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**GTC**

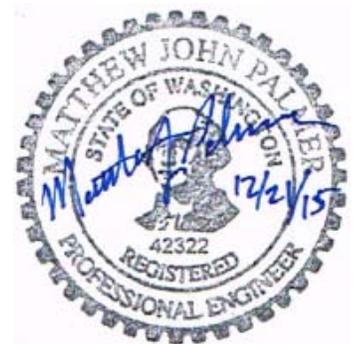
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# **Park Place Middle School Traffic Impact Analysis**

**Prepared for: Monroe School District  
Jurisdiction: City of Monroe**

**December 2015**



GTC #15-273

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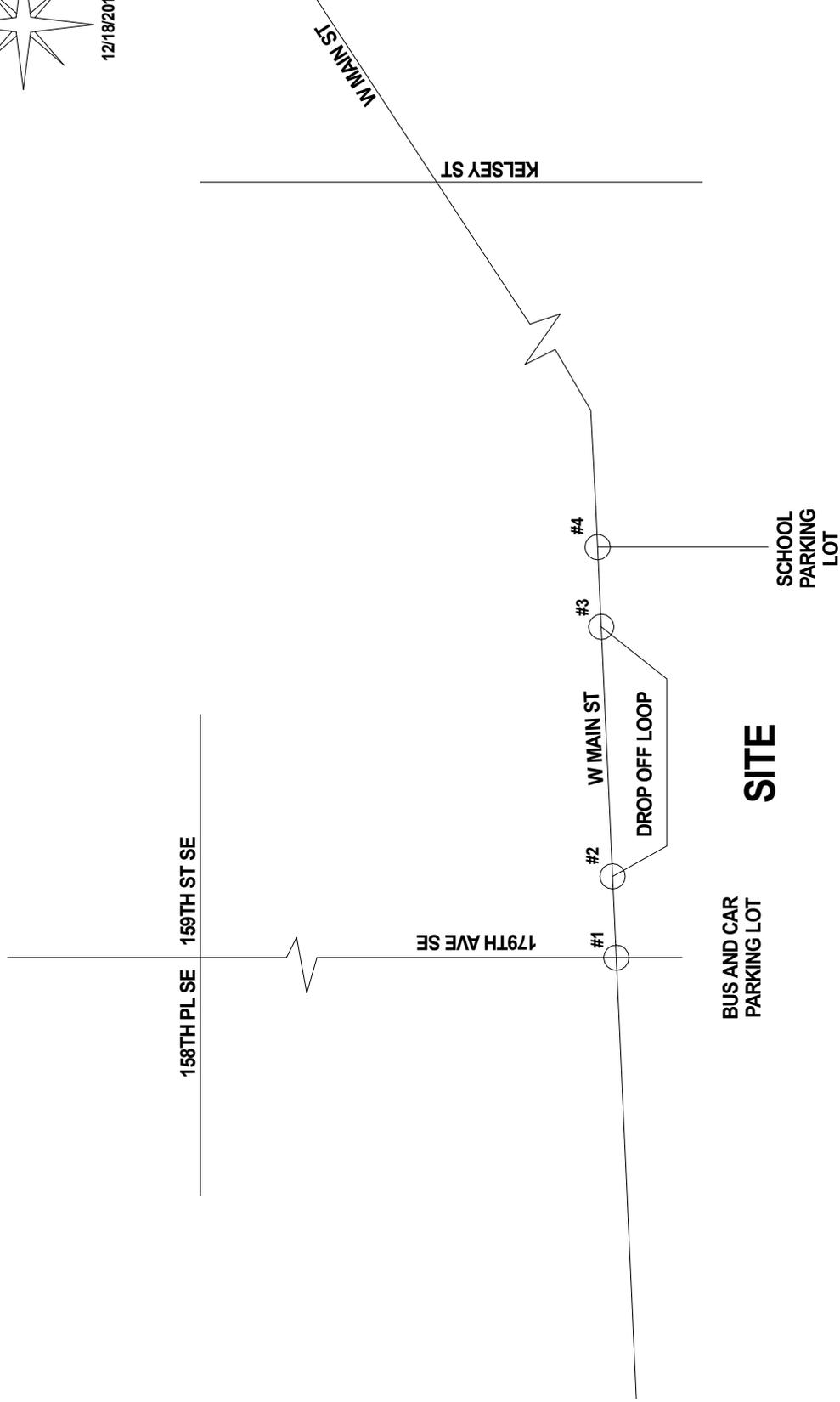
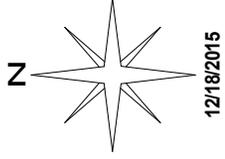
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## 1. INTRODUCTION

Gibson Traffic Consultants, Inc. (GTC) has been retained to complete a traffic impact analysis (TIA) for the Park Place Middle School reconstruction. Monroe School District (MSD) is proposing to reconstruct Park Place Middle School, which is located on the south side of W Main Street, between 179<sup>th</sup> Ave SE and Dennis Way in the city of Monroe. A site vicinity map is included in Figure 1. The school will continue to be a middle school serving grades 6<sup>th</sup> through 8<sup>th</sup> grade with school hours from 7:50 AM and to 2:20 PM. Today's student approved capacity is 930, with this change, the new capacity for Park Place Middle School is 850 students. A similar ratio of volunteers and staff currently serving the school was assumed for future conditions as well. The schools current district boundary lines are not anticipated to change with this reconstruction.

## 2. PROPOSED SITE DEVELOPMENT & ACCESS

Park Place Middle School is being designed with a capacity of 850 students. With the reconstruction, the bus drop-off/pick-up area will be moved from the west side of the school to a loop in front of the school which will be accessed from the existing east full access. The existing middle access loop along W Main Street that is used as the parent drop-off/pick-up area will be removed and a new loop will be added on the west side of the site with access to the signal at 179<sup>th</sup> Avenue SE. The staff and visitor parking lot will be located on the west side of the school and will contain the new drop-off/pick-up loop for students which will have a significantly increased queuing capacity to support the parent demand. There are currently twenty-one (21) bus routes serving the school; all of which will remain with no new routes added. The proposed school is scheduled for full facility build-out and occupancy by the 2017 school year. The City of Monroe requires a forecast of ten years. Therefore, the year 2025 has been used as the opening year in the analysis.



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**FIGURE 1**  
**SITE VICINITY**  
**MAP**

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LEGEND



KEY INTERSECTION

**PARK PLACE MIDDLE SCHOOL**  
**STUDENT CAPACITY**  
**CHANGE TO 850 STUDENTS**

**MONROE COUNTY**

### 3. METHODOLOGY & ANALYSIS SCOPING

Peak-hour level of service (LOS) is determined using the methodology described in the 2010 *Highway Capacity Manual* (HCM) and *Synchro 9.1* software developed by Trafficware. In December of 2015, 787 students were enrolled at Park Place Middle School. The turning movement counts and observations were performed during the same school year in December 2015. In order to analyze site specific traffic conditions at the school site, GTC has utilized existing driveway count data to estimate future peak-hour traffic volumes and peak-hour LOS conditions.

Traffic congestion on roadways is generally measured in terms of LOS at critical intersections. In accordance with the 2010 *Highway Capacity Manual*, roadway facilities and intersections are rated between LOS A and F, with LOS A being free flow and LOS F being forced flow or over-capacity conditions. The LOS at signalized intersections and all-way stop-controlled intersections are based on the average stopped delay for all entering vehicles. The LOS at two-way stop-controlled intersections is based on stopped delay times for the critical approach or movement(s). Geometric characteristics and conflicting traffic movements are taken into consideration when determining LOS values. A summary of the level of service criteria has been included in **Table 1**.

GTC utilized a 2.0-percent annual compounding growth rate to the non-school traffic to account for background traffic growth in the site vicinity. The street network surrounding the school is primarily comprised of stop-controlled intersections (all-way and two-way) and residential homes to the north. The acceptable level of service at arterial intersections within the City of Monroe is LOS D.

Matthew Palmer, responsible for the traffic analysis and report, is a licensed professional engineer (Civil) in the State of Washington and a current member of the Washington State section of ITE.

**Table 1: Level of Service Criteria for Intersections**

Level of <sup>1</sup> Service	Expected Delay	Intersection Control Delay (Seconds per Vehicle)	
		Unsignalized Intersections	Signalized Intersections
<b>A</b>	Little/No Delay	≤10	≤10
<b>B</b>	Short Delays	>10 and ≤15	>10 and ≤20
<b>C</b>	Average Delays	>15 and ≤25	>20 and ≤35
<b>D</b>	Long Delays	>25 and ≤35	>35 and ≤55
<b>E</b>	Very Long Delays	>35 and ≤50	>55 and ≤80
<b>F</b>	Extreme Delays <sup>2</sup>	>50	>80

GTC analyzed AM and School PM peak-hour level of service. Due to the change in access locations, the 2025 future with reconstruction study intersections differ slightly from the ones in the 2015 existing conditions. The study intersections are shown in Table 2.

**Table 2: Study Intersections**

Study Intersections	
2015 Existing/2017 Baseline Conditions	2025 Future with Expansion Conditions
1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy	1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy
2. W Main St. @ Middle Entrance	
3. W Main St. @ Middle Exit	
4. W Main St. @ East Driveway	4. W Main St. @ East Driveway

Study intersection number 2 is an entrance only; therefore, there is no intersection delay associated with that access point.

<sup>1</sup> **Source:** *Highway Capacity Manual* 2010.

LOS A: Free-flow traffic conditions, with minimal delay to stopped vehicles (no vehicle is delayed longer than one cycle at signalized intersection).

LOS B: Generally stable traffic flow conditions.

LOS C: Occasional back-ups may develop, but delay to vehicles is short term and still tolerable.

LOS D: During short periods of the peak hour, delays to approaching vehicles may be substantial but are tolerable during times of less demand (i.e. vehicles delayed one cycle or less at signal).

LOS E: Intersections operate at or near capacity, with long queues developing on all approaches and long delays.

LOS F: Jammed conditions on all approaches with excessively long delays and vehicles unable to move at times.

<sup>2</sup> When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection.

## **4. EXISTING CONDITIONS**

### **4.1 Transit Service/Walking**

There is one existing transit service stop in the site vicinity. Community Transit route 271 stops along W Main Street between the two access points for the parent drop-off/pick-up loop. Twenty-one school buses serve the school.

There were a total of 81 pedestrians that utilized the crossings to the west of the school at the intersection of 179<sup>th</sup> Avenue NE and W Main Street during the AM peak-hour and during the School PM peak-hour there was a total of 108 pedestrians that utilized the crossings. These numbers represent a two-way total flow of pedestrians and may have included non-students. The weather was rainy so there may be higher pedestrian activity on sunny days.

### **4.2 Collision Data**

Collision data was provided by WSDOT for 5-years from January 1, 2010 through December 31, 2014 along W Main Street. There were nine collisions, all of which were either at or just to the west of the W Main Street and 179<sup>th</sup> Avenue SE intersection. All but two of the collisions were at an angle collisions where the contributing circumstances were people not granting the right of way. None of these collisions involved pedestrians or bikes and none were fatalities.

### **4.3 Existing Parking Utilization**

A parking survey was completed by GTC staff and the independent count firm Traffic Data Gathering (TDG) after the morning peak period from 7:50-8:10 AM and prior to school dismissal at 2:20 PM on December 8 and 16, 2015. Currently on site there are a total of 163 spaces split among 3 parking locations (84 on the West side of the building, 11 in the middle of the site and 68 on the East side of the site). In the morning there was an average of 126 vehicles parked on the site (77% occupied). Prior to the school dismissal/arrival of parent pick-up traffic, there were a total of 106 parked vehicles on the site (65% occupied). The parking generation per student based on 787 existing students is 0.16 vehicles per student for the AM and 0.12 vehicles per student at School PM peak-hours, this includes all vehicles parked on-site (staff, visitor, and personal vehicles for school bus drivers of the adjacent bus barn). Note: today approximately 50 school bus barn drivers utilize the school parking for convenience even though there is an official off-site parking lot for them.

#### 4.4 Existing Volumes and Level of Service

Existing turning movement counts at all the study intersections were obtained by the independent count firm, Traffic Data Gathering (TDG) on Tuesday, December 8 and Wednesday December 9, 2015. The existing peak-hour turning movement volumes are shown at the study intersections during the AM peak-hour (7:30-8:30 AM) and School PM peak-hour (2:15-3:15 PM) in **Figure 2 and Figure 3** respectively. Based on the existing counts, channelization and intersection control; all of the study intersections will operate at LOS C or better during the AM peak-hour and the School PM peak-hour. The existing level of service and critical approach for the unsignalized intersections for the AM and School PM peak-hour are summarized in **Table 3 and Table 4** respectively. The existing level of service calculations are included in the attachments.

The existing queuing at the intersection of W Main Street and 179<sup>th</sup> Avenue SE was observed for the southbound left-turn. This queue was observed to have over 10 vehicles in it at any given time during the AM peak-hour. In order to calibrate the Synchro system the peak-hour factor for this movement was set to 1 and the volume was doubled to reflect the peaking effect of the school. This was done to get the 95<sup>th</sup> Percentile queues in Synchro to reflect actual conditions.

**Table 3: Existing Level of Service Summary – AM Peak-Hour**

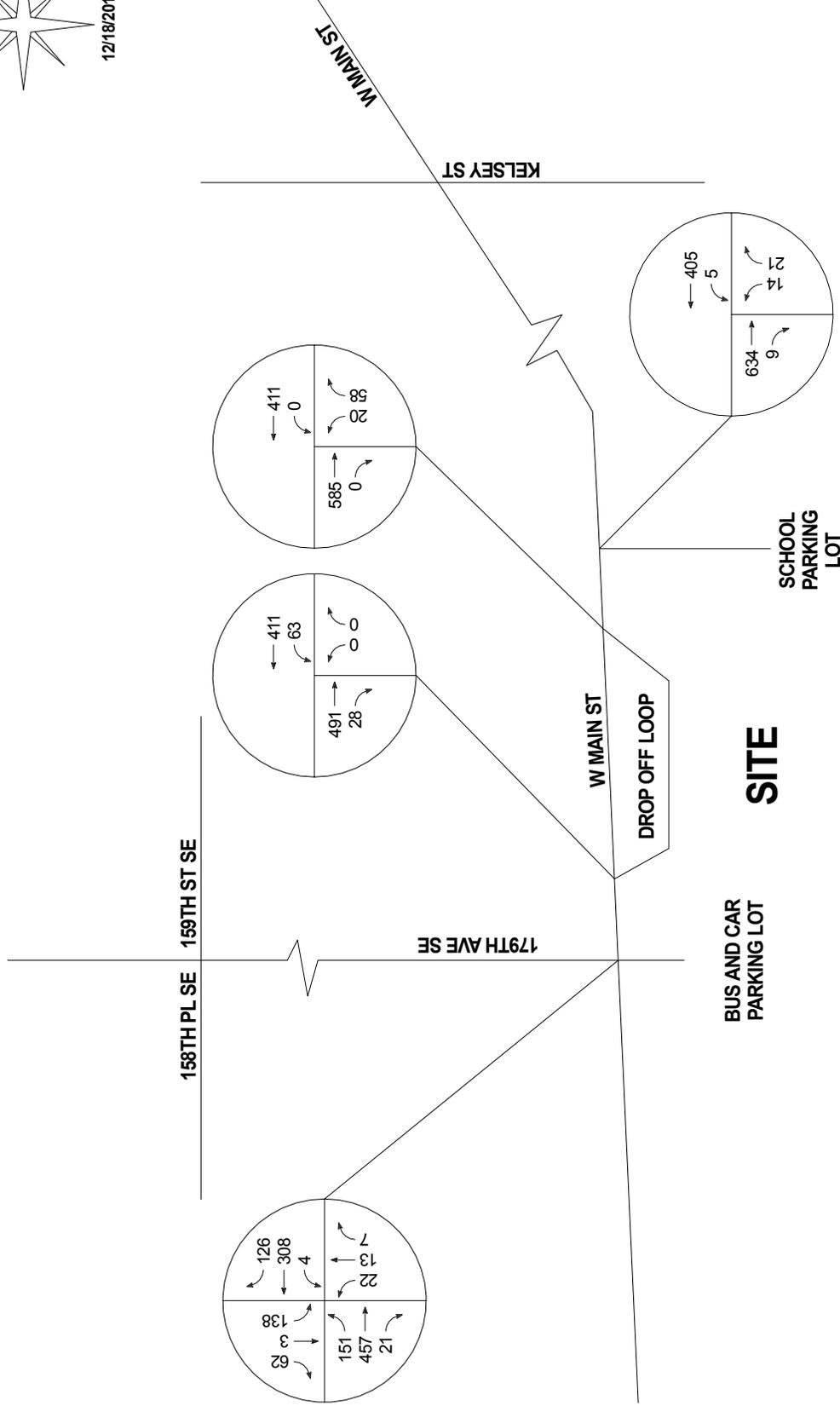
Intersections	Existing Conditions		
	LOS	Delay	Critical Approach
1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy	C	21.5 sec	Signalized
2. W Main St. @ Middle Driveway Entrance	---	---	---
3. W Main St. @ Middle Driveway Exit	C	16.4 sec	Northbound
4. W Main St. @ East Driveway	C	15.3 sec	Northbound

**Table 4: Existing Level of Service Summary – School PM Peak-Hour**

Intersections	Existing Conditions		
	LOS	Delay	Critical Approach
1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy	C	21.5 sec	Signalized
2. W Main St. @ Middle Driveway Entrance	---	---	---
3. W Main St. @ Middle Driveway Exit	C	16.7 sec	Northbound
4. W Main St. @ East Driveway	C	17.0 sec	Northbound



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**FIGURE 3**  
**EXISTING SCHOOL PM**  
**PEAK-HOUR**  
**TURNING MOVEMENTS**

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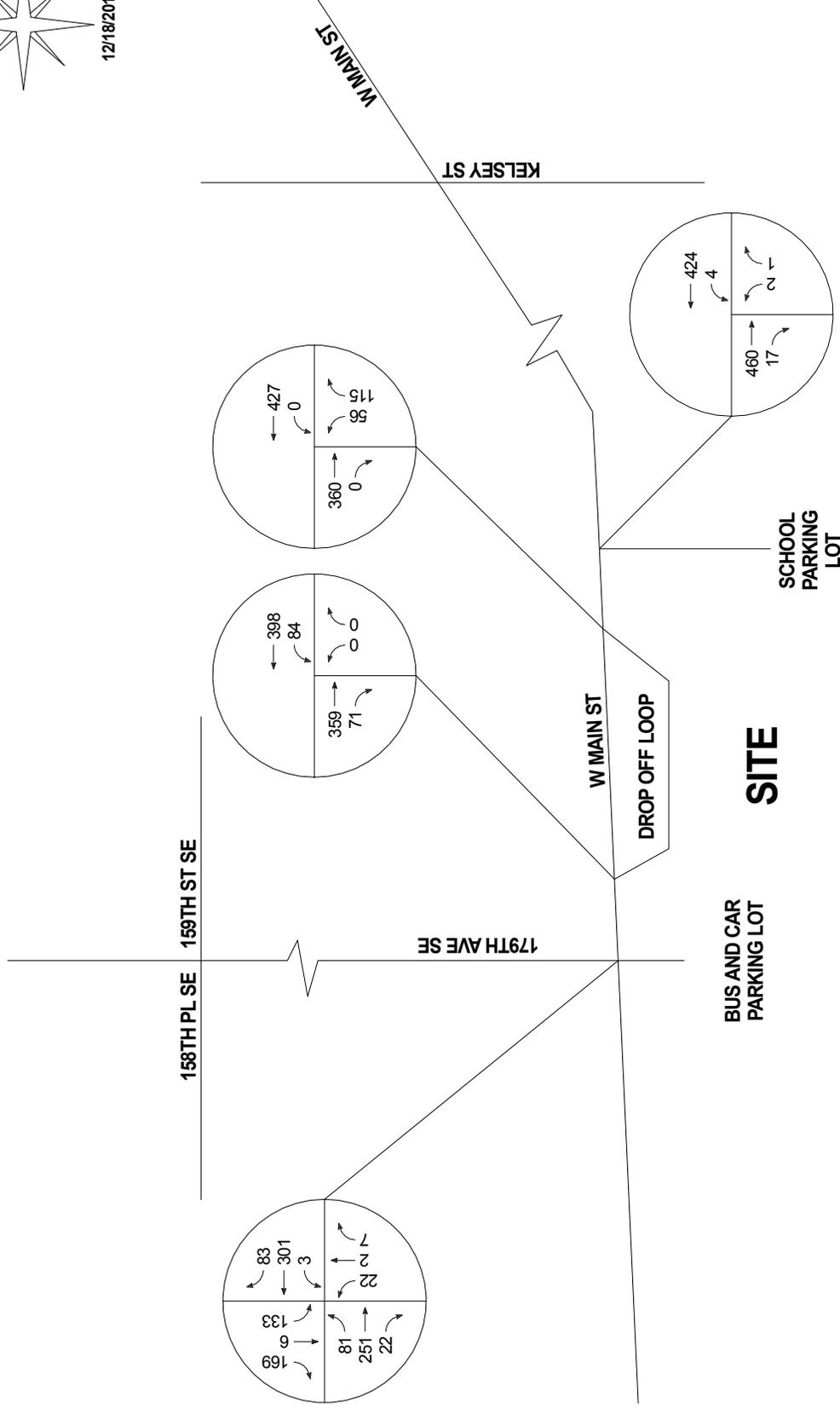
**LEGEND**  
XX→  
PEAK-HOUR  
TURNING MOVEMENT VOLUMES

**PARK PLACE MIDDLE SCHOOL**  
**STUDENT CAPACITY**  
**CHANGE TO 850 STUDENTS**

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**FIGURE 2**  
**EXISTING AM PEAK-HOUR**  
**TURNING MOVEMENTS**

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**LEGEND**  
XX→  
PEAK-HOUR  
TURNING MOVEMENT VOLUMES

**PARK PLACE MIDDLE SCHOOL**  
**STUDENT CAPACITY**  
**CHANGE TO 850 STUDENTS**

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## 5. FUTURE CONDITIONS

### 5.1 Trip Generation

Traffic counts at the school entrances and exits were taken on Wednesday December 9, 2015 indicate school trip volumes are similar to the ITE trip estimates, with 412 peak-hour trips (207 inbound and 205 outbound) during the AM peak-hour for existing conditions, approximately 3.1% lower than ITE estimates. Traffic counts taken on Tuesday December 8, 2015 were 288 peak trips (133 inbound and 155 outbound) during the School PM peak-hour, approximately 22% greater than ITE. GTC has utilized existing driveway count data to estimate future peak-hour traffic volumes and peak-hour LOS conditions.

For future school traffic with the proposed school reconstruction, GTC assumed the same traffic generation characteristics as counted at the existing school driveways with new school traffic proportional to the expected maximum growth in the student enrollment. The maximum expected enrollment for the future at Park Place Middle School is 850 students, or an increase of 63 students. For the AM peak period, school traffic would increase by an estimated 33 trips (17 inbound/16 outbound) and by 23 trips (11 inbound/12 outbound) for the School PM peak. Based on ITE it would generate 9 trips during the commuter street PM peak-hour. The trip generation is summarized in Table 5.

**Table 5: Middle School Net New Trip Generation Summary**

Students	Average Daily Trips	AM Peak-Hour			School PM Peak-Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
63	98.9 <sup>3</sup>	16.6	16.4	33.0	10.6	12.4	23.0

The old library building in the southeastern corner of the site is being considered either or storage or converted into a public pre-kindergarten facility. As a highest case GTC has analyzed it as a pre-kindergarten facility. GTC understands that based on schedule times of other Monroe School District pre-kindergarten facilities (8:55 AM to 3:25 PM), that drop-off and pick-up times would be offset enough that the trips generated from the pre-kindergarten facility would not impact the middle school. The exception to this is the teachers coming in in the morning, which were represented by adding 15 pipeline trips to the east driveway in the morning, 5 from the west and 10 from the east.

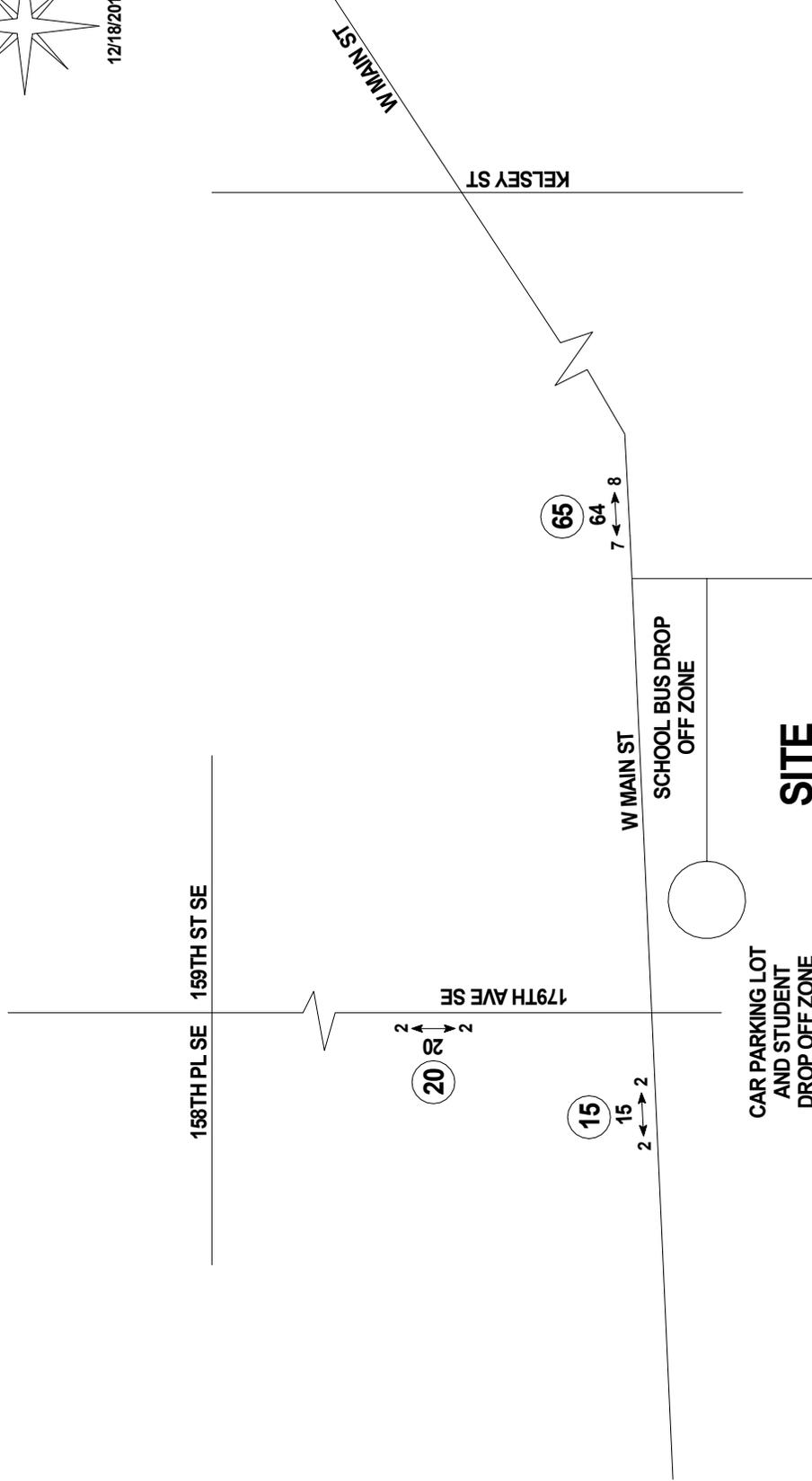
<sup>3</sup> Uses on site counts, not ITE trip generation.

## 5.2 Trip Distribution

Trip distribution is based on the existing traffic counts, school draw areas, and employment destinations. It is estimated that 15% of the site traffic will travel to and from the east on Main Street. An estimated 20% of the site traffic will travel to and from the north on 179<sup>th</sup> Ave SE. The remaining 65% is expected to travel to and from the east on W Main Street. Detailed trip distributions are shown in Figure 4 and Figure 5 for the AM peak-hour and School PM peak-hour respectively.



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**PARK PLACE MIDDLE SCHOOL  
STUDENT CAPACITY  
CHANGE TO 850 STUDENTS**

**LEGEND**  
AWDT  
PM ← PEAK

NEW DAILY TRIPS  
NEW SCHOOL PM PEAK-HOUR TRIPS

XX

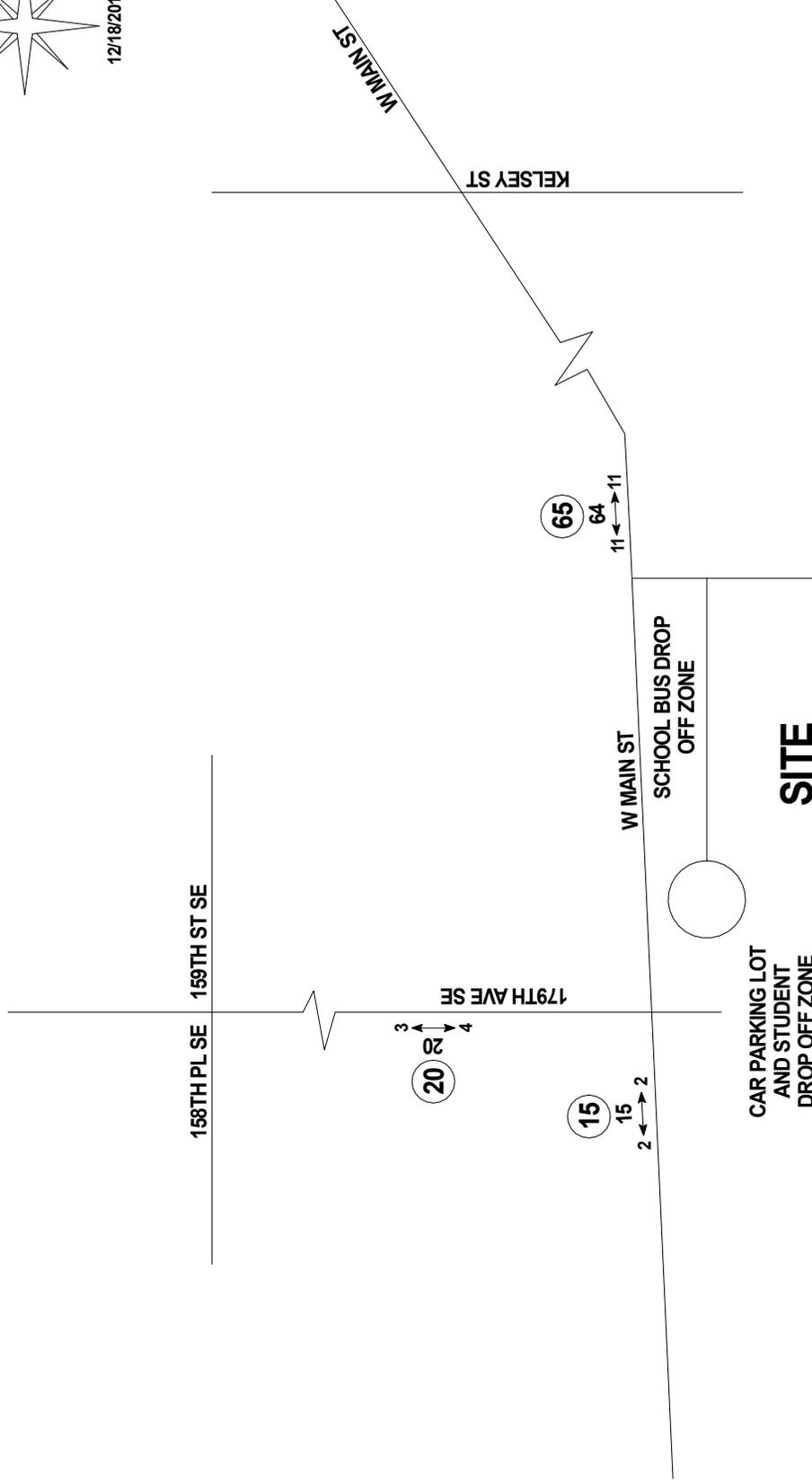
TRIP DISTRIBUTION %

**FIGURE 5  
SCHOOL PM PEAK-HOUR  
DEVELOPMENT  
TRIP DISTRIBUTION**

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CHANGE TO 850 STUDENTS**

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**LEGEND**

- AWDT
- AM ← PEAK
- NEW DAILY TRIPS
- NEW AM PEAK-HOUR TRIPS
- TRIP DISTRIBUTION %
- XX

**FIGURE 4**

**AM PEAK-HOUR  
DEVELOPMENT  
TRIP DISTRIBUTION**

### 5.3 2025 Future with Project Volumes and Level of Service

The 2025 future with project turning movement volumes are calculated by adding all of the school traffic based on the trip distribution to the existing 2015 counts that have been increased by 10 years with a 2% growth factor. Additionally, the relocation of the main school bus and parent drop-off/pick-up accesses for the site means existing school trips will change from their current travel paths. After the reconstruction, all of the buses should be picking up and dropping off students from the east access and all of the parents should be dropping off and picking up students from the west access. Additionally the school driveway at the intersection of W Main Street and 179<sup>th</sup> Ave SE is proposed to have northbound split channelization with a shared through/left and a right-turn lane. The 2025 future with project turning movement volumes for the AM peak-hour and School PM peak-hour in Figure 6 and Figure 7.

With the addition of school traffic, both study intersections will continue to operate at acceptable LOS D or better during the AM peak-hour and School PM peak-hour. The school's west access is expected to operate at LOS C during the AM peak-hour with 21.3 seconds of delay and LOS C during the School PM peak-hour with 30.2 seconds of delay.

The school turning movements at this intersection have been analyzed with the peak-hour factor set to 1 and the volumes doubled to reflect the school peaking and queuing. The signal phasing was also optimized with the additional parent traffic added to the signalized intersection. With the parent inbound access moved to the W Main Street at 179<sup>th</sup> Avenue SE intersection the southbound left-turn queuing is reduced and is anticipated to fit within the available storage.

The school's east access is expected to operate at LOS D with 30.2 seconds of delay in the AM peak-hour and LOS C with 20.8 seconds of delay in the School PM peak-hour. All of the study intersections will operate at acceptable City of Monroe Intersection Standards used for SEPA impact evaluation. The 2025 future with project level of service results for the AM peak-hour and School PM peak-hour are summarized in Table 6 and Table 7. The 2025 future with project level of service calculations are included in the attachments.

**Table 6: 2025 Level of Service Summary – AM Peak-Hour**

Intersection	Existing Conditions			2025 Future Conditions		
	LOS	Delay	Critical Approach	LOS	Delay	Critical Approach
1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy	C	21.5 sec	Signalized	C	21.3 sec	Signalized
2. W Main St. @ Middle Driveway Entrance	---	---	---	---	---	---
3. W Main St. @ Middle Driveway Exit	C	16.4 sec	Northbound	---	---	---
4. W Main St. @ East Driveway	C	15.3 sec	Northbound	D	30.2 sec	Northbound

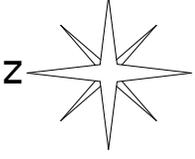
**Table 7: 2025 Level of Service Summary – School PM Peak-Hour**

Intersection	Existing Conditions			2025 Future Conditions		
	LOS	Delay	Critical Approach	LOS	Delay	Critical Approach
1. W Main St. @ 179 <sup>th</sup> Ave SE/ West Drwy	C	21.5 sec	Signalized	C	20.1 sec	Signalized
2. W Main St. @ Middle Driveway Entrance	---	---	---	---	---	---
3. W Main St. @ Middle Driveway Exit	C	16.7 sec	Northbound	---	---	---
4. W Main St. @ East Driveway	C	17.0 sec	Northbound	C	20.8 sec	Northbound

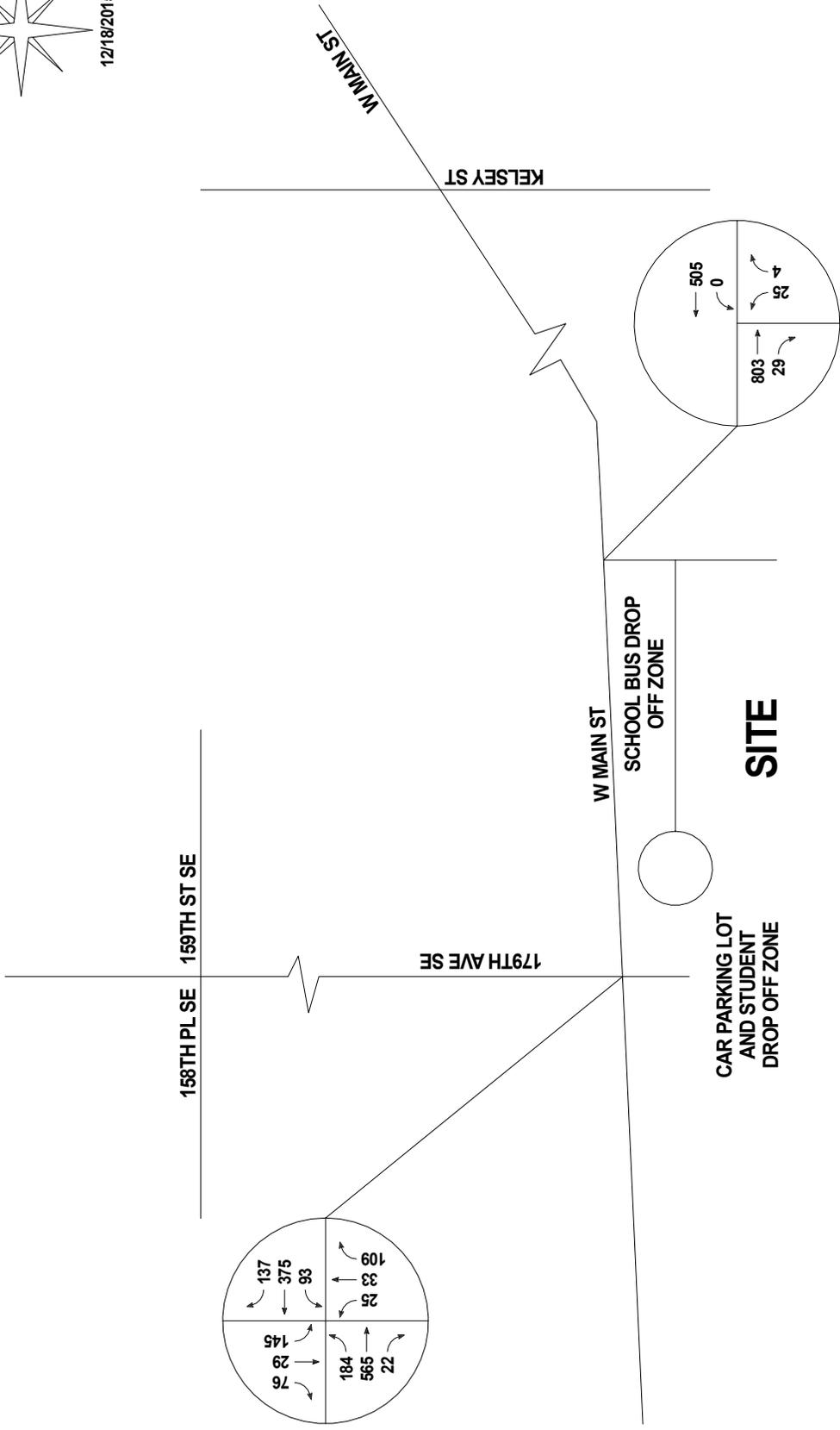
#### 5.4 2025 Opening Year On-site Queuing

Currently, there is about 300 feet of queuing space that is used before W Main Street is impacted. An average of the two days where queuing was observed for AM and School PM queues, there was a maximum of 10 cars, or approximately 240 feet of queued length on W Main Street before the first bell at 7:50 AM and a maximum of 14 cars, or 336 feet of queued length on Main Street after the final bell at 2:20 PM. This would result in a total queue length of about 540 feet in the morning and about 636 feet of queuing in the afternoon. Increasing the existing queue distance by 8% (850 students / 787 students) to account for the increase in students would result in a required queue distance of 687 feet.

The proposed new loop will provide approximately 837 feet of queuing space before impacting Main Street without including the ability to direct parents through the western parking portion of the lot, and approximately 1,215 feet of queuing space if the western parking portion of the lot is included. Both routes are included in the attachments. This provides space for 34 or 50 vehicles respectively. The proposed new loop would provide adequate space for queuing in the morning and afternoon using only the loop itself.



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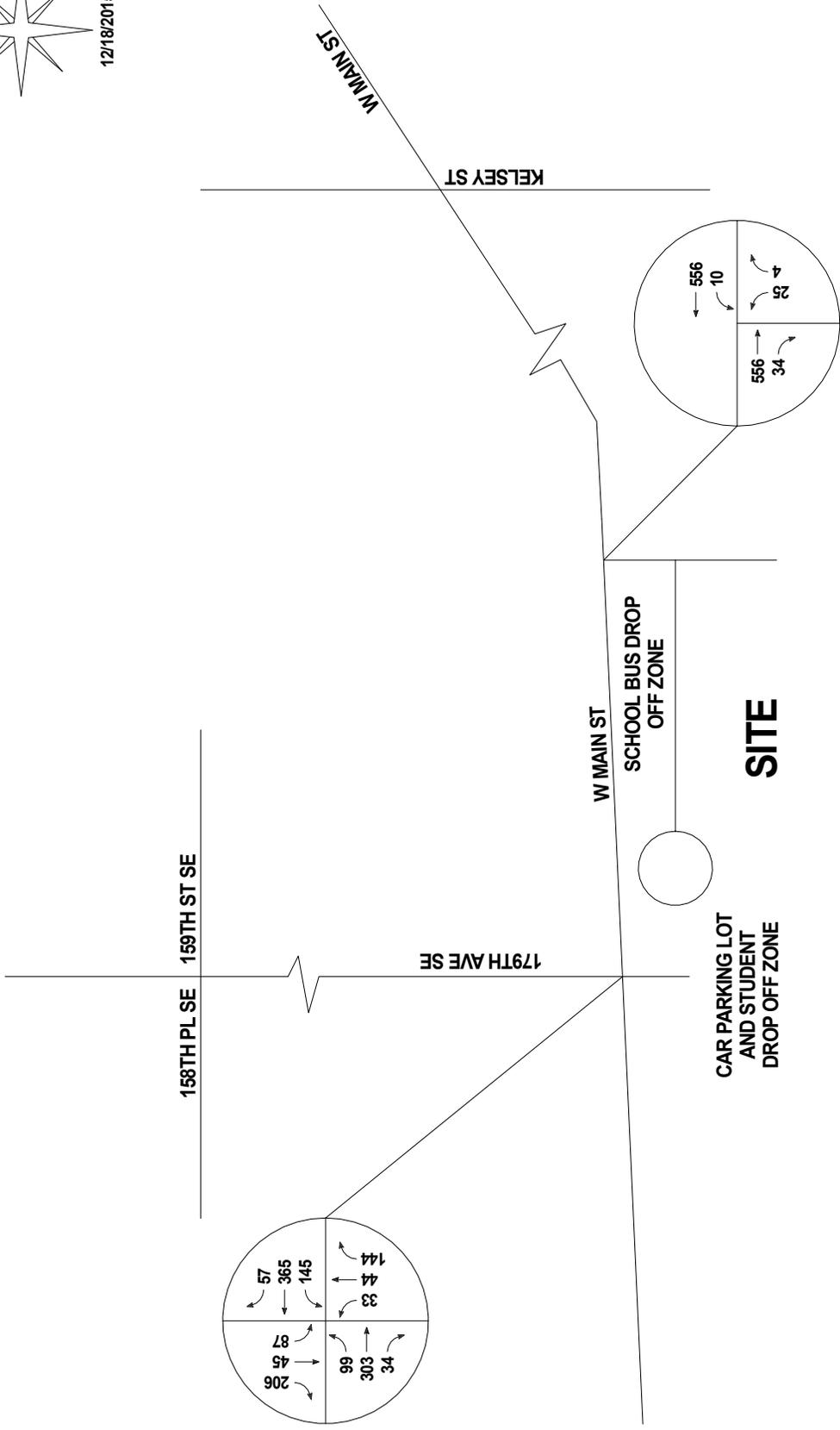
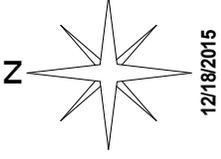


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**PARK PLACE MIDDLE SCHOOL  
STUDENT CAPACITY  
CHANGE TO 850 STUDENTS  
MONROE COUNTY**

**FIGURE 7**  
**2025 FUTURE WITH  
RECONSTRUCTION SCHOOL PM  
PEAK-HOUR TURNING MOVEMENTS**



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STUDENT CAPACITY  
CHANGE TO 850 STUDENTS**

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**FIGURE 6**  
**2025 FUTURE WITH  
RECONSTRUCTION AM PEAK-HOUR  
TURNING MOVEMENTS**

### 5.5 2025 Opening Year Parking Demand

For the future parking assessment, GTC assumed that the student enrollment would increase from 787 existing students (when counts were conducted) to the maximum of 850 students projected by the Monroe School District. The results of the parking study that included vehicles parked on-site before parent pick-up traffic arrived had parking generation rates of 0.158 vehicles per student for the AM and 0.121 vehicles per student for the School PM peak-hour. The higher AM rate would result in a demand for 134 parking spaces. The new lot layout is proposed to have 151 parking spaces. Of the 151 parking spaces identified on the site layout, 134 would be occupied during the AM peak-hour (89%) and 103 would be occupied during the School PM-peak-hour (68%). Any extra parking spaces not used by staff/volunteers are likely to be used by drop-off/pick-up trips during the AM and School PM peak-hour. Note: The existing parking count/demand includes the personal cars for approximately 50 bus drivers presently parking at the school for convenience.

If the old library building on the southeastern corner of the site was converted to a public preschool use, then the need for an additional 24 parking spaces would be required according to ITE's Parking Generation Manual. This would raise the parking demand for the site to 158 parking spaces, 7 more than what the proposed site plan has. It should be noted that a large number of the vehicles parking over on the west side of the existing site are associated with the school district bus barn and would not increase with the increase in student population. Additionally, the bus barn has official off-site parking for drivers that is less convenient. However, if on-site parking becomes an issue they would be required to use that less convenient parking.

According to Monroe Municipal Code (MMC) 18.86.050, junior high schools are required to provide 1.5 parking spaces for each staff member and one parking space for every person based on occupancy load for public assembly areas. This would result in a total required parking of 802 spaces. The Monroe School District is however requesting a variance for this requirement. The School District is proposing to provide 118 parking spaces for the middle school (one for each staff member, along with 34 for visitors) and 33 parking spaces for Building F. The School District believes this is justified due to the prior use and the frequency and timing of most public events.

The middle school was used as a high school from 1974-1999 under the current configuration, which supplied 144 parking spaces for both staff and student parking. Since middle school students do not drive to school, unlike high school students, and the reconstruction will reduce the previous capacity of the school from 935 students to only 850, the variance is also justifiable.

Additionally, most special events occur after school hours or on the weekend and only happen 6-8 times during the year. Due to this, it can be assumed that assembly and educational uses will never occur at the same time. No complaints have been issued to the district about any parking issues in the surrounding neighborhoods during special events as well.

## **6. TRAFFIC MITIGATION FEES**

As stated previously the school was previously approved for 935 students. This remodel will actually reduce its approved capacity to 850 students more in line with its actual enrolment today and anticipated enrolment in its capital facility plan. However, Building F would have a change in use. The potential change in use is for 6 classrooms of 24 students for a maximum of 144 pre-kindergarten students. This is being discussed as pre-kindergarten students or storage. School Storage would result no new trips as its on-site usage. If it was for pre-kindergarten type use, elementary trip generation would be the most appropriate. Monroe traffic mitigation fees are based on commuter peak hour trips.

### **6.1 City Fees**

The capacity reduction of 85 middle school students (935-850) provides a credit of 13.6 PM peak-hour trips. The 144 pre-kindergarten students would generate 21.6 PM peak-hour commuter trips; therefore, a net increase of 8.0 PM peak-hour commuter trips. The City of Monroe has a traffic mitigation fee of \$176.42 per student for elementary/junior high school. Therefore, if building F is permitted for a 144 pre-kindergarten type facility it should pay \$10,408.78 at time of permitting for the 59 new students. If building F is converted into storage, there should be no mitigation fees due to a reduction in trips applied to the street system.

### **6.2 County Fees**

The additional PM peak-hour commuter trips for the kindergarten are most likely to be all within the City of Monroe. There would be less than 3 PM peak-hour trips onto any county arterial. Therefore, per the interlocal agreement the modernization/change in use would not trigger any mitigation to the Snohomish County.

### **6.3 WSDOT Fees**

The WSDOT agreement with the City of Monroe requires analysis of State intersections impacted with 25 or more PM peak-hour commuter trips. The School would not generate 25 new PM peak-hour trips and would therefore not be required to analyze any state intersections. Neither would it add 10 PM peak-hour trips to any State improvement project; therefore, traffic mitigation fees are not required to be provided to WSDOT.

## 7. CONCLUSIONS

Park Place Middle School will continue to serve grades 6<sup>th</sup> through 8<sup>th</sup> grade with a maximum of 850 students by the future analysis year, 2025. The school hours are from 7:50 AM and to 2:20 PM.

The reconstruction of Park Place Middle School is estimated to generate a total of 98.94 new average daily trips with 33 trips (17 inbound/16 outbound) during the AM peak-hour and 23 trips (11 inbound/12 outbound) during the School PM peak-hour.

In the 2025 future with reconstruction analysis all of the study intersections will continue to operate at acceptable LOS D or better during the AM peak-hour and LOS C or better during the School PM peak-hour, thus meeting the City of Monroe Intersection Standards used for SEPA impact evaluation. The west access for the school will operate at LOS C during the AM peak-hour and the School PM peak-hour with the school driveway having a split through/left and right turn lane. The east access for the school will operate at LOS D during the AM peak-hour and LOS C during the PM peak-hour.

The site is expected to have sufficient parking to satisfy the long term parking needs while the improved drop-off/pick-up loop will allow vehicles to queue within the school's parking lot without spilling out onto Main Street or 179<sup>th</sup> Avenue SE.

As the school had a maximum capacity of 935 high school students in the past and the proposed capacity of 850 middle school students is less; the district would not be required to pay traffic mitigation fees to the City of Monroe or Snohomish County.

# **Trip Generation Calculations**

Park Place Middle School  
GTC #15-273

**Park Place Middle School**

Count Data:

Location	AM (7:30 AM to 8:30 AM)				PM (2:15 PM - 3:15 PM)			
	In	% of Total	Out	% of Total	In	% of Total	Out	% of Total
West Lot	31	15%	31	15%	28	21%	42	27%
Drop Enter	155	75%	0	0%	91	68%	0	0%
Drop Exit	0	0%	171	83%	0	0%	78	50%
East Lot	21	10%	3	1%	14	11%	35	23%
Total	207	50%	205	50%	133	46%	155	54%

Trip Generation per student:

787 students

	School Rates			ITE Comparison			+/- to Park Place
	Rate	% In	% Out	Rate	% In	% Out	Trips
AM	0.52	50%	50%	0.54	55%	45%	-13
PM	0.37	46%	54%	0.30	45%	55%	52

New Trips

63 students

	Total	% In	% Out
AM	33	17	16
PM	23	11	12

Total Trips

850 students

	Total	% In	% Out
AM	445	224	221
PM	311	144	167

Park Place Middle School  
GTC #15-273

Current Students	787	Future Students		850	West Lot			Middle Lot			East Lot			Combined		
		Students			Capacity	Count	Utilization %	Capacity	Count	Utilization %	Capacity	Count	Utilization %	Capacity	Count	Utilization %
		AM	PM		84	58	69%	11	6	55%	68	60	88%	163	124	76%
					84	52	62%	11	9	82%	68 <td>34</td> <td>50%</td> <td>163 <td>95</td> <td>58%</td> </td>	34	50%	163 <td>95</td> <td>58%</td>	95	58%

Parking Rate per Student: AM 0.158 PM 0.121 Average 0.139  
 Required parking spaces: 134 103 118

Trip Generation for: Development Peak Weekday  
(a.k.a.): Average Weekday Daily Trips (AWDT)

LAND USES		NET EXTERNAL TRIPS BY TYPE															
		IN BOTH DIRECTIONS						DIRECTIONAL ASSIGNMENTS									
		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW					
	% IN	% OUT	In+Out (Total)	% of Gross Trips	Trips In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In	Out	In	Out				
Middle School	VARIABLE	ITE LU code	63 students	stdy	1.57	50%	50%	98.94	0%	0.00	0%	0.00	98.94	0.00	0.00	49.47	49.47
Total								98.94		0.00		0.00	98.94	0.00	0.00	49.47	49.47

**Trip Generation for: Development Peak Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 7 and 9 AM  
(a.k.a.): Weekday AM Peak Hour**

LAND USES		NET EXTERNAL TRIPS BY TYPE																					
		IN BOTH DIRECTIONS						DIRECTIONAL ASSIGNMENTS															
		Gross Trips		Internal Crossover		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW							
ITE LU code	VARIABLE	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	% of Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	In	Out	In+Out (Total)	In	Out	In+Out (Total)	In	Out			
Middle School	63 students	stdy	0.52	50%	50%	32.98	0%	0%	0.00	0%	0%	0.00	0.00	0.00	0.00	32.98	0.00	0.00	0.00	0.00	0.00	16.57	16.41
<b>Total</b>						32.98			0.00			0.00	0.00	0.00	0.00	32.98	0.00	0.00	0.00	0.00	0.00	16.57	16.41

**Trip Generation for: Development Peak Weekday, School PM Peak-Hour, One Hour between 1:30 and 3:30 PM  
(a.k.a.): Weekday School PM Peak Hour**

LAND USES		NET EXTERNAL TRIPS BY TYPE																			
		IN BOTH DIRECTIONS							DIRECTIONAL ASSIGNMENTS												
		Gross Trips		Internal Crossover		TOTAL	PASS-BY		DIVERTED LINK		NEW	PASS-BY		DIVERTED LINK		NEW					
ITE LU code	VARIABLE	Trip Rate	% IN	% OUT	In+Out (Total)	% of Gross Trips	% of Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In+Out (Total)	% of Ext. Trips	In	Out	In	Out	In	Out		
Middle School	63 students	stdy	0.37	46%	54%	23.05	0%	0.00	0%	0.00	0%	23.05	0%	0.00	0.00	0.00	0.00	0.00	0.00	10.64	12.41
<b>Total</b>					23.05		0.00	23.05		0.00		23.05		0.00	0.00	0.00	0.00	0.00	0.00	10.64	12.41

Park Place Middle School  
GTC #15-273

AM Peak-Hour

%	New ADT	New AM Peak Hour Trips		
		In	Out	Total
100%	99	17	16	33
1%	0.99	0.17	0.16	0.33
2%	1.98	0.33	0.33	0.66
3%	2.97	0.50	0.49	0.99
4%	3.96	0.66	0.66	1.32
<b>5%</b>	<b>4.95</b>	<b>0.83</b>	<b>0.82</b>	<b>1.65</b>
6%	5.94	0.99	0.98	1.98
7%	6.93	1.16	1.15	2.31
8%	7.92	1.33	1.31	2.64
9%	8.90	1.49	1.48	2.97
<b>10%</b>	<b>9.89</b>	<b>1.66</b>	<b>1.64</b>	<b>3.30</b>
11%	10.88	1.82	1.81	3.63
12%	11.87	1.99	1.97	3.96
13%	12.86	2.15	2.13	4.29
14%	13.85	2.32	2.30	4.62
<b>15%</b>	<b>14.84</b>	<b>2.49</b>	<b>2.46</b>	<b>4.95</b>
16%	15.83	2.65	2.63	5.28
17%	16.82	2.82	2.79	5.61
18%	17.81	2.98	2.95	5.94
19%	18.80	3.15	3.12	6.27
<b>20%</b>	<b>19.79</b>	<b>3.31</b>	<b>3.28</b>	<b>6.60</b>
21%	20.78	3.48	3.45	6.93
22%	21.77	3.65	3.61	7.26
23%	22.76	3.81	3.77	7.59
24%	23.75	3.98	3.94	7.92
<b>25%</b>	<b>24.74</b>	<b>4.14</b>	<b>4.10</b>	<b>8.25</b>
26%	25.72	4.31	4.27	8.57
27%	26.71	4.47	4.43	8.90
28%	27.70	4.64	4.59	9.23
29%	28.69	4.81	4.76	9.56
<b>30%</b>	<b>29.68</b>	<b>4.97</b>	<b>4.92</b>	<b>9.89</b>
31%	30.67	5.14	5.09	10.22
32%	31.66	5.30	5.25	10.55
33%	32.65	5.47	5.42	10.88
34%	33.64	5.63	5.58	11.21
<b>35%</b>	<b>34.63</b>	<b>5.80</b>	<b>5.74</b>	<b>11.54</b>
36%	35.62	5.97	5.91	11.87
37%	36.61	6.13	6.07	12.20
38%	37.60	6.30	6.24	12.53
39%	38.59	6.46	6.40	12.86
<b>40%</b>	<b>39.58</b>	<b>6.63</b>	<b>6.56</b>	<b>13.19</b>
41%	40.57	6.79	6.73	13.52
42%	41.55	6.96	6.89	13.85
43%	42.54	7.13	7.06	14.18
44%	43.53	7.29	7.22	14.51
<b>45%</b>	<b>44.52</b>	<b>7.46</b>	<b>7.38</b>	<b>14.84</b>
46%	45.51	7.62	7.55	15.17
47%	46.50	7.79	7.71	15.50
48%	47.49	7.95	7.88	15.83
49%	48.48	8.12	8.04	16.16
<b>50%</b>	<b>49.47</b>	<b>8.29</b>	<b>8.21</b>	<b>16.49</b>

%	New ADT	New AM Peak Hour Trips		
		In	Out	Total
100%	99	17	16	33
51%	50.46	8.45	8.37	16.82
52%	51.45	8.62	8.53	17.15
53%	52.44	8.78	8.70	17.48
54%	53.43	8.95	8.86	17.81
<b>55%</b>	<b>54.42</b>	<b>9.11</b>	<b>9.03</b>	<b>18.14</b>
56%	55.41	9.28	9.19	18.47
57%	56.40	9.44	9.35	18.80
58%	57.39	9.61	9.52	19.13
59%	58.37	9.78	9.68	19.46
<b>60%</b>	<b>59.36</b>	<b>9.94</b>	<b>9.85</b>	<b>19.79</b>
61%	60.35	10.11	10.01	20.12
62%	61.34	10.27	10.17	20.45
63%	62.33	10.44	10.34	20.78
64%	63.32	10.60	10.50	21.11
<b>65%</b>	<b>64.31</b>	<b>10.77</b>	<b>10.67</b>	<b>21.44</b>
66%	65.30	10.94	10.83	21.77
67%	66.29	11.10	10.99	22.10
68%	67.28	11.27	11.16	22.43
69%	68.27	11.43	11.32	22.76
<b>70%</b>	<b>69.26</b>	<b>11.60</b>	<b>11.49</b>	<b>23.09</b>
71%	70.25	11.76	11.65	23.42
72%	71.24	11.93	11.82	23.75
73%	72.23	12.10	11.98	24.08
74%	73.22	12.26	12.14	24.41
<b>75%</b>	<b>74.21</b>	<b>12.43</b>	<b>12.31</b>	<b>24.74</b>
76%	75.19	12.59	12.47	25.06
77%	76.18	12.76	12.64	25.39
78%	77.17	12.92	12.80	25.72
79%	78.16	13.09	12.96	26.05
<b>80%</b>	<b>79.15</b>	<b>13.26</b>	<b>13.13</b>	<b>26.38</b>
81%	80.14	13.42	13.29	26.71
82%	81.13	13.59	13.46	27.04
83%	82.12	13.75	13.62	27.37
84%	83.11	13.92	13.78	27.70
<b>85%</b>	<b>84.10</b>	<b>14.08</b>	<b>13.95</b>	<b>28.03</b>
86%	85.09	14.25	14.11	28.36
87%	86.08	14.42	14.28	28.69
88%	87.07	14.58	14.44	29.02
89%	88.06	14.75	14.60	29.35
<b>90%</b>	<b>89.05</b>	<b>14.91</b>	<b>14.77</b>	<b>29.68</b>
91%	90.04	15.08	14.93	30.01
92%	91.02	15.24	15.10	30.34
93%	92.01	15.41	15.26	30.67
94%	93.00	15.58	15.43	31.00
<b>95%</b>	<b>93.99</b>	<b>15.74</b>	<b>15.59</b>	<b>31.33</b>
96%	94.98	15.91	15.75	31.66
97%	95.97	16.07	15.92	31.99
98%	96.96	16.24	16.08	32.32
99%	97.95	16.40	16.25	32.65
<b>100%</b>	<b>98.94</b>	<b>16.57</b>	<b>16.41</b>	<b>32.98</b>

Park Place Middle School  
GTC #15-273

School PM Peak-Hour

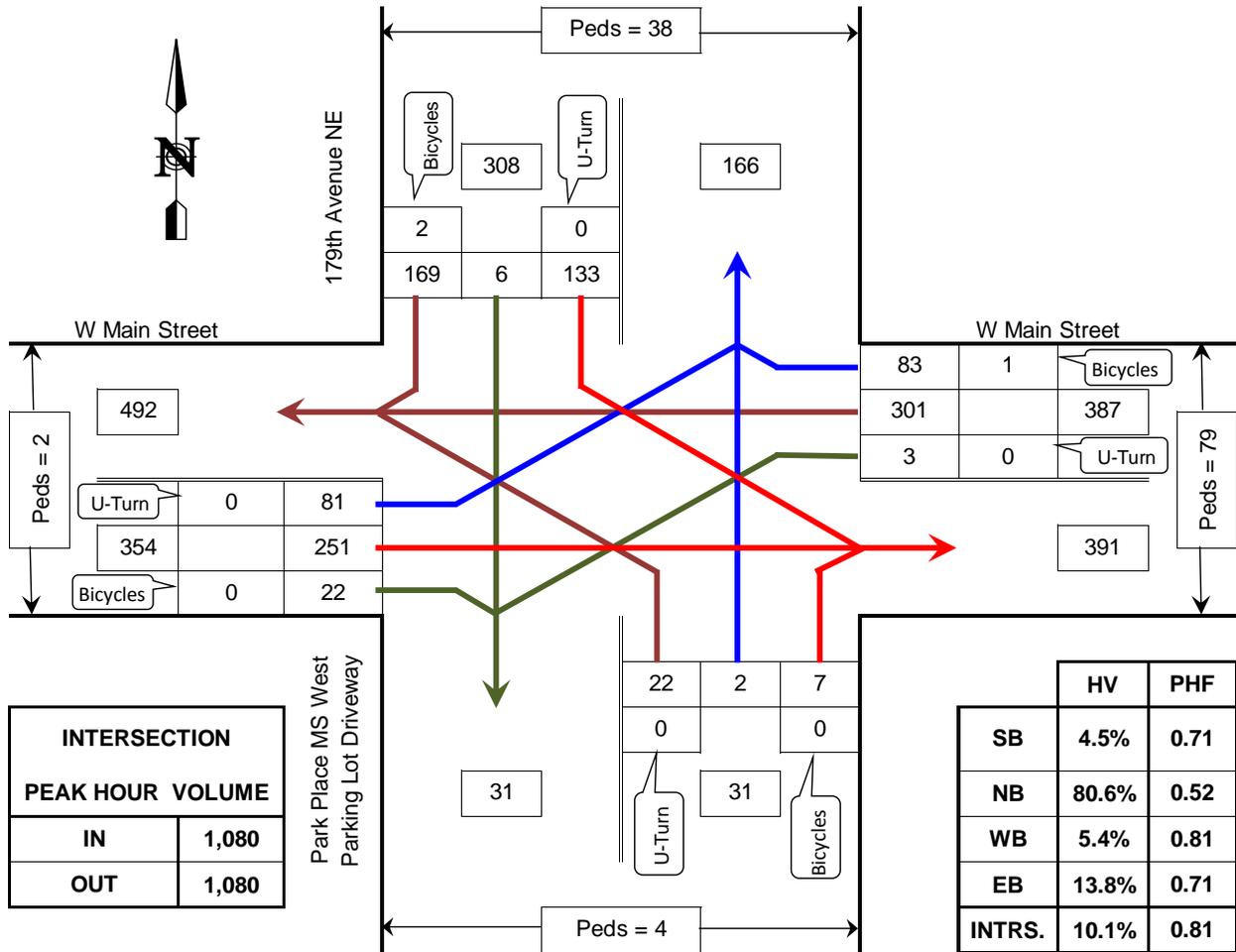
%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	99	11	12	23
1%	0.99	0.11	0.12	0.23
2%	1.98	0.21	0.25	0.46
3%	2.97	0.32	0.37	0.69
4%	3.96	0.43	0.50	0.92
<b>5%</b>	<b>4.95</b>	<b>0.53</b>	<b>0.62</b>	<b>1.15</b>
6%	5.94	0.64	0.74	1.38
7%	6.93	0.74	0.87	1.61
8%	7.92	0.85	0.99	1.84
9%	8.90	0.96	1.12	2.07
<b>10%</b>	<b>9.89</b>	<b>1.06</b>	<b>1.24</b>	<b>2.31</b>
11%	10.88	1.17	1.37	2.54
12%	11.87	1.28	1.49	2.77
13%	12.86	1.38	1.61	3.00
14%	13.85	1.49	1.74	3.23
<b>15%</b>	<b>14.84</b>	<b>1.60</b>	<b>1.86</b>	<b>3.46</b>
16%	15.83	1.70	1.99	3.69
17%	16.82	1.81	2.11	3.92
18%	17.81	1.92	2.23	4.15
19%	18.80	2.02	2.36	4.38
<b>20%</b>	<b>19.79</b>	<b>2.13</b>	<b>2.48</b>	<b>4.61</b>
21%	20.78	2.23	2.61	4.84
22%	21.77	2.34	2.73	5.07
23%	22.76	2.45	2.85	5.30
24%	23.75	2.55	2.98	5.53
<b>25%</b>	<b>24.74</b>	<b>2.66</b>	<b>3.10</b>	<b>5.76</b>
26%	25.72	2.77	3.23	5.99
27%	26.71	2.87	3.35	6.22
28%	27.70	2.98	3.47	6.45
29%	28.69	3.09	3.60	6.68
<b>30%</b>	<b>29.68</b>	<b>3.19</b>	<b>3.72</b>	<b>6.92</b>
31%	30.67	3.30	3.85	7.15
32%	31.66	3.40	3.97	7.38
33%	32.65	3.51	4.10	7.61
34%	33.64	3.62	4.22	7.84
<b>35%</b>	<b>34.63</b>	<b>3.72</b>	<b>4.34</b>	<b>8.07</b>
36%	35.62	3.83	4.47	8.30
37%	36.61	3.94	4.59	8.53
38%	37.60	4.04	4.72	8.76
39%	38.59	4.15	4.84	8.99
<b>40%</b>	<b>39.58</b>	<b>4.26</b>	<b>4.96</b>	<b>9.22</b>
41%	40.57	4.36	5.09	9.45
42%	41.55	4.47	5.21	9.68
43%	42.54	4.58	5.34	9.91
44%	43.53	4.68	5.46	10.14
<b>45%</b>	<b>44.52</b>	<b>4.79</b>	<b>5.58</b>	<b>10.37</b>
46%	45.51	4.89	5.71	10.60
47%	46.50	5.00	5.83	10.83
48%	47.49	5.11	5.96	11.06
49%	48.48	5.21	6.08	11.29
<b>50%</b>	<b>49.47</b>	<b>5.32</b>	<b>6.21</b>	<b>11.53</b>

%	New ADT	New PM Peak Hour Trips		
		In	Out	Total
100%	99	11	12	23
51%	50.46	5.43	6.33	11.76
52%	51.45	5.53	6.45	11.99
53%	52.44	5.64	6.58	12.22
54%	53.43	5.75	6.70	12.45
<b>55%</b>	<b>54.42</b>	<b>5.85</b>	<b>6.83</b>	<b>12.68</b>
56%	55.41	5.96	6.95	12.91
57%	56.40	6.06	7.07	13.14
58%	57.39	6.17	7.20	13.37
59%	58.37	6.28	7.32	13.60
<b>60%</b>	<b>59.36</b>	<b>6.38</b>	<b>7.45</b>	<b>13.83</b>
61%	60.35	6.49	7.57	14.06
62%	61.34	6.60	7.69	14.29
63%	62.33	6.70	7.82	14.52
64%	63.32	6.81	7.94	14.75
<b>65%</b>	<b>64.31</b>	<b>6.92</b>	<b>8.07</b>	<b>14.98</b>
66%	65.30	7.02	8.19	15.21
67%	66.29	7.13	8.31	15.44
68%	67.28	7.24	8.44	15.67
69%	68.27	7.34	8.56	15.90
<b>70%</b>	<b>69.26</b>	<b>7.45</b>	<b>8.69</b>	<b>16.14</b>
71%	70.25	7.55	8.81	16.37
72%	71.24	7.66	8.94	16.60
73%	72.23	7.77	9.06	16.83
74%	73.22	7.87	9.18	17.06
<b>75%</b>	<b>74.21</b>	<b>7.98</b>	<b>9.31</b>	<b>17.29</b>
76%	75.19	8.09	9.43	17.52
77%	76.18	8.19	9.56	17.75
78%	77.17	8.30	9.68	17.98
79%	78.16	8.41	9.80	18.21
<b>80%</b>	<b>79.15</b>	<b>8.51</b>	<b>9.93</b>	<b>18.44</b>
81%	80.14	8.62	10.05	18.67
82%	81.13	8.72	10.18	18.90
83%	82.12	8.83	10.30	19.13
84%	83.11	8.94	10.42	19.36
<b>85%</b>	<b>84.10</b>	<b>9.04</b>	<b>10.55</b>	<b>19.59</b>
86%	85.09	9.15	10.67	19.82
87%	86.08	9.26	10.80	20.05
88%	87.07	9.36	10.92	20.28
89%	88.06	9.47	11.04	20.51
<b>90%</b>	<b>89.05</b>	<b>9.58</b>	<b>11.17</b>	<b>20.75</b>
91%	90.04	9.68	11.29	20.98
92%	91.02	9.79	11.42	21.21
93%	92.01	9.90	11.54	21.44
94%	93.00	10.00	11.67	21.67
<b>95%</b>	<b>93.99</b>	<b>10.11</b>	<b>11.79</b>	<b>21.90</b>
96%	94.98	10.21	11.91	22.13
97%	95.97	10.32	12.04	22.36
98%	96.96	10.43	12.16	22.59
99%	97.95	10.53	12.29	22.82
<b>100%</b>	<b>98.94</b>	<b>10.64</b>	<b>12.41</b>	<b>23.05</b>

# Count Data

### TURNING MOVEMENTS DIAGRAM

6:30 AM - 8:30 AM PEAK HOUR: 7:00 AM TO 8:00 AM



PHF = Peak Hour Factor  
HV = Heavy Vehicle

### 179th Ave SE/Park Place MS West Parking Lot Driveway @ W Main Street

Monroe, WA

COUNTED BY: SN \_\_\_\_\_

DATE OF COUNT: Wed. 12/9/15 \_\_\_\_\_

REDUCED BY: CN \_\_\_\_\_

TIME OF COUNT: 6:30 AM - 8:30 AM \_\_\_\_\_

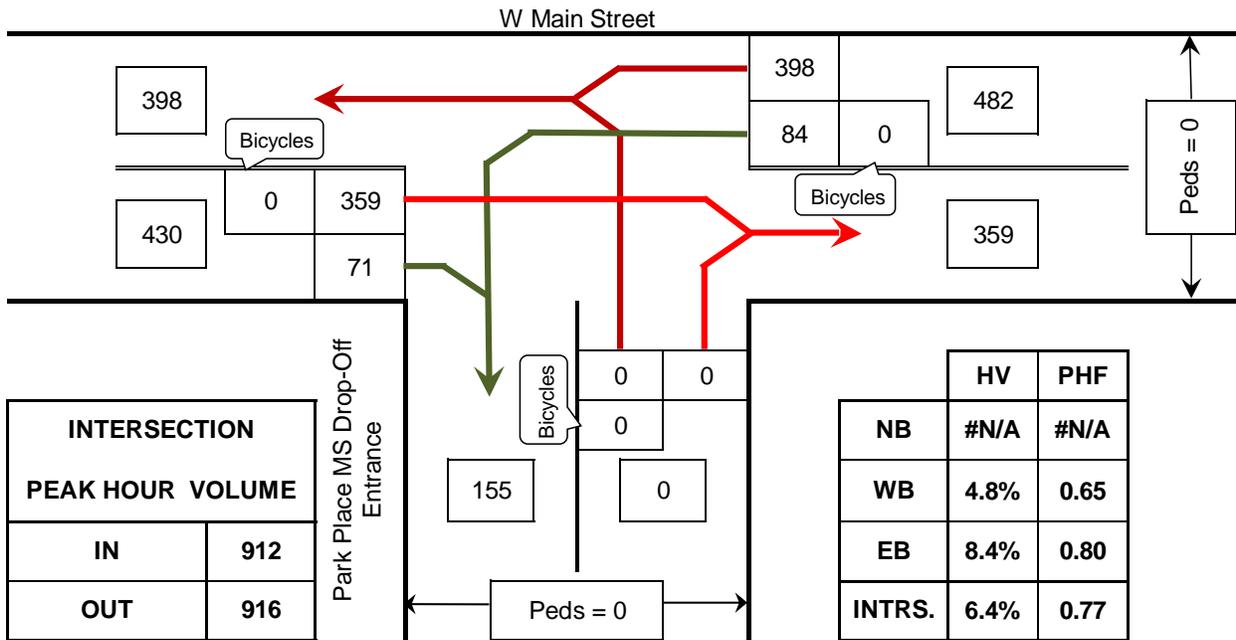
REDUCTION DATE: Wed. 12/9/15 \_\_\_\_\_

WEATHER: Rainy \_\_\_\_\_



**TURNING MOVEMENTS DIAGRAM**

6:30 AM - 8:30 AM PEAK HOUR: 7:30 AM TO 8:30 AM



HV = Heavy Vehicles  
PHF = Peak Hour Factor

**Park Place MS Drop-Off Entrance @ W Main Street**

**Monroe, WA**

COUNTED BY: VT

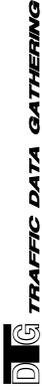
DATE OF COUNT: Wed. 12/9/15

REDUCED BY: CN

TIME OF COUNT: 6:30 AM - 8:30 AM

REDUCTION DATE: Wed. 12/9/15

WEATHER: Rainy



INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Park Place MS Drop-Off Entrance @ W Main Street DATE OF COUNT: Wed. 12/9/15 COUNTED BY: VT  
Monroe, WA TIME OF COUNT: 6:30 AM - 8:30 AM WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON				FROM SOUTH ON				FROM EAST ON				FROM WEST ON				INTERVAL TOTALS
	Private Driveway		Park Place MS Drop-Off Entrance		Park Place MS Drop-Off Entrance		W Main Street		W Main Street		W Main Street		W Main Street		INTERSECTION		
	HV	U-Turn	Left	Right	HV	U-Turn	Left	Right	Peds	Bicycle	HV	U-Turn	Left	Right			
04:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR TOTALS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALL MOVEMENTS	2				0				483				431				916
% HV	0.0%				#N/A				4.8%				8.4%				6.4%
PEAK HOUR FACTOR	0.50				#N/A				0.65				0.80				0.77

HV = Heavy Vehicle  
 PHF = Peak Hour Factor

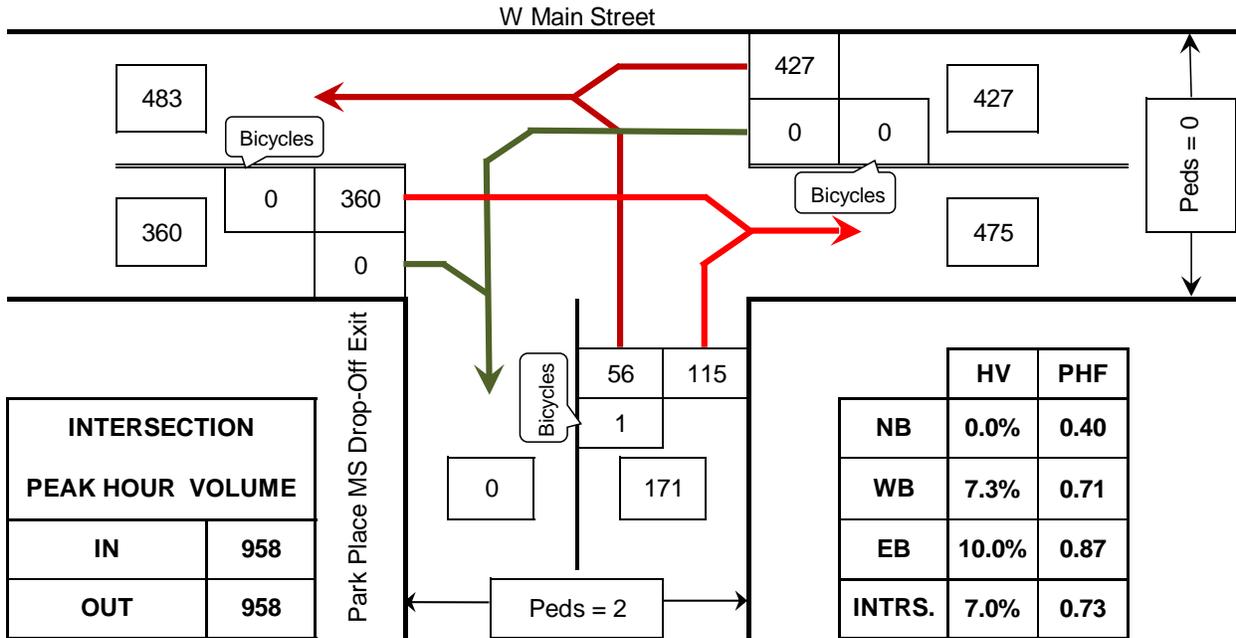
REDUCED BY: GN DATE OF REDUCTION: 12/9/2015

ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON				FROM SOUTH ON				FROM EAST ON				FROM WEST ON				INTERVAL TOTALS
	Private Driveway		Park Place MS Drop-Off Entrance		Park Place MS Drop-Off Entrance		W Main Street		W Main Street		W Main Street		W Main Street		INTERSECTION		
	HV	U-Turn	Left	Right	HV	U-Turn	Left	Right	Peds	Bicycle	HV	U-Turn	Left	Right			
4:30 AM - 5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM - 5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:45 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 8:15 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR TOTALS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALL MOVEMENTS	2				0				483				431				916
% HV	0.0%				#N/A				4.8%				8.4%				6.4%
PEAK HOUR FACTOR	0.50				#N/A				0.65				0.80				0.77

**TURNING MOVEMENTS DIAGRAM**

6:30 AM - 8:30 AM PEAK HOUR: 7:30 AM TO 8:30 AM



HV = Heavy Vehicles  
PHF = Peak Hour Factor

**Park Place MS Drop-Off Exit @ W Main Street**

**Monroe, WA**

COUNTED BY: VT

DATE OF COUNT: Wed. 12/9/15

REDUCED BY: CN

TIME OF COUNT: 6:30 AM - 8:30 AM

REDUCTION DATE: Fri. 12/11/15

WEATHER: Rainy

# DG TRAFFIC DATA GATHERING

## INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Park Place MS Drop-Off Exit @ W Main Street COUNTED BY: VT  
Monroe, WA WEATHER: Rainy  
 DATE OF COUNT: Wed. 12/9/15  
 TIME OF COUNT: 6:30 AM - 8:30 AM

TIME INTERVAL ENDING AT	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS				
	Park Place MS Drop-Off Exit		W Main Street		W Main Street		Park Place MS Drop-Off Exit		W Main Street		W Main Street		W Main Street		W Main Street		W Main Street		W Main Street										
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV		U-Turn	Left	Thru	Right
04:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HOUR TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ALL MOVEMENTS	0						171						427						360						968				
% HV	#N/A						0.0%						7.3%						10.0%						7.0%				
PEAK HOUR FACTOR	#N/A						0.40						0.71						0.87						0.73				

6:30 AM - 8:30 AM PEAK HOUR: 7:30 AM TO 8:30 AM

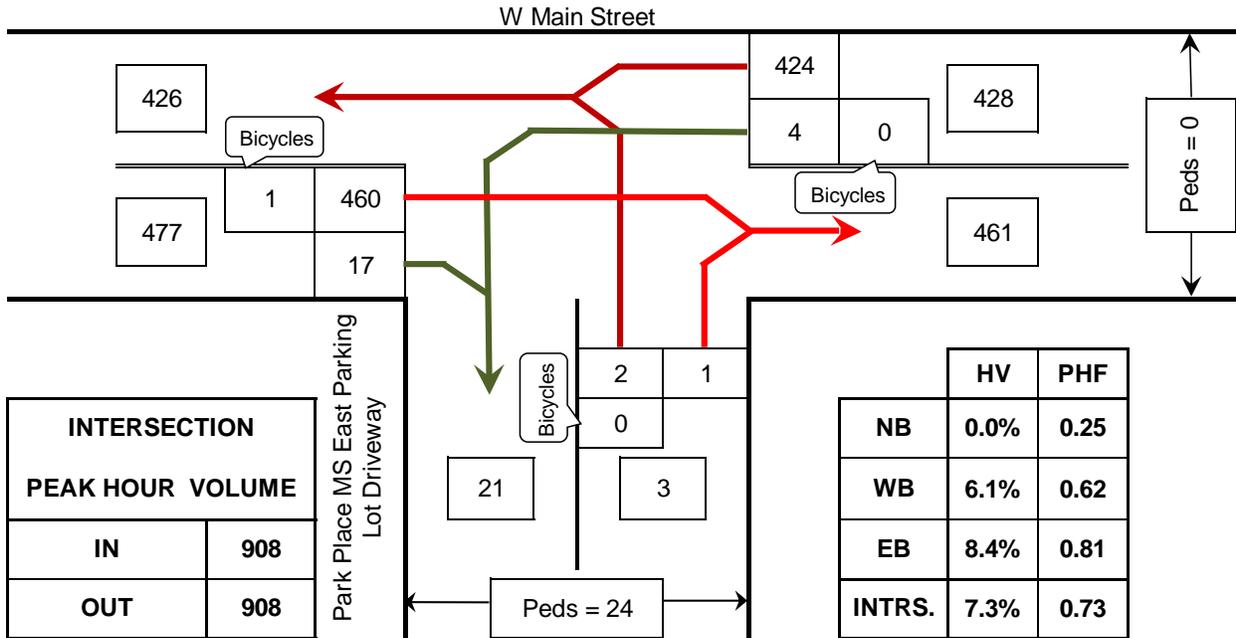
REDUCED BY: CN DATE OF REDUCTION: 12/11/2015

### ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS				
	Park Place MS Drop-Off Exit		W Main Street		W Main Street		Park Place MS Drop-Off Exit		W Main Street		W Main Street		W Main Street		W Main Street		W Main Street		W Main Street										
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV		U-Turn	Left	Thru	Right
4:30 AM - 5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 AM - 5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**TURNING MOVEMENTS DIAGRAM**

6:30 AM - 8:30 AM PEAK HOUR: 7:30 AM TO 8:30 AM



HV = Heavy Vehicles  
PHF = Peak Hour Factor

**Park Place MS East Parking Lot Driveway @ W Main Street**

**Monroe, WA**

COUNTED BY: JH

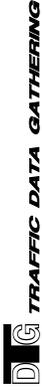
DATE OF COUNT: Wed. 12/9/15

REDUCED BY: CN

TIME OF COUNT: 6:30 AM - 8:30 AM

REDUCTION DATE: Wed. 12/9/15

WEATHER: Rainy



INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Park Place MS East Parking Lot Driveway @ W Main Street DATE OF COUNT: Wed. 12/9/15 COUNTED BY: JH  
Monroe, WA TIME OF COUNT: 6:30 AM - 8:30 AM WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS							
	Park Place MS East Parking Lot Driveway			W Main Street			Park Place MS East Parking Lot Driveway			W Main Street			W Main Street			W Main Street			W Main Street													
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right								
04:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
05:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
05:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
05:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
05:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
06:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
06:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
PEAK HOUR TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						
ALL MOVEMENTS	#N/A						0						3						428						477						908	
% HV	#N/A						0.0%						6.1%						8.4%						0.81						7.3%	
PEAK HOUR FACTOR	#N/A						0.25						0.62						0.81						0.73							

HV = Heavy Vehicle  
 PHF = Peak Hour Factor  
 6:30 AM - 8:30 AM PEAK HOUR: 7:30 AM TO 8:30 AM

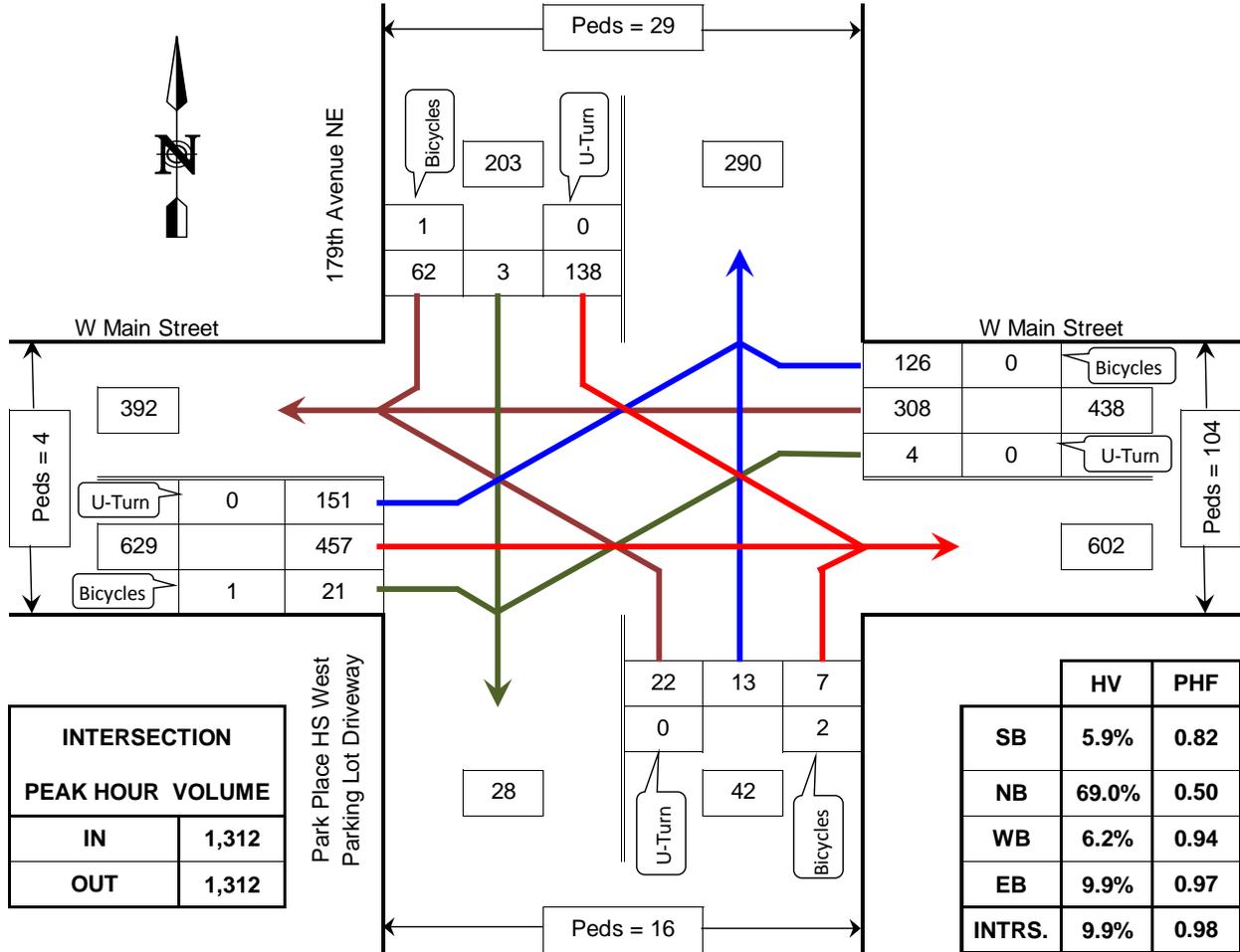
REDUCED BY: CN DATE OF REDUCTION: 12/9/2015

ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS		
	Park Place MS East Parking Lot Driveway			W Main Street			Park Place MS East Parking Lot Driveway			W Main Street			W Main Street			W Main Street			W Main Street								
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Peds	Bicycle	HV	U-Turn	Left	Thru	Right			
4:30 AM - 5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 AM - 5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM - 6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM - 6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM - 6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM - 7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**TURNING MOVEMENTS DIAGRAM**

1:30 PM - 3:30 PM PEAK HOUR: 2:15 PM TO 3:15 PM



PHF = Peak Hour Factor  
HV = Heavy Vehicle

**179th Ave SE/Park Place MS West Parking Lot Driveway @ W Main Street**

**Monroe, WA**

COUNTED BY: SN

DATE OF COUNT: Tue. 12/8/15

REDUCED BY: CN

TIME OF COUNT: 1:30 PM - 3:30 PM

REDUCTION DATE: Wed. 12/9/15

WEATHER: Rainy



INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: 179th Ave SE/Park Place MS West Parking Lot Driveway @ W Main Street  
 DATE OF COUNT: Tue. 12/8/15  
 TIME OF COUNT: 1:30 PM - 3:30 PM  
 SN: SN  
 WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON 179th Avenue NE				FROM SOUTH ON Park Place HS West Parking Lot Driveway				FROM EAST ON W Main Street				FROM WEST ON W Main Street				INTERVAL TOTALS					
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	U-Turn	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	U-Turn		Left	Thru	Right		
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
01:45 PM	0	0	4	0	21	5	26	3	0	0	0	1	0	0	4	89	15	0	3			
02:00 PM	0	0	2	0	27	6	20	1	0	1	1	1	0	0	5	86	20	0	9			
02:15 PM	0	0	2	0	24	2	17	1	0	0	0	1	0	0	3	0	0	5	0			
02:30 PM	21	0	2	0	23	2	23	0	2	18	0	9	3	86	0	10	0	0	27			
02:45 PM	6	0	2	0	29	0	14	1	0	11	1	4	17	0	6	0	3	74	35			
03:00 PM	2	1	3	0	39	0	11	4	0	0	0	0	1	0	10	0	1	73	31			
03:15 PM	0	0	5	0	47	1	14	11	0	0	0	2	3	0	1	0	0	73	32			
03:30 PM	0	0	1	0	31	0	16	5	0	0	0	3	0	1	0	4	0	1	75			
PEAK HOUR TOTALS	29	1	12	0	138	3	62	16	2	29	0	22	13	7	104	0	27	0	4			
ALL MOVEMENTS																	42	438				1312
%HV																	69.0%	6.2%				9.9%
PEAK HOUR FACTOR																	0.50	0.94				0.97

HV = Heavy Vehicle  
 PHF = Peak Hour Factor  
 1:30 PM - 3:30 PM PEAK HOUR: 2:15 PM TO 3:15 PM

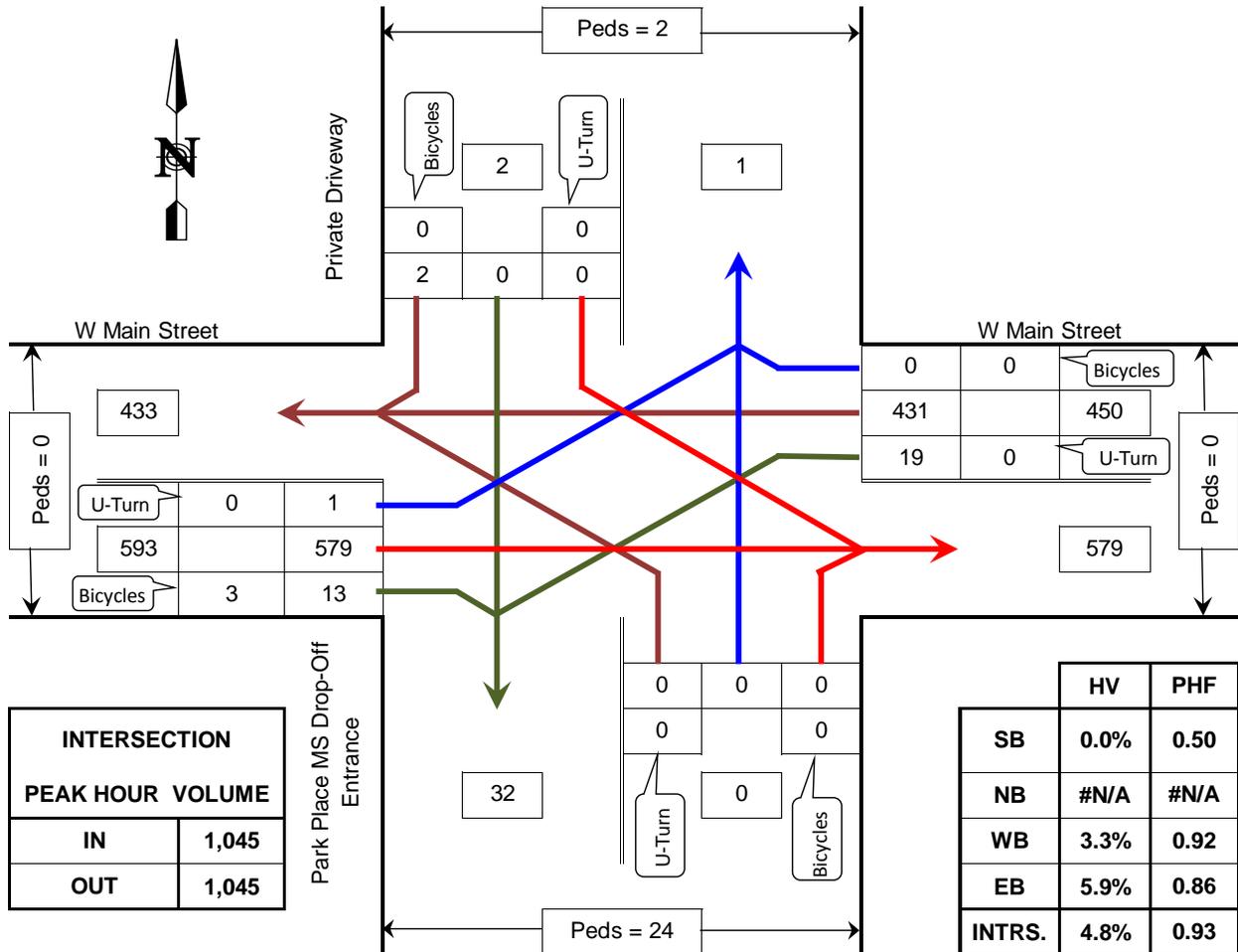
REDUCED BY: CN DATE OF REDUCTION: 12/9/2015

ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON 179th Avenue NE				FROM SOUTH ON Park Place HS West Parking Lot Driveway				FROM EAST ON W Main Street				FROM WEST ON W Main Street				INTERVAL TOTALS					
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	U-Turn	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	U-Turn		Left	Thru	Right		
11:30 AM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:45 AM - 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:15 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:45 PM - 1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:15 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
1:30 PM - 2:30 PM	21	0	10	0	95	15	86	5	2	19	0	10	11	5	86	0	26	0	13			
1:45 PM - 2:45 PM	27	0	8	0	103	10	74	3	2	30	0	21	11	9	103	0	24	0	12			
2:00 PM - 3:00 PM	29	1	9	0	115	4	65	6	2	29	0	20	10	8	104	0	29	0	8			
2:15 PM - 3:15 PM	29	1	12	0	138	3	62	16	2	29	0	22	13	7	104	0	27	0	4			
2:30 PM - 3:30 PM	8	1	11	0	146	1	95	21	0	11	0	16	4	5	18	0	21	0	5			
PEAK HOUR TOTALS	8	1	11	0	146	1	95	21	0	11	0	16	4	5	18	0	21	0	5			
ALL MOVEMENTS																	42	438				1312
%HV																	69.0%	6.2%				9.9%
PEAK HOUR FACTOR																	0.50	0.94				0.97

### TURNING MOVEMENTS DIAGRAM

1:30 PM - 3:30 PM PEAK HOUR: 2:30 PM TO 3:30 PM



PHF = Peak Hour Factor  
HV = Heavy Vehicle

#### Park Place MS Drop-Off Entrance @ W Main Street

Monroe, WA

COUNTED BY: CN

DATE OF COUNT: Tue. 12/8/15

REDUCED BY: CN

TIME OF COUNT: 1:30 PM - 3:30 PM

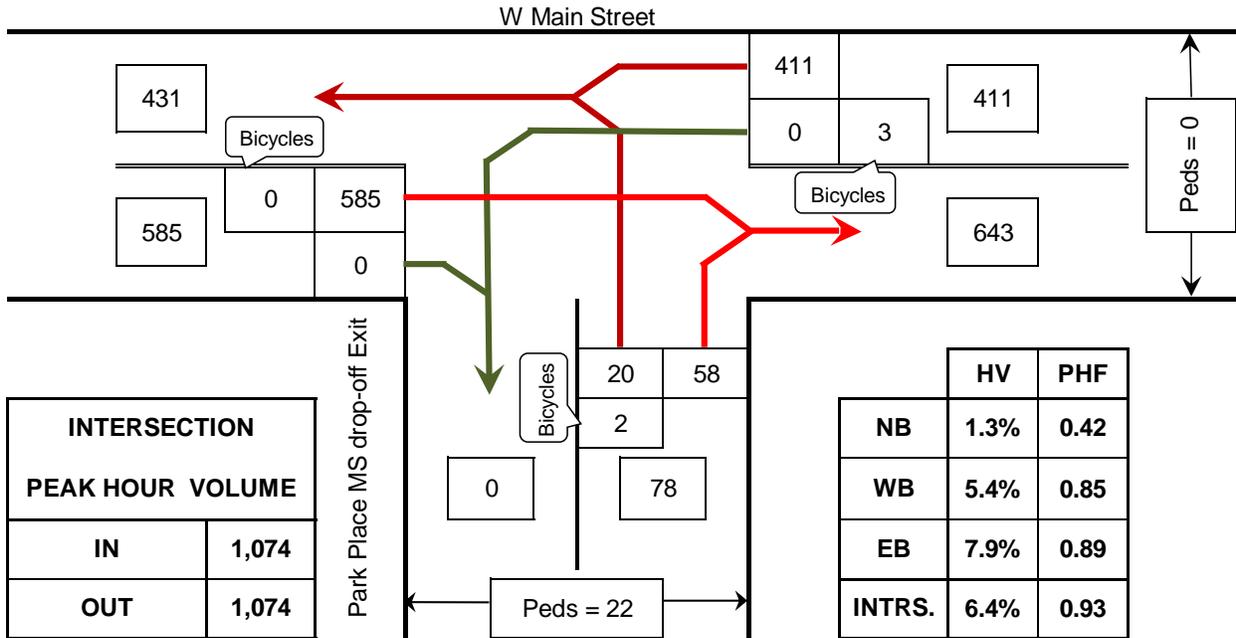
REDUCTION DATE: Wed. 12/9/15

WEATHER: Rainy



**TURNING MOVEMENTS DIAGRAM**

1:30 PM - 3:30 PM PEAK HOUR: 2:15 PM TO 3:15 PM



HV = Heavy Vehicles  
PHF = Peak Hour Factor

**Park Place MS Drop-Off Exit @ W Main Street**

**Monroe, WA**

COUNTED BY: VT

DATE OF COUNT: Tue. 12/8/15

REDUCED BY: CN

TIME OF COUNT: 1:30 PM - 3:30 PM

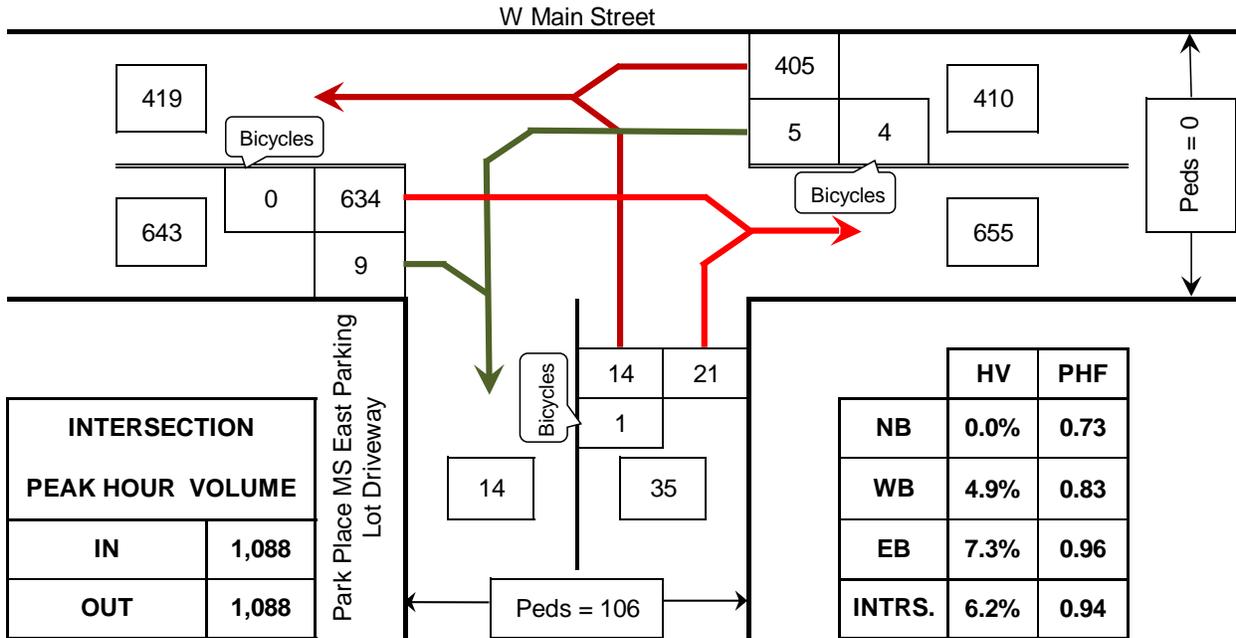
REDUCTION DATE: Fri. 12/11/15

WEATHER: Rainy



**TURNING MOVEMENTS DIAGRAM**

1:30 PM - 3:30 PM PEAK HOUR: 2:15 PM TO 3:15 PM



HV = Heavy Vehicles  
PHF = Peak Hour Factor

**Park Place MS East Parking Lot Driveway @ W Main Street**

**Monroe, WA**

COUNTED BY: VT

DATE OF COUNT: Tue. 12/8/15

REDUCED BY: CN

TIME OF COUNT: 1:30 PM - 3:30 PM

REDUCTION DATE: Fri. 12/11/15

WEATHER: Rainy



INTERSECTION TURNING MOVEMENTS REDUCTION SHEET

LOCATION: Park Place MS East Parking Lot Driveway @ W Main Street  
 DATE OF COUNT: Tue. 12/8/15  
 TIME OF COUNT: 1:30 PM - 3:30 PM  
 COUNTED BY: VT  
 WEATHER: Rainy

TIME INTERVAL ENDING AT	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS															
	Park Place MS East Parking Lot Driveway			W Main Street			Park Place MS East Parking Lot Driveway			W Main Street			W Main Street			W Main Street			W Main Street																					
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Right	Left	Thru	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Peds	Bicycle	HV		U-Turn	Left	Thru	Right											
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0													
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
PEAK HOUR TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												
ALL MOVEMENTS	#N/A						0						0.0%						35						410						643						1088			
PEAK HOUR FACTOR	#N/A						0.73						4.9%						0.83						7.3%						0.96						6.2%		0.94	

HV = Heavy Vehicle  
 PHF = Peak Hour Factor  
 1:30 PM - 3:30 PM PEAK HOUR: 2:15 PM TO 3:15 PM

REDUCED BY: CN DATE OF REDUCTION: 12/11/2015

ROLLING HOUR COUNT

TIME INTERVAL	FROM NORTH ON						FROM SOUTH ON						FROM EAST ON						FROM WEST ON						INTERVAL TOTALS				
	Park Place MS East Parking Lot Driveway			W Main Street			Park Place MS East Parking Lot Driveway			W Main Street			W Main Street			W Main Street			W Main Street										
	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Right	Left	Thru	Peds	Bicycle	HV	U-Turn	Left	Thru	Right	Left	Thru	Peds	Bicycle	HV		U-Turn	Left	Thru	Right
11:30 AM - 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM - 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM - 1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM - 1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM - 1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM - 1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM - 2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM - 2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM - 2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM - 2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM - 3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM - 3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM - 3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# **AM Turning Movement Calculations**

1 West Dwy\_179th Ave @ Main St

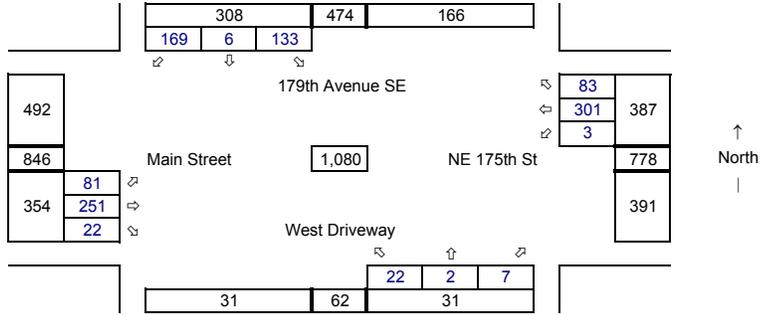
Synchro ID: 1

**Existing**

Average Weekday  
AM Peak Hour

Year: 12/9/15

Data Source: TDG



**Future without Project**

Average Weekday  
AM Peak Hour

Year: 2025

Growth Rate = 2.0%

Years of Growth = 10

Total Growth = 1.2190

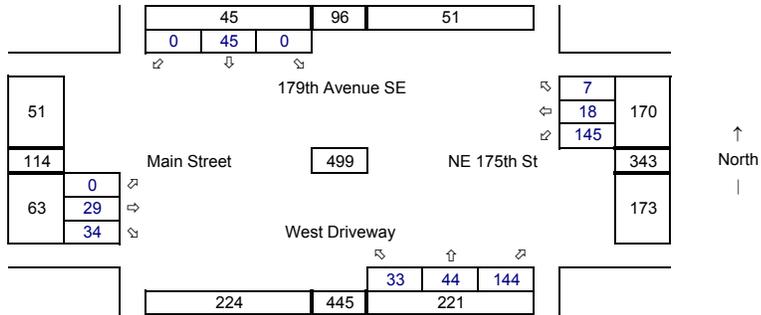
Does not include school trips



**Total Project Trips**

Average Weekday  
AM Peak Hour

Future School Trips



**Future with Project**

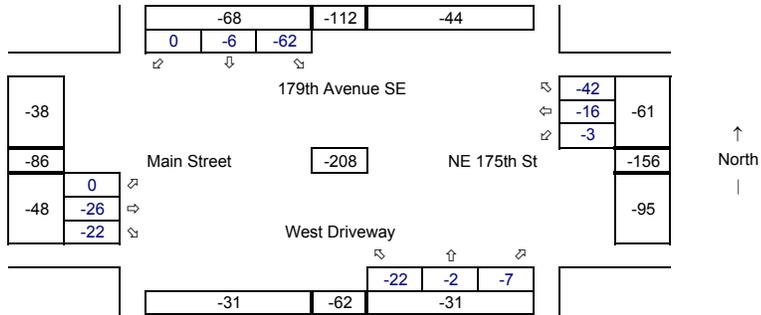
Average Weekday  
AM Peak Hour



**Pipeline Project Trips**

Average Weekday  
AM Peak Hour

Existing School Trips





### 3 Middle Exit Dwy @ Main St

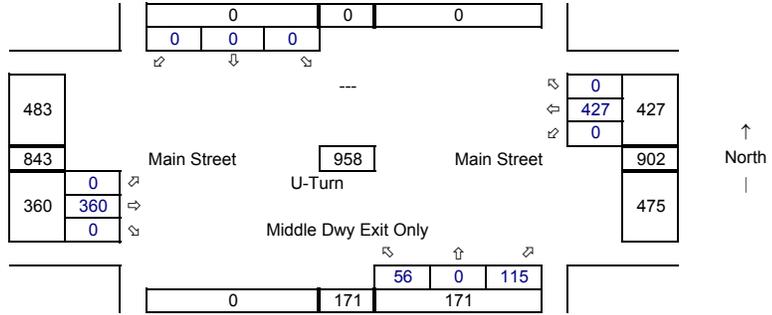
Synchro ID: 3

**Existing**

Average Weekday  
AM Peak Hour

Year: 12/9/15

Data Source: TDG



**Future without Project**

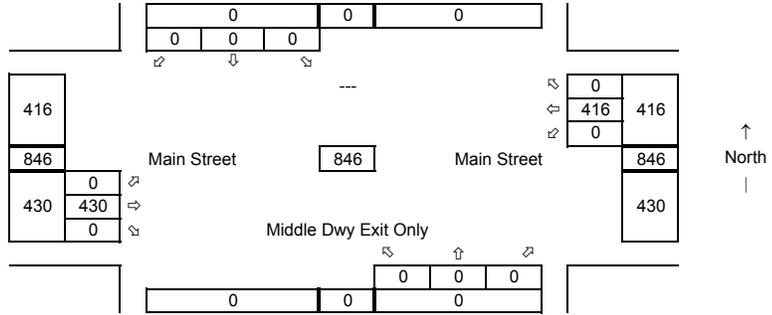
Average Weekday  
AM Peak Hour

Year: 2025

Growth Rate = 2.0%

Years of Growth = 10

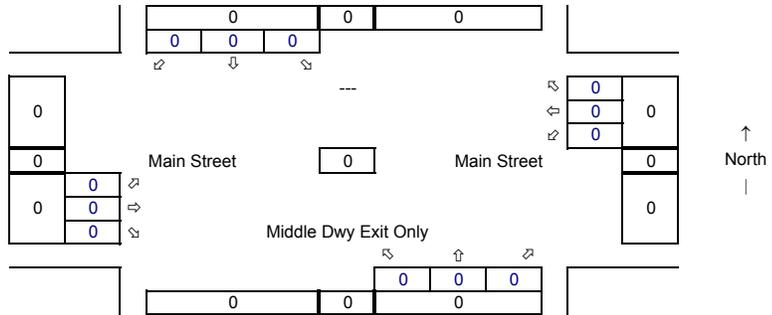
Total Growth = 1.2190



**Total Project Trips**

Average Weekday  
AM Peak Hour

Future School Trips



**Future with Project**

Average Weekday  
AM Peak Hour



**Pipeline Project Trips**

Average Weekday  
AM Peak Hour

Existing School Trips





# **School PM Turning Movement Calculations**

1 West Dwy\_179th Ave @ Main St

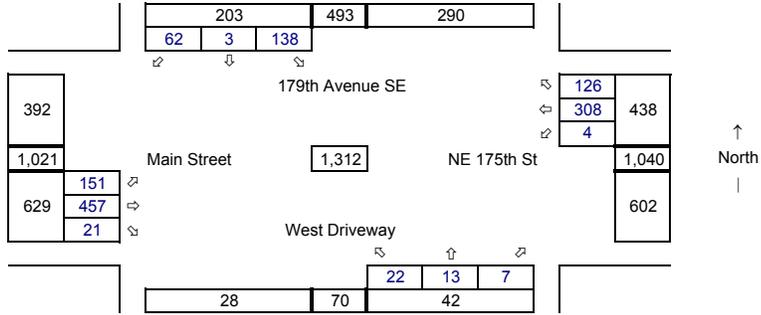
Synchro ID: 1

**Existing**

Average Weekday  
School PM Peak Hour

Year: 12/8/15

Data Source: TDG



**Future without Project**

Average Weekday  
School PM Peak Hour

Year: 2025

Growth Rate = 2.0%

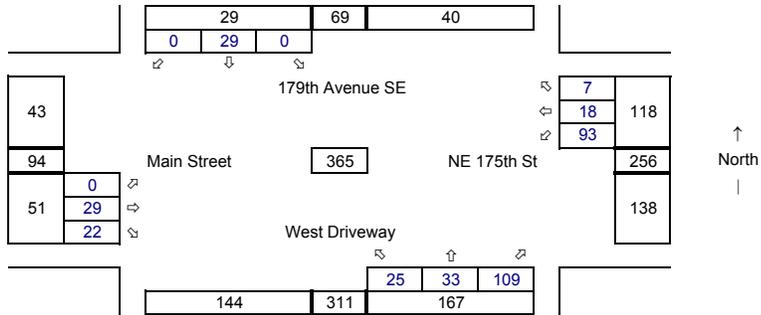
Years of Growth = 10

Total Growth = 1.2190



**Total Project Trips**

Average Weekday  
School PM Peak Hour



**Future with Project**

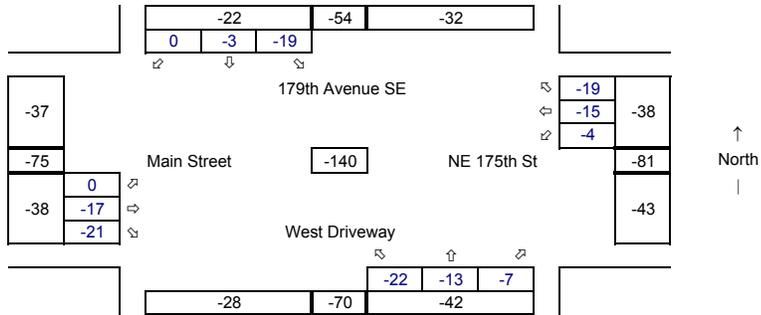
Average Weekday  
School PM Peak Hour



**Pipeline Project Trips**

Average Weekday  
School PM Peak Hour

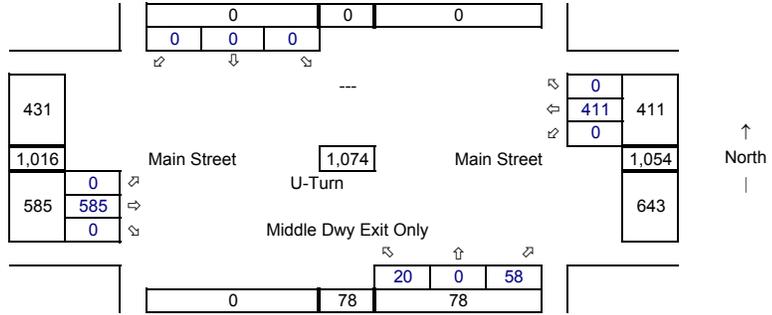
Existing School Trips



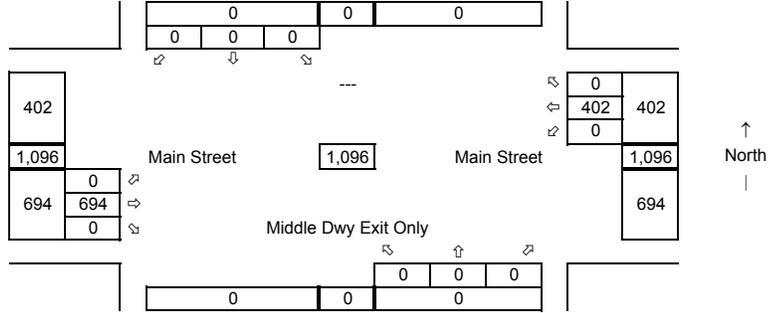


### 3 Middle Exit Dwy @ Main St

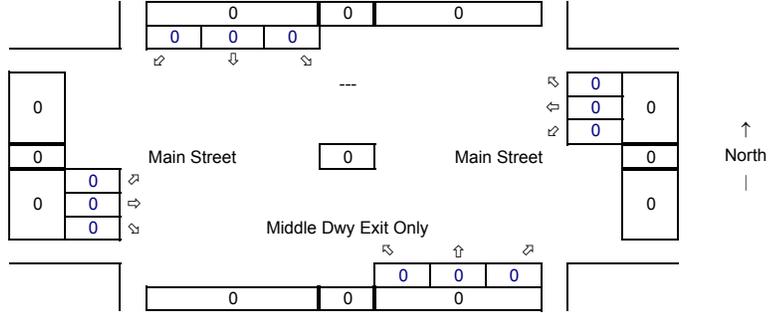
Synchro ID: 3  
**Existing**  
 Average Weekday  
 School PM Peak Hour  
 Year: 12/8/15  
 Data Source: TDG



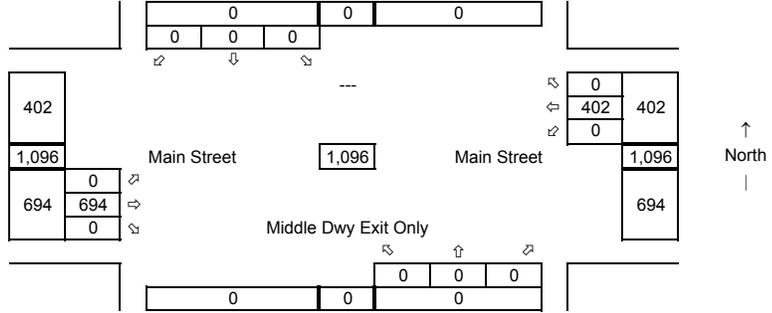
**Future without Project**  
 Average Weekday  
 School PM Peak Hour  
 Year: 2025  
 Growth Rate = 2.0%  
 Years of Growth = 10  
 Total Growth = 1.2190



**Total Project Trips**  
 Average Weekday  
 School PM Peak Hour

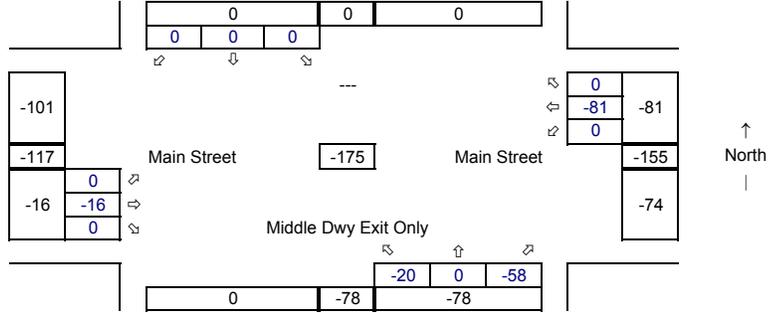


**Future with Project**  
 Average Weekday  
 School PM Peak Hour



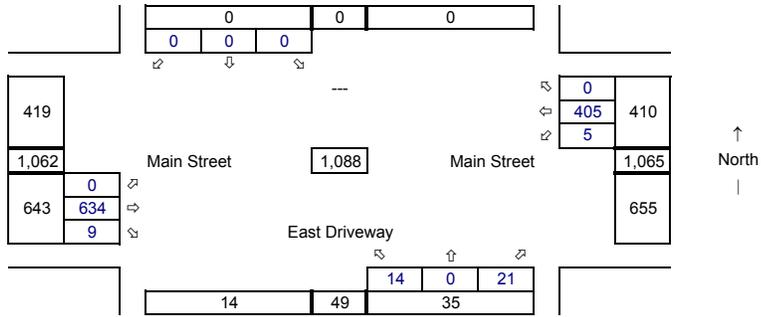
**Pipeline Project Trips**  
 Average Weekday  
 School PM Peak Hour

Existing School Trips



### 4 East Dwy @ Main St

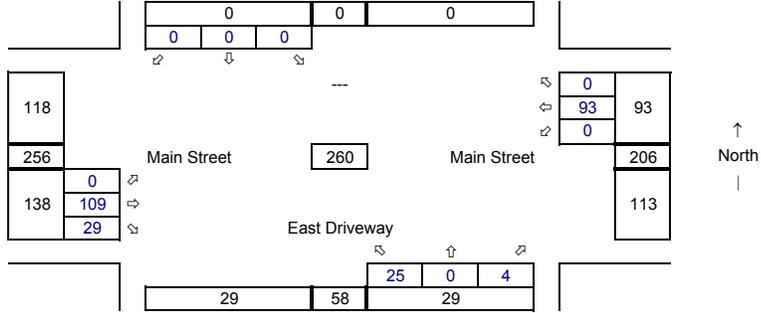
Synchro ID: 4  
**Existing**  
 Average Weekday  
 School PM Peak Hour  
  
 Year: **12/8/15**  
 Data Source: **TDG**



**Future without Project**  
 Average Weekday  
 School PM Peak Hour  
  
 Year: 2025  
 Growth Rate = 2.0%  
 Years of Growth = 10  
 Total Growth = 1.2190



**Total Project Trips**  
 Average Weekday  
 School PM Peak Hour



**Future with Project**  
 Average Weekday  
 School PM Peak Hour



**Pipeline Project Trips**  
 Average Weekday  
 School PM Peak Hour

Existing School Trips



# **2015 Existing AM Peak-Hour Level of Service Analysis**

H:\2015\15-273\Synchro\Existing Conditions AM.syn  
 1: West Driveway\179th Ave SE & Main St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	81	251	22	3	301	83	22	2	7	266	6	169
Traffic Volume (vph)	81	251	22	3	301	83	22	2	7	266	6	169
Future Volume (vph)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Ideal Flow (vphpl)	100	1900	0	100	1900	0	0	0	0	50	0	0
Storage Length (ft)	1	0	0	1	0	0	0	0	0	1	0	0
Taper Length (ft)	25	1.00	1.00	25	1.00	1.00	1.00	1.00	1.00	25	1.00	1.00
Lane Util. Factor	0.97	1.00	0.99	0.98	0.98	0.95	0.968	0.966	0.968	0.81	0.97	0.855
Ped Bike Factor	0.988											
Flt Protected	0.950			0.950				0.966		0.950		
Satd. Flow (prot)	1641	1702	0	1641	1631	0	0	1531	0	1641	1438	0
Flt Permitted	0.269			0.558				0.785		0.732		
Satd. Flow (perm)	452	1702	0	959	1631	0	0	1241	0	1027	1438	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	6			20				9		209		
Link Speed (mph)	30			30				30		30		
Link Distance (ft)	560			177				524		366		
Travel Time (s)	12.7			4.0				11.9		8.3		
Confl. Peds. (#/hr)	38		4	4		38	2	79	79	79		2
Confl. Bikes (#/hr)						1		7	7			2
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	1.00	0.81	0.81
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	337	0	4	474	0	0	38	0	266	216	0
Turn Type	pm-pt	NA		pm-pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8		2	2		6		
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		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		22.5	22.5		22.5	22.5	
Total Split (s)	11.6	46.0		9.6	44.0		34.4	34.4		34.4	34.4	
Total Split (%)	12.9%	51.1%		10.7%	48.9%		38.2%	38.2%		38.2%	38.2%	
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 Optimize?	Yes	Yes		Yes	Yes		Min	Min		Min	Min	
Recall Mode	None	None		None	None							
Act Effct Green (s)	33.5	32.4		29.1	25.4		0.34	0.34		0.34	0.34	
Actuated g/C Ratio	0.50	0.48		0.43	0.38		0.09	0.09		0.76	0.34	
v/c Ratio	0.28	0.41		0.01	0.75		16.0	38.8		5.4	5.4	
Control Delay	11.0	13.7		9.0	27.4		0.0	0.0		0.0	0.0	
Queue Delay	0.0	0.0		0.0	0.0		16.0	38.8		5.4	5.4	
Total Delay	11.0	13.7		9.0	27.4		16.0	38.8		5.4	5.4	
LOS	B	B		A	C		B	D		A	A	
Approach Delay	13.1			27.2			16.0	23.8		23.8		

Gibson Traffic Consultants, Inc. [SF] Existing AM Conditions

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 1: West Driveway\179th Ave SE & Main St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS												
Queue Length 50th (ft)	21	82		1	178					9	104	2
Queue Length 95th (ft)	42	166		5	259					30	#265	36
Internal Link Dist (ft)	100	480		100	97					444	286	
Turn Bay Length (ft)	369	1110		474	1026					640	50	838
Base Capacity (vph)	0	0		0	0					0	0	0
Starvation Cap Reductn	0	0		0	0					0	0	0
Spillback Cap Reductn	0	0		0	0					0	0	0
Storage Cap Reductn	0	0		0	0					0	0	0
Reduced v/c Ratio	0.27	0.30		0.01	0.46					0.06	0.51	0.26
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	67.3											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.76											
Intersection Capacity Utilization:	21.5											
Analysis Period (min):	15											
ICU Level of Service:	B											
Intersection LOS:	C											
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Gibson Traffic Consultants, Inc. [SF] Existing AM Conditions

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	359	71	84	398	0	0
Future Vol, veh/h	359	71	84	398	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	-	-	10	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	65	65	92	92
Heavy Vehicles, %	8	8	5	5	0	0
Mvmt Flow	449	89	129	612	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1364
Stage 1	-	-	493
Stage 2	-	-	871
Critical Hdwy	-	4.15	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.245	3.5
Pot Cap-1 Maneuver	-	1015	164
Stage 1	-	-	618
Stage 2	-	-	413
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1015	143
Mov Cap-2 Maneuver	-	-	267
Stage 1	-	-	618
Stage 2	-	-	361

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1015	-
HCM Lane V/C Ratio	-	-	-	0.127	-
HCM Control Delay (s)	0	-	-	9.1	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0.4	-

Intersection

Int Delay, s/veh 4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	360	0	0	427	56	115
Future Vol, veh/h	360	0	0	427	56	115
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	71	71	40	40
Heavy Vehicles, %	10	10	7	7	0	0
Mvmt Flow	414	0	0	601	140	288

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	414
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.17
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.263
Pot Cap-1 Maneuver	-	-	1119
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1117
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	640	-	-	1117	-
HCM Lane V/C Ratio	0.354	0.449	-	-	-	-
HCM Control Delay (s)	19	15.1	-	-	0	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	2.3	-	-	0	-

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	460	17	4	424	2	1
Future Vol, veh/h	460	17	4	424	2	1
Conflicting Peds, #/hr	0	24	24	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	62	62	25	25
Heavy Vehicles, %	8	8	6	6	0	0
Mvmt Flow	568	21	6	684	8	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1275
Stage 1	-	-	578
Stage 2	-	-	697
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	-	967	186
Stage 1	-	-	565
Stage 2	-	-	498
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	945	181
Mov Cap-2 Maneuver	-	-	320
Stage 1	-	-	565
Stage 2	-	-	484

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	362	-	-	945	-
HCM Lane V/C Ratio	0.033	-	-	0.007	-
HCM Control Delay (s)	15.3	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# **2015 Existing School PM Peak-Hour Level of Service Analysis**



Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	359	71	84	398	0	0
Future Vol, veh/h	359	71	84	398	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	-	-	10	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	65	65	92	92
Heavy Vehicles, %	8	8	5	5	0	0
Mvmt Flow	449	89	129	612	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1364
Stage 1	-	-	493
Stage 2	-	-	871
Critical Hdwy	-	4.15	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.245	3.5
Pot Cap-1 Maneuver	-	1015	164
Stage 1	-	-	618
Stage 2	-	-	413
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1015	143
Mov Cap-2 Maneuver	-	-	267
Stage 1	-	-	618
Stage 2	-	-	361

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	1015	-
HCM Lane V/C Ratio	-	-	-	0.127	-
HCM Control Delay (s)	0	-	-	9.1	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	-	-	-	0.4	-

Intersection

Int Delay, s/veh 4.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	360	0	0	427	56	115
Future Vol, veh/h	360	0	0	427	56	115
Conflicting Peds, #/hr	0	2	2	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	71	71	40	40
Heavy Vehicles, %	10	10	7	7	0	0
Mvmt Flow	414	0	0	601	140	288

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	414
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.17
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.263
Pot Cap-1 Maneuver	-	-	1119
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1117
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	640	-	-	1117	-
HCM Lane V/C Ratio	0.354	0.449	-	-	-	-
HCM Control Delay (s)	19	15.1	-	-	0	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	1.6	2.3	-	-	0	-

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	460	17	4	424	2	1
Future Vol, veh/h	460	17	4	424	2	1
Conflicting Peds, #/hr	0	24	24	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	62	62	25	25
Heavy Vehicles, %	8	8	6	6	0	0
Mvmt Flow	568	21	6	684	8	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	1275
Stage 1	-	-	578
Stage 2	-	-	697
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	-	967	186
Stage 1	-	-	565
Stage 2	-	-	498
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	945	181
Mov Cap-2 Maneuver	-	-	320
Stage 1	-	-	565
Stage 2	-	-	484

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	362	-	-	945	-
HCM Lane V/C Ratio	0.033	-	-	0.007	-
HCM Control Delay (s)	15.3	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

# **2025 Future With Reconstruction AM Peak Hour Level of Service Analysis**

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 1: West Driveway\179th Ave SE & Main St

Park Place Middle School (15-273)

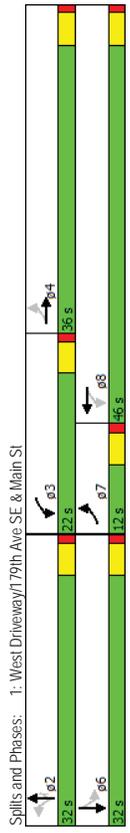
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	99	303	68	290	365	57	66	44	288	87	90	206
Traffic Volume (vph)	99	303	68	290	365	57	66	88	288	87	90	206
Future Volume (vph)	99	303	68	290	365	57	66	88	288	87	90	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100	0	100	0	0	0	0	0	0	50	0	0
Storage Lanes	1	0	1	0	0	0	0	0	1	1	1	0
Taper Length (ft)	25	0	25	0	0	25	1.00	1.00	1.00	1.00	1.00	1.00
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.98	0.889	0.950
Ped Bike Factor	0.96	1.00	0.98	0.98	0.98	0.98	0.850	0.979	0.950	0.950	1505	0
Frt	0.977	0.977	0.980	0.980	0.980	0.980	0.850	0.979	0.950	0.950	1505	0
Flt Protected	0.950	0.950	0.950	0.950	0.950	0.950	0.950	0.979	0.950	0.950	1505	0
Satd. Flow (prot)	1641	1680	0	1641	1667	0	0	1691	1468	1641	1505	0
Flt Permitted	0.390	0.262	0.453	0.262	0.453	0.262	0.453	0.262	0.453	0.262	0.453	0.262
Satd. Flow (perm)	647	1680	0	647	1667	0	0	877	1145	964	1505	0
Right Turn on Red			Yes									
Satd. Flow (RTOR)	11	12	30	12	30	30	30	30	288	163	30	0
Link Speed (mph)	30	30	30	30	30	30	30	30	288	163	30	0
Link Distance (ft)	560	1762	1762	524	524	524	524	524	366	366	366	0
Travel Time (s)	12.7	40.0	40.0	11.9	11.9	11.9	11.9	11.9	8.3	8.3	8.3	0
Confl. Peds. (#/hr)	38	4	4	38	4	4	38	4	79	79	79	2
Confl. Bikes (#/hr)	0.81	1.00	1.00	0.81	1.00	1.00	1.00	1.00	0.81	1.00	1.00	0.81
Peak Hour Factor	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Heavy Vehicles (%)	0.81	1.00	1.00	0.81	1.00	1.00	1.00	1.00	0.81	1.00	1.00	0.81
Shared Lane Traffic (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Lane Group Flow (vph)	122	442	0	290	521	0	0	154	288	107	344	0
Turn Type	pm+pt	NA	pm+pt	NA	NA	NA	Perm	NA	Perm	Perm	NA	0
Protected Phases	7	4	8	3	8	8	2	2	2	6	6	0
Permitted Phases	4	8	8	3	8	8	2	2	2	6	6	0
Detector Phase	7	4	3	3	8	8	2	2	2	6	6	0
Switch Phase	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Initial (s)	9.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Minimum Split (s)	12.0	36.0	22.0	46.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	13.3%	40.0%	24.4%	51.1%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%	35.6%
Total Split (%)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Yellow Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
All-Red Time (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lost Time Adjust (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Total Lost Time (s)	Lead	Lag										
Lead/Lag	Yes											
Lead-Lag Optimize?	None											
Recall Mode	29.1	21.6	37.0	28.8	37.0	28.8	37.0	28.8	37.0	28.8	37.0	28.8
Act Effct Green (s)	0.46	0.34	0.58	0.45	0.58	0.45	0.58	0.45	0.58	0.45	0.58	0.45
Actuated g/C Ratio	0.30	0.76	0.61	0.68	0.61	0.68	0.61	0.68	0.61	0.68	0.61	0.68
v/c Ratio	9.6	29.8	13.0	21.2	13.0	21.2	13.0	21.2	13.0	21.2	13.0	21.2
Control Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Delay	9.6	29.8	13.0	21.2	9.6	29.8	13.0	21.2	9.6	29.8	13.0	21.2
Total Delay	A	C	B	C	A	C	D	A	C	C	C	C
LOS	25.4	18.2	20.3	22.5	20.3	22.5	20.3	22.5	20.3	22.5	20.3	22.5
Approach Delay												

Gibson Traffic Consultants, Inc. [SF] Future With AM Conditions

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 1: West Driveway\179th Ave SE & Main St

Park Place Middle School (15-273)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS	17	134	44	154	154	44	154	154	44	154	154	44
Queue Length 50th (ft)	46	280	120	281	281	120	281	281	120	281	281	120
Queue Length 95th (ft)	100	480	100	1682	1682	100	1682	1682	100	1682	1682	100
Internal Link Dist (ft)	430	909	625	1174	1174	625	1174	1174	625	1174	1174	625
Turn Bay Length (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Base Capacity (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.49	0.46	0.44	0.44	0.46	0.44	0.44	0.46	0.44	0.44	0.46
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	63.6											
Natural Cycle:	60											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	0.76											
Intersection Signal Delay:	21.3											
Intersection Capacity Utilization:	83.3%											
Analysis Period (min):	15											
Intersection LOS:	C											
ICU Level of Service:	E											



Gibson Traffic Consultants, Inc. [SF] Future With AM Conditions

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	556	34	10	556	25	4
Future Vol, veh/h	556	34	10	556	25	4
Conflicting Peds, #/hr	0	24	24	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	62	62	25	25
Heavy Vehicles, %	8	8	6	6	0	0
Mvmt Flow	686	42	16	897	100	16

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	728
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	-	-	857
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	837
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	30.2
HCM LOS			D

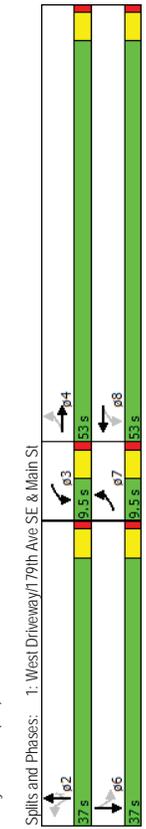
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	256	-	-	837	-
HCM Lane V/C Ratio	0.453	-	-	0.019	-
HCM Control Delay (s)	30.2	-	-	9.4	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-

# **2025 Future With Reconstruction School PM Peak-Hour Level of Service Analysis**

H:\2015\15-273\Synchro\Future With Conditions School PM.syn  
 1: West Driveway\179th Ave SE & Main St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS												
Queue Length 50th (ft)	29	183		13	146			17	0	50	8	
Queue Length 95th (ft)	83	407		44	333			56	38	141	51	
Internal Link Dist (ft)		480			1682			444			286	
Turn Bay Length (ft)	100			100						50		
Base Capacity (vph)	362	1339		345	1267			813	604	494	849	
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	0.52	0.45		0.27	0.41			0.07	0.18	0.30	0.13	

Intersection Summary  
 Area Type: Other  
 Cycle Length: 99.5  
 Actuated Cycle Length: 65.8  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 20.1  
 Intersection Capacity Utilization 66.2%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service: C



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 1: West Driveway\179th Ave SE & Main St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	184	565	22	93	375	137	25	33	109	145	29	76
Future Volume (vph)	184	565	22	93	375	137	25	33	109	145	29	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	0	0	0	50	0	0
Storage Lanes	1		0	1		0	0	0	1	1	0	0
Taper Length (ft)	25		0	25		0	25	0	25	25	0	0
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
Ped Bike Factor	0.98	1.00	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.98	0.98
Frt	0.994			0.960			0.850		0.850		0.891	
Flt Protected	0.950			0.950			0.979		0.979		0.950	
Satd. Flow (prot)	1641	1713	0	1641	1614	0	0	1691	1468	1641	1503	0
Flt Permitted	0.293			0.279			0.873		0.719		0.719	
Satd. Flow (perm)	495	1713	0	482	1614	0	0	1502	1023	913	1503	0
Right Turn on Red			Yes		Yes			Yes	Yes		Yes	Yes
Satd. Flow (RTOR)	3			26			30		109		78	
Link Speed (mph)	30			30			30		30		30	
Link Distance (ft)	560			1762			524		366		366	
Travel Time (s)	12.7			40.0			11.9		8.3		8.3	
Confl. Peds. (#/hr)	29		16	16		29	4		104	104	4	4
Confl. Bikes (#/hr)			1					2			1	1
Peak Hour Factor	0.98	0.98	1.00	1.00	0.98	0.98	1.00	1.00	1.00	0.98	1.00	0.98
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	599	0	93	523	0	0	58	109	148	107	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	0
Protected Phases	7	4		3	8		2		2	6	6	
Permitted Phases	4			8			2		2	6	6	
Detector Phase	7	4		3	8		2		2	6	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		22.5		22.5	22.5	22.5	
Total Split (s)	9.5	53.0		9.5	53.0		37.0		37.0	37.0	37.0	
Total Split (%)	9.5%	53.3%		9.5%	53.3%		37.2%		37.2%	37.2%	37.2%	
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	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Min		Min	Min	Min	
Recall Mode	None	None		None	None		Min		Min	Min	Min	
Act Effct Green (s)	35.5	31.7		34.0	28.5		0.26		0.26	0.26	0.26	
Actuated g/C Ratio	0.54	0.48		0.52	0.43		0.15		0.32	0.63	0.24	
v/c Ratio	0.52	0.73		0.27	0.73		22.2		7.9	37.2	10.5	
Control Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Queue Delay	14.1	21.7		9.1	21.8		22.2		7.9	37.2	10.5	
Total Delay	14.1	21.7		9.1	21.8		22.2		7.9	37.2	10.5	
LOS	B	C		A	C		C		A	D	B	
Approach Delay	19.8			19.9			12.9		12.9	26.0		

Gibson Traffic Consultants, Inc. [SF]  
 Future With School PM Conditions

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 1: West Driveway\179th Ave SE & Main St

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS												
Queue Length 50th (ft)	29	183		13	146			17	0	50	8	
Queue Length 95th (ft)	83	407		44	333			56	38	141	51	
Internal Link Dist (ft)		480			1682			444			286	
Turn Bay Length (ft)	100			100						50		
Base Capacity (vph)	362	1339		345	1267			813	604	494	849	
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	0.52	0.45		0.27	0.41			0.07	0.18	0.30	0.13	

Gibson Traffic Consultants, Inc. [SF]  
 Future With School PM Conditions

Intersection

Int Delay, s/veh 0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	803	29	0	505	25	4
Future Vol, veh/h	803	29	0	505	25	4
Conflicting Peds, #/hr	0	106	106	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	83	83	73	73
Heavy Vehicles, %	7	7	5	5	0	0
Mvmt Flow	836	30	0	608	34	5

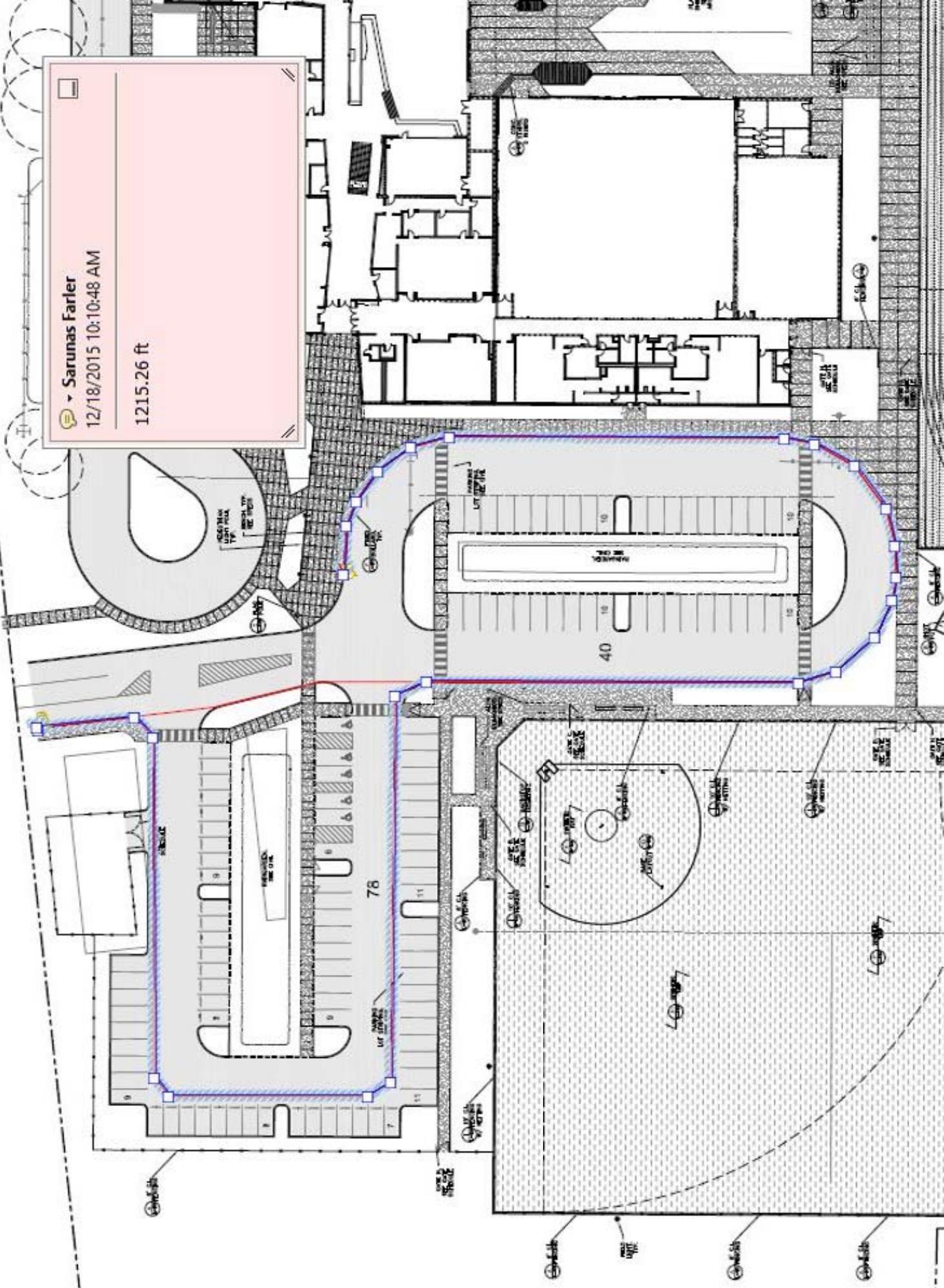
Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	958
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.15	6.2
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.245	3.3
Pot Cap-1 Maneuver	-	764	315
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	687	283
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	-	-	687	-
HCM Lane V/C Ratio	0.149	-	-	-	-
HCM Control Delay (s)	20.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0	-

# Queuing Routes

 Sarunas Farler  
12/18/2015 10:10:48 AM  
1215.26 ft





640.38 ft

12/18/2015 10:29:27 AM

Sarunas Farler

The image shows a detailed architectural floor plan of a building. A path is highlighted in purple, starting from a yellow location pin on the left side of the plan, moving through a parking area, and then following a curved path through a large open space. A red line also highlights a path in a different section of the plan. A pink popup window is overlaid on the top left, displaying the user's name 'Sarunas Farler', the date and time '12/18/2015 10:29:27 AM', and a distance of '640.38 ft'. The plan includes various rooms, corridors, and parking spaces, with labels such as 'PARKING LOT', 'OFFICE', and 'RECEPTION'. There are also several circular symbols with arrows, possibly representing light fixtures or ventilation points.

# Collision Data

OFFICER REPORTED CRASHES THAT OCCURRED ON ALL ROADS IN THE CITY OF MONROE  
**1/1/2010 - available 2015** (2015 data is partial and preliminary)

UNDER 23 UNITED STATES CODE -- SECTION 409. THIS DATA CANNOT BE USED IN DISCOVERY OR AS EVIDENCE  
 AT TRIAL IN ANY ACTION FOR DAMAGES AGAINST THE WSDOT. OR ANY JURISDICTIONS INVOLVED IN THE DATA

JURISDICTION	PRIMARY TRAFFICWAY	CITY/COUNTY/MISC INTERSECTING TRAFFICWAY	CITY OR MISC DISTANCE FROM REFERENCE POINT	CITY OR MISC REFERENCE MILES OR FEET	CITY OR MISC COMPASS DIRECTION FROM REFERENCE POINT	REPORT NUMBER	DATE	MOST SEVERE INJURY TYPE	JUNCTION RELATIONSHIP	FIRST COLLISION TYPE/OBJECT STRUCK
City Street	179TH AVE SE	W MAIN ST				2835516	03/01/2010	No Injury	0 0 2 0 0 At Intersection and Related	Entering at angle
City Street	W MAIN ST	179TH AVE SE			E	E136699	11/04/2011	No Injury	0 0 2 0 0 At Driveway	From opposite direction - both moving - head-on
City Street	W MAIN ST	179TH AVE SE	97	F	E	E058077	06/21/2010	No Injury	0 0 2 0 0 At Driveway	Entering at angle
City Street	W MAIN ST	179TH AVE SE				E160334	02/23/2012	Possible Injury	1 0 2 0 0 At Intersection and Related	Entering at angle
City Street	W MAIN ST	179TH AVE SE				E087757	01/17/2011	No Injury	0 0 2 0 0 At Intersection and Related	Entering at angle
City Street	W MAIN ST	179TH AVE SE				E368142	10/19/2014	No Injury	0 0 2 0 0 At Intersection and Related	From opposite direction - one left turn - one straight
City Street	W MAIN ST	179TH AVE SE				E055944	06/13/2010	No Injury	0 0 2 0 0 At Intersection and Related	Entering at angle
City Street	W MAIN ST	179TH AVE SE				3461883	11/02/2010	No Injury	0 0 2 0 0 At Driveway within Major Intersection	Entering at angle
City Street	W MAIN ST	179TH AVE SE				E476532	10/01/2015	No Injury	0 0 2 0 0 At Intersection and Related	Entering at angle

# **Parking Variance Request**

**VARIANCE APPLICATION CRITERIA  
PARK PLACE MIDDLE SCHOOL MODERNIZATION  
PARKING REQUIREMENTS**

Monroe School District is requesting a Variance to parking requirements for the Park Place Middle School (PPM) Modernization project. For junior high schools MMC 18.86.050 requires 1.5 parking spaces for each staff member plus parking required for public assembly areas. Public assembly areas require 1 parking space for every 4 persons based on occupancy load or fixed seats.

Based on the new design, a total of 802 parking spaces would be required per code:

*School Use: 84 staff x 1.5 = 126 parking spaces required*

*Public Assembly (gym and commons): 2,701 occupancy load x .25 = 676 parking spaces required*

*Total required parking for both uses = 802*

The District is proposing to provide 108 parking spaces for the middle school (one parking space for each staff member, plus 24 visitor parking spaces) and 32 parking spaces for Building F. By using the drop-off area and bus lanes there is an additional 39 parking spaces that can be used during special events occurring during non-school hours. This would bring the total number of available parking spaces to 179.

**BACKGROUND**

The site currently operates as a middle school designed for 935 students (1,035 student capacity including portables) and provides 144 parking spaces. From 1974-1999 the school was used as Monroe High School, with the current building configuration in place since 1990. During use as a high school, the 144 parking spaces accommodated both staff and student parking.

The new design utilizes a similar footprint to the existing layout, but is designed to support only 850 middle school students – a reduction of 85 students (or 185 reduction if portables are considered). There are two primary factors that support a lesser number of parking spaces than what is required by code: Middle school students do not drive to school; and Special events only occur during non-school hours.

Special events in the gym and commons only occur after school hours or on weekends. Events that draw larger crowds occur approximately 6-8 times during the year. The educational and assembly uses will never occur at the same time. The District is not aware of any neighborhood complaints about parking during these events.

**VARIANCE CRITERIA**

Special Privileges

No special privilege will be granted with the variance. It will allow the property to continue with the same use and (nearly identical) parking that has been in place for over 30 years.

Special Circumstance

The 19.4 acre site is relatively small for a middle school, and there is no surplus space to create more parking. The proposed design utilizes all of the available site for building, landscaping, circulation,

parking, or athletic fields. No surrounding property is available for expansion, and the location of a Category 1 Wetland to the south prevents development in this area.

Public Welfare

Allowing the same level of parking will not be detrimental to the public welfare, rather it will be beneficial to the public. If 802 parking spaces are required, the existing site is not large enough and the District would not be able to construct a new middle school. Completion of the project as designed will create a better learning environment for students, as well as enhanced gathering and athletic facilities for community use.

Comprehensive Plan

Granting the variance will not adversely affect the implementation of the comprehensive plan. The property is designated as Public Facilities School and the zoning is Public Open Space. The variance will allow the site to continue its current operation as a middle school.

Property Rights

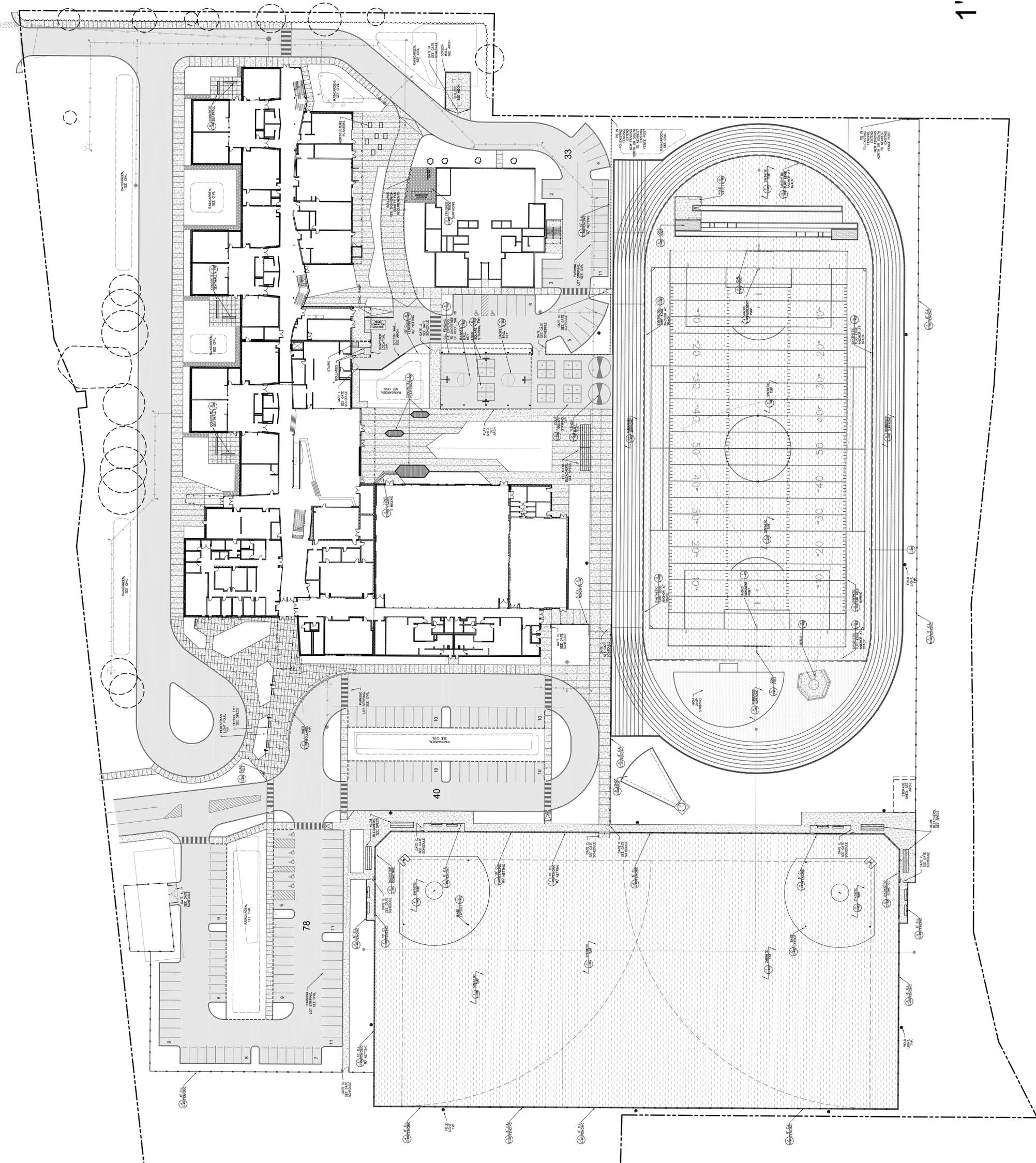
Since this is the only middle school in the area, it is difficult to compare property rights of similar surrounding uses. The District conducted an informal survey of newer middle schools in the region to find out how much parking these schools provide:

School	District	# Students	# Parking	Spaces/Student
Meadowdale Middle	Edmonds	750	156	.21
Northshore Jr.	Northshore	950	122	.13
Finn Hill Middle	Lk Washington	750	77	.10
Valley View Middle	Snohomish	800	220*	.11
Park Place Middle (existing)	Monroe	935	144	.15
Park Place Middle (proposed)	Monroe	850	140	.16

\*Valley View MS has only 84 designated parking spaces, additional parking is provided by using drop-off areas

None of the schools above provide more than 220 parking spaces and it is likely that no middle school in the region has the available space or budget to provide 800 parking spaces.

# Site Layout



1"=40'-0"