	0	22	2	13	41	0	5	0	0	0	0	147
8:45 - 9:00 AM	0	75	2	3	7	0	35	0	9	28	0	3	0	0	0	0	156
																Peak 15 Total	178
<u>Hourly Total by 15 minutes</u>																	
7:00 - 8:00 AM	0	340	4	4	9	0	120	1	33	140	0	12	0	0	0	0	646
7:15 - 8:15 AM	0	354	4	3	7	0	120	4	41	154	0	16	0	0	0	0	680
7:30 - 8:30 AM	0	324	6	4	5	0	122	3	40	161	0	16	0	0	0	0	658
7:45 - 8:45 AM	0	305	6	6	8	0	111	5	45	167	0	19	0	0	0	0	642
8:00 - 9:00 AM	0	298	7	7	14	0	112	5	42	147	0	19	0	0	0	0	620
Peak Hour 7:15 - 8:15 AM	0	354	4	3	7	0	120	4	41	154	0	16	0	0	0	0	680
Peak Hour Factor	0.89				0.91				0.81				0.00				0.96
Peak Hour % Trucks	1%				3%				8%				0%				
Peak 15 Min % Trucks	2%				0%				5%				0%				

Intersection: NW Brady Road/NW McIntosh Road
PM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	<u>SB</u>				<u>WB</u>				<u>NB</u>				<u>EB</u>				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
<u>15 Minute Totals</u>																		
4:00 - 4:15 PM	0	52	3	1	3	0	16	1	25	54	0	0	0	0	0	0	153	
4:15 - 4:30 PM	0	48	4	0	4	0	11	2	27	66	0	0	0	0	0	0	160	
4:30 - 4:45 PM	0	60	2	0	2	0	17	0	22	51	0	0	0	0	0	0	154	
4:45 - 5:00 PM	0	47	1	0	2	0	13	0	37	66	0	1	0	0	0	0	166	
5:00 - 5:15 PM	0	89	2	3	3	0	12	0	33	96	0	1	0	0	0	0	235	
5:15 - 5:30 PM	0	48	6	1	2	0	13	0	21	81	0	1	0	0	0	0	171	
5:30 - 5:45 PM	0	66	1	0	2	0	14	2	33	75	0	1	0	0	0	0	191	
5:45 - 6:00 PM	0	49	2	2	2	0	29	0	31	100	0	1	0	0	0	0	213	
																Peak 15 Total		235
<u>Hourly Total by 15 minutes</u>																		
4:00 - 5:00 PM	0	207	10	1	11	0	57	3	111	237	0	1	0	0	0	0	633	
4:15 - 5:15 PM	0	244	9	3	11	0	53	2	119	279	0	2	0	0	0	0	715	
4:30 - 5:30 PM	0	244	11	4	9	0	55	0	113	294	0	3	0	0	0	0	726	
4:45 - 5:45 PM	0	250	10	4	9	0	52	2	124	318	0	4	0	0	0	0	763	
5:00 - 6:00 PM	0	252	11	6	9	0	68	2	118	352	0	4	0	0	0	0	810	
Peak Hour 5:00 - 6:00 PM	0	252	11	6	9	0	68	2	118	352	0	4	0	0	0	0	810	
Peak Hour Factor	0.72				0.62				0.90				0.00				0.86	
Peak Hour % Trucks	2%				3%				1%				0%					
Peak 15 Min % Trucks	3%				0%				1%				0%					

Intersection: SE Brady Road/SE Grand Ridge Drive
 AM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	SB				WB				NB				EB				Total														
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks															
15 Minute Totals																															
7:00 - 7:15 AM	22	0	4	0	0	98	0	1	0	0	0	0	0	26	7	3	157														
7:15 - 7:30 AM	18	0	2	0	1	129	0	0	0	0	0	0	0	39	2	4	191														
7:30 - 7:45 AM	21	0	1	0	0	119	0	1	0	0	0	0	0	47	0	3	188														
7:45 - 8:00 AM	12	0	2	0	3	112	0	2	0	0	0	0	0	53	0	2	182														
8:00 - 8:15 AM	5	0	0	0	1	107	0	3	0	0	0	0	0	51	3	1	167														
8:15 - 8:30 AM	13	0	2	0	0	98	0	1	0	0	0	0	0	40	6	5	159														
8:30 - 8:45 AM	18	0	1	0	2	85	0	3	0	0	0	0	0	53	5	8	164														
8:45 - 9:00 AM	5	0	0	0	1	104	0	2	0	0	0	0	0	38	4	4	152														
																Peak 15 Total		191													
Hourly Total by 15 minutes																															
7:00 - 8:00 AM	73	0	9	0	4	458	0	4	0	0	0	0	0	165	9	12	718														
7:15 - 8:15 AM	56	0	5	0	5	467	0	6	0	0	0	0	0	190	5	10	728														
7:30 - 8:30 AM	51	0	5	0	4	436	0	7	0	0	0	0	0	191	9	11	696														
7:45 - 8:45 AM	48	0	5	0	6	402	0	9	0	0	0	0	0	197	14	16	672														
8:00 - 9:00 AM	41	0	3	0	4	394	0	9	0	0	0	0	0	182	18	18	642														
Peak Hour 7:15 - 8:15 AM	56	0	5	0	5	467	0	6	0	0	0	0	0	190	5	10	728														
Peak Hour Factor																		0.69	0.91				0.00				0.90				0.95
Peak Hour % Trucks		0%			1%			0%			5%																				
Peak 15 Min % Trucks		0%			0%			0%			10%																				

Intersection: SE Brady Road/SE Grand Ridge Drive
 PM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	<u>SB</u>				<u>WB</u>				<u>NB</u>				<u>EB</u>				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
<u>15 Minute Totals</u>																		
4:00 - 4:15 PM	5	0	0	1	1	64	0	3	0	0	0	0	0	79	8	2	157	
4:15 - 4:30 PM	10	0	2	1	0	55	0	2	0	0	0	0	0	86	14	1	167	
4:30 - 4:45 PM	7	0	0	1	4	72	0	1	0	0	0	0	0	78	5	1	166	
4:45 - 5:00 PM	8	0	4	0	2	55	0	1	0	0	0	0	0	89	9	0	167	
5:00 - 5:15 PM	4	0	2	0	1	94	0	2	0	0	0	0	0	122	12	1	235	
5:15 - 5:30 PM	15	0	2	0	3	61	0	1	0	0	0	0	0	94	15	1	190	
5:30 - 5:45 PM	9	0	0	0	0	72	0	2	0	0	0	0	0	113	12	3	206	
5:45 - 6:00 PM	6	0	3	0	3	75	0	2	0	0	0	0	0	124	19	2	230	
																Peak 15 Total		235
<u>Hourly Total by 15 minutes</u>																		
4:00 - 5:00 PM	30	0	6	3	7	246	0	7	0	0	0	0	0	332	36	4	657	
4:15 - 5:15 PM	29	0	8	2	7	276	0	6	0	0	0	0	0	375	40	3	735	
4:30 - 5:30 PM	34	0	8	1	10	282	0	5	0	0	0	0	0	383	41	3	758	
4:45 - 5:45 PM	36	0	8	0	6	282	0	6	0	0	0	0	0	418	48	5	798	
5:00 - 6:00 PM	34	0	7	0	7	302	0	7	0	0	0	0	0	453	58	7	861	
Peak Hour 5:00 - 6:00 PM	34	0	7	0	7	302	0	7	0	0	0	0	0	453	58	7	861	
Peak Hour Factor	0.60				0.81				0.00				0.89				0.92	
Peak Hour % Trucks	0%				2%				0%				1%					
Peak 15 Min % Trucks	0%				2%				0%				1%					

Intersection: SE 40th Street/Project Access
 AM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	<u>SB</u>				<u>WB</u>				<u>NB</u>				<u>EB</u>				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
<u>15 Minute Totals</u>																		
7:00 - 7:15 AM	0	0	0	0	0	21	0	1	0	0	0	0	0	2	0	2	23	
7:15 - 7:30 AM	0	0	0	0	0	15	0	1	0	0	0	0	0	7	0	1	22	
7:30 - 7:45 AM	0	0	0	0	0	29	0	1	0	0	0	0	0	7	0	0	36	
7:45 - 8:00 AM	0	0	0	0	0	17	0	0	0	0	0	0	0	12	0	0	29	
8:00 - 8:15 AM	0	0	0	0	0	14	0	0	0	0	0	0	0	13	0	1	27	
8:15 - 8:30 AM	0	0	0	0	0	17	0	1	0	0	0	0	0	9	0	1	26	
8:30 - 8:45 AM	0	0	0	0	0	21	0	0	0	0	0	0	0	16	0	0	37	
8:45 - 9:00 AM	0	0	0	0	0	31	0	2	0	0	0	0	0	17	0	3	48	
																Peak 15 Total		48
<u>Hourly Total by 15 minutes</u>																		
7:00 - 8:00 AM	0	0	0	0	0	82	0	3	0	0	0	0	0	28	0	3	110	
7:15 - 8:15 AM	0	0	0	0	0	75	0	2	0	0	0	0	0	39	0	2	114	
7:30 - 8:30 AM	0	0	0	0	0	77	0	2	0	0	0	0	0	41	0	2	118	
7:45 - 8:45 AM	0	0	0	0	0	69	0	1	0	0	0	0	0	50	0	2	119	
8:00 - 9:00 AM	0	0	0	0	0	83	0	3	0	0	0	0	0	55	0	5	138	
Peak Hour 8:00 - 9:00 AM	0	0	0	0	0	83	0	3	0	0	0	0	0	55	0	5	138	
Peak Hour Factor	0.00				0.67				0.00				0.81				0.72	
Peak Hour % Trucks	0%				4%				0%				9%					
Peak 15 Min % Trucks	0%				6%				0%				18%					

Intersection: SE 40th Street/Project Access
 PM Peak Hour Turning Movement Volumes

Date: 02/13/18

Time	<u>SB</u>				<u>WB</u>				<u>NB</u>				<u>EB</u>				Total	
	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks		
<u>15 Minute Totals</u>																		
4:00 - 4:15 PM	0	0	0	0	0	33	0	0	0	0	0	0	0	39	0	0	72	
4:15 - 4:30 PM	0	0	0	0	0	23	0	0	0	0	0	0	0	27	0	0	50	
4:30 - 4:45 PM	0	0	0	0	0	28	0	0	0	0	0	0	0	34	0	0	62	
4:45 - 5:00 PM	0	0	0	0	0	18	0	0	0	0	0	0	0	44	0	0	62	
5:00 - 5:15 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	28	0	0	37	
5:15 - 5:30 PM	0	0	0	0	0	22	0	0	0	0	0	0	0	34	0	0	56	
5:30 - 5:45 PM	0	0	0	0	0	22	0	0	0	0	0	0	0	50	0	0	72	
5:45 - 6:00 PM	0	0	0	0	0	19	0	0	0	0	0	0	0	36	0	0	55	
																Peak 15 Total		72
<u>Hourly Total by 15 minutes</u>																		
4:00 - 5:00 PM	0	0	0	0	0	102	0	0	0	0	0	0	0	144	0	0	246	
4:15 - 5:15 PM	0	0	0	0	0	78	0	0	0	0	0	0	0	133	0	0	211	
4:30 - 5:30 PM	0	0	0	0	0	77	0	0	0	0	0	0	0	140	0	0	217	
4:45 - 5:45 PM	0	0	0	0	0	71	0	0	0	0	0	0	0	156	0	0	227	
5:00 - 6:00 PM	0	0	0	0	0	72	0	0	0	0	0	0	0	148	0	0	220	
Peak Hour 4:00 - 5:00 PM	0	0	0	0	0	102	0	0	0	0	0	0	0	144	0	0	246	
Peak Hour Factor	0.00				0.77				0.00				0.82				0.85	
Peak Hour % Trucks	0%				0%				0%				0%					
Peak 15 Min % Trucks	0%				0%				0%				0%					

H. LEE & ASSOCIATES, PLLC

P.O. Box 1849
Vancouver, WA 98668

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																SE 40th Street Between SE201st St and NW Deer Fern St		
A to B WB																		
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace	
03/07/18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	0	0	0	0	14	22	15	7	0	0	0	0	0	0	58	34-43	37	
18:00	1	0	0	3	21	22	14	2	0	0	0	0	0	0	63	31-40	43	
19:00	1	0	0	4	21	32	10	1	1	0	0	0	0	0	70	31-40	53	
20:00	0	0	0	1	6	15	6	1	0	0	0	0	0	0	29	31-40	21	
21:00	0	0	0	1	7	8	1	1	0	0	0	0	0	0	18	31-40	15	
22:00	0	0	0	1	2	1	0	0	0	0	0	0	0	0	4	25-34	3	
23:00	0	0	0	0	0	1	2	0	0	0	0	0	0	0	3	35-44	3	
Total	2	0	0	10	71	101	48	12	1	0	0	0	0	0	245			
Percent	0.8%	0.0%	0.0%	4.1%	29.0%	41.2%	19.6%	4.9%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM Peak Vol.																		
PM Peak Vol.	18:00 1			19:00 4	18:00 21	19:00 32	17:00 15	17:00 7	19:00 1						19:00 70			

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SE 40th Street
Between SE201st St and NW Deer Fern St

A to B WB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
03/08/18	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	19-28	1
01:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	34-43	1
02:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	24-33	1
03:00	0	0	0	0	0	2	0	0	1	0	0	0	0	0	3	30-39	2
04:00	0	0	1	1	1	1	1	0	0	0	0	0	0	0	5	36-45	2
05:00	0	0	0	1	3	8	5	3	0	0	0	0	0	0	20	35-44	13
06:00	0	0	0	2	5	15	5	2	0	0	0	0	0	0	29	36-45	20
07:00	0	0	0	5	11	36	19	2	1	0	0	0	0	0	74	36-45	55
08:00	0	0	0	7	22	44	24	1	0	0	0	0	0	0	98	35-44	68
09:00	2	0	0	6	19	41	26	7	0	0	0	0	0	0	101	36-45	67
10:00	5	1	1	1	14	22	7	2	0	0	0	0	0	0	53	31-40	36
11:00	0	0	1	7	19	20	14	2	0	0	0	0	0	0	63	31-40	39
12 PM	1	0	0	5	11	24	10	1	1	0	0	0	0	0	53	31-40	35
13:00	1	1	4	4	14	18	17	1	0	0	0	0	0	0	60	36-45	35
14:00	1	0	1	1	20	22	13	2	0	0	0	0	0	0	60	31-40	42
15:00	0	0	2	4	34	35	12	4	1	1	0	0	0	0	93	31-40	69
16:00	4	0	1	2	22	33	14	1	0	1	0	0	0	0	78	31-40	55
17:00	0	0	0	2	0	1	0	0	0	0	0	0	0	0	3	20-29	2
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	14	2	11	49	196	322	168	28	4	2	0	0	0	0	796		
Percent	1.8%	0.3%	1.4%	6.2%	24.6%	40.5%	21.1%	3.5%	0.5%	0.3%	0.0%	0.0%	0.0%	0.0%			
AM Peak	10:00	10:00	04:00	08:00	08:00	08:00	09:00	09:00	03:00						09:00		
Vol.	5	1	1	7	22	44	26	7	1						101		
PM Peak	16:00	13:00	13:00	12:00	15:00	15:00	13:00	15:00	12:00	15:00					15:00		
Vol.	4	1	4	5	34	35	17	4	1	1					93		
Total	16	2	11	59	267	423	216	40	5	2	0	0	0	0	1041		
Percent	1.5%	0.2%	1.1%	5.7%	25.6%	40.6%	20.7%	3.8%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 31 MPH
50th Percentile : 36 MPH
85th Percentile : 42 MPH
95th Percentile : 44 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 690
Percent in Pace : 66.3%
Number of Vehicles > 55 MPH : 2
Percent of Vehicles > 55 MPH : 0.2%
Mean Speed(Average): 37 MPH

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																SE 40th Street Between SE201st St and NW Deer Fern St					
B to A EB																					
Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace				
03/07/18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*			
17:00	0	0	2	8	45	64	21	4	1	0	0	0	0	0	145	31-40	109				
18:00	1	0	1	9	37	41	22	1	0	0	0	0	0	0	112	31-40	78				
19:00	1	0	0	7	39	30	11	2	2	0	0	0	0	0	92	31-40	69				
20:00	0	0	0	5	19	18	10	0	1	0	0	0	0	0	53	31-40	37				
21:00	0	0	1	3	17	21	6	2	0	0	0	0	0	0	50	31-40	38				
22:00	0	0	0	2	2	5	2	1	0	0	0	0	0	0	12	36-45	7				
23:00	0	0	0	0	1	4	3	1	0	0	0	0	0	0	9	35-44	7				
Total	2	0	4	34	160	183	75	11	4	0	0	0	0	0	473						
Percent	0.4%	0.0%	0.8%	7.2%	33.8%	38.7%	15.9%	2.3%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%							
AM Peak Vol.																					
PM Peak Vol.	18:00 1		17:00 2	18:00 9	17:00 45	17:00 64	18:00 22	17:00 4	19:00 2										17:00 145		

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SE 40th Street
Between SE201st St and NW Deer Fern St

B to A EB

Start Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total	Pace Speed	Number in Pace
03/08/18	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2	34-43	2
01:00	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2	25-34	2
02:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	34-43	1
03:00	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	30-39	2
04:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	29-38	1
05:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	24-33	1
06:00	0	0	0	3	3	3	0	1	0	0	0	0	0	0	10	31-40	6
07:00	1	0	0	3	7	15	0	0	0	0	0	0	0	0	26	31-40	22
08:00	2	0	0	7	19	21	6	1	0	0	0	0	0	0	56	31-40	40
09:00	2	1	0	6	19	16	9	4	0	0	0	0	0	0	57	31-40	35
10:00	1	0	4	10	14	21	10	1	0	0	0	0	0	0	61	31-40	35
11:00	0	0	2	7	19	29	11	2	0	0	0	0	0	0	70	31-40	48
12 PM	1	0	1	7	21	30	12	1	1	0	0	0	0	0	74	31-40	51
13:00	0	0	0	6	22	20	12	2	1	0	0	0	0	0	63	31-40	42
14:00	1	0	0	8	27	22	18	2	0	0	0	0	0	0	78	31-40	49
15:00	0	1	1	8	44	42	17	2	0	0	0	0	0	0	115	31-40	86
16:00	8	1	8	8	38	67	13	3	0	0	0	0	0	0	146	31-40	105
17:00	0	0	1	2	0	0	0	0	0	0	0	0	0	0	3	20-29	3
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	16	3	17	75	236	290	110	19	2	0	0	0	0	0	768		
Percent	2.1%	0.4%	2.2%	9.8%	30.7%	37.8%	14.3%	2.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	09:00	10:00	10:00	08:00	11:00	11:00	09:00							11:00		
Vol.	2	1	4	10	19	29	11	4							70		
PM Peak	16:00	15:00	16:00	14:00	15:00	16:00	14:00	16:00	12:00						16:00		
Vol.	8	1	8	8	44	67	18	3	1						146		
Total	18	3	21	109	396	473	185	30	6	0	0	0	0	0	1241		
Percent	1.5%	0.2%	1.7%	8.8%	31.9%	38.1%	14.9%	2.4%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 30 MPH
50th Percentile : 35 MPH
85th Percentile : 40 MPH
95th Percentile : 44 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 869
Percent in Pace : 70.0%
Number of Vehicles > 55 MPH : 0
Percent of Vehicles > 55 MPH : 0.0%
Mean Speed(Average) : 36 MPH

APPENDIX B

EXISTING LEVEL OF SERVICE

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	408	52	12	184	0	148	0	32	4	0	28
Future Volume (vph)	4	408	52	12	184	0	148	0	32	4	0	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983						0.976			0.882	
Flt Protected	0.950			0.950				0.961			0.994	
Satd. Flow (prot)	1752	3445	0	1736	3471	0	0	1747	0	0	1666	0
Flt Permitted	0.950			0.950				0.961			0.994	
Satd. Flow (perm)	1752	3445	0	1736	3471	0	0	1747	0	0	1666	0
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	4	408	52	12	184	0	148	0	32	4	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	460	0	12	184	0	0	180	0	0	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	36.4%											
Analysis Period (min)	15											
	ICU Level of Service A											

Intersection

Int Delay, s/veh 4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	408	52	12	184	0	148	0	32	4	0	28
Future Vol, veh/h	4	408	52	12	184	0	148	0	32	4	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	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	115	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	3	3	3	4	4	4	2	2	2	0	0	0
Mvmt Flow	4	408	52	12	184	0	148	0	32	4	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	184	0	0	460	0	0	558	650	230	420	676	92
Stage 1	-	-	-	-	-	-	442	442	-	208	208	-
Stage 2	-	-	-	-	-	-	116	208	-	212	468	-
Critical Hdwy	4.16	-	-	4.18	-	-	7.54	6.54	6.94	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.5	5.5	-
Follow-up Hdwy	2.23	-	-	2.24	-	-	3.52	4.02	3.32	3.5	4	3.3
Pot Cap-1 Maneuver	1381	-	-	1083	-	-	412	387	772	522	378	954
Stage 1	-	-	-	-	-	-	564	575	-	780	734	-
Stage 2	-	-	-	-	-	-	876	729	-	776	565	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1381	-	-	1083	-	-	396	382	772	495	373	954
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	382	-	495	373	-
Stage 1	-	-	-	-	-	-	562	573	-	778	726	-
Stage 2	-	-	-	-	-	-	841	721	-	742	563	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.5			19			9.4		
HCM LOS							C			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	434	1381	-	-	1083	-	-	855
HCM Lane V/C Ratio	0.415	0.003	-	-	0.011	-	-	0.037
HCM Control Delay (s)	19	7.6	-	-	8.4	-	-	9.4
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	2	0	-	-	0	-	-	0.1

Lanes, Volumes, Timings

2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	140	84	84	172	72	128	60	24	44	88	68
Future Volume (vph)	80	140	84	84	172	72	128	60	24	44	88	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.970			0.985			0.954	
Flt Protected		0.987			0.987			0.971			0.989	
Satd. Flow (prot)	0	1657	0	0	1783	0	0	1747	0	0	1758	0
Flt Permitted		0.987			0.987			0.971			0.989	
Satd. Flow (perm)	0	1657	0	0	1783	0	0	1747	0	0	1758	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	9%	9%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	80	140	84	84	172	72	128	60	24	44	88	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	304	0	0	328	0	0	212	0	0	200	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	56.8%											
Analysis Period (min)	15											
	ICU Level of Service B											

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	140	84	84	172	72	128	60	24	44	88	68
Future Vol, veh/h	80	140	84	84	172	72	128	60	24	44	88	68
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	9	9	9	2	2	2	4	4	4	2	2	2
Mvmt Flow	80	140	84	84	172	72	128	60	24	44	88	68
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.7	15.1	13.1	12.3
HCM LOS	B	C	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	60%	26%	26%	22%
Vol Thru, %	28%	46%	52%	44%
Vol Right, %	11%	28%	22%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	212	304	328	200
LT Vol	128	80	84	44
Through Vol	60	140	172	88
RT Vol	24	84	72	68
Lane Flow Rate	212	304	328	200
Geometry Grp	1	1	1	1
Degree of Util (X)	0.373	0.499	0.527	0.34
Departure Headway (Hd)	6.328	5.905	5.781	6.124
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	568	614	626	586
Service Time	4.374	3.917	3.794	4.172
HCM Lane V/C Ratio	0.373	0.495	0.524	0.341
HCM Control Delay	13.1	14.7	15.1	12.3
HCM Lane LOS	B	B	C	B
HCM 95th-tile Q	1.7	2.8	3.1	1.5

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	136	4	192	48	4	328
Future Volume (vph)	136	4	192	48	4	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996		0.973			
Flt Protected	0.954				0.950	
Satd. Flow (prot)	1805	0	1761	0	1770	1863
Flt Permitted	0.954				0.950	
Satd. Flow (perm)	1805	0	1761	0	1770	1863
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	5%	5%	2%	2%
Adj. Flow (vph)	136	4	192	48	4	328
Shared Lane Traffic (%)						
Lane Group Flow (vph)	140	0	240	0	4	328
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	136	4	192	48	4	328
Future Vol, veh/h	136	4	192	48	4	328
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	5	2	2
Mvmt Flow	136	4	192	48	4	328

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	552	216	0
Stage 1	216	-	-
Stage 2	336	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	498	829	-
Stage 1	825	-	-
Stage 2	728	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	496	829	-
Mov Cap-2 Maneuver	496	-	-
Stage 1	825	-	-
Stage 2	726	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	502	1327
HCM Lane V/C Ratio	-	-	0.279	0.003
HCM Control Delay (s)	-	-	14.9	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	156	516	4	8	72
Future Volume (vph)	8	156	516	4	8	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.878	
Flt Protected		0.998			0.995	
Satd. Flow (prot)	0	1724	1898	0	1660	0
Flt Permitted		0.998			0.995	
Satd. Flow (perm)	0	1724	1898	0	1660	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	10%	0%	0%	0%	0%
Adj. Flow (vph)	8	156	516	4	8	72
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	164	520	0	80	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.0% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	156	516	4	8	72
Future Vol, veh/h	8	156	516	4	8	72
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	100	100	100	100	100	100
Heavy Vehicles, %	10	10	0	0	0	0
Mvmt Flow	8	156	516	4	8	72

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	520	0	0 690 518
Stage 1	-	-	- 518 -
Stage 2	-	-	- 172 -
Critical Hdwy	4.2	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.29	-	- 3.5 3.3
Pot Cap-1 Maneuver	1007	-	- 414 562
Stage 1	-	-	- 602 -
Stage 2	-	-	- 863 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1007	-	- 410 562
Mov Cap-2 Maneuver	-	-	- 410 -
Stage 1	-	-	- 602 -
Stage 2	-	-	- 855 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1007	-	-	-	542
HCM Lane V/C Ratio	0.008	-	-	-	0.148
HCM Control Delay (s)	8.6	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	68	0	0	124	0	0
Future Volume (vph)	68	0	0	124	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1610	0	1792	1792	1900	0
Flt Permitted						
Satd. Flow (perm)	1610	0	1792	1792	1900	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	18%	18%	6%	6%	0%	0%
Adj. Flow (vph)	68	0	0	124	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	0	0	124	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	9.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	68	0	0	124	0	0
Future Vol, veh/h	68	0	0	124	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	18	18	6	6	0	0
Mvmt Flow	68	0	0	124	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	68
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.16
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.254
Pot Cap-1 Maneuver	-	-	1508
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1508
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1508	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	228	220	12	768	4	132	0	16	12	0	4
Future Volume (vph)	24	228	220	12	768	4	132	0	16	12	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.926			0.999			0.985			0.966	
Flt Protected	0.950			0.950				0.957			0.964	
Satd. Flow (prot)	1787	3310	0	1787	3571	0	0	1791	0	0	1769	0
Flt Permitted	0.950			0.950				0.957			0.964	
Satd. Flow (perm)	1787	3310	0	1787	3571	0	0	1791	0	0	1769	0
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	24	228	220	12	768	4	132	0	16	12	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	448	0	12	772	0	0	148	0	0	16	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.8%											
Analysis Period (min)	15											
	ICU Level of Service A											

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	228	220	12	768	4	132	0	16	12	0	4
Future Vol, veh/h	24	228	220	12	768	4	132	0	16	12	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	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	115	-	-	135	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	24	228	220	12	768	4	132	0	16	12	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	772	0	0	448	0	0	794	1182	224	956	1290	386
Stage 1	-	-	-	-	-	-	386	386	-	794	794	-
Stage 2	-	-	-	-	-	-	408	796	-	162	496	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	845	-	-	1116	-	-	282	191	786	216	165	618
Stage 1	-	-	-	-	-	-	614	614	-	352	403	-
Stage 2	-	-	-	-	-	-	596	402	-	830	549	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	845	-	-	1116	-	-	272	184	786	205	159	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	272	184	-	205	159	-
Stage 1	-	-	-	-	-	-	597	597	-	342	399	-
Stage 2	-	-	-	-	-	-	586	398	-	790	533	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.1			29.2			20.7		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	845	-	-	1116	-	-	246
HCM Lane V/C Ratio	0.505	0.028	-	-	0.011	-	-	0.065
HCM Control Delay (s)	29.2	9.4	-	-	8.3	-	-	20.7
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.7	0.1	-	-	0	-	-	0.2

Lanes, Volumes, Timings
2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	100	8	104	24	96	4	188	136	100	236	4
Future Volume (vph)	4	100	8	104	24	96	4	188	136	100	236	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.942			0.944			0.998	
Flt Protected		0.998			0.977			0.999			0.986	
Satd. Flow (prot)	0	1877	0	0	1749	0	0	1792	0	0	1833	0
Flt Permitted		0.998			0.977			0.999			0.986	
Satd. Flow (perm)	0	1877	0	0	1749	0	0	1792	0	0	1833	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Adj. Flow (vph)	4	100	8	104	24	96	4	188	136	100	236	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	224	0	0	328	0	0	340	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	66.2%						ICU Level of Service C					
Analysis Period (min)	15											

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	100	8	104	24	96	4	188	136	100	236	4
Future Vol, veh/h	4	100	8	104	24	96	4	188	136	100	236	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	4	100	8	104	24	96	4	188	136	100	236	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.6	12	12.9	14.4
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	4%	46%	29%
Vol Thru, %	57%	89%	11%	69%
Vol Right, %	41%	7%	43%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	328	112	224	340
LT Vol	4	4	104	100
Through Vol	188	100	24	236
RT Vol	136	8	96	4
Lane Flow Rate	328	112	224	340
Geometry Grp	1	1	1	1
Degree of Util (X)	0.474	0.19	0.356	0.519
Departure Headway (Hd)	5.204	6.097	5.728	5.492
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	689	585	625	653
Service Time	3.263	4.175	3.794	3.549
HCM Lane V/C Ratio	0.476	0.191	0.358	0.521
HCM Control Delay	12.9	10.6	12	14.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.6	0.7	1.6	3

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	48	12	384	132	8	356
Future Volume (vph)	48	12	384	132	8	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.973		0.965			
Flt Protected	0.962				0.950	
Satd. Flow (prot)	1778	0	1815	0	1752	1845
Flt Permitted	0.962				0.950	
Satd. Flow (perm)	1778	0	1815	0	1752	1845
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	1%	1%	3%	3%
Adj. Flow (vph)	48	12	384	132	8	356
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	516	0	8	356
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	38.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	12	384	132	8	356
Future Vol, veh/h	48	12	384	132	8	356
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	1	1	3	3
Mvmt Flow	48	12	384	132	8	356

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	822	450	0
Stage 1	450	-	-
Stage 2	372	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	346	613	-
Stage 1	647	-	-
Stage 2	702	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	343	613	-
Mov Cap-2 Maneuver	343	-	-
Stage 1	647	-	-
Stage 2	697	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	376	1045
HCM Lane V/C Ratio	-	-	0.16	0.008
HCM Control Delay (s)	-	-	16.4	8.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	48	488	376	4	8	16
Future Volume (vph)	48	488	376	4	8	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.910	
Flt Protected		0.996			0.984	
Satd. Flow (prot)	0	1874	1861	0	1701	0
Flt Permitted		0.996			0.984	
Satd. Flow (perm)	0	1874	1861	0	1701	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Adj. Flow (vph)	48	488	376	4	8	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	536	380	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 61.7% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.7

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 48 488 376 4 8 16

Future Vol, veh/h 48 488 376 4 8 16

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 100 100 100 100 100 100

Heavy Vehicles, % 1 1 2 2 0 0

Mvmt Flow 48 488 376 4 8 16

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 380 0 - 0 962 378

Stage 1 - - - - 378 -

Stage 2 - - - - 584 -

Critical Hdwy 4.11 - - - 6.4 6.2

Critical Hdwy Stg 1 - - - - 5.4 -

Critical Hdwy Stg 2 - - - - 5.4 -

Follow-up Hdwy 2.209 - - - 3.5 3.3

Pot Cap-1 Maneuver 1184 - - - 286 673

Stage 1 - - - - 697 -

Stage 2 - - - - 561 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1184 - - - 270 673

Mov Cap-2 Maneuver - - - - 270 -

Stage 1 - - - - 697 -

Stage 2 - - - - 530 -

Approach EB WB SB

HCM Control Delay, s 0.7 0 13.5

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1184 - - - 449

HCM Lane V/C Ratio 0.041 - - - 0.053

HCM Control Delay (s) 8.2 0 - - 13.5

HCM Lane LOS A A - - B

HCM 95th %tile Q(veh) 0.1 - - - 0.2

Lanes, Volumes, Timings

5: Project Access & SE 40th Street/SE 40th Street

03/06/2018

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	156	0	0	132	0	0
Future Volume (vph)	156	0	0	132	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1900	0	1900	1900	1900	0
Flt Permitted						
Satd. Flow (perm)	1900	0	1900	1900	1900	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	156	0	0	132	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	156	0	0	132	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	11.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	156	0	0	132	0	0
Future Vol, veh/h	156	0	0	132	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	156	0	0	132	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	156
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.2	-
Pot Cap-1 Maneuver	-	1436	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1436	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1436	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

APPENDIX C
ACCIDENT DATA



**Washington State
Department of Transportation**

Transportation Data, GIS & Modeling Office
7345 Linderson Way Sw, Fl 1
Tumwater, WA 98501

360-570-2464 / Fax 360-570-2449
TTY: 1-800-833-6388
www.wsdot.wa.gov

February 22, 2018

Grant Stonex
H. Lee & Associates, PLLC
PO Box 1849
Vancouver WA 98668

Dear Mr. Stonex:

In accordance with the Public Records Act, RCW 42.56, this letter acknowledges receipt of your request for records dated February 12, 2018 (Request Number PDR-18-0562).

We have prepared a history of officer reported crashes that occurred *at or in the vicinity of* the following intersections and road segment in the City of Camas for the period of 1/1/2013 – *available 2018*.

- 34th St / Pacific Rim Blvd @ Lorenz St / Payne Rd
- Brady Rd @ 16th Ave
- Brady Rd @ McIntosh Rd
- Brady Rd @ Grand Ridge Dr.
- Payne Rd / 40th St / 18th Ave from 201st Ave to Deerfern St

Federal law 23 United States Code Section 409 governs use of the data you requested. Under this law, data maintained for purposes of evaluating potential highway safety enhancements:

“ . . . shall not be subject to discovery or admitted into evidence in a federal or state court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.” [Emphasis added.]

The Washington State Department of Transportation (WSDOT) is releasing this data to you with the understanding that you will not use this data contrary to the restrictions in Section 409, which means you will not use this data in discovery or as evidence at trial in any action for damages against the WSDOT, the State of Washington, or any other jurisdiction involved in the locations mentioned in the data. If you should attempt to use this data in an action for damages against WSDOT, the State of Washington, or any other jurisdiction involved in the locations mentioned in the data, these entities expressly reserve the right, under Section 409, to object to the use of the data, including any opinions drawn from the data.

With this package, your request for records is complete and closed.

If you have any further questions you may contact me at 360-570-2464.

Sincerely,

A handwritten signature in blue ink that reads "Julie Brown". The signature is written in a cursive, flowing style.

Julie Brown
Transportation Planning Technician 3
Transportation Data, GIS & Modeling Office

OFFICER REPORTED CRASHES THAT OCCURRED AT OR IN THE VICINITY OF THE FOLLOWING INTERSECTIONS & ROAD SEGMENT IN THE CITY OF CAMAS
34th ST / PACIFIC RIM BLVD @ LORENZ ST/ PAYNE RD
BRADY RD @ 16th AVE
BRADY RD @ MCINTOSH RD
BRADY RD @ GRAND RIDGE DR.
PAYNE RD / 40th ST / 18th AVE FROM 201st AVE TO DEERFERN ST

01/01/2011 - available 2011

Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / B	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJURY	# FATAL	# KILLED	# VEHICLES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Mile Trafficways - 2010 forward)	WASTATE PLANE SOUTH - 2010 - FORWARD	WASTATE PLANE SOUTH - Y 2010 - FORWARD
City Street	NW 16TH AVE	4200	NW BRADY RD						E236450	#####	19:37	No Apparent Injury	0	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Entering at angle	Going Straight Ahead	Going Straight Ahead	West	East	South	North	None			Inattention			Lane of Primary Trafficway	#####	#####
City Street	NW BRADY RD	1600	NW 16TH AVE						3711803	#####	17:23	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Snowing	Snow/Slush	Dark-Street Lights On	From same direction both going straight - one stopped - rear-end	Stopped at Signal or Stop Sign	North	South	North	South	Exceeding Reas. Safe Speed			None			Lane of Primary Trafficway	#####	#####	
City Street	NW BRADY RD	1600	NW 16TH AVE						E298816	#####	06:55	No Apparent Injury	0	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Overcast	Wet	Dark-No Street Lights	Entering at angle	Going Straight Ahead	Going Straight Ahead	East	West	South	North	Inattention			Inattention			Lane of Primary Trafficway	#####	#####
City Street	NW BRADY RD	0	NW 16TH AVE						E097830	#####	19:59	Died in Hospital	1	1	0	0	Motorcycle	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Going Straight Ahead	Going Straight Ahead	North	South	West	East	Disregard Stop Sign - Flashing Red	Exceeding Reas. Safe Speed		None			Lane of Primary Trafficway	#####	#####
City Street	NW BRADY RD	0	NW 16TH AVE						E708673	#####	22:21	Possible Injury	1	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Entering at angle	Going Straight Ahead	Going Straight Ahead	West	East	North	South	None			Disregard Stop Sign - Flashing Red	Did Not Grant RW to Vehicle		Lane of Primary Trafficway	#####	#####
City Street	NW BRADY RD	0	NW MCINTOSH RD						E673603	#####	16:55	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	East	South	North	South	None			None			Lane of Primary Trafficway	#####	98479.44
City Street	NW BRADY RD	2000		0.25	M	N	NW 16TH AVE		3720255	#####	00:12	No Apparent Injury	0	0	0	0	Passenger Car		Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Vehicle overturned	Making Left Turn		North	South			Exceeding Stated Speed Limit	Inattention				Past the Outside Shoulder of Primary Trafficway	#####	#####	
City Street	NW BRADY RD	1700		400	F	N	NW 16TH AVE		3766664	#####	15:14	No Apparent Injury	0	0	0	0	Passenger Car		Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	Domestic animal other (cat, dog, etc)	Going Straight Ahead		North	South			Driver Not Distracted					Lane of Primary Trafficway	#####	#####	
City Street	NW BRADY RD	20800		0.1	M	NE	NW MCINTOSH RD		3711770	#####	13:28	Suspected Minor Injury	1	0	0	0	Passenger Car		Not at Intersection and Not Related	Overcast	Wet	Daylight	Vehicle overturned	Going Straight Ahead		North	Northeast			Unknown Driver Distraction	Exceeding Reas. Safe Speed				Past the Outside Shoulder of Primary Trafficway	#####	98855.99	
City Street	NW BRADY RD	20800		225	F	NE	NW MCINTOSH RD		3711823	#####	22:00	No Apparent Injury	0	0	0	0	Truck (Flatbed,Van,etc)		Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Dark-No Street Lights	Vehicle overturned	Other*		Vehicle Backing	Vehicle Stopped			Other					Lane of Primary Trafficway	#####	98658.31	
City Street	NW BRADY RD	20800		100	F	NE	NW MCINTOSH RD		3766665	#####	06:41	No Apparent Injury	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Dawn	Concrete Barrier/Jersey Barrier - Face	Going Straight Ahead	Going Straight Ahead	Southwest	Northeast	Northeast	Southwest	Apparently Asleep			Driver Not Distracted			Outside Shoulder of Primary Trafficway	#####	98565.23
City Street	NW PACIFIC RIM BLVD		SE PAYNE RD						3602250	#####	07:51	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Daylight	Entering at angle	Going Straight Ahead	Making Right Turn	West	East	South	East	None			Inattention			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						3673294	#####	08:56	Possible Injury	1	0	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Driver Distractions Outside Vehicle			Driver Not Distracted			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						3677001	#####	11:55	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			None			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						3711818	#####	15:42	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			None			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						E290745	#####	17:51	No Apparent Injury	0	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			Driver Not Distracted			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						E303451	#####	15:13	No Apparent Injury	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Raining	Wet	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			Driver Not Distracted			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						E308237	#####	20:35	Suspected Serious Injury	1	0	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Overcast	Dry	Dark-Street Lights On	Entering at angle	Going Straight Ahead	Making Left Turn	West	East	South	West	Under Influence of Alcohol	Exceeding Reas. Safe Speed		None			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	6000	SE PAYNE RD						E466225	#####	17:13	Possible Injury	1	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			None			Lane of Primary Trafficway	#####	#####
City Street	NW PACIFIC RIM BLVD	4600		133	F	E	SE PAYNE RD		3411793	#####	07:48	Died in Hospital	0	1	0	0	Passenger Car		Not at Intersection and Not Related	Fog or Smog or Smoke	Dry	Daylight	Tree or Stump (stationary)	Going Straight Ahead		West	East			Exceeding Stated Speed Limit	Exceeding Reas. Safe Speed				Past the Outside Shoulder of Primary Trafficway	#####	#####	
City Street	NW PACIFIC RIM BLVD	5700		0.25	M	E	SE PAYNE RD		3766630	#####	07:37	No Apparent Injury	0	0	0	0	Pickup,Panel Truck or Vanette under 10,000 lb		Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Daylight	Vehicle Strikes Deer	Going Straight Ahead		East	West			Driver Not Distracted					Lane of Primary Trafficway	#####	#####	
City Street	NW PACIFIC RIM BLVD	5600		0.2	M	E	SE PAYNE RD		E701328	#####	02:22	No Apparent Injury	0	0	0	0	Passenger Car		Not at Intersection and Not Related	Clear or Partly Cloudy	Dry	Dark-Street Lights On	Tree or Stump (stationary)	Going Straight Ahead		East	West			Operating Defective Equipment	Other	Exceeding Reas. Safe Speed			Past the Outside Shoulder of Primary Trafficway	#####	#####	
City Street	SE BRADY RD	19900		0.22	M	W	NW GRAND RIDGE DR		E723299	#####	17:55	No Apparent Injury	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	Not at Intersection and Not Related	Raining	Wet	Dusk	From opposite direction - both going straight - sideswipe	Going Straight Ahead	Going Straight Ahead	North	South	South	North	Under Influence of Alcohol	Over Center Line		None		Lane of Primary Trafficway	#####	97840.76	

OFFICER REPORTED CRASHES THAT OCCURRED at OR in the vicinity of THE FOLLOWING INTERSECTIONS & ROAD SEGMENT IN THE CITY OF CAMAS
34th ST / PACIFIC RIM BLVD @ LORENZ ST/ PAYNE RD
BRADY RD @ 16th AVE
BRADY RD @ MCINTOSH RD
BRADY RD @ GRAND RIDGE DR.
PAYNE RD / 40th ST / 18th AVE FROM 201st AVE TO DEERFERN ST

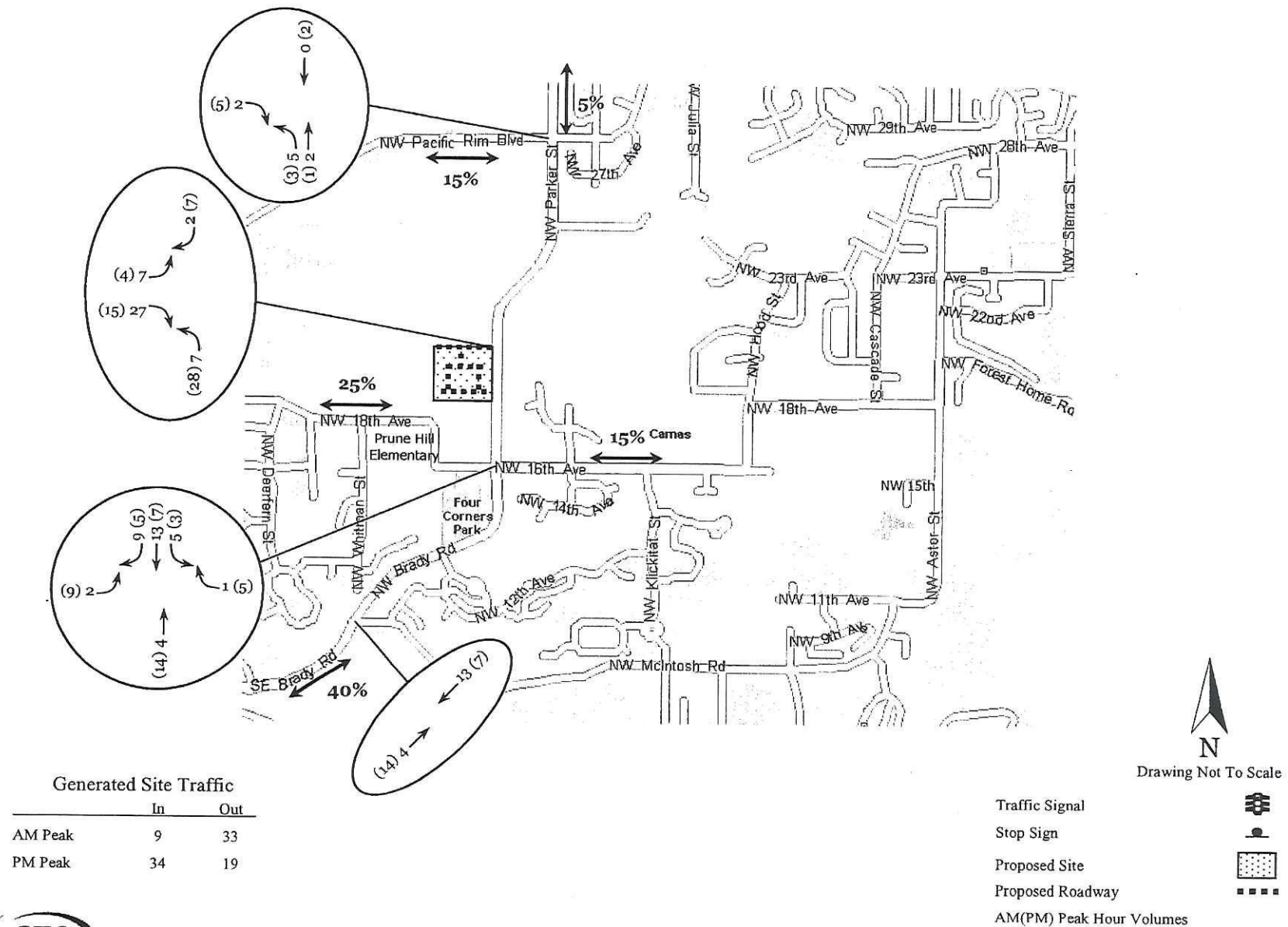
01/01/2013 - available 2018

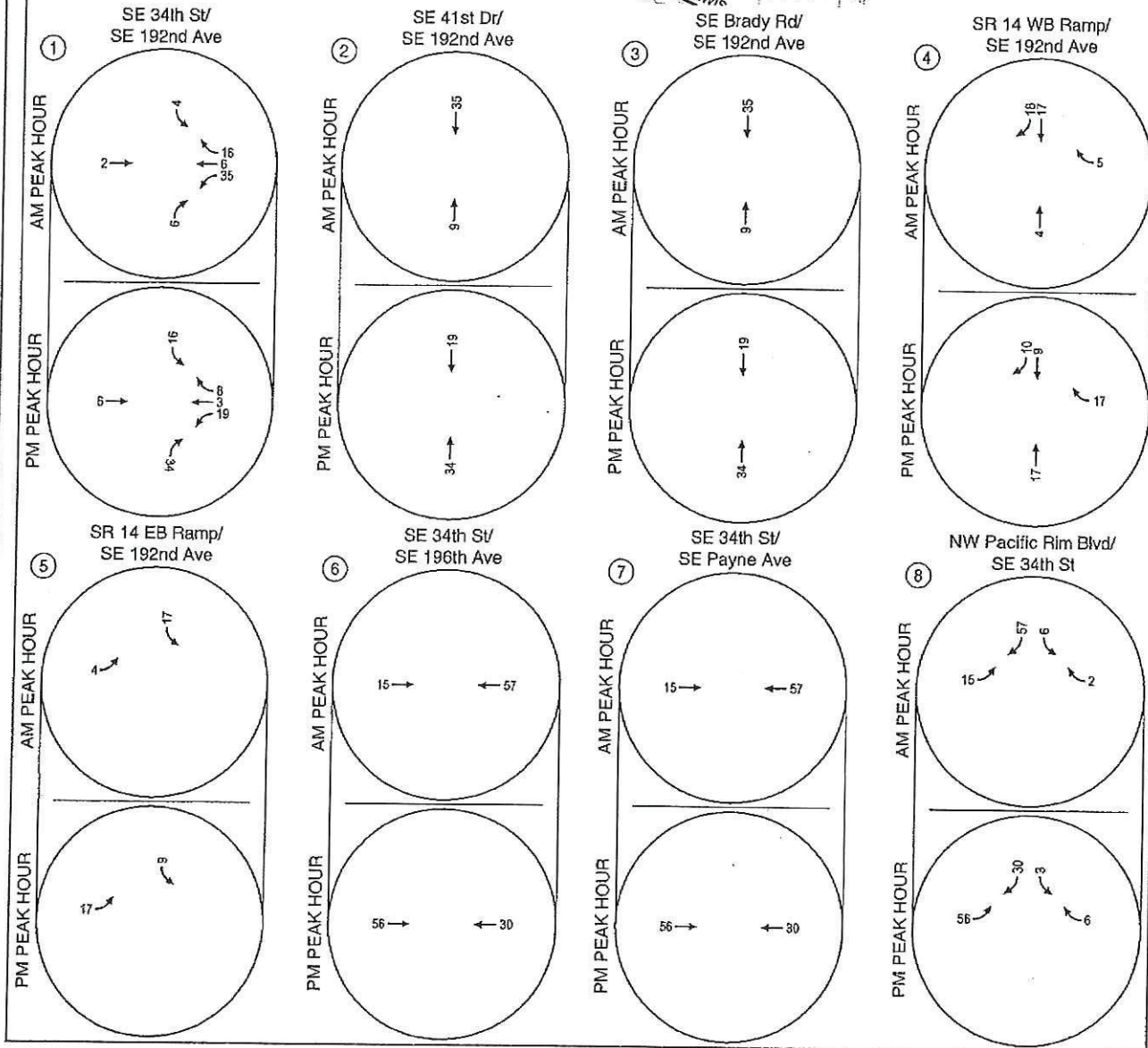
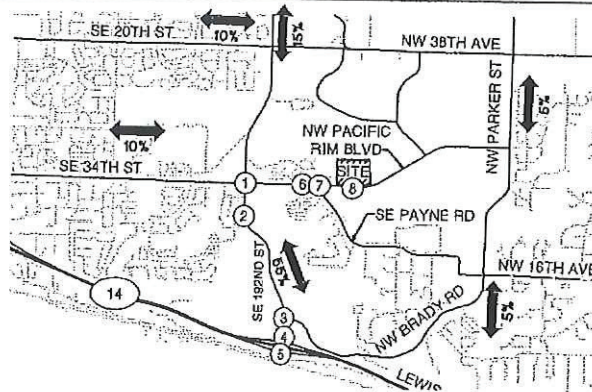
Under 23 U.S. Code § 409 and 23 U.S. Code § 148, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

JURISDICTION	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	MILEPOST	A / R NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# FATAL	# INJURED	# PROPERTY DAMAGE	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Mileage - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
City Street	SE BRADY RD	20300		203	F W	SE GRAND RIDGE DR		3766554	#####	21:36	No Apparent Injury	0	0	1	Pickup,Panel Truck or Vanette under 10,000 lb		Not at Intersection and Not Related	Overcast	Dry	Dark-No Street Lights	Metal Sign Post	Going Straight Ahead		West	East			Under Influence of Alcohol						Past the Outside Shoulder of Primary Trafficway	1137753.8	97835.43
City Street	SE PAYNE RD		NW PACIFIC RIM BLVD					3673292	#####	09:15	No Apparent Injury	0	0	2	Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related	Clear or Partly Cloudy	Dry	Daylight	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	West	East	Did Not Grant RW to Vehicle			Other			Lane of Primary Trafficway	#####	#####
City Street	SE PAYNE ST	4000	SE 201ST ST					3766640	#####	00:15	No Apparent Injury	0	0	1	Passenger Car		At Intersection and Related	Raining	Wet	Dark-Street Lights On	Metal Sign Post	Making Right Turn		North	Southwest			Unknown Driver Distraction						Past the Outside Shoulder of Primary Trafficway	#####	#####

APPENDIX D
IN-PROCESS INFORMATION

Figure 9: Weekday Peak Hour Traffic Volumes Generated By Parker Village

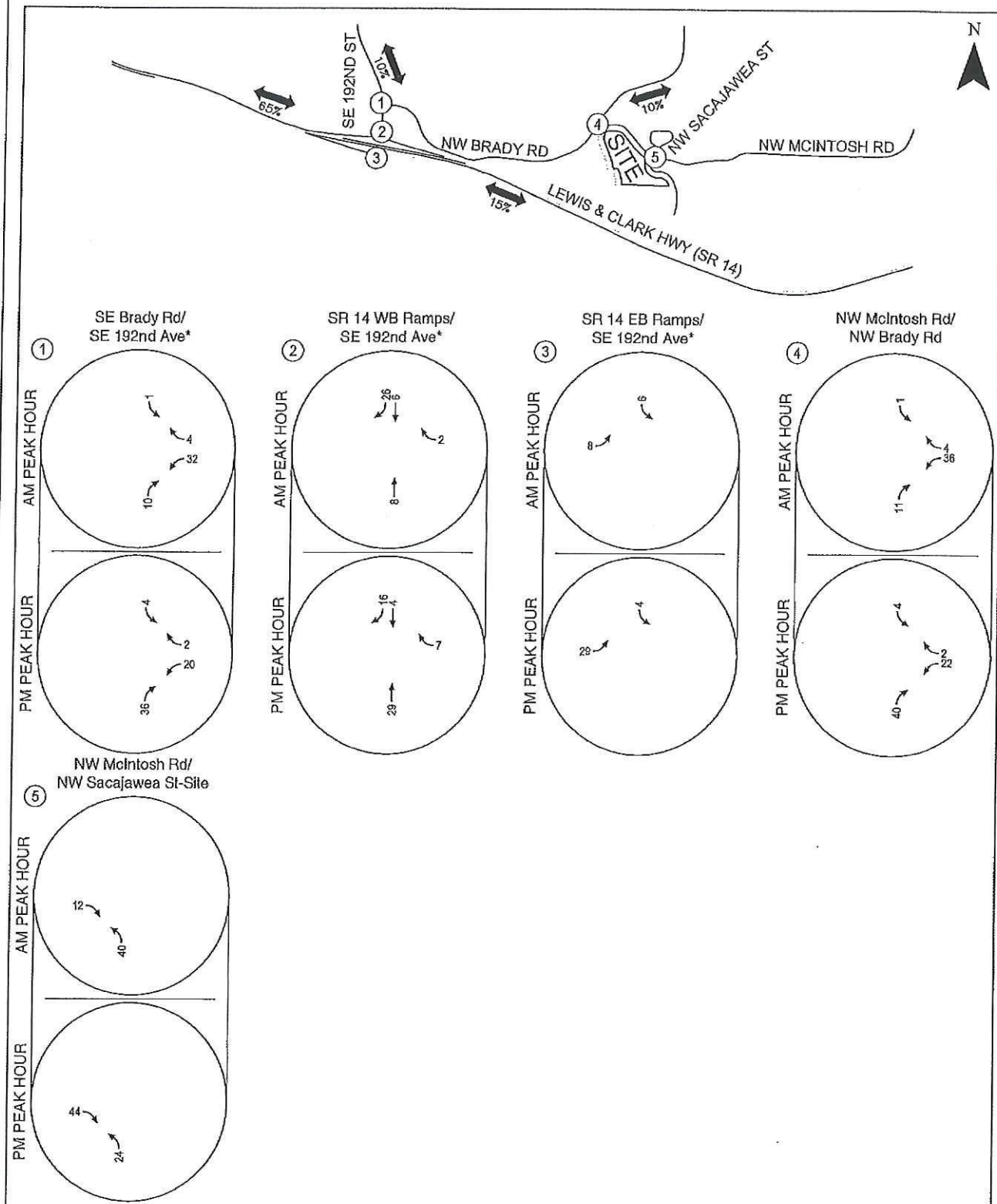




Site-Generated Trips
Weekday AM and PM Peak Hours
Camas, Washington

Figure
6



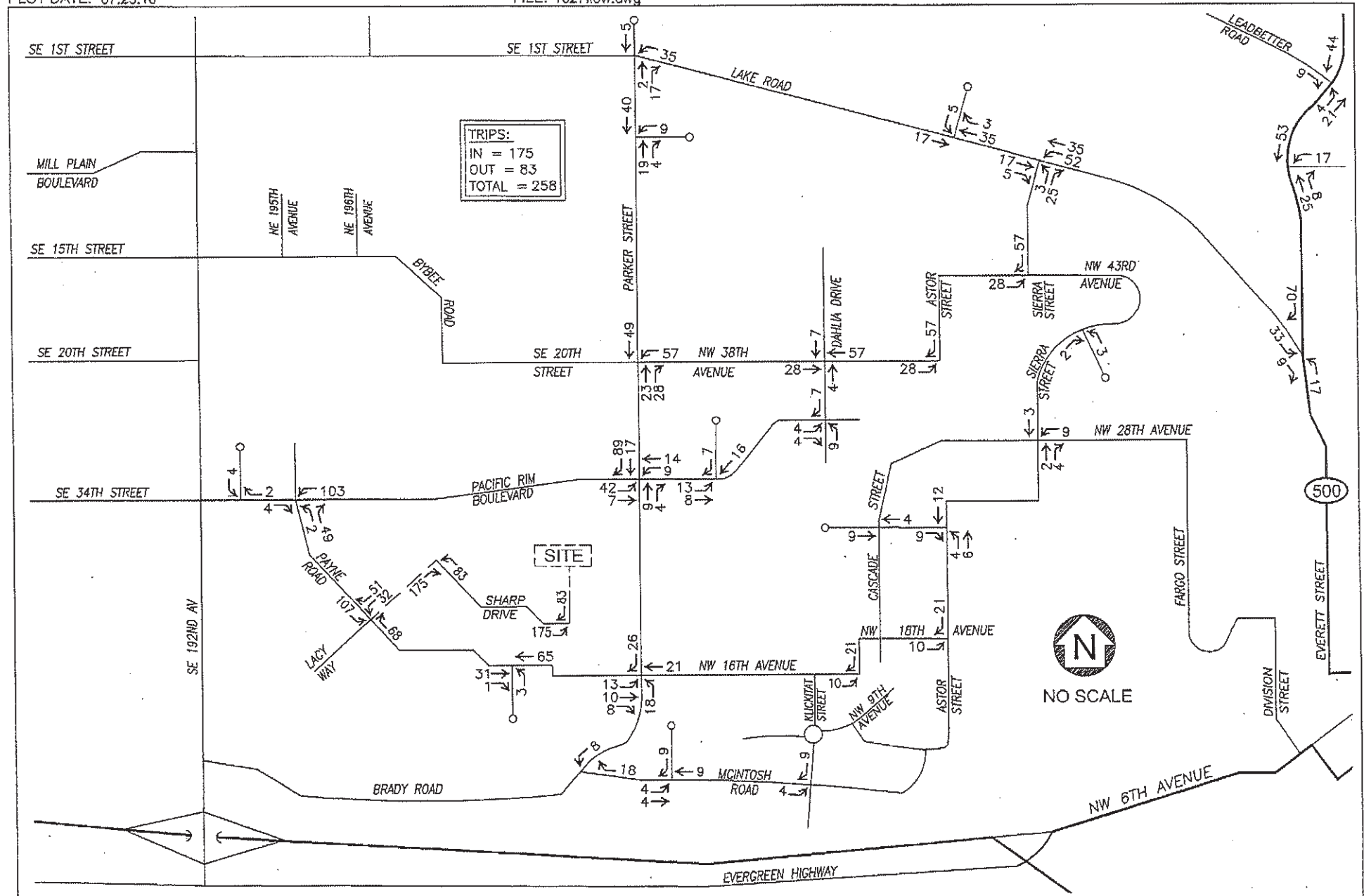


Site-Generated Trips
Weekday AM and PM Peak Hours
Camas, Washington

Figure
6

PLOT DATE: 07.25.16

FILE: 1627flow.dwg



**CHARBONNEAU
ENGINEERING LLC**

PROJECT: 16-27

NOTES: Trip generation based on High School
(ITE 530) trip rates.

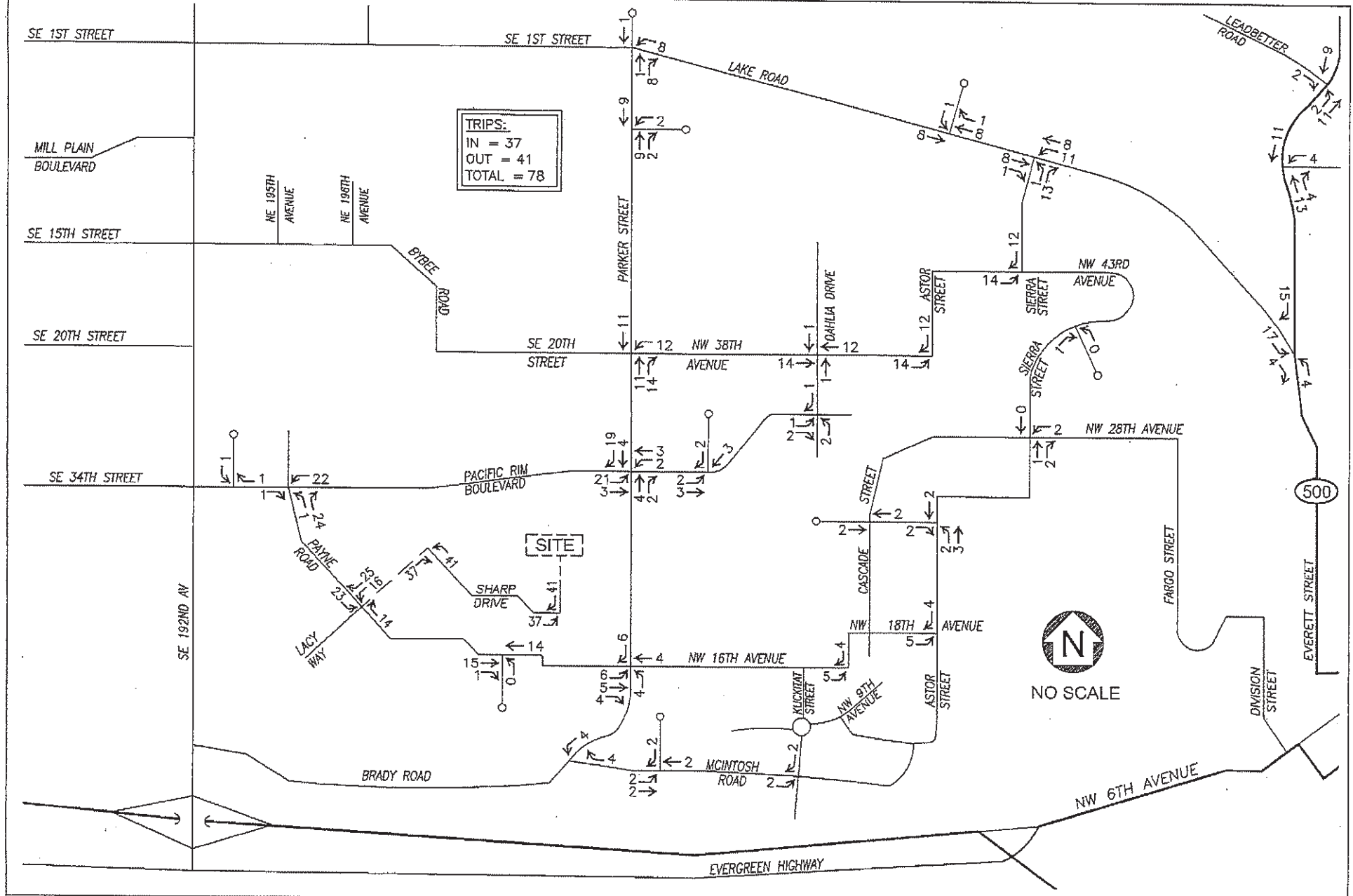
**TRIP ASSIGNMENT
AM PEAK HOUR
CAMAS HIGH SCHOOL - SHARP DRIVE**

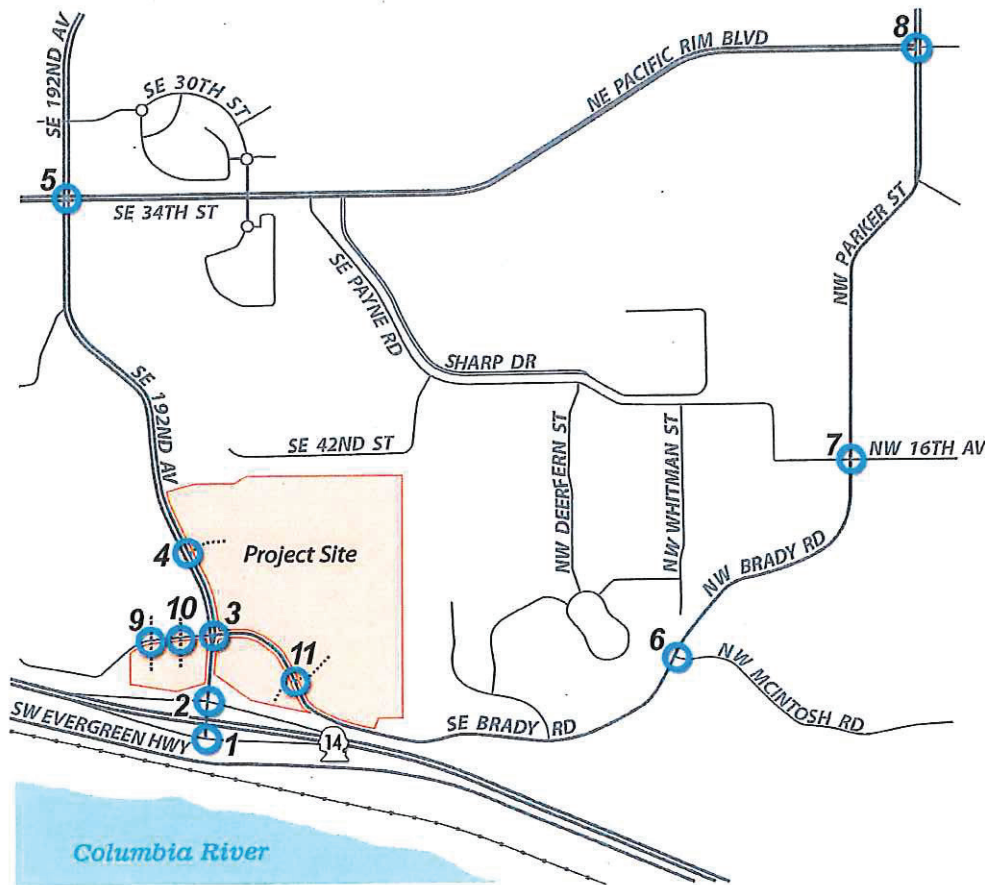
FIGURE

6a

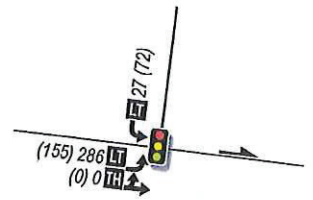
PLOT DATE: 07.25.16

FILE: 1627flow.dwg

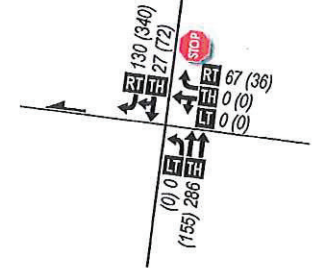




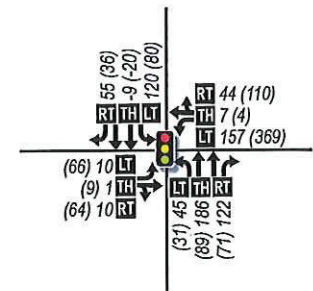
1. SR-14 EB Ramp @ SE 192nd Ave.



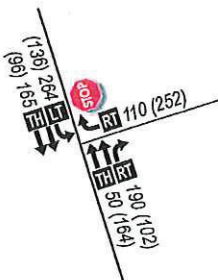
2. SR-14 WB Ramp @ SE 192nd Ave.



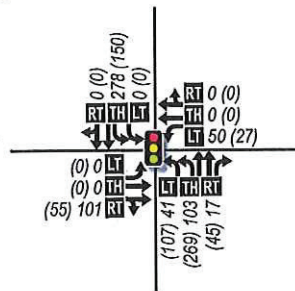
3. SE Brady Rd. @ SE 192nd Ave.



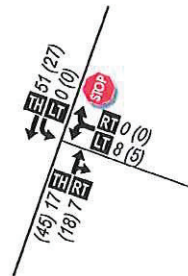
4. Site Access @ SE 192nd Ave.



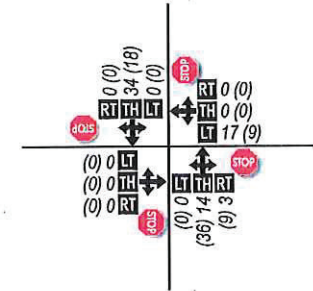
5. SE 192nd Ave. @ SE 34th St.



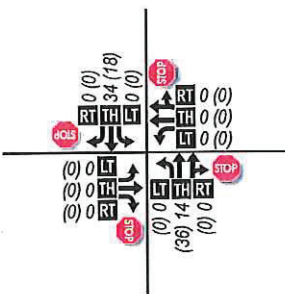
6. NW Brady Rd. @ McIntosh Rd.



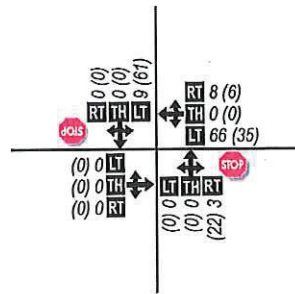
7. NW Brady Rd. @ NW 16th Av.



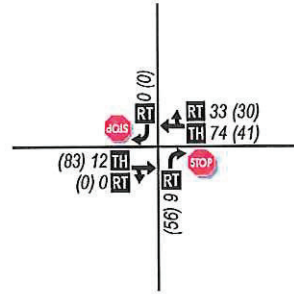
8. Pacific Rim Blvd. @ Parker St.



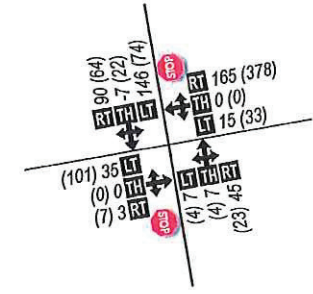
9. Site Access @ SE Brady Rd.



10. Site Access @ SE Brady Rd.



11. Site Access @ SE Brady Rd.



LEGEND

- Traffic Signal
- Stop Sign
- Lane Configuration
- Future Project Access

- # - Study Intersection
- AM (PM) - Peak Hour Traffic Volumes

DKS



No Scale

Figure 3

Site-Generated Traffic Volumes
Weekday AM & PM Peak Hours

Columbia Palisades

APPENDIX E

2023 “WITHOUT PROJECT” LEVEL OF SERVICE

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	474	63	117	264	0	169	0	85	5	0	32
Future Volume (vph)	5	474	63	117	264	0	169	0	85	5	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982						0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3442	0	1736	3471	0	1770	1583	0	1805	1615	0
Flt Permitted	0.589			0.295			0.489			0.702		
Satd. Flow (perm)	1087	3442	0	539	3471	0	911	1583	0	1334	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16						450			538	
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	5	474	63	117	264	0	169	0	85	5	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	537	0	117	264	0	169	85	0	5	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	11.0	31.0		16.0	36.0		17.0	32.0		11.0	26.0	
Total Split (%)	12.2%	34.4%		17.8%	40.0%		18.9%	35.6%		12.2%	28.9%	
Maximum Green (s)	6.5	26.5		11.5	31.5		12.5	27.5		6.5	21.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.7	14.7		23.5	22.0		18.0	15.8		10.4	6.3	
Actuated g/C Ratio	0.36	0.29		0.46	0.43		0.35	0.31		0.20	0.12	
v/c Ratio	0.01	0.54		0.27	0.18		0.34	0.11		0.02	0.05	
Control Delay	8.4	19.4		10.1	10.9		15.9	0.3		14.4	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.4	19.4		10.1	10.9		15.9	0.3		14.4	0.1	
LOS	A	B		B	B		B	A		B	A	
Approach Delay		19.3			10.6			10.7			2.1	
Approach LOS		B			B			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 51.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 48.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

 Ø1	 Ø2	 Ø3	 Ø4
11 s	32 s	16 s	31 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	26 s	11 s	36 s

Queues

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	537	117	264	169	85	5	32
v/c Ratio	0.01	0.54	0.27	0.18	0.34	0.11	0.02	0.05
Control Delay	8.4	19.4	10.1	10.9	15.9	0.3	14.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	19.4	10.1	10.9	15.9	0.3	14.4	0.1
Queue Length 50th (ft)	1	81	21	24	38	0	1	0
Queue Length 95th (ft)	5	132	46	62	91	0	8	0
Internal Link Dist (ft)		1699		1111		1425		463
Turn Bay Length (ft)	115		135		220		30	
Base Capacity (vph)	505	1952	570	2201	604	1106	364	1057
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.28	0.21	0.12	0.28	0.08	0.01	0.03

Intersection Summary

HCM 2010 Signalized Intersection Summary

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	474	63	117	264	0	169	0	85	5	0	32
Future Volume (veh/h)	5	474	63	117	264	0	169	0	85	5	0	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1900	1863	1863	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	474	63	117	264	0	169	0	85	5	0	32
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	2	2	2	0	0	0
Cap, veh/h	482	866	115	440	1243	0	493	0	346	328	0	184
Arrive On Green	0.01	0.28	0.28	0.09	0.36	0.00	0.11	0.00	0.22	0.01	0.00	0.11
Sat Flow, veh/h	1757	3113	412	1740	3563	0	1774	0	1583	1810	0	1615
Grp Volume(v), veh/h	5	266	271	117	264	0	169	0	85	5	0	32
Grp Sat Flow(s),veh/h/ln	1757	1752	1772	1740	1736	0	1774	0	1583	1810	0	1615
Q Serve(g_s), s	0.1	5.7	5.7	1.9	2.3	0.0	3.4	0.0	1.9	0.1	0.0	0.8
Cycle Q Clear(g_c), s	0.1	5.7	5.7	1.9	2.3	0.0	3.4	0.0	1.9	0.1	0.0	0.8
Prop In Lane	1.00		0.23	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	482	488	493	440	1243	0	493	0	346	328	0	184
V/C Ratio(X)	0.01	0.55	0.55	0.27	0.21	0.00	0.34	0.00	0.25	0.02	0.00	0.17
Avail Cap(c_a), veh/h	730	1057	1069	745	2489	0	800	0	991	583	0	791
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	13.5	13.5	9.4	9.8	0.0	13.0	0.0	14.2	17.0	0.0	17.6
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.3	0.1	0.0	0.4	0.0	0.4	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	2.9	0.9	1.1	0.0	1.7	0.0	0.9	0.1	0.0	0.4
LnGrp Delay(d),s/veh	11.3	14.4	14.5	9.7	9.9	0.0	13.4	0.0	14.5	17.1	0.0	18.0
LnGrp LOS	B	B	B	A	A		B		B	B		B
Approach Vol, veh/h		542			381			254			37	
Approach Delay, s/veh		14.4			9.8			13.8			17.9	
Approach LOS		B			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	14.1	8.3	16.7	9.4	9.5	4.8	20.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	27.5	11.5	26.5	12.5	21.5	6.5	31.5				
Max Q Clear Time (g_c+l1), s	2.1	3.9	3.9	7.7	5.4	2.8	2.1	4.3				
Green Ext Time (p_c), s	0.0	0.6	0.1	4.5	0.2	0.6	0.0	5.0				
Intersection Summary												
HCM 2010 Ctrl Delay				13.0								
HCM 2010 LOS				B								

Lanes, Volumes, Timings
2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	165	101	110	211	80	159	82	29	52	138	106
Future Volume (vph)	102	165	101	110	211	80	159	82	29	52	138	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.973			0.985			0.952	
Flt Protected		0.986			0.986			0.971			0.991	
Satd. Flow (prot)	0	1655	0	0	1787	0	0	1747	0	0	1757	0
Flt Permitted		0.986			0.986			0.971			0.991	
Satd. Flow (perm)	0	1655	0	0	1787	0	0	1747	0	0	1757	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	9%	9%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	102	165	101	110	211	80	159	82	29	52	138	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	368	0	0	401	0	0	270	0	0	296	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	70.7%											
Analysis Period (min)	15											
	ICU Level of Service C											

Intersection	
Intersection Delay, s/veh	28.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	102	165	101	110	211	80	159	82	29	52	138	106
Future Vol, veh/h	102	165	101	110	211	80	159	82	29	52	138	106
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	9	9	9	2	2	2	4	4	4	2	2	2
Mvmt Flow	102	165	101	110	211	80	159	82	29	52	138	106
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	30.5	34.7	22	22.5
HCM LOS	D	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	59%	28%	27%	18%
Vol Thru, %	30%	45%	53%	47%
Vol Right, %	11%	27%	20%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	368	401	296
LT Vol	159	102	110	52
Through Vol	82	165	211	138
RT Vol	29	101	80	106
Lane Flow Rate	270	368	401	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.594	0.761	0.811	0.623
Departure Headway (Hd)	7.916	7.443	7.281	7.579
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	454	486	497	474
Service Time	5.995	5.468	5.306	5.657
HCM Lane V/C Ratio	0.595	0.757	0.807	0.624
HCM Control Delay	22	30.5	34.7	22.5
HCM Lane LOS	C	D	D	C
HCM 95th-tile Q	3.8	6.6	7.7	4.2

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	26	231	71	13	420
Future Volume (vph)	194	26	231	71	13	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.968			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1791	0	1752	0	1770	1863
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1791	0	1752	0	1770	1863
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	5%	5%	2%	2%
Adj. Flow (vph)	194	26	231	71	13	420
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	0	302	0	13	420
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	26	231	71	13	420
Future Vol, veh/h	194	26	231	71	13	420
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	5	2	2
Mvmt Flow	194	26	231	71	13	420

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	713	267	0
Stage 1	267	-	-
Stage 2	446	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	401	777	-
Stage 1	782	-	-
Stage 2	649	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	397	777	-
Mov Cap-2 Maneuver	397	-	-
Stage 1	782	-	-
Stage 2	642	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	421	1259
HCM Lane V/C Ratio	-	-	0.523	0.01
HCM Control Delay (s)	-	-	22.5	7.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.9	0

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	196	629	4	9	79
Future Volume (vph)	9	196	629	4	9	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.879	
Flt Protected		0.998			0.995	
Satd. Flow (prot)	0	1724	1898	0	1662	0
Flt Permitted		0.998			0.995	
Satd. Flow (perm)	0	1724	1898	0	1662	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	10%	0%	0%	0%	0%
Adj. Flow (vph)	9	196	629	4	9	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	205	633	0	88	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.4% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	196	629	4	9	79
Future Vol, veh/h	9	196	629	4	9	79
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	100	100	100	100	100	100
Heavy Vehicles, %	10	10	0	0	0	0
Mvmt Flow	9	196	629	4	9	79

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	633	0	845
Stage 1	-	-	631
Stage 2	-	-	214
Critical Hdwy	4.2	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.29	-	3.5
Pot Cap-1 Maneuver	913	-	336
Stage 1	-	-	534
Stage 2	-	-	826
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	913	-	332
Mov Cap-2 Maneuver	-	-	332
Stage 1	-	-	534
Stage 2	-	-	817

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	463
HCM Lane V/C Ratio	0.01	-	-	-	0.19
HCM Control Delay (s)	9	0	-	-	14.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.7

Lanes, Volumes, Timings

5: Project Access & SE 40th Street/SE 40th Street

03/06/2018

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	0	0	137	0	0
Future Volume (vph)	75	0	0	137	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1610	0	1792	1792	1900	0
Flt Permitted						
Satd. Flow (perm)	1610	0	1792	1792	1900	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	18%	18%	6%	6%	0%	0%
Adj. Flow (vph)	75	0	0	137	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	0	0	137	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	10.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	0	0	137	0	0
Future Vol, veh/h	75	0	0	137	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	18	18	6	6	0	0
Mvmt Flow	75	0	0	137	0	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	75	0	212
Stage 1	-	-	-	-	75
Stage 2	-	-	-	-	137
Critical Hdwy	-	-	4.16	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	2.254	-	3.5
Pot Cap-1 Maneuver	-	-	1499	-	781
Stage 1	-	-	-	-	953
Stage 2	-	-	-	-	895
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1499	-	781
Mov Cap-2 Maneuver	-	-	-	-	781
Stage 1	-	-	-	-	953
Stage 2	-	-	-	-	895

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1499	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	313	249	36	895	5	150	0	42	14	0	5
Future Volume (vph)	27	313	249	36	895	5	150	0	42	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.934			0.999			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3338	0	1787	3571	0	1805	1615	0	1805	1615	0
Flt Permitted	0.194			0.389			0.499			0.730		
Satd. Flow (perm)	365	3338	0	732	3571	0	948	1615	0	1387	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		249			1			548			229	
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	27	313	249	36	895	5	150	0	42	14	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	562	0	36	900	0	150	42	0	14	5	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	10.0	40.0		10.0	40.0		14.0	30.0		10.0	26.0	
Total Split (%)	11.1%	44.4%		11.1%	44.4%		15.6%	33.3%		11.1%	28.9%	
Maximum Green (s)	5.5	35.5		5.5	35.5		9.5	25.5		5.5	21.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	22.3	20.6		22.3	20.6		16.6	14.8		10.2	6.1	
Actuated g/C Ratio	0.45	0.41		0.45	0.41		0.33	0.30		0.20	0.12	
v/c Ratio	0.08	0.37		0.08	0.61		0.32	0.05		0.04	0.01	
Control Delay	7.4	7.1		7.4	14.8		17.0	0.1		16.4	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.4	7.1		7.4	14.8		17.0	0.1		16.4	0.0	
LOS	A	A		A	B		B	A		B	A	
Approach Delay		7.1			14.5			13.3			12.1	
Approach LOS		A			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 49.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 11.9

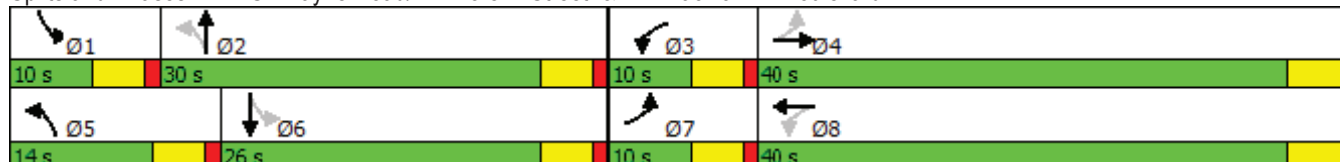
Intersection LOS: B

Intersection Capacity Utilization 52.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard



Queues

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	562	36	900	150	42	14	5
v/c Ratio	0.08	0.37	0.08	0.61	0.32	0.05	0.04	0.01
Control Delay	7.4	7.1	7.4	14.8	17.0	0.1	16.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	7.1	7.4	14.8	17.0	0.1	16.4	0.0
Queue Length 50th (ft)	4	28	6	98	25	0	2	0
Queue Length 95th (ft)	13	72	16	196	93	0	16	0
Internal Link Dist (ft)		1699		1111		1425		463
Turn Bay Length (ft)	115		135		220		30	
Base Capacity (vph)	336	2502	455	2605	516	1152	334	890
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.22	0.08	0.35	0.29	0.04	0.04	0.01

Intersection Summary

HCM 2010 Signalized Intersection Summary

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	313	249	36	895	5	150	0	42	14	0	5
Future Volume (veh/h)	27	313	249	36	895	5	150	0	42	14	0	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	27	313	249	36	895	5	150	0	42	14	0	5
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	340	787	612	461	1526	9	456	0	289	310	0	159
Arrive On Green	0.03	0.41	0.41	0.04	0.42	0.42	0.10	0.00	0.18	0.02	0.00	0.10
Sat Flow, veh/h	1792	1916	1489	1792	3644	20	1810	0	1615	1810	0	1615
Grp Volume(v), veh/h	27	291	271	36	439	461	150	0	42	14	0	5
Grp Sat Flow(s),veh/h/ln	1792	1787	1618	1792	1787	1878	1810	0	1615	1810	0	1615
Q Serve(g_s), s	0.4	5.8	6.0	0.6	9.6	9.6	3.6	0.0	1.1	0.4	0.0	0.1
Cycle Q Clear(g_c), s	0.4	5.8	6.0	0.6	9.6	9.6	3.6	0.0	1.1	0.4	0.0	0.1
Prop In Lane	1.00		0.92	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	734	665	461	748	786	456	0	289	310	0	159
V/C Ratio(X)	0.08	0.40	0.41	0.08	0.59	0.59	0.33	0.00	0.15	0.05	0.00	0.03
Avail Cap(c_a), veh/h	478	1247	1129	585	1247	1310	616	0	809	473	0	682
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.9	10.6	10.6	8.2	11.4	11.4	16.6	0.0	17.6	20.0	0.0	20.8
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.1	0.7	0.7	0.4	0.0	0.2	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.9	2.7	0.3	4.8	5.0	1.8	0.0	0.5	0.2	0.0	0.1
LnGrp Delay(d),s/veh	9.0	10.9	11.0	8.3	12.1	12.1	17.0	0.0	17.9	20.1	0.0	20.8
LnGrp LOS	A	B	B	A	B	B	B		B	C		C
Approach Vol, veh/h	589				936				192		19	
Approach Delay, s/veh	10.9				12.0				17.2		20.3	
Approach LOS	B				B				B		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.4	13.6	6.5	25.4	9.5	9.5	6.1	25.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	25.5	5.5	35.5	9.5	21.5	5.5	35.5				
Max Q Clear Time (g_c+l1), s	2.4	3.1	2.6	8.0	5.6	2.1	2.4	11.6				
Green Ext Time (p_c), s	0.0	0.2	0.0	10.2	0.1	0.2	0.0	9.7				
Intersection Summary												
HCM 2010 Ctrl Delay	12.3											
HCM 2010 LOS	B											

Lanes, Volumes, Timings
2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	115	13	124	30	109	8	246	159	112	283	13
Future Volume (vph)	15	115	13	124	30	109	8	246	159	112	283	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.944			0.948			0.996	
Flt Protected		0.995			0.977			0.999			0.986	
Satd. Flow (prot)	0	1868	0	0	1752	0	0	1799	0	0	1829	0
Flt Permitted		0.995			0.977			0.999			0.986	
Satd. Flow (perm)	0	1868	0	0	1752	0	0	1799	0	0	1829	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Adj. Flow (vph)	15	115	13	124	30	109	8	246	159	112	283	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	143	0	0	263	0	0	413	0	0	408	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	81.1%											
Analysis Period (min)	15											
	ICU Level of Service D											

Intersection	
Intersection Delay, s/veh	19.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	115	13	124	30	109	8	246	159	112	283	13
Future Vol, veh/h	15	115	13	124	30	109	8	246	159	112	283	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	15	115	13	124	30	109	8	246	159	112	283	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.9	15.6	20.6	22.6
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	10%	47%	27%
Vol Thru, %	60%	80%	11%	69%
Vol Right, %	38%	9%	41%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	413	143	263	408
LT Vol	8	15	124	112
Through Vol	246	115	30	283
RT Vol	159	13	109	13
Lane Flow Rate	413	143	263	408
Geometry Grp	1	1	1	1
Degree of Util (X)	0.678	0.281	0.48	0.701
Departure Headway (Hd)	5.91	7.062	6.575	6.184
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	607	506	544	583
Service Time	3.974	5.147	4.647	4.247
HCM Lane V/C Ratio	0.68	0.283	0.483	0.7
HCM Control Delay	20.6	12.9	15.6	22.6
HCM Lane LOS	C	B	C	C
HCM 95th-tile Q	5.2	1.1	2.6	5.6

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	19	477	204	17	424
Future Volume (vph)	80	19	477	204	17	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974		0.960			
Flt Protected	0.961				0.950	
Satd. Flow (prot)	1778	0	1806	0	1752	1845
Flt Permitted	0.961				0.950	
Satd. Flow (perm)	1778	0	1806	0	1752	1845
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	1%	1%	3%	3%
Adj. Flow (vph)	80	19	477	204	17	424
Shared Lane Traffic (%)						
Lane Group Flow (vph)	99	0	681	0	17	424
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 2010 TWSC
3: NW Brady Road & NW McIntosh Road

03/06/2018

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	19	477	204	17	424
Future Vol, veh/h	80	19	477	204	17	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	1	1	3	3
Mvmt Flow	80	19	477	204	17	424

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1037	579	0
Stage 1	579	-	-
Stage 2	458	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	258	519	-
Stage 1	564	-	-
Stage 2	641	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	253	519	-
Mov Cap-2 Maneuver	253	-	-
Stage 1	564	-	-
Stage 2	629	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.6	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	281	907
HCM Lane V/C Ratio	-	-	0.352	0.019
HCM Control Delay (s)	-	-	24.6	9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.5	0.1

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	53	602	447	4	9	18
Future Volume (vph)	53	602	447	4	9	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.910	
Flt Protected		0.996			0.984	
Satd. Flow (prot)	0	1874	1861	0	1701	0
Flt Permitted		0.996			0.984	
Satd. Flow (perm)	0	1874	1861	0	1701	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Adj. Flow (vph)	53	602	447	4	9	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	655	451	0	27	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 71.7%

ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.8

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 53 602 447 4 9 18

Future Vol, veh/h 53 602 447 4 9 18

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 100 100 100 100 100 100

Heavy Vehicles, % 1 1 2 2 0 0

Mvmt Flow 53 602 447 4 9 18

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 451 0 - 0 1157 449

Stage 1 - - - - 449 -

Stage 2 - - - - 708 -

Critical Hdwy 4.11 - - - 6.4 6.2

Critical Hdwy Stg 1 - - - - 5.4 -

Critical Hdwy Stg 2 - - - - 5.4 -

Follow-up Hdwy 2.209 - - - 3.5 3.3

Pot Cap-1 Maneuver 1115 - - - 219 614

Stage 1 - - - - 647 -

Stage 2 - - - - 492 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1115 - - - 203 614

Mov Cap-2 Maneuver - - - - 203 -

Stage 1 - - - - 647 -

Stage 2 - - - - 457 -

Approach EB WB SB

HCM Control Delay, s 0.7 0 15.6

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1115 - - - 367

HCM Lane V/C Ratio 0.048 - - - 0.074

HCM Control Delay (s) 8.4 0 - - 15.6

HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.1 - - - 0.2

Lanes, Volumes, Timings

5: Project Access & SE 40th Street/SE 40th Street

03/06/2018

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	172	0	0	146	0	0
Future Volume (vph)	172	0	0	146	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1900	0	1900	1900	1900	0
Flt Permitted						
Satd. Flow (perm)	1900	0	1900	1900	1900	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	172	0	0	146	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	172	0	0	146	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	12.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	172	0	0	146	0	0
Future Vol, veh/h	172	0	0	146	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	172	0	0	146	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	172
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1417
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1417
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1417	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0	-

APPENDIX F

2023 “WITH PROJECT” LEVEL OF SERVICE

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	474	64	118	264	0	172	0	87	5	0	32
Future Volume (vph)	5	474	64	118	264	0	172	0	87	5	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982						0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3442	0	1736	3471	0	1770	1583	0	1805	1615	0
Flt Permitted	0.589			0.294			0.489			0.701		
Satd. Flow (perm)	1087	3442	0	537	3471	0	911	1583	0	1332	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17						450			536	
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	2%	2%	2%	0%	0%	0%
Adj. Flow (vph)	5	474	64	118	264	0	172	0	87	5	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	538	0	118	264	0	172	87	0	5	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	11.0	31.0		16.0	36.0		17.0	32.0		11.0	26.0	
Total Split (%)	12.2%	34.4%		17.8%	40.0%		18.9%	35.6%		12.2%	28.9%	
Maximum Green (s)	6.5	26.5		11.5	31.5		12.5	27.5		6.5	21.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	18.7	14.8		23.5	22.0		18.0	15.8		10.4	6.4	
Actuated g/C Ratio	0.36	0.29		0.46	0.43		0.35	0.31		0.20	0.12	
v/c Ratio	0.01	0.54		0.27	0.18		0.34	0.11		0.02	0.05	
Control Delay	8.4	19.4		10.2	10.9		16.0	0.3		14.4	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	8.4	19.4		10.2	10.9		16.0	0.3		14.4	0.1	
LOS	A	B		B	B		B	A		B	A	
Approach Delay		19.3			10.6			10.7			2.1	
Approach LOS		B			B			B			A	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 51.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 49.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

 Ø1	 Ø2	 Ø3	 Ø4
11 s	32 s	16 s	31 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	26 s	11 s	36 s

Queues

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	538	118	264	172	87	5	32
v/c Ratio	0.01	0.54	0.27	0.18	0.34	0.11	0.02	0.05
Control Delay	8.4	19.4	10.2	10.9	16.0	0.3	14.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.4	19.4	10.2	10.9	16.0	0.3	14.4	0.1
Queue Length 50th (ft)	1	81	21	25	39	0	1	0
Queue Length 95th (ft)	5	132	46	62	93	0	8	0
Internal Link Dist (ft)		1699		1111		1425		463
Turn Bay Length (ft)	115		135		220		30	
Base Capacity (vph)	505	1951	569	2198	604	1105	363	1056
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.28	0.21	0.12	0.28	0.08	0.01	0.03

Intersection Summary

HCM 2010 Signalized Intersection Summary

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	474	64	118	264	0	172	0	87	5	0	32
Future Volume (veh/h)	5	474	64	118	264	0	172	0	87	5	0	32
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1827	1827	1900	1863	1863	1900	1900	1900	1900
Adj Flow Rate, veh/h	5	474	64	118	264	0	172	0	87	5	0	32
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	3	3	3	4	4	4	2	2	2	0	0	0
Cap, veh/h	481	864	116	439	1243	0	495	0	348	326	0	183
Arrive On Green	0.01	0.28	0.28	0.09	0.36	0.00	0.11	0.00	0.22	0.01	0.00	0.11
Sat Flow, veh/h	1757	3106	417	1740	3563	0	1774	0	1583	1810	0	1615
Grp Volume(v), veh/h	5	267	271	118	264	0	172	0	87	5	0	32
Grp Sat Flow(s),veh/h/ln	1757	1752	1771	1740	1736	0	1774	0	1583	1810	0	1615
Q Serve(g_s), s	0.1	5.7	5.8	2.0	2.3	0.0	3.4	0.0	2.0	0.1	0.0	0.8
Cycle Q Clear(g_c), s	0.1	5.7	5.8	2.0	2.3	0.0	3.4	0.0	2.0	0.1	0.0	0.8
Prop In Lane	1.00		0.24	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	481	488	493	439	1243	0	495	0	348	326	0	183
V/C Ratio(X)	0.01	0.55	0.55	0.27	0.21	0.00	0.35	0.00	0.25	0.02	0.00	0.17
Avail Cap(c_a), veh/h	728	1053	1065	742	2480	0	797	0	988	581	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	13.5	13.6	9.5	9.8	0.0	13.0	0.0	14.2	17.1	0.0	17.7
Incr Delay (d2), s/veh	0.0	1.0	1.0	0.3	0.1	0.0	0.4	0.0	0.4	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	2.9	1.0	1.1	0.0	1.7	0.0	0.9	0.1	0.0	0.4
LnGrp Delay(d),s/veh	11.3	14.5	14.5	9.8	9.9	0.0	13.5	0.0	14.6	17.1	0.0	18.1
LnGrp LOS	B	B	B	A	A		B		B	B		B
Approach Vol, veh/h		543			382			259			37	
Approach Delay, s/veh		14.5			9.9			13.8			18.0	
Approach LOS		B			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.8	14.2	8.3	16.8	9.5	9.5	4.8	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	6.5	27.5	11.5	26.5	12.5	21.5	6.5	31.5				
Max Q Clear Time (g_c+l1), s	2.1	4.0	4.0	7.8	5.4	2.8	2.1	4.3				
Green Ext Time (p_c), s	0.0	0.6	0.1	4.5	0.2	0.6	0.0	5.0				
Intersection Summary												
HCM 2010 Ctrl Delay				13.0								
HCM 2010 LOS				B								

Lanes, Volumes, Timings

2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	166	101	110	211	80	159	82	29	52	138	106
Future Volume (vph)	102	166	101	110	211	80	159	82	29	52	138	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.973			0.985			0.952	
Flt Protected		0.986			0.986			0.971			0.991	
Satd. Flow (prot)	0	1655	0	0	1787	0	0	1747	0	0	1757	0
Flt Permitted		0.986			0.986			0.971			0.991	
Satd. Flow (perm)	0	1655	0	0	1787	0	0	1747	0	0	1757	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	9%	9%	9%	2%	2%	2%	4%	4%	4%	2%	2%	2%
Adj. Flow (vph)	102	166	101	110	211	80	159	82	29	52	138	106
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	369	0	0	401	0	0	270	0	0	296	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	70.7%											
Analysis Period (min)	15											
	ICU Level of Service C											

Intersection	
Intersection Delay, s/veh	28.4
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	102	166	101	110	211	80	159	82	29	52	138	106
Future Vol, veh/h	102	166	101	110	211	80	159	82	29	52	138	106
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	9	9	9	2	2	2	4	4	4	2	2	2
Mvmt Flow	102	166	101	110	211	80	159	82	29	52	138	106
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	30.7	34.8	22	22.5
HCM LOS	D	D	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	59%	28%	27%	18%
Vol Thru, %	30%	45%	53%	47%
Vol Right, %	11%	27%	20%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	270	369	401	296
LT Vol	159	102	110	52
Through Vol	82	166	211	138
RT Vol	29	101	80	106
Lane Flow Rate	270	369	401	296
Geometry Grp	1	1	1	1
Degree of Util (X)	0.594	0.763	0.812	0.624
Departure Headway (Hd)	7.922	7.447	7.287	7.585
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	454	487	497	474
Service Time	6.003	5.473	5.311	5.664
HCM Lane V/C Ratio	0.595	0.758	0.807	0.624
HCM Control Delay	22	30.7	34.8	22.5
HCM Lane LOS	C	D	D	C
HCM 95th-tile Q	3.8	6.6	7.8	4.2

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	26	231	72	13	420
Future Volume (vph)	194	26	231	72	13	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984		0.968			
Flt Protected	0.958				0.950	
Satd. Flow (prot)	1791	0	1752	0	1770	1863
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1791	0	1752	0	1770	1863
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	5%	5%	2%	2%
Adj. Flow (vph)	194	26	231	72	13	420
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	0	303	0	13	420
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 2010 TWSC
3: NW Brady Road & NW McIntosh Road

03/06/2018

Intersection

Int Delay, s/veh 5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	26	231	72	13	420
Future Vol, veh/h	194	26	231	72	13	420
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	5	5	2	2
Mvmt Flow	194	26	231	72	13	420

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	713	267	0
Stage 1	267	-	-
Stage 2	446	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	401	777	-
Stage 1	782	-	-
Stage 2	649	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	397	777	-
Mov Cap-2 Maneuver	397	-	-
Stage 1	782	-	-
Stage 2	642	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	421	1258
HCM Lane V/C Ratio	-	-	0.523	0.01
HCM Control Delay (s)	-	-	22.5	7.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	2.9	0

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	196	629	4	10	90
Future Volume (vph)	13	196	629	4	10	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.878	
Flt Protected		0.997			0.995	
Satd. Flow (prot)	0	1722	1898	0	1660	0
Flt Permitted		0.997			0.995	
Satd. Flow (perm)	0	1722	1898	0	1660	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	10%	0%	0%	0%	0%
Adj. Flow (vph)	13	196	629	4	10	90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	209	633	0	100	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.1% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	196	629	4	10	90
Future Vol, veh/h	13	196	629	4	10	90
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	100	100	100	100	100	100
Heavy Vehicles, %	10	10	0	0	0	0
Mvmt Flow	13	196	629	4	10	90

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	633	0	853
Stage 1	-	-	631
Stage 2	-	-	222
Critical Hdwy	4.2	-	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	2.29	-	3.5
Pot Cap-1 Maneuver	913	-	332
Stage 1	-	-	534
Stage 2	-	-	820
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	913	-	327
Mov Cap-2 Maneuver	-	-	327
Stage 1	-	-	534
Stage 2	-	-	807

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	14.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	913	-	-	-	463
HCM Lane V/C Ratio	0.014	-	-	-	0.216
HCM Control Delay (s)	9	0	-	-	14.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.8

Lanes, Volumes, Timings

5: Project Access & SE 40th Street/SE 40th Street

03/06/2018

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	75	2	1	137	5	2
Future Volume (vph)	75	2	1	137	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996				0.961	
Flt Protected			0.950		0.966	
Satd. Flow (prot)	1604	0	1703	1792	1764	0
Flt Permitted			0.950		0.966	
Satd. Flow (perm)	1604	0	1703	1792	1764	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	18%	18%	6%	6%	0%	0%
Adj. Flow (vph)	75	2	1	137	5	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	77	0	1	137	7	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	2	1	137	5	2
Future Vol, veh/h	75	2	1	137	5	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	18	18	6	6	0	0
Mvmt Flow	75	2	1	137	5	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	77
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.16
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.254
Pot Cap-1 Maneuver	-	-	1497
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1497
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	828	-	-	1497	-
HCM Lane V/C Ratio	0.008	-	-	0.001	-
HCM Control Delay (s)	9.4	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	313	253	38	895	5	152	0	43	14	0	5
Future Volume (vph)	27	313	253	38	895	5	152	0	43	14	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	135		0	220		0	30		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.933			0.999			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3335	0	1787	3571	0	1805	1615	0	1805	1615	0
Flt Permitted	0.194			0.386			0.499			0.729		
Satd. Flow (perm)	365	3335	0	726	3571	0	948	1615	0	1385	1615	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		253			1			548			229	
Link Speed (mph)		40			40			35			25	
Link Distance (ft)		1779			1191			1505			543	
Travel Time (s)		30.3			20.3			29.3			14.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	27	313	253	38	895	5	152	0	43	14	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	566	0	38	900	0	152	43	0	14	5	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	

Lanes, Volumes, Timings

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	9.5	22.5		9.5	22.5		9.5	22.5		9.5	22.5	
Total Split (s)	10.0	40.0		10.0	40.0		14.0	30.0		10.0	26.0	
Total Split (%)	11.1%	44.4%		11.1%	44.4%		15.6%	33.3%		11.1%	28.9%	
Maximum Green (s)	5.5	35.5		5.5	35.5		9.5	25.5		5.5	21.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		11.0			11.0			11.0			11.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	22.3	20.6		22.3	20.6		16.6	14.8		10.2	6.1	
Actuated g/C Ratio	0.45	0.41		0.45	0.41		0.33	0.30		0.20	0.12	
v/c Ratio	0.08	0.37		0.08	0.61		0.32	0.05		0.04	0.01	
Control Delay	7.4	7.1		7.5	14.8		17.1	0.1		16.4	0.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	7.4	7.1		7.5	14.8		17.1	0.1		16.4	0.0	
LOS	A	A		A	B		B	A		B	A	
Approach Delay		7.1			14.5			13.3			12.1	
Approach LOS		A			B			B			B	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 49.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 11.8

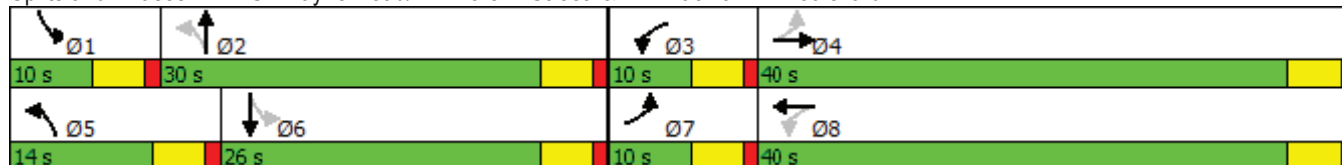
Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard



Queues

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	27	566	38	900	152	43	14	5
v/c Ratio	0.08	0.37	0.08	0.61	0.32	0.05	0.04	0.01
Control Delay	7.4	7.1	7.5	14.8	17.1	0.1	16.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	7.1	7.5	14.8	17.1	0.1	16.4	0.0
Queue Length 50th (ft)	4	28	6	98	25	0	2	0
Queue Length 95th (ft)	13	72	17	196	94	0	16	0
Internal Link Dist (ft)		1699		1111		1425		463
Turn Bay Length (ft)	115		135		220		30	
Base Capacity (vph)	336	2501	453	2605	516	1152	334	890
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.23	0.08	0.35	0.29	0.04	0.04	0.01

Intersection Summary

HCM 2010 Signalized Intersection Summary

1: SE Payne Road/NW Lorenz Street & NW Pacific Rim Boulevard

03/06/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	313	253	38	895	5	152	0	43	14	0	5
Future Volume (veh/h)	27	313	253	38	895	5	152	0	43	14	0	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1900	1881	1881	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	27	313	253	38	895	5	152	0	43	14	0	5
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	1	1	1	1	1	1	0	0	0	0	0	0
Cap, veh/h	340	778	614	460	1526	9	457	0	290	309	0	158
Arrive On Green	0.03	0.41	0.41	0.04	0.42	0.42	0.10	0.00	0.18	0.02	0.00	0.10
Sat Flow, veh/h	1792	1902	1502	1792	3644	20	1810	0	1615	1810	0	1615
Grp Volume(v), veh/h	27	294	272	38	439	461	152	0	43	14	0	5
Grp Sat Flow(s),veh/h/ln	1792	1787	1616	1792	1787	1878	1810	0	1615	1810	0	1615
Q Serve(g_s), s	0.4	5.9	6.1	0.6	9.7	9.7	3.6	0.0	1.1	0.4	0.0	0.1
Cycle Q Clear(g_c), s	0.4	5.9	6.1	0.6	9.7	9.7	3.6	0.0	1.1	0.4	0.0	0.1
Prop In Lane	1.00		0.93	1.00		0.01	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	731	661	460	748	786	457	0	290	309	0	158
V/C Ratio(X)	0.08	0.40	0.41	0.08	0.59	0.59	0.33	0.00	0.15	0.05	0.00	0.03
Avail Cap(c_a), veh/h	477	1243	1125	580	1243	1306	615	0	807	472	0	681
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.0	10.7	10.7	8.3	11.4	11.4	16.6	0.0	17.6	20.1	0.0	20.8
Incr Delay (d2), s/veh	0.1	0.4	0.4	0.1	0.7	0.7	0.4	0.0	0.2	0.1	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.9	2.8	0.3	4.9	5.1	1.8	0.0	0.5	0.2	0.0	0.1
LnGrp Delay(d),s/veh	9.1	11.0	11.1	8.3	12.2	12.1	17.0	0.0	17.9	20.2	0.0	20.9
LnGrp LOS	A	B	B	A	B	B	B		B	C		C
Approach Vol, veh/h		593			938			195			19	
Approach Delay, s/veh		11.0			12.0			17.2			20.4	
Approach LOS		B			B			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.4	13.7	6.6	25.4	9.6	9.5	6.1	25.9				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	5.5	25.5	5.5	35.5	9.5	21.5	5.5	35.5				
Max Q Clear Time (g_c+I1), s	2.4	3.1	2.6	8.1	5.6	2.1	2.4	11.7				
Green Ext Time (p_c), s	0.0	0.2	0.0	10.3	0.1	0.2	0.0	9.7				
Intersection Summary												
HCM 2010 Ctrl Delay				12.3								
HCM 2010 LOS				B								

Lanes, Volumes, Timings
2: NW Brady Road & NW 16th Street

03/06/2018

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	116	13	124	31	109	8	246	159	112	283	13
Future Volume (vph)	15	116	13	124	31	109	8	246	159	112	283	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.944			0.948			0.996	
Flt Protected		0.995			0.977			0.999			0.986	
Satd. Flow (prot)	0	1868	0	0	1752	0	0	1799	0	0	1829	0
Flt Permitted		0.995			0.977			0.999			0.986	
Satd. Flow (perm)	0	1868	0	0	1752	0	0	1799	0	0	1829	0
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		1212			959			2307			902	
Travel Time (s)		33.1			26.2			44.9			17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	2%	2%
Adj. Flow (vph)	15	116	13	124	31	109	8	246	159	112	283	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	144	0	0	264	0	0	413	0	0	408	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	81.2%											
Analysis Period (min)	15											
	ICU Level of Service D											

Intersection

Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	116	13	124	31	109	8	246	159	112	283	13
Future Vol, veh/h	15	116	13	124	31	109	8	246	159	112	283	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	2	2	2
Mvmt Flow	15	116	13	124	31	109	8	246	159	112	283	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13	15.7	20.7	22.7
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	10%	47%	27%
Vol Thru, %	60%	81%	12%	69%
Vol Right, %	38%	9%	41%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	413	144	264	408
LT Vol	8	15	124	112
Through Vol	246	116	31	283
RT Vol	159	13	109	13
Lane Flow Rate	413	144	264	408
Geometry Grp	1	1	1	1
Degree of Util (X)	0.679	0.283	0.483	0.702
Departure Headway (Hd)	5.921	7.07	6.583	6.194
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	607	505	544	579
Service Time	3.986	5.157	4.655	4.26
HCM Lane V/C Ratio	0.68	0.285	0.485	0.705
HCM Control Delay	20.7	13	15.7	22.7
HCM Lane LOS	C	B	C	C
HCM 95th-tile Q	5.2	1.2	2.6	5.6

Lanes, Volumes, Timings
3: NW Brady Road & NW McIntosh Road

03/06/2018

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	81	19	477	204	17	424
Future Volume (vph)	81	19	477	204	17	424
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.974		0.960			
Flt Protected	0.961				0.950	
Satd. Flow (prot)	1778	0	1806	0	1752	1845
Flt Permitted	0.961				0.950	
Satd. Flow (perm)	1778	0	1806	0	1752	1845
Link Speed (mph)	35		40			35
Link Distance (ft)	1524		727			2307
Travel Time (s)	29.7		12.4			44.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	1%	1%	3%	3%
Adj. Flow (vph)	81	19	477	204	17	424
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	681	0	17	424
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	81	19	477	204	17	424
Future Vol, veh/h	81	19	477	204	17	424
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	0	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	1	1	3	3
Mvmt Flow	81	19	477	204	17	424

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1037	579	0
Stage 1	579	-	-
Stage 2	458	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	258	519	-
Stage 1	564	-	-
Stage 2	641	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	253	519	-
Mov Cap-2 Maneuver	253	-	-
Stage 1	564	-	-
Stage 2	629	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.8	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	280	907
HCM Lane V/C Ratio	-	-	0.357	0.019
HCM Control Delay (s)	-	-	24.8	9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.6	0.1

Lanes, Volumes, Timings

4: SE Brady Road /SE Brady Road & SE Grand Ridge Drive

03/06/2018



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	66	602	447	5	9	26
Future Volume (vph)	66	602	447	5	9	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.900	
Flt Protected		0.995			0.987	
Satd. Flow (prot)	0	1872	1861	0	1688	0
Flt Permitted		0.995			0.987	
Satd. Flow (perm)	0	1872	1861	0	1688	0
Link Speed (mph)		40	40		25	
Link Distance (ft)		978	3072		1011	
Travel Time (s)		16.7	52.4		27.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	1%	2%	2%	0%	0%
Adj. Flow (vph)	66	602	447	5	9	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	668	452	0	35	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.5% ICU Level of Service C

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.9

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 66 602 447 5 9 26

Future Vol, veh/h 66 602 447 5 9 26

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 100 100 100 100 100 100

Heavy Vehicles, % 1 1 2 2 0 0

Mvmt Flow 66 602 447 5 9 26

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 452 0 - 0 1184 450

Stage 1 - - - - 450 -

Stage 2 - - - - 734 -

Critical Hdwy 4.11 - - - 6.4 6.2

Critical Hdwy Stg 1 - - - - 5.4 -

Critical Hdwy Stg 2 - - - - 5.4 -

Follow-up Hdwy 2.209 - - - 3.5 3.3

Pot Cap-1 Maneuver 1114 - - - 211 613

Stage 1 - - - - 647 -

Stage 2 - - - - 478 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1114 - - - 192 613

Mov Cap-2 Maneuver - - - - 192 -

Stage 1 - - - - 647 -

Stage 2 - - - - 435 -

Approach EB WB SB

HCM Control Delay, s 0.8 0 15.1

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1114 - - - 392

HCM Lane V/C Ratio 0.059 - - - 0.089

HCM Control Delay (s) 8.4 0 - - 15.1

HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0.2 - - - 0.3

Lanes, Volumes, Timings

5: Project Access & SE 40th Street/SE 40th Street

03/06/2018

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	172	6	2	146	3	2
Future Volume (vph)	172	6	2	146	3	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.946	
Flt Protected			0.950		0.971	
Satd. Flow (prot)	1890	0	1805	1900	1745	0
Flt Permitted			0.950		0.971	
Satd. Flow (perm)	1890	0	1805	1900	1745	0
Link Speed (mph)	40			40	25	
Link Distance (ft)	1480			1830	2017	
Travel Time (s)	25.2			31.2	55.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	172	6	2	146	3	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	2	146	5	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	19.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	172	6	2	146	3	2
Future Vol, veh/h	172	6	2	146	3	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	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	172	6	2	146	3	2

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	178
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1410
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1410
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	9.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	740	-	-	1410	-
HCM Lane V/C Ratio	0.007	-	-	0.001	-
HCM Control Delay (s)	9.9	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-