



TRAFFIC AND PARKING STUDY

Washingtonville Neighborhood

Village of Mamaroneck, New York

Prepared for

Village of Mamaroneck

Prepared by

Provident Design Engineering, PLLC
Hawthorne, New York

December 15, 2016

PDE Project No. 259591

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TRAFFIC AND PARKING STUDY
Washingtonville Neighborhood
Village of Mamaroneck, New York

1.0 INTRODUCTION

Provident Design Engineering (PDE) has been retained by the Village of Mamaroneck to review the traffic circulation and the parking conditions for the Washingtonville Neighborhood in the Village (see Figure No. 1). The Washingtonville Neighborhood is an older densely populated neighborhood with narrow streets. Some of the properties do not have their own driveways while many have very limited off-street parking available, thus there is a high demand for on-street parking in the neighborhood. While the streets appear as generally quiet residential neighborhood streets, because of the location of the neighborhood, there are a significant number of vehicles using the streets as cut-thru's. This decreases pedestrian and bicycle safety. There are sidewalks in the neighborhood but residents cross the streets to get to their vehicles and children walk to school and the commercial facilities. Likely due to the narrow streets and on-street parking, along with the cut-thru's, there were limited bicyclists observed in the neighborhood.

The Washingtonville neighborhood was originally constructed in the mid 1800's, and thus was not designed to support the amount of automobiles traveling and parking in the neighborhood. Between its densely developed area and its layout, options to improve traffic and parking in the neighborhood are limited.

One of the concerns of the Village and the residents of the neighborhood is vehicles cutting through the area. Drivers will cut through the neighborhood to avoid traffic delays and traffic signals along Mamaroneck Avenue, Palmer Avenue and Fenimore Road. Based upon traffic counts and field observations, the cut-thru's occurred throughout the day and night. More vehicles appear to cut through in the Peak AM Hour (7:30 – 8:30 AM) than in the Peak PM Hour (4:45 – 5:45 PM). During the Peak AM Hour alone, approximately 500-550 vehicles are possibly cutting through the neighborhood from the west (Fenimore Road). Another 250-300 or so are possibly cutting through in the opposite direction during the same Peak AM Hour. There is the desire to shift this traffic out of the neighborhood and onto roads such as Hoyt Avenue.

The study area consists of 13 traffic study locations and 9 streets. To perform this Study, PDE performed various observations of the traffic operations in the neighborhood. PDE also conducted traffic counts and parking counts throughout the months of September and October.

There are currently approximately 158 on-street parking spaces provided in the

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Site Location Map
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Figure No.01

neighborhood (excluding parking spaces on Pelham Street, Ailing Street, Old White Plains Road, Mamaroneck Avenue, and Hoyt Avenue), which may vary slightly based on the size of the parked vehicles and the ways some vehicles park. These vehicles have to parallel park on the various streets in the neighborhood and are supposed to comply with the parking restrictions applied by the Village of Mamaroneck. These restrictions only allow non-residents to park on these streets for 2 hours, while residents with permit stickers are allowed to park in the neighborhood without any restrictions in legal parking spaces. The main purpose of this is to limit commuter and shopper parking in the neighborhood.

PDE held discussions with representatives of the Village including the Police Department. To perform this Study, Provident Design Engineering performed various observations of the traffic operations at the various locations in the neighborhood, as well as conducted parking counts at various times during the day and week. PDE performed traffic counts and analysis for the following intersections as required by the Village:

1. Fenimore Road & Hoyt Avenue
2. Mamaroneck Avenue & Hoyt Avenue
3. Fenimore Road & Waverly Avenue
4. Plaza Avenue & Waverly Avenue
5. Mamaroneck Avenue & Waverly Avenue
6. Plaza Avenue & Center Avenue
7. Old White Plains Road/Mamaroneck Avenue & Center Avenue
8. Plaza Avenue & Madison Street
9. Old White Plains Road & Madison Street
10. Plaza Avenue & Washington Street
11. Old White Plains Road & Washington Street
12. Plaza Avenue & Grand Street
13. Old White Plains Road & Grand Street

Pelham Street and Ailing Street are also part of the Washingtonville Neighborhood and the traffic volumes for those streets are accounted for in the traffic counts described above. Hoyt Avenue is not part of the neighborhood but was included due to its potential impacts resulting from possible mitigation measures within the neighborhood as well as some issues regarding its intersection with Fenimore Road (which also is not part of the neighborhood). Hoyt Avenue is essentially an industrial road and has a signalized intersection with Mamaroneck Avenue. At the other end, Hoyt Avenue has an unsignalized intersection with Fenimore Road, with Stop signs facing the Hoyt Avenue approach and the Fenimore Road westbound approach, but not the Fenimore Road eastbound approach. This is discussed in more detail in Section 5. Hoyt Avenue is wider and has the capacity to support more traffic which could reduce the amount of traffic traveling through the Washingtonville Neighborhood.

While almost entirely residential, there are some non-residential properties at the end of the neighborhood near Old White Plains Road/Mamaroneck Avenue including a Church, a day care center and some commercial facilities.

The Village has been reviewing this area over the years and changes have been implemented. A previous Study for this area was commissioned by the Village in 2000-2001. To increase the traffic on Hoyt Avenue, the Village modified the traffic control and added a Stop sign on Fenimore Road. There has been an increase in traffic on Hoyt Avenue. To reduce the number of train commuters parking in the neighborhood, the Village installed a resident-parking permit plan. Modifications were made to the intersections of Mamaroneck Avenue and Old White Plains Road as well as Old White Plains Road and Center Avenue. Truck restrictions were also added over the years.

The following is a summary of PDE's observations and findings in regard to existing and future traffic operations and parking.

It is important to consider that any modification will have positive and negative impacts so one area or street may be improved at the expense of another area or street. Traffic will find an alternative route and that if you limit traffic in one spot, it will increase traffic in another. Also, any turn restrictions or traffic calming will not only impact the drivers cutting through the neighborhood but will also impact the residents, and thus a balance must be struck.

2.0 **TRAFFIC CONDITIONS**

Existing Traffic Volumes

PDE performed numerous observations throughout the area along with specific traffic counts at the subject intersections. The traffic counts were performed during the peak commuter periods at each of the locations on various weekdays in the month of September of 2016 when schools were open. The counts were performed during both the AM and PM peak periods at each location.

PDE conducted traffic counts at the following intersections in the Study Area, as required by the Village:

1. Fenimore Road & Hoyt Avenue
2. Mamaroneck Avenue & Hoyt Avenue
3. Fenimore Road & Waverly Avenue
4. Plaza Avenue & Waverly Avenue
5. Mamaroneck Avenue & Waverly Avenue
6. Plaza Avenue & Center Avenue
7. Old White Plains Road/Mamaroneck Avenue & Center Avenue
8. Plaza Avenue & Madison Street
9. Old White Plains Road & Madison Street
10. Plaza Avenue & Washington Street
11. Old White Plains Road & Washington Street
12. Plaza Avenue & Grand Street
13. Old White Plains Road & Grand Street

The roadways listed above are all under local jurisdiction except for Mamaroneck Avenue, which is under the jurisdiction of Westchester County.

The traffic counts for the above intersections were summarized to determine the Peak Roadway Hours. Based upon this review, it was determined that the Peak Weekday Roadway Hours were:

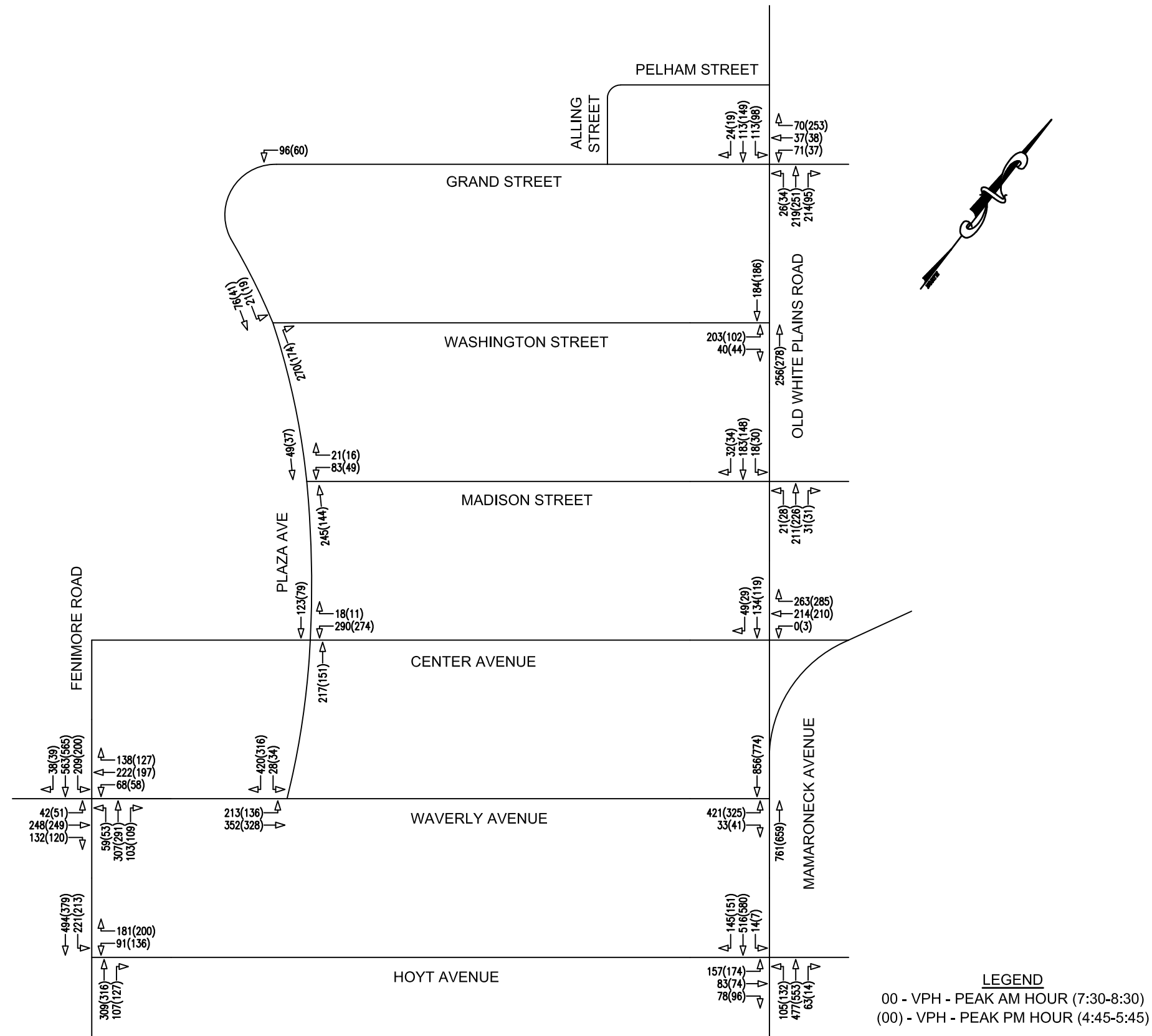
Peak Weekday AM Hour: 7:30 AM to 8:30 AM

Peak Weekday PM Hour: 4:45 PM to 5:45 PM

The traffic volumes summarized for the two peak hours were generally left unbalanced due to the various properties and driveways in between. The 2016 Existing Weekday AM and PM Traffic Volumes are illustrated on Figure No. 2.

The existing traffic volumes were compared to the traffic volumes from 2000 and 2001.

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2016 Existing Traffic Volumes
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Figure No. 02

During the Peak AM Hour, the current volumes on Fenimore Road are about 10% higher eastbound/southbound but about 15% lower westbound/northbound. Within the Washingtonville Neighborhood, there is currently less traffic utilizing Waverly Avenue and Washington Street (though only slightly less) as well as on northbound Old White Plains Road and on Mamaroneck Avenue, but more traffic on Hoyt Avenue (in both directions), Center Avenue, Madison Street, and Grand Street as well as southbound Old White Plains Road. During the Peak PM Hour, the current volumes on Fenimore Road are significantly higher eastbound/southbound but significantly lower westbound/northbound. Within the Washingtonville Neighborhood, there is currently less traffic utilizing Waverly Avenue, Center Avenue, and Grand Street but more traffic on Hoyt Avenue (in both directions), Madison Street (slightly) and on Old White Plains northbound as well as on Mamaroneck Avenue. Old White Plains Road (southbound) and Washington Avenue have similar traffic volumes compared to the earlier counts.

Thus, during the Peak AM Hour, there appears to be less vehicles currently cutting through the neighborhood eastbound (toward Mamaroneck Avenue) while more vehicles are cutting through in the westbound direction (toward Fenimore Road). During the Peak PM Hour, there appears to be less vehicles currently cutting through the neighborhood eastbound while there is a similar amount of vehicles cutting through in the westbound direction today compared to 2001.

A review of the existing traffic volumes indicates that a large amount of drivers, close to 200 in the Peak AM Hour alone, utilize Plaza Avenue to Washington Street to reach Old White Plains Road, avoiding Mamaroneck Avenue. Between 350 and 400 vehicles use Waverly Avenue in the Peak AM Hour to reach northbound Mamaroneck Avenue, significantly more than are using Hoyt Avenue. To reach the train station and southbound Mamaroneck Avenue, more vehicles use Hoyt Avenue.

Drivers from the south on Mamaroneck Avenue are using Center Avenue to cut through the neighborhood. Over 200 cars are making this maneuver during the Peak Hours. Drivers from the north and the east are using Grand Street, Madison Street and Center Avenue, but this is to a lesser extent.

The impacts of the nearby schools were observed. While there was an increase in vehicular trips and pedestrians at those times, this was not significant and the schools did not have the major impact that they would have if the school was actually in the neighborhood. School buses turning left from eastbound Old White Plains Road have difficulty making the turn and will sometimes hold up traffic.

Existing Levels of Service

Level of Service Capacity Analyses were condition for the Peak AM Hour and the Peak PM Hour at each of the Study Intersections. A detailed description of Levels of Service

is contained in Appendix A. Level of Service Tables for each intersection by intersection approach are attached. Copies of the capacity analyses are contained in Appendix B.

The Tables summarize the Levels of Service for each of the Study Intersections. For signalized Levels of Service (LOS), the LOS is indicated in uppercase letters and is the overall LOS for the entire intersection. For unsignalized intersections, the LOS is indicated in lowercase letters and is the LOS for the intersection. The signalized intersections currently generally operate in the LOS B – C range. The unsignalized intersections generally operate in the LOS a – b range. The left turn/through movement from Waverly Avenue at Plaza Avenue is operating at a LOS e during the Peak AM Hour. It was experiencing similar delays in 2000. All other movements are operating at good levels of service. The intersection of Fenimore Road/Waverly Place operates better than it did in 2000. Because of the non-standard Stop sign configuration of the intersection of Fenimore Road/Hoyt Avenue, with Stop signs on two of the three approaches, the Capacity Analyses Software does not provide a Level of Service. With only the one Stop sign in 2000, the Hoyt Avenue approach was operating at a Level of Service f.

Future Traffic Volumes

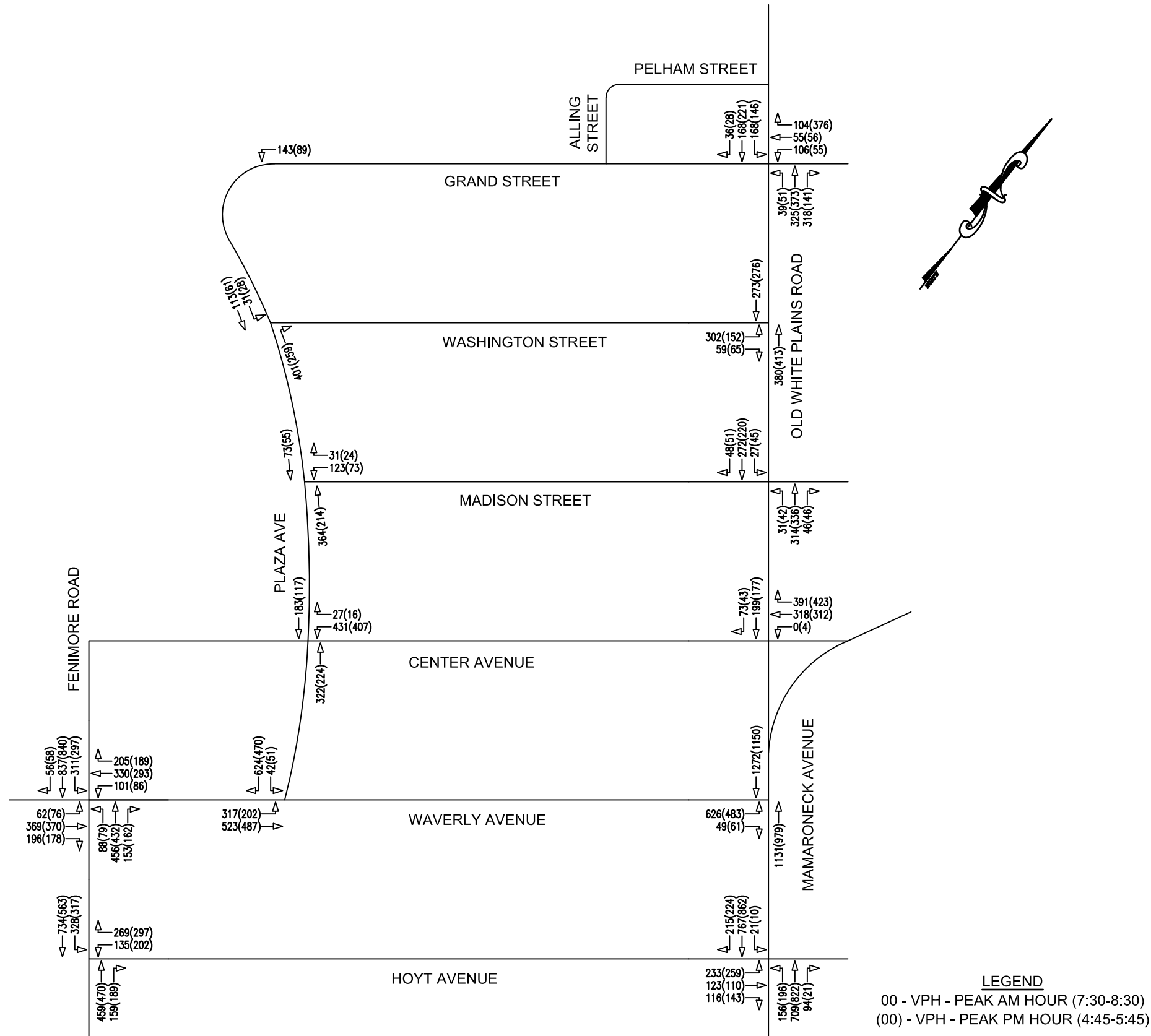
The 2016 Existing Traffic Volumes were projected twenty years out to 2036 Future Traffic Volumes through the utilization of a compounded growth rate of 2% per year, which has been the default growth rate utilized in Traffic Studies in the area. However, this results in a total growth of almost 50% over the 2016 Existing Traffic Volumes. The resulting 2036 Future Traffic Volumes with the 2% per year growth are illustrated in Figure No. 3.

Traffic growth in the immediate neighborhood is projected to be small as there are limited open areas to build as well as limited area to accommodate additional parking. However, as overall traffic increases throughout the Village, there could be additional cut-thru traffic in the neighborhood. Thus, an additional projection utilizing a smaller growth rate of 0.5% per year was also utilized. These volumes are illustrated on Figure No. 4. A comparison of traffic volumes from 2001 to today more closely resemble the smaller growth rate.

Future Levels of Service

Capacity analyses were performed for the Study Intersections utilizing the 2036 Future Traffic Volumes at both the 2% per year compounded growth rate as well as at the 0.5% per year compounded rate. These analyses are summarized in the Tables and indicate that if the full 50% growth is experienced, some of the signalized intersections such as the intersection of Fenimore Road/Waverly Place will have certain intersection approaches operating at failing levels of service. While most of the neighborhood intersections that

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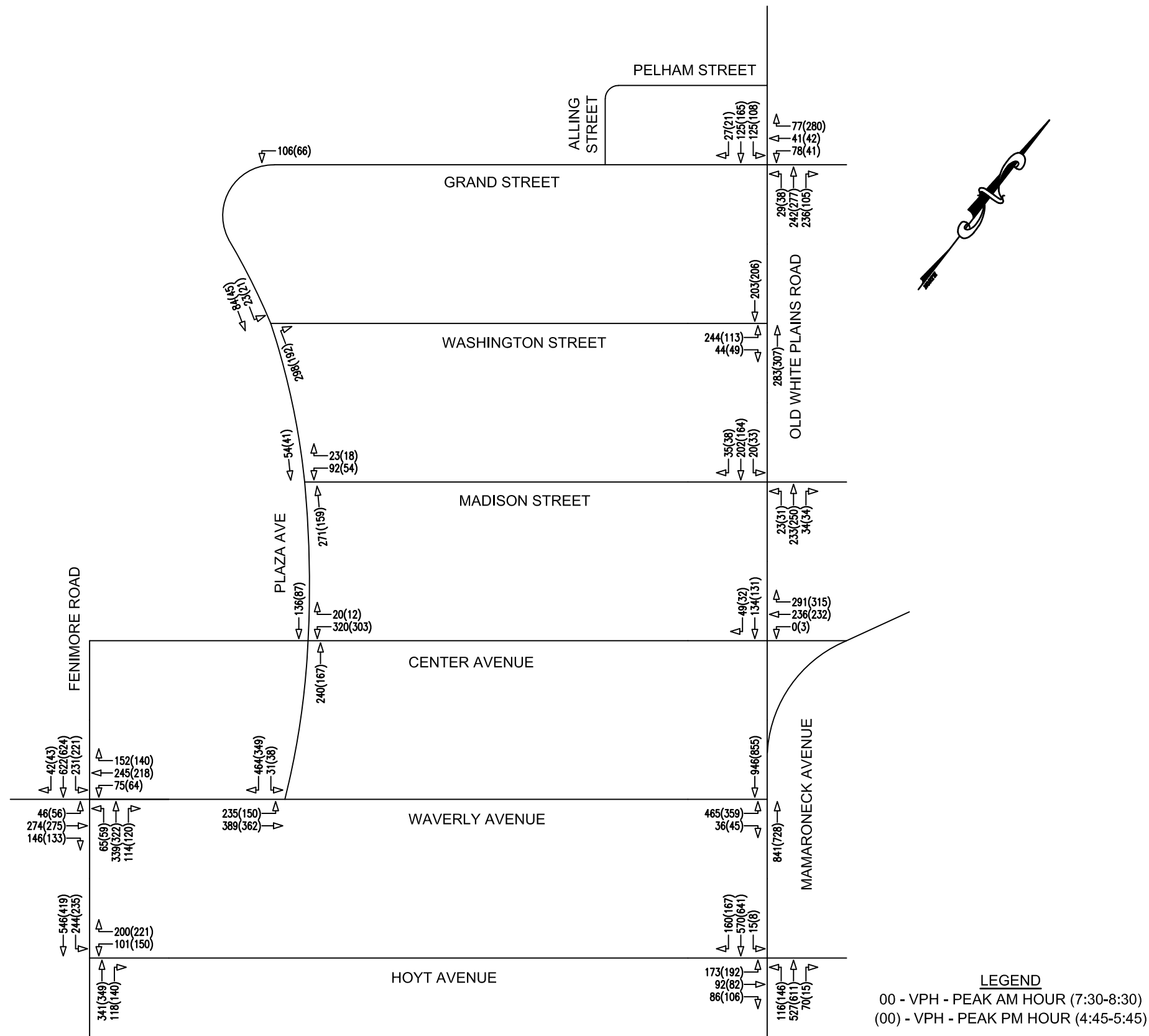
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2036 Future Traffic Volumes (2% Growth Rate)
Mamaroneck, Westchester County, New York

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Figure No. 03

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2036 Future Traffic Volumes (0.5% Growth Rate)
Mamaroneck, Westchester County, New York

are unsignalized will continue to operate at good levels of service, the Old White Plains Road intersections and the intersection of Plaza Avenue/Waverly Avenue will have some movements operating at failing levels of service if the full growth in traffic is experienced.

At the smaller growth rate, the majority of the intersections would generally continue to operate at levels of service b or c.

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Location: Mamaroneck, Westchester County, NY

TABLE NO. 1							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Fenimore Rd & Hoyt Ave							
APPROACH		PEAK AM HOUR (7:45 - 8:45 AM)			PEAK PM HOUR (5:00 - 6:00 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Hoyt Ave							
SB	L	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	R	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
Fenimore Rd							
EB	L	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
WB	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	R	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
INTERSECTION		- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0

Notes

1. Due to the stop sign configuration at the intersection, Levels of Service are not provided.

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TABLE NO. 2							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Mamaroneck Ave & Hoyt Ave							
APPROACH	PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)			
	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	
	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	
Hoyt Ave							
NB	L	C 34.8	D 35.9	D 41.3	D 35.9	D 37.3	D 45.1
	TR	D 35.8	D 37.1	D 44.6	D 36.6	D 38.3	D 47.8
	OVERALL	D 35.3	D 36.5	D 43.0	D 36.3	D 37.8	D 46.4
Mamaroneck Ave							
EB	L	B 18.2	B 18.3	B 18.8	B 17.9	B 18.0	B 18.2
	T	C 25.7	C 27.4	D 38.9	C 26.7	C 29.5	D 48.9
	R	C 26.2	C 28.0	D 40.8	C 26.9	C 30.1	D 52.3
	OVERALL	C 25.8	C 27.5	D 39.3	C 26.7	C 29.7	D 50.2
WB	L	B 10.2	B 11.1	B 16.2	B 11.1	B 12.7	B 18.6
	T	A 8.1	A 8.4	A 9.4	A 8.2	A 8.4	A 9.5
	R	A 8.1	A 8.4	A 9.5	A 8.1	A 8.4	A 9.5
	OVERALL	A 8.5	A 8.8	B 10.5	A 8.7	A 9.2	B 11.2
INTERSECTION		C 20.8	C 21.9	C 28.7	C 21.5	C 23.2	C 34.2

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Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 3
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE
Fenimore Rd & Waverly Ave

APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Waverly Ave							
NB	L	D 36.0	D 39.9	F 87.1	C 34.2	D 37.5	F 82.9
	TR	C 34.0	D 39.4	F 102.4	C 32.6	D 37.0	F 86.7
	OVERALL	C 34.2	D 39.4	F 100.9	C 32.8	D 37.1	F 86.2
SB	L	D 41.6	D 50.5	F 219.5	D 38.4	D 44.5	F 155.0
	TR	C 32.4	D 36.3	F 85.2	C 29.6	C 32.2	E 55.9
	OVERALL	C 33.9	D 38.6	F 106.6	C 31.0	C 34.0	E 70.8
Fenimore Rd							
EB	L	B 13.1	B 14.5	C 29.1	B 12.6	B 13.8	C 24.0
	T	B 13.4	B 14.6	C 23.2	B 13.4	B 14.6	C 23.4
	R	A 7.8	A 7.8	A 7.9	A 7.8	A 7.8	A 7.9
	OVERALL	B 13.0	B 14.2	C 24.0	B 12.9	B 14.1	C 22.8
WB	L	B 19.1	C 21.9	D 44.6	B 18.9	C 21.6	D 42.4
	T	B 18.0	B 18.7	C 22.0	B 17.7	B 18.4	C 21.2
	R	B 15.1	B 15.2	B 16.0	B 15.2	B 15.4	B 16.2
	OVERALL	B 17.5	B 18.4	C 23.6	B 17.2	B 18.0	C 22.5
INTERSECTION		C 22.4	C 25.0	E 55.8	C 21.3	C 23.4	D 44.6

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TABLE NO. 4							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Plaza Ave & Waverly Ave							
APPROACH	PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)			
	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	
	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	
Waverly Ave							
NB	LT	e 39.9	f 70.3	f 246.5	c 18.5	c 24.4	f 112.6
	OVERALL	<i>e</i> 39.9	<i>f</i> 70.3	<i>f</i> 246.5	<i>c</i> 18.5	<i>c</i> 24.4	<i>f</i> 112.6
Plaza Ave							
EB	LR	c 19.1	c 24.7	f 72.9	b 12.4	b 14.4	d 28.8
	OVERALL	<i>c</i> 19.1	<i>c</i> 24.7	<i>f</i> 72.9	<i>b</i> 12.4	<i>b</i> 14.4	<i>d</i> 28.8
INTERSECTION		d 30.7	f 50.2	f 169.7	c 15.9	c 20.1	f 76.5

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Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 5							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Mamaroneck Ave & Waverly Ave							
APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Waverly Ave							
NB	L	D 41.2	D 52.7	F 159.6	C 30.0	C 32.7	E 60.1
	R	B 19.9	B 20.0	C 20.3	C 20.1	C 20.2	C 20.6
	OVERALL	<i>D</i> 39.6	<i>D</i> 50.4	<i>F</i> 149.5	<i>C</i> 28.9	<i>C</i> 31.3	<i>E</i> 55.7
Mamaroneck Ave							
EB	T	B 11.3	B 11.9	B 14.8	B 10.8	B 11.3	B 14.8
	OVERALL	<i>B</i> 11.3	<i>B</i> 11.9	<i>B</i> 14.8	<i>B</i> 10.8	<i>B</i> 11.3	<i>B</i> 14.8
WB	T	B 10.8	B 11.2	B 13.4	B 10.2	B 10.6	B 12.2
	OVERALL	<i>B</i> 10.8	<i>B</i> 11.2	<i>B</i> 13.4	<i>B</i> 10.2	<i>B</i> 10.6	<i>B</i> 12.2
INTERSECTION		B 17.3	C 20.1	D 43.8	B 14.3	B 15.1	C 21.8

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TABLE NO. 6							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Plaza Ave & Center Ave							
APPROACH	PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)			
	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	
	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	
Center Ave							
SB	LR	b 12.4	b 13.8	d 26.4	b 11.0	b 11.8	c 17.4
	OVERALL	b 12.4	b 13.8	d 26.4	b 11.0	b 11.8	c 17.4
Plaza Ave							
EB	T	a 9.4	a 9.9	b 12.2	a 8.6	a 8.9	a 10.0
	OVERALL	a 9.4	a 9.9	b 12.2	a 8.6	a 8.9	a 10.0
WB	T	b 10.5	b 11.3	c 16.3	a 9.2	a 9.6	b 11.6
	OVERALL	b 10.5	b 11.3	c 16.3	a 9.2	a 9.6	b 11.6
INTERSECTION		b 11.2	b 12.2	c 20.3	b 10.1	b 11.2	b 14.5

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TABLE NO. 7							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Mamaroneck Ave/Old White Plains Rd & Center Ave							
APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Mamaroneck Ave/Old White Plains Rd							
EB	TR	b 11.5	b 13.6	c 15.7	b 11.3	b 12.9	b 14.9
	OVERALL	<i>b</i> <i>11.5</i>	<i>b</i> <i>13.6</i>	<i>c</i> <i>15.7</i>	<i>b</i> <i>11.3</i>	<i>b</i> <i>12.9</i>	<i>b</i> <i>14.9</i>
WB	LT	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>
INTERSECTION		<i>a</i> 3.2	<i>a</i> 3.8	<i>a</i> 4.4	<i>a</i> 2.6	<i>a</i> 2.9	<i>a</i> 3.4

Project #: 259591

Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 8
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE
Plaza Ave & Madison St

APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Madison St							
SB	LR	b 11.2	b 11.8	b 14.0	a 9.8	a 10.0	b 10.8
	OVERALL	<i>b</i> <i>11.2</i>	<i>b</i> <i>11.8</i>	<i>b</i> <i>14.0</i>	<i>a</i> <i>9.8</i>	<i>a</i> <i>10.0</i>	<i>b</i> <i>10.8</i>
Plaza Ave							
EB	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>
WB	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>
INTERSECTION		a 2.9	a 3.0	a 3.6	a 2.6	a 2.6	a 2.9

Project #: 259591

Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 9
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE
Old White Plains Rd & Madison St

APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Old White Plains Rd							
EB	LTR	a 0.7	a 0.8	a 0.9	a 1.3	a 1.3	a 1.6
	OVERALL	<i>a</i> <i>0.7</i>	<i>a</i> <i>0.8</i>	<i>a</i> <i>0.9</i>	<i>a</i> <i>1.3</i>	<i>a</i> <i>1.3</i>	<i>a</i> <i>1.6</i>
WB	LTR	a 0.8	a 0.8	a 0.9	a 0.9	a 1.0	a 1.1
	OVERALL	<i>a</i> <i>0.8</i>	<i>a</i> <i>0.8</i>	<i>a</i> <i>0.9</i>	<i>a</i> <i>0.9</i>	<i>a</i> <i>1.0</i>	<i>a</i> <i>1.1</i>
INTERSECTION		a 0.8	a 0.8	a 0.9	a 1.1	a 1.1	a 1.3

Project #: 259591
 Project: Washingtonville Neighborhood
 Location: Mamaroneck, Westchester County, NY

TABLE NO. 10							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Plaza Ave & Washington St							
APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Plaza Ave							
EB	LT	a 7.8	a 7.9	a 8.3	a 7.5	a 7.5	a 7.7
	OVERALL	<i>a</i> 7.8	<i>a</i> 7.9	<i>a</i> 8.3	<i>a</i> 7.5	<i>a</i> 7.5	<i>a</i> 7.7
WB	R	a 7.8	a 8.0	a 9.0	a 7.1	a 7.2	a 7.7
	OVERALL	<i>a</i> 7.8	<i>a</i> 8.0	<i>a</i> 9.0	<i>a</i> 7.1	<i>a</i> 7.2	<i>a</i> 7.7
INTERSECTION		a 7.8	a 8.0	a 8.8	a 7.2	a 7.3	a 7.7

Project #: 259591

Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 11
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE
Old White Plains Rd & Washington St

APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Washington St							
NB	LR	c 16.3	c 19.0	f 54.1	b 13.3	c 15.7	c 21.9
	OVERALL	<i>c</i> <i>16.3</i>	<i>c</i> <i>19.0</i>	<i>f</i> <i>54.1</i>	<i>b</i> <i>13.3</i>	<i>c</i> <i>15.7</i>	<i>c</i> <i>21.9</i>
Old White Plains Rd							
EB	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>
WB	T	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
	OVERALL	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>	- <i>0.0</i>
INTERSECTION		a 5.8	a 6.8	c 19.3	a 3.2	a 3.8	a 5.2

Project #: 259591

Project: Washingtonville Neighborhood

Location: Mamaroneck, Westchester County, NY

TABLE NO. 12							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Old White Plains Rd & Grand St							
APPROACH		PEAK AM HOUR (7:30 - 8:30 AM)			PEAK PM HOUR (4:45 - 5:45 PM)		
		2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)	2016 EXISTING	2036 FUTURE (0.5% GR)	2036 FUTURE (2% GR)
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
Grand St							
SB	LTR	b 11.0	b 11.9	c 16.2	b 14.2	c 17.1	e 49.2
	OVERALL	b 11.0	b 11.9	c 16.2	b 14.2	c 17.1	e 49.2
Old White Plains Rd							
EB	LTR	b 11.4	b 12.6	c 20.2	b 13.2	c 15.3	d 34.9
	OVERALL	b 11.4	b 12.6	c 20.2	b 13.2	c 15.3	d 34.9
WB	LTR	c 15.5	c 19.7	f 89.7	c 16.2	c 20.7	f 106.0
	OVERALL	c 15.5	c 19.7	f 89.7	c 16.2	c 20.7	f 106.0
INTERSECTION		b 13.4	c 16.1	f 55.3	b 14.7	c 18.0	f 67.4

3.0 **PARKING CONDITIONS**

a. Existing Parking Conditions

PDE conducted numerous parking observations and parking counts on the roadways in the subject area during different times of the day and different days of the week. Physical parking counts were performed on the following dates and times while additional observations were performed at other times and on other dates:

Monday September 26, 2016	3:30 PM
Monday September 26, 2016	6:15 PM
Tuesday September 27, 2016	6:45 AM
Tuesday September 27, 2016	9:15 AM
Tuesday September 27, 2016	3:20 PM
Wednesday September 27, 2016	7:30 AM
Wednesday September 27, 2016	4:30 PM
Wednesday September 27, 2016	4:50 PM
Wednesday September 27, 2016	6:30 PM
Sunday October 16, 2016	12:15 PM
Sunday October 16, 2016	7:30 PM

A summary of the parking counts by street is attached. There are a total of approximately 158 on-street parking spaces in the neighborhood (excluding parking spaces on Pelham Street, Ailing Street, Old White Plains Road, Mamaroneck Avenue, and Hoyt Avenue). However this number is estimated and can vary depending upon where and how some people park, as the spaces are generally not striped. Thus, if a driver parking a vehicle leaves too much of a gap between cars, an additional parking space is lost and thus cannot be used.

The amount of vehicles parked in the neighborhood varied from 95 occupied parking spaces at 9:15 AM on Tuesday September 27th to 139 occupied parking spaces at 7:30 AM on Wednesday October 5th, which is to be expected as it is before most people leave for work and school. During these times, not all of the parking spaces were able to be utilized due to the gaps left between some cars as well as other reasons. For most streets, there were a few spaces open, but not necessarily that close to where certain residents live. Some streets were completely full at times.

There are various parking restrictions within the neighborhood including prohibition of commercial vehicles. The majority of the streets have two hour

Washingtonville Neighborhood Parking Summary												
Street	Parking Available ¹	Monday 9/26/2016 (3:30 PM)	Monday 9/26/2016 (6:15PM)	Tuesday 9/27/16 (6:45AM)	Tuesday 9/27/2016 (9:15AM)	Tuesday 9/27/16 (3:20PM)	Wednesday 10/5/16 (7:30AM)	Wednesday 10/5/16 (4:30PM)	Wednesday ¹ 0/5/16 (4:50PM)	Wednesday 10/5/16 (6:30PM)	Sunday 10/16/16 (12:15PM)	Sunday 9/16/16 (7:30PM)
Old White Plains Road	31	22	28	27	20	25	26	26	24	22	24	20
Grand Street	38	22	31	34	16	20	30	16	20	28	27	27
Plaza Avenue	15	10	13	8	10	6	12	8	11	12	11	14
Washington Street	28	16	30	25	15	19	26	25	27	27	19	26
Madison Street	23	13	15	20	18	17	22	14	15	18	15	16
Center Avenue	27	25	23	N/A ³	26	26	24	19	21	25	26	26
Waverly Avenue	27	15	N/A ²	25	10	19	25	21	20	26	22	27
Hoyt Avenue	-	-	-	-	-	-	-	-	-	-	7	7
Mamaroneck Avenue	7	5	3	1	4	3	7	6	6	3	3	3
Total Demand ^d	158	101	112	112	95	107	139	103	114	136	120	136

Notes:

1. Available parking may vary due to the size of different vehicles
2. Emergency vehicle had Waverly Avenue closed down during parking count
3. Sanitation Truck had Center Avenue closed during parking count
4. Total Parking only includes Washingtonville Neighborhood roads (Excludes Old White Plains Road, Mamaroneck Avenue, and Hoyt Avenue)

parking, but residents can park all day and night if they have a resident pass. This was established due to people previously parking in the area for the train.

There were people (possibly residents) parking in the non-residential/commercial lots.

Parking Signage

There is a significant number of parking related signs throughout the Washingtonville neighborhood. The majority of the signs are regulatory signs. Some of the signage prohibits the parking of commercial vehicles while others indicate no parking during certain times to allow for street cleaning. Many explain that there is 2 hour parking except for residents, a program established by the Village to eliminate people parking there who are using the train.

Many of the signs are old and faded or bent and should be updated.

4.0 PEDESTRIAN AND BICYCLE CONDITIONS

Pedestrians

As described previously, there are sidewalks on the neighborhood streets. In most of the area, sidewalks are provided on both sides of the streets. Some are narrow and have utility poles and signage but they are generally serviceable. There are limited striped crosswalks in the area including at the day care center (see below) and across Old White Plains Road.

Because many residents live on the opposite side of the road from where they park their car on the street, people are crossing the various roads at all different locations.

Many pedestrians on Mamaroneck Avenue and Old White Plains Road don't use the crosswalks or follow standard crossing procedures. While some cross at the intersection in conjunction with the traffic signal, others jay walk and cross in between intersections, especially on Old White Plains Road. Many of these appeared to be going to/coming from school while others were going to commercial facilities.

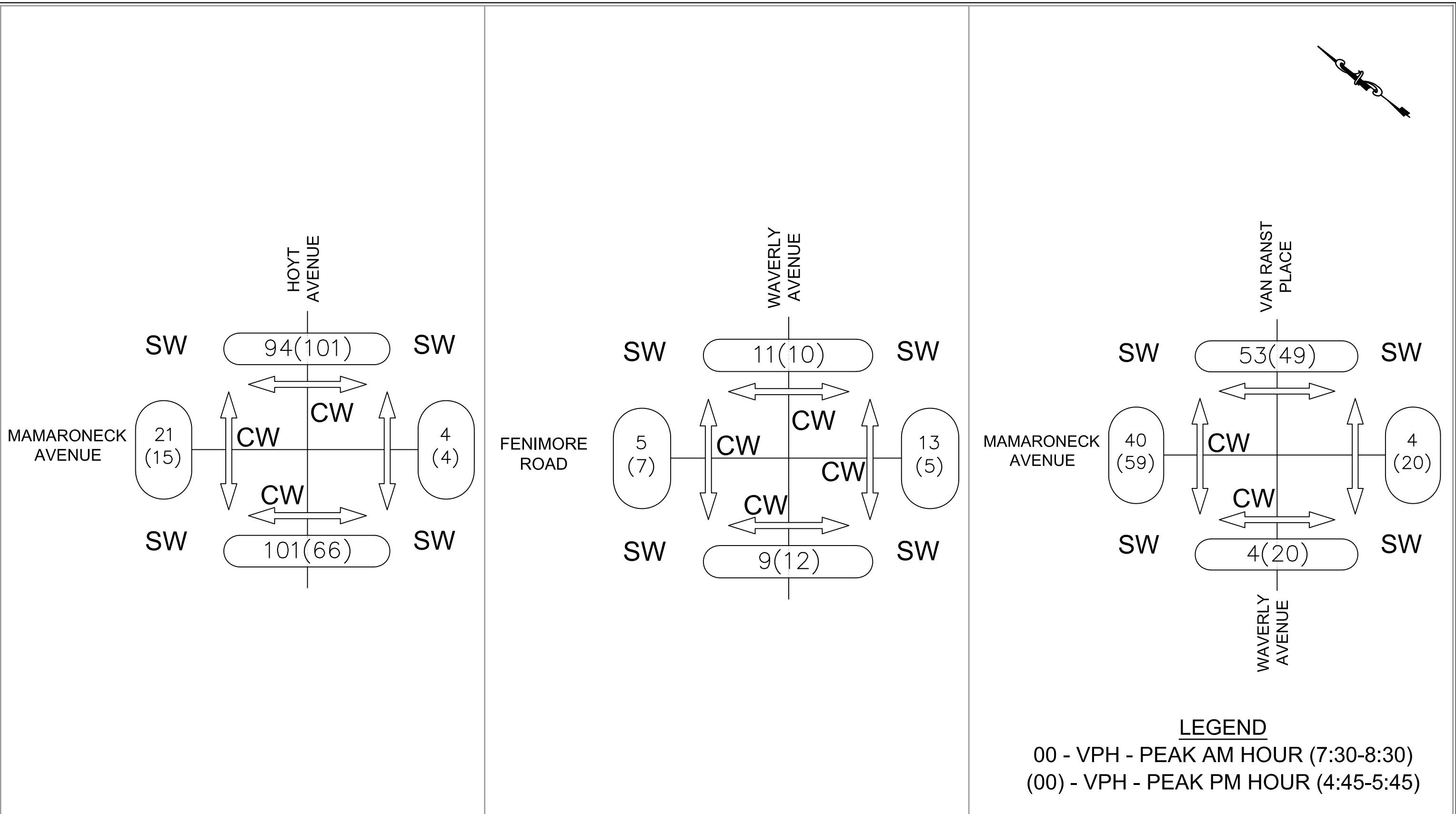
Figure No. 5 shows the number of pedestrians observed at the signalized intersections. There are a significant number of pedestrians at the intersections of Mamaroneck Avenue/Hoyt Avenue and Mamaroneck Avenue/Waverly Avenue. There are less pedestrians at the unsignalized intersections.

Pedestrians were also observed in the vicinity of some of the non-residential/commercial properties such as the day care and the Church. Some recommendations for the crosswalk at the day care facility on Center Avenue are discussed in Section 6.

Bicyclists

There were very limited bicyclists observed in the neighborhood. A reason for this could be the narrow streets and the on-street parking.

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5.0 INTERSECTION OF FENIMORE ROAD AND HOYT AVENUE

The operation of the intersection of Fenimore Road and Hoyt Avenue was also reviewed. The intersection is unsignalized and operates under an atypical control of Stop signs on two of the three approaches due to various factors. The westbound approach of Fenimore Road and the southbound approach of Hoyt Avenue currently have Stop signs. Thus, the eastbound approach of Fenimore Road does not have a Stop sign, which we were informed was due to the presence of the commercial driveway limiting where a Stop sign could be installed. The two approaches with Stop signs each have a supplemental sign indicating that the eastbound approach of Fenimore Road does not stop.

The reason for the current traffic control along westbound Fenimore Road is mainly a result of the existing railroad bridge over Fenimore Road, adjacent to the intersection. The bridge structure limits sight distance for vehicles exiting Hoyt Avenue.

Additional lighting can be added to the intersection, particularly the westbound approach, which will make the Stop sign more visible. Updating the Stop Ahead sign to current retroreflective standards will also make it more visible and is recommended. To further supplement the Stop sign's visibility, the word Stop could be written on the pavement and/or the small blinking LED lights could be added to the Stop sign. If it remains an issue, then flashing beacons could be added. An additional alternative would be to add a vertical red reflective strip along the sign pole. This is recommended.

The "2-Way" signs currently underneath the Stop signs at this location are no longer permitted by the Federal Manual on Uniform Traffic Control Devices (MUTCD) and thus should be removed.

One of the main goals of this Study is to reduce cut-thru's in the neighborhood. The amount of vehicles utilizing Hoyt Avenue currently is likely somewhat limited due to the lack of a traffic signal or a three-way stop at its intersection with Fenimore Road. Installing a traffic signal at this intersection would not be simple. If a traffic signal was to be installed at the intersection, it would be difficult to be seen by vehicles travelling westbound on Fenimore Road and additional measures would be required. Also, the location of Bishop Avenue would have to be taken into consideration, as well as the proximity to the existing traffic signal at Waverly Avenue.

It should be noted that even with a traffic signal installed, there would still be drivers cutting through the neighborhood unless other changes are made.

On Hoyt Avenue southbound, the signs should be modified to say "No Parking, Standing or Stopping" to prohibit trucks that are idling on Hoyt Avenue.

6.0 POTENTIAL MITIGATION/MODIFICATIONS

It is important to consider that any modification will have positive and negative impacts so one area or street may be improved at the expense of another area or street. Traffic will find an alternative route and that if you limit traffic in one spot, it will increase traffic in another. Also, any turn restrictions or traffic calming will not only impact the drivers cutting through the neighborhood but will also impact the residents, and thus a balance must be struck.

The following is a summary of some of the mitigation/modifications that could be performed to improve the safety and/or efficiency through the neighborhood:

Signage – Additional signage could be installed in some locations but locations for the existing signs are generally appropriate. However, many signs are old/faded/dented and should be updated to current standards.

Improved Geometry – The intersection of Mamaroneck Avenue and Old White Plains Road is non-standard due to the angle of the intersection and the curve on Mamaroneck Avenue. In addition, Center Avenue intersects Old White Plains Road just prior to Mamaroneck Avenue. Drivers would make a short right turn and then a quick left turn, essentially going diagonally. Some modifications have been performed to improve the safety of the intersections and now there is a Stop sign as a driver exits southbound Mamaroneck Avenue onto White Plains Road as well as a Stop sign on Old White Plains Road just west of Center Street. Over 200 vehicles during each peak hour turn from Mamaroneck Avenue onto Center Street. Sight distance is limited due to the existing building on the corner and that is why the Stop signs were added. PDE reviewed various modifications at the intersection including the potential installation of a roundabout and had discussions with Westchester County (who has jurisdiction over Mamaroneck Avenue at this location). The traffic volumes along Mamaroneck Road, the close proximity of the traffic signal at Waverly Avenue, and the angle of Old White Plains Road make a roundabout and some of the other options unfeasible. Based upon a review of the intersections' operation and discussions with the County and consideration of the other factors, it has been determined to leave the intersections as is. However, a Yield bar should be added on Old White Plains Road before it merges with Mamaroneck Avenue. The addition of the Stop signs and the striping have improved the operation of the intersections. As discussed below, there has been some consideration of reversing the direction of traffic on Center Avenue.

Recommended Parking Zones – The implementation of the residential parking requirements, in conjunction with the other existing parking regulations, appears to be working appropriately. There is a significant amount of on-street parking occurring throughout the day, with the higher amounts overnight, as would be expected. Some

residents seem to also be parking in some of the non-residential/commercial properties at times. There are no real suitable locations within the neighborhood for additional recommended parking zones. Any redeveloped properties should provide some off-street parking.

Pedestrian Features – There are sidewalks on both sides of most of the roads. The sidewalks are generally narrow and some have utility poles in the middle of them and thus do not meet current standards but they are generally functional. Grand Street mainly only has sidewalks on the east side. The west side has limited room to install a sidewalk and there are utility poles. Plaza Avenue also has a sidewalk on only one side as there is a guiderail on the other. There is not a need for a sidewalk on that other side as there are no residences or destinations there. Hoyt Avenue also has a sidewalk on only one side also, as the other side contains a retaining wall for the railroad tracks.

There is a crosswalk along Center Avenue for the day care center. Additional signage should be added on both sides of the street at the crosswalk. Consideration should be given to slightly adjusting the location as there are no ADA ramps and there is a catch basin at one end of the crosswalk. There also should not be parking permitted all of the way up to the crosswalk as this limits the visibility of the pedestrians. Vehicles were observed parking right up to the edge of the crosswalk. This could result in the loss of a parking space.

Bicycle Features – The narrowness of the streets limits the ability of providing a separate bicycle lane, unless the existing on-street parking was removed.

Expanded Sidewalk Areas – There are very limited locations where sidewalk areas can be expanded to be of any significant benefit within the Washingtonville neighborhood. As previously described, the streets in the neighborhood have sidewalks on both sides except for Grand Street and Plaza Avenue, which both only have sidewalks on one side. Portions of Grand Street do have a sidewalk on the other side but the pieces are not connected. Because of the narrow width of Grand Street in conjunction with the utility poles and topography, it would be difficult to install a full-size regulation sidewalk for the entire length and still maintain the on-street parking.

There is not a need to install a sidewalk on the other side of Plaza Avenue as it would not serve a purpose.

One place where sidewalks could be widened and improved is the connection to and on the Waverly Avenue Bridge over the Sheldrake River. The bridge has two old, narrow asphalt sidewalks on each side that are not in the best condition. Because of the width of the bridge, full sidewalks cannot be installed on each side. There is the possibility of constructing a full sized sidewalk on one side of the bridge and eliminating the sidewalk

on the other side.

Sanitation Pick-Up – During periods of sanitation pick-up, some roads in the neighborhood are temporarily closed. This is an efficient procedure but it is recommended that the timing of the pick-up be adjusted to be outside the morning peak period and thus have it occur after 9:00 AM if possible.

Reversing One-Way Flow on Center Avenue - One possible traffic control modification to reduce cut-thru's is the reversal of the one-way pattern for Center Avenue from north-to-south to south-to-north. This would reduce traffic on cut-thru Center Avenue but it would increase traffic on Madison Street. Since it takes vehicles a little farther out of their way, it may slightly reduce cut-thru traffic in the neighborhood, but only in the one direction.

In the 2001 Study, an additional modification to this change would be the elimination of the left turn movement from Waverly Avenue. This would make it difficult to turn onto northbound Mamaroneck Avenue. Thus drivers would have to find alternative routes. It would reduce the number of cut-thru's but would result in inconveniences for the residents of the neighborhood. Some drivers, particularly Waverly Avenue residents, would then cut-thru the train station or use Halstead Avenue while the majority from the neighborhood would use Old White Plains Road and then cut-thru the neighborhood on the north side of Old White Plains Road to Grand Street, which also has previously expressed concerns about cut-thru's of their own. Cut-thru's would be reduced on Waverly Avenue and some on-street parking could be added in replace of the Waverly Avenue left-turn lane. If the left turns are not restricted on Waverly Avenue, then there would be the same cut-thru's on Waverly Avenue as there are today.

Reversing One-Way Flow on Center Avenue and Waverly Avenue – Traffic flow on Center Avenue currently runs east to west (away from Mamaroneck Avenue/Old White Plains Road) while traffic flow on Waverly Avenue currently runs west to east (towards Mamaroneck Avenue/Old White Plains Road). If the one-way flows on Center Avenue and Waverly Avenue are reversed, it would be difficult to reach northbound Mamaroneck Avenue. Reversing the travel directions on these roads would eliminate the ability to use the traffic signal at the intersection of Mamaroneck Avenue and Waverly Avenue to turn from the neighborhood onto northbound Mamaroneck Avenue. Thus drivers would have to find alternative routes. It would reduce the number of cut-thru's but would result in inconveniences for the residents of the neighborhood. Some drivers would then cut-thru the train station or use Halstead Avenue while the majority from the neighborhood would use Old White Plains Road and then cut-thru the neighborhood on the north side of Old White Plains Road to Grand Street. Waverly Avenue would still have a significant amount of cut-thru's, they would just be in the opposite direction.

Reversing One-Way Flow on Various Roadways – Aside from the above, reversing the one-way flow on other roadways would not have a significant impact but would generally just push the cut-thru's to a different neighborhood roadway.

Traffic Calming – Traffic Calming is another methodology that can be used to reduce cut-thru's in the neighborhood. These could include speed humps. Speeding is not really a major issue in the neighborhood based upon PDE's observations, particularly with the short, narrow roads and the on-street parking, but the speed humps could discourage some people from cutting through the neighborhood. However, speed humps can create noise, and can cause issues with drainage and snowplowing. In addition, the neighborhood residents would have to travel over them also. Locating the speed humps will take some effort to limit impacts of residents pulling in and out of their driveways while also not impacting on-street parking.

Reverse Parking Side – Reversing the side of the street that the on-street parking is on may help slightly increase the number of parking spaces on some of the individual streets. The impact of the shift would be a result of various factors including the number, size and the location of the various driveways as well as the location of the fire hydrants, among others.

Shifting Fire Hydrants – Some on-street parking spaces are lost due to the location of fire hydrants. Shifting fire hydrants to the other side of the street could slightly increase the number of parking spaces. However, this would be expensive, approximately \$10,000 per hydrant.

Chicaning of On-street Parking - One option is “Chicaning” the on-street parking, which would be continuously switching the side of the road that on-street parking is permitted as you travel the length of the road. Thus, for the first one hundred feet or so, the parking would be on the east side, then for the next one hundred feet, the parking would be on the west side, then it reverts back to the east side and continues on a similar pattern for the length of the street. This helps reduce cut-thru's and slows traffic, but would also result in the loss of some on-street parking for the cross-over areas and is effected by the location of the driveways. Thus this is not recommended.

Closure or Partial Closure of Waverly Avenue Bridge – A more drastic measure but one that would eliminate cut thru's would be the closure of the Waverly Avenue Bridge over the Sheldrake River. During the Peak AM Hour (7:30 – 8:30 AM), there are over 560 vehicles traveling eastbound over the bridge with another 420 traveling westbound. During the Peak PM Hour (4:45 – 5:45 PM), there are about 460 vehicles traveling eastbound and 315 traveling westbound. The Waverly Avenue Bridge is owned by the Town of Mamaroneck.

If the bridge is closed, drivers would not be able to directly travel through the Washingtonville Neighborhood to travel between Fenimore Road and Mamaroneck Avenue/Old White Plains Road. These drivers would need to find an alternative route, possibly Hoyt Avenue, Bishop Avenue or Palmer Avenue. This would add delays to the signalized intersections at those locations. In addition, the bridge closure would also impact the residents of the Washingtonville Neighborhood as they would no longer be able to use the bridge either and would be forced to loop around to get to or from the neighborhood. This would also add neighborhood traffic on some of the other streets in the neighborhood due to the one-way patterns.

A less drastic but still significant measure is a partial closure of the Waverly Avenue Bridge. This would only close the bridge in one direction, thus eliminating the cut-thru's in that direction. However, the impacts described above for the Washingtonville Neighborhood residents will still occur.

Discussions would need to be held regarding the need to continue to permit emergency service vehicles over the bridge.

Intersection of Waverly Avenue and Plaza Avenue – The intersection of Waverly Avenue and Plaza Avenue is non-standard due to the Waverly Avenue Bridge and the resulting offset at the intersection and thus it can be confusing for some drivers. Drivers travelling north on Waverly Avenue stop before the bridge and thus before they reach the intersection. Due to vegetation, the drivers have a limited view of traffic on Plaza Avenue. Both approaches do have stop signs facing them. The bridge is narrow and there is limited pedestrian areas on each side. The majority of traffic on Waverly Avenue stays straight on Waverly Avenue and then turns left at the traffic signal onto Mamaroneck Avenue, but over 200 vehicles during the Peak AM Hour turn west from Waverly Avenue onto Plaza Avenue and then turn onto Washington Street, with most of them then turning left onto Old White Plains Road. More than ninety percent of the Plaza Avenue traffic turns right and crosses the bridge. Some clearing of vegetation would help improve visibility and traffic flow.

Intersection of Hoyt Avenue and Fenimore Road – Mitigation for this intersection is described in the previous Section.

Truck Traffic – Trucks are currently restricted from using Waverly Avenue except for local deliveries and under set weight restrictions. Thus, trucks are supposed to use Hoyt Avenue. There are also issues with trucks hitting the railroad overpasses on Fenimore Road (10'2" Clearance) and Mamaroneck Avenue (10'11" Clearance). Additional signage including possibly with LED lights could be added. Bumper bars could also be added but with the location of the side streets and other curb cuts so close to the bridges, there may not be enough room for them to be installed to account for all trucks. "Low

Bridge” is painted on the roadway prior to the bridges and these are helpful but should be freshly painted.

Striping Plaza Avenue – A resident had asked the Village about providing a double yellow line on Plaza Avenue. However, due to the nature, traffic volume and width of the roadway, it is not necessary to stripe.

Preliminary Cost Estimates

Preliminary Cost Estimates can be further refined after the Village determines the route it chooses for these projects. Modifying signage and striping will be minimal costs. Relocating a fire hydrant would cost about \$10,000. Installing a traffic signal at the intersection of Fenimore Road and Hoyt Avenue would costs upwards of \$150,000.

APPENDIX A

LEVEL OF SERVICE STANDARDS

1. LEVEL OF SERVICE

CONCEPT

The 2010 Highway Capacity Manual, published by the Transportation Research Board of the U.S. Government, established a system by which highway facilities are examined for their adequacy to handle traffic volumes. The terminology "Level of Service" is used to provide a "qualitative" evaluation based on certain "quantitative" calculations which are related to empirical values.

Intersection Capacity, Delay and resultant Levels of Service are dependent upon a number of factors, including the following:

- Area Type
- Intersection geometrics
- Traffic volumes
- Parking conditions
- Pedestrian activity
- Vehicle Mix
- Bus Stop location and activity
- Peak Hour Factor
- Traffic Signal operation, if applicable

Ramp and weaving area Densities and resultant Levels of Service are dependent upon a number of factors, including the following:

- Number of lanes
- Configuration of weaving area
- Length of acceleration/deceleration lanes
- Vehicle speeds
- Traffic volumes
- Vehicle Mix
- Peak Hour Factor

FACTORS

SIGNALIZED INTERSECTIONS

Level of Service for Signalized Intersections is defined in terms of Delay, which is a measure of driver discomfort, frustration, fuel consumption, and loss of travel time. Specifically, Level of Service criteria are stated in terms of the Average Control Delay per vehicle for the peak 15-minute period within the hour analyzed.

Delay is a complex measure and is dependent upon a number of variables, including:

- Cycle length
- Ratio of Green time to Cycle length (G/C)

- Ratio of Volume to Capacity (V/C) for lane group or approach
- Traffic signal progression

UNSIGNALIZED INTERSECTIONS

Level of Service for Unsignalized Intersections is also defined in terms of Delay. The amount of Delay is based upon the availability of "gaps" in the mainline traffic stream and the acceptance of these gaps by motorists waiting on the side street to enter the main street traffic flow.

RAMP AND RAMP JUNCTIONS

Level of Service for ramp freeway junctions and the ramp proper are defined in terms of Density (passenger cars per mile per lane). Density is related to the traffic flow in the area of influence.

WEAVING AREAS

Level of Service for weaving areas is defined in terms of Density (passenger cars per mile per lane). Density is based on the ratio of weaving vehicles to non-weaving vehicles and on vehicle speeds in the weaving area of influence

CRITERIA

The criteria for the various Level of Service designations are as follows:

	SIGNALIZED	UNSIGNALIZED
LEVEL OF SERVICE	Average Control Delay per Vehicle (Seconds)	Average Control Delay per Vehicle (Seconds)
A	10.0 or less	10.0 or less
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	80.1 or greater	50.1 or greater

Level of Service	Ramp-Freeway Junction	Ramp Proper	Weaving Areas	
	Maximum Density pc/mi/ln	Density Range pc/mi/ln	Maximum Density pc/mi/ln	
			Freeway Weaving Area	Multi-lane + C-D Weaving Area
A	≤10	≤11	≤10	≤12
B	>10 - 20	>11 – 18	>10 - 20	>12 - 24
C	>20 - 28	>18 – 26	> 20 - 28	>24 - 32
D	>28 - 35	>26 – 35	>28 - 35	>32 - 36
E	>35	>35 – 45	>35 - 43	>36 - 40
F	Demand exceeds capacity	>45	>43	>40

DESCRIPTION

The following is a brief description of each of the six Level of Service designations as defined by the Highway Capacity Manual:

SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE A

Average Control Delay - 10.0 secs. or less

Describes operations with very low delay. Occurs when progression is extremely favorable and most vehicles arrive during the Green Phase and do not stop at all. Short cycle lengths may also contribute to low delay.

LEVEL OF SERVICE B

Average Control Delay - 10.1 to 20.0 secs.

Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average delay.

LEVEL OF SERVICE C

Average Control Delay - 20.1 to 35.0 secs.

Higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this Level of Service. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.

LEVEL OF SERVICE D

Average Control Delay - 35.1 to 55.0 secs.

The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high Volume/Capacity (V/C) Ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LEVEL OF SERVICE E

Average Control Delay - 55.1 to 80.0 secs.

The limit of acceptable delay.

Higher delay values generally indicate poor progression, long cycle lengths, and high V/C Ratios. Individual cycle failures are frequent occurrences.

LEVEL OF SERVICE F

Average Control Delay - in excess of 80.0 secs.

Unacceptable to most drivers.

Occurs with oversaturation, i.e., arrival flow rates exceed the capacity of the intersection. May also occur at high V/C Ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.

UNSIGNALIZED INTERSECTIONS

LEVEL OF SERVICE A

Average Control Delay - 10.0 secs. or less

Operations with little or no delay to minor turning movements.

LEVEL OF SERVICE B

Average Control Delay - 10.1 to 15.0 secs.

Operations with short delays on minor turning movements.

LEVEL OF SERVICE C

Average Control Delay - 15.1 to 25.0 secs.

Operations with average delays on minor turning movements.

LEVEL OF SERVICE D

Average Control Delay - 25.1 to 35.0 secs.

Operations with some delays on minor turning movements.

LEVEL OF SERVICE E

Average Control Delay - 35.1 to 50.0 secs.

Operations with long delays on minor turning movements.

LEVEL OF SERVICE F

Average Control Delay - In excess of 50.0 secs.

Operations where demand exceeds capacity. Very long delays with queuing may be experienced on the minor street approach.

RAMPS AND RAMP JUNCTIONS**LEVEL OF SERVICE A**

Maximum Density - 10 pc/mi/ln

Unrestricted operations with no noticeable turbulence in the ramp influence area.

LEVEL OF SERVICE B

Maximum Density - 20 pc/mi/ln

Minimal levels of turbulence exist and speeds of vehicles in the influence area begin to decline.

LEVEL OF SERVICE C

Maximum Density - 28 pc/mi/ln

Level of turbulence becomes noticeable as average speed within the influence area declines. Driving conditions are still relatively comfortable at this level.

LEVEL OF SERVICE D

Maximum Density - 35 pc/mi/ln

Turbulence levels become intrusive. Queues may form on some high volume on-ramps but freeway operation remains stable.

LEVEL OF SERVICE E

Maximum Density - >35 pc/mi/ln

Conditions approaching and reaching capacity. Speeds are reduced and turbulence of merging/diverging vehicles becomes intrusive to all vehicles in the influence area. Flow levels approach capacity limits and minor changes in demand can cause ramp and freeway queues to occur.

LEVEL OF SERVICE F

Maximum Density – Demand flow exceeds limits

Unstable, or breakdown, operation. Approaching demand flows exceed the discharge capacity of the downstream freeway or ramp. Queues are visibly formed on the freeway and on-ramps and will continue to grow as long as the approaching demand exceeds the discharge capacity.

APPENDIX B

CAPACITY ANALYSES

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	516	145	105	477	63	157	83	78	0	0	0
Future Volume (veh/h)	14	516	145	105	477	63	157	83	78	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.87	1.00		0.92	1.00		0.97			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	15	561	158	114	518	68	171	90	85			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	374	1002	280	599	1962	256	386	189	178			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.2	25.7	26.2	10.2	8.1	8.1	34.8	0.0	35.8			
Ln Grp LOS	B	C	C	B	A	A	C		D			
Approach Vol, veh/h	734			700			346			Timer: 10.00		
Approach Delay, s/veh	25.8			8.5			35.3			Assigned Phs		
Approach LOS	C			A			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0				67.0			
Change Period (Y+Rc), s	5.0			4.0	9.0				9.0			
Max Green (Gmax), s	20.0			19.0	35.0				58.0			
Max Allow Headway (MAH), s	4.6			3.8	5.4				5.4			
Max Q Clear (g_c+I1), s	10.3			4.5	17.6				8.8			
Green Ext Time (g_e), s	1.1			0.2	8.1				11.6			
Prob of Phs Call (p_c)	1.00			1.00	1.00				1.00			
Prob of Max Out (p_x)	0.00			0.00	0.00				0.00			
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	777							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	869			2633	3113							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	820			737	406							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	171	114	15	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	777	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
AM Peak

Q Serve Time (g_s), s	0.0	7.7	2.5	1.1	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	7.7	2.5	1.1	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	729	777	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	19.4	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	3.3	1.1	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	599	374	0	0	0	0
V/C Ratio (X)	0.00	0.44	0.19	0.04	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	599	374	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	31.2	9.5	18.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.7	0.7	0.2	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.8	10.2	18.2	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	3.8	1.2	0.2	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	4.1	1.3	0.3	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	1.75	0.65	0.19	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	376	0	0	0	293
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	15.4	0.0	0.0	0.0	6.8
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	15.4	0.0	0.0	0.0	6.8
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.26
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	22.4	0.0	0.0	0.0	7.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	3.3	0.0	0.0	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	25.7	0.0	0.0	0.0	8.1
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	7.5	0.0	0.0	0.0	3.3
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
AM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	8.1	0.0	0.0	0.0	3.4
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.65
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	175	0	343	0	0	0	293
Grp Sat Flow (s), veh/h/ln	0	1689	0	1600	0	0	0	1749
Q Serve Time (g_s), s	0.0	8.3	0.0	15.6	0.0	0.0	0.0	6.8
Cycle Q Clear Time (g_c), s	0.0	8.3	0.0	15.6	0.0	0.0	0.0	6.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.49	0.00	0.46	0.00	0.00	0.00	0.23
Lane Grp Cap (c), veh/h	0	367	0	609	0	0	0	1103
V/C Ratio (X)	0.00	0.48	0.00	0.56	0.00	0.00	0.00	0.27
Avail Cap (c_a), veh/h	0	367	0	609	0	0	0	1103
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	31.4	0.0	22.5	0.0	0.0	0.0	7.5
Incr Delay (d2), s/veh	0.0	4.4	0.0	3.7	0.0	0.0	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	35.8	0.0	26.2	0.0	0.0	0.0	8.1
1st-Term Q (Q1), veh/ln	0.0	3.9	0.0	6.9	0.0	0.0	0.0	3.3
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.6	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.3	0.0	7.5	0.0	0.0	0.0	3.4
%ile Storage Ratio (RQ%)	0.00	0.08	0.00	0.54	0.00	0.00	0.00	0.65
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	20.8							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Existing
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	209	563	38	59	307	103	42	248	132	68	222	138
Future Volume (veh/h)	209	563	38	59	307	103	42	248	132	68	222	138
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	227	612	41	64	334	112	46	270	143	74	241	150
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	544	1068	899	370	795	667	204	361	191	189	338	210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	13.1	13.4	7.8	19.1	18.0	15.1	36.0	0.0	34.0	41.6	0.0	32.4
Ln Grp LOS	B	B	A	B	B	B	D		C	D		C
Approach Vol, veh/h		880			510			459			465	
Approach Delay, s/veh		13.0			17.5			34.2			33.9	
Approach LOS		B			B			C			C	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1				
Max Q Clear (g_c+I1), s		21.9		19.1		25.5	7.4	12.3				
Green Ext Time (g_e), s		2.1		8.3		0.3	0.0	7.8				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt			5				1	7	3			
Mvmt Sat Flow, veh/h			987				968	1774	773			
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1139		1863		1066		1863				
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			603		1568		663		1563			
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

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Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	46	0	0	0	74	227	64
Grp Sat Flow (s), veh/h/ln	0	987	0	0	0	968	1774	773
Q Serve Time (g_s), s	0.0	3.5	0.0	0.0	0.0	6.1	5.4	4.7
Cycle Q Clear Time (g_c), s	0.0	19.9	0.0	0.0	0.0	23.5	5.4	9.8
Perm LT Sat Flow (s_l), veh/h/ln	0	987	0	0	0	968	938	773
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	9.6	0.0	0.0	0.0	8.6	24.7	29.9
Perm LT Q Serve Time (g_ps), s	0.0	3.5	0.0	0.0	0.0	6.1	3.9	4.7
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	204	0	0	0	189	544	370
V/C Ratio (X)	0.00	0.23	0.00	0.00	0.00	0.39	0.42	0.17
Avail Cap (c_a), veh/h	0	204	0	0	0	189	544	370
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	33.5	0.0	0.0	0.0	35.6	10.8	18.1
Incr Delay (d2), s/veh	0.0	2.6	0.0	0.0	0.0	6.0	2.4	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	36.0	0.0	0.0	0.0	41.6	13.1	19.1
1st-Term Q (Q1), veh/ln	0.0	1.0	0.0	0.0	0.0	1.6	2.6	1.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.3	0.4	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.0	0.0	1.9	2.9	1.1
%ile Storage Ratio (RQ%)	0.00	0.31	0.00	0.00	0.00	0.76	0.93	0.28
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	612	0	0	0	334
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.1	0.0	0.0	0.0	10.3
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.1	0.0	0.0	0.0	10.3
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.42
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.1	0.0	0.0	0.0	16.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.2	0.0	0.0	0.0	1.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.4	0.0	0.0	0.0	18.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.7	0.0	0.0	0.0	5.3

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2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.3	0.0	0.0	0.0	5.6
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.46
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	413	0	41	0	391	0	112
Grp Sat Flow (s), veh/h/ln	0	1741	0	1568	0	1729	0	1563
Q Serve Time (g_s), s	0.0	17.4	0.0	0.9	0.0	16.4	0.0	3.6
Cycle Q Clear Time (g_c), s	0.0	17.4	0.0	0.9	0.0	16.4	0.0	3.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.35	0.00	1.00	0.00	0.38	0.00	1.00
Lane Grp Cap (c), veh/h	0	552	0	899	0	548	0	667
V/C Ratio (X)	0.00	0.75	0.00	0.05	0.00	0.71	0.00	0.17
Avail Cap (c_a), veh/h	0	552	0	899	0	548	0	667
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.1	0.0	7.7	0.0	24.7	0.0	14.5
Incr Delay (d2), s/veh	0.0	9.0	0.0	0.1	0.0	7.7	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.0	0.0	7.8	0.0	32.4	0.0	15.1
1st-Term Q (Q1), veh/ln	0.0	8.4	0.0	0.4	0.0	7.8	0.0	1.6
2nd-Term Q (Q2), veh/ln	0.0	1.4	0.0	0.0	0.0	1.2	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	9.7	0.0	0.4	0.0	9.0	0.0	1.7
%ile Storage Ratio (RQ%)	0.00	0.77	0.00	0.14	0.00	0.54	0.00	0.42
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	22.4							
HCM 2010 LOS	C							

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Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑			↑↑	↱	↲			
Traffic Volume (veh/h)	856	0	0	761	421	33			
Future Volume (veh/h)	856	0	0	761	421	33			
Number	4	14	3	8	5	12			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863			
Adj Flow Rate, veh/h	930	0	0	827	458	36			
Adj No. of Lanes	2	0	0	2	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	0	0	2	2	2			
Opposing Right Turn Influence			No		Yes				
Cap, veh/h	1971	0	0	1971	539	481			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30			
Ln Grp Delay, s/veh	11.3	0.0	0.0	10.8	41.2	19.9			
Ln Grp LOS	B			B	D	B			
Approach Vol, veh/h	930			827	494				
Approach Delay, s/veh	11.3			10.8	39.6				
Approach LOS	B			B	D				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4				8
Case No			9.0		8.0				8.0
Phs Duration (G+Y+Rc), s			29.5		49.5				49.5
Change Period (Y+Rc), s			5.5		5.5				5.5
Max Green (Gmax), s			24.0		44.0				44.0
Max Allow Headway (MAH), s			3.8		5.2				5.2
Max Q Clear (g_c+I1), s			21.1		14.5				12.7
Green Ext Time (g_e), s			0.5		15.9				16.4
Prob of Phs Call (p_c)			1.00		1.00				1.00
Prob of Max Out (p_x)			0.00		0.00				0.00
Left-Turn Movement Data									
Assigned Mvmt			5		7				3
Mvmt Sat Flow, veh/h			1774		0				0
Through Movement Data									
Assigned Mvmt			2		4				8
Mvmt Sat Flow, veh/h			0		3725				3725
Right-Turn Movement Data									
Assigned Mvmt			12		14				18
Mvmt Sat Flow, veh/h			1583		0				0
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	0	0	3
Lane Assignment									

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Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	458	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	25.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	41.2	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	9.3	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	11.6	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	3.93	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	930	0	0	0	827
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	12.5	0.0	0.0	0.0	10.7
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	12.5	0.0	0.0	0.0	10.7
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.42
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	10.5	0.0	0.0	0.0	10.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	11.3	0.0	0.0	0.0	10.8
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	6.1	0.0	0.0	0.0	5.2

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2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	6.3	0.0	0.0	0.0	5.3
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	8.88	0.00	0.00	0.00	0.38
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	36	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	19.6	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	19.9	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	17.3							
HCM 2010 LOS	B							

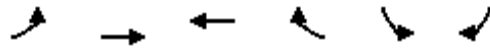
HCM Unsignalized Intersection Capacity Analysis
5: Waverly Ave & Plaza Ave

2016 Existing
AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	28	420	213	352	0	0
Future Volume (vph)	28	420	213	352	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	457	232	383	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	487	615				
Volume Left (vph)	30	232				
Volume Right (vph)	457	0				
Hadj (s)	-0.52	0.11				
Departure Headway (s)	5.1	5.4				
Degree Utilization, x	0.70	0.91				
Capacity (veh/h)	681	658				
Control Delay (s)	19.1	39.9				
Approach Delay (s)	19.1	39.9				
Approach LOS	C	E				
Intersection Summary						
Delay			30.7			
Level of Service			D			
Intersection Capacity Utilization			64.5%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
8: Plaza Ave & Center Ave

2016 Existing
AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	123	217	0	290	18
Future Volume (vph)	0	123	217	0	290	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	134	236	0	315	20
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	134	236	335			
Volume Left (vph)	0	0	315			
Volume Right (vph)	0	0	20			
Hadj (s)	0.03	0.03	0.19			
Departure Headway (s)	5.2	5.0	5.0			
Degree Utilization, x	0.19	0.33	0.47			
Capacity (veh/h)	642	670	683			
Control Delay (s)	9.4	10.5	12.4			
Approach Delay (s)	9.4	10.5	12.4			
Approach LOS	A	B	B			
Intersection Summary						
Delay			11.2			
Level of Service			B			
Intersection Capacity Utilization			35.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2016 Existing

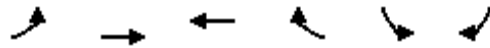
14: Madison St & Old White Plains Rd

AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	183	32	21	211	31	0	0	0	0	0	0
Future Volume (Veh/h)	18	183	32	21	211	31	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	199	35	23	229	34	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	263			234			548	566	216	548	566	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	263			234			548	566	216	548	566	246
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	100	100	100	100
cM capacity (veh/h)	1301			1333			436	420	823	436	420	793
Direction, Lane #	EB 1	WB 1										
Volume Total	254	286										
Volume Left	20	23										
Volume Right	35	34										
cSH	1301	1333										
Volume to Capacity	0.02	0.02										
Queue Length 95th (ft)	1	1										
Control Delay (s)	0.7	0.8										
Lane LOS	A	A										
Approach Delay (s)	0.7	0.8										
Approach LOS												
Intersection Summary												
Average Delay		0.8										
Intersection Capacity Utilization		22.0%	ICU Level of Service					A				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
16: Plaza Ave & Washington St

2016 Existing
AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	21	76	0	270	0	0
Future Volume (vph)	21	76	0	270	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	83	0	293	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	106	293				
Volume Left (vph)	23	0				
Volume Right (vph)	0	293				
Hadj (s)	0.08	-0.57				
Departure Headway (s)	4.2	3.4				
Degree Utilization, x	0.12	0.28				
Capacity (veh/h)	836	1039				
Control Delay (s)	7.8	7.8				
Approach Delay (s)	7.8	7.8				
Approach LOS	A	A				
Intersection Summary						
Delay			7.8			
Level of Service			A			
Intersection Capacity Utilization			28.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2016 Existing
AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations					 	
Traffic Volume (veh/h)	184	0	0	256	203	40
Future Volume (Veh/h)	184	0	0	256	203	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	200	0	0	278	221	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			200		478	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		478	200
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		60	95
cM capacity (veh/h)			1372		546	841
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	200	278	264			
Volume Left	0	0	221			
Volume Right	0	0	43			
cSH	1700	1700	579			
Volume to Capacity	0.12	0.16	0.46			
Queue Length 95th (ft)	0	0	59			
Control Delay (s)	0.0	0.0	16.3			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	16.3			
Approach LOS			C			
Intersection Summary						
Average Delay		5.8				
Intersection Capacity Utilization		33.8%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
19: Grand St & Old White Plains Rd

2016 Existing
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	113	113	24	26	219	214	0	0	0	71	37	70
Future Volume (vph)	113	113	24	26	219	214	0	0	0	71	37	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	123	123	26	28	238	233	0	0	0	77	40	76
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	272	499	193									
Volume Left (vph)	123	28	77									
Volume Right (vph)	26	233	76									
Hadj (s)	0.07	-0.23	-0.12									
Departure Headway (s)	5.2	4.6	5.6									
Degree Utilization, x	0.39	0.64	0.30									
Capacity (veh/h)	661	757	577									
Control Delay (s)	11.4	15.5	11.0									
Approach Delay (s)	11.4	15.5	11.0									
Approach LOS	B	C	B									
Intersection Summary												
Delay			13.4									
Level of Service			B									
Intersection Capacity Utilization			59.9%	ICU Level of Service		B						
Analysis Period (min)			15									

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	221	494	309	107	91	181
Future Vol, veh/h	221	494	309	107	91	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	240	537	336	116	99	197
Major/Minor	Major1		Minor2			
Conflicting Flow All	0	0			1017	0
Stage 1	-	-			0	-
Stage 2	-	-			1017	-
Critical Hdwy	4.12	-			7.12	6.22
Critical Hdwy Stg 1	-	-			-	-
Critical Hdwy Stg 2	-	-			6.12	-
Follow-up Hdwy	2.218	-			3.518	3.318
Pot Cap-1 Maneuver	-	-			216	-
Stage 1	-	-			-	-
Stage 2	-	-			287	-
Platoon blocked, %		-				
Mov Cap-1 Maneuver	-	-			216	-
Mov Cap-2 Maneuver	-	-			216	-
Stage 1	-	-			-	-
Stage 2	-	-			287	-
Approach	EB		SB			
HCM Control Delay, s						
HCM LOS	-					
Minor Lane/Major Mvmt	EBL	EBT	SBLn1			
Capacity (veh/h)	-	-	-			
HCM Lane V/C Ratio	-	-	-			
HCM Control Delay (s)	-	-	-			
HCM Lane LOS	-	-	-			
HCM 95th %tile Q(veh)	-	-	-			

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	134	49	0	0	0	0	0	0	0	214	263
Future Vol, veh/h	0	134	49	0	0	0	0	0	0	0	214	263
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	146	53	0	0	0	0	0	0	0	233	286

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	376	376	0	0	0
Stage 1	-	376	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	555	670	-	-	-
Stage 1	0	616	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	670	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	12.6	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	670	-	-	-
HCM Lane V/C Ratio	0.297	-	-	-
HCM Control Delay (s)	12.6	0	-	-
HCM Lane LOS	B	A	-	-
HCM 95th %tile Q(veh)	1.2	-	-	-

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	49	245	0	83	21
Future Vol, veh/h	0	49	245	0	83	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	53	266	0	90	23

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	- 0	- 0	319 266
Stage 1	- -	- -	266 -
Stage 2	- -	- -	53 -
Critical Hdwy	- -	- -	6.42 6.22
Critical Hdwy Stg 1	- -	- -	5.42 -
Critical Hdwy Stg 2	- -	- -	5.42 -
Follow-up Hdwy	- -	- -	3.518 3.318
Pot Cap-1 Maneuver	0 -	- 0	674 773
Stage 1	0 -	- 0	779 -
Stage 2	0 -	- 0	970 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	- -	- -	674 773
Mov Cap-2 Maneuver	- -	- -	674 -
Stage 1	- -	- -	779 -
Stage 2	- -	- -	970 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.2
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	692
HCM Lane V/C Ratio	-	-	0.163
HCM Control Delay (s)	-	-	11.2
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.6

Intersection

Int Delay, s/veh 5.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	184	0	0	256	203	40
Future Vol, veh/h	184	0	0	256	203	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	200	0	0	278	221	43

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	478
Stage 1	-	-	200
Stage 2	-	-	278
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	546
Stage 1	-	0	834
Stage 2	-	0	769
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	546
Mov Cap-2 Maneuver	-	-	546
Stage 1	-	-	834
Stage 2	-	-	769

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	579	-	-
HCM Lane V/C Ratio	0.456	-	-
HCM Control Delay (s)	16.3	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	2.4	-	-

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	767	215	156	709	94	233	123	116	0	0	0
Future Volume (veh/h)	21	767	215	156	709	94	233	123	116	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.80	1.00		0.88	1.00		0.96			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	23	834	234	170	771	102	253	134	126			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	305	980	275	488	1946	257	386	188	177			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.8	38.9	40.8	16.2	9.4	9.5	41.3	0.0	44.6			
Ln Grp LOS	B	D	D	B	A	A	D		D			
Approach Vol, veh/h	1091			1043			513			Timer: 10.00		
Approach Delay, s/veh	39.3			10.5			43.0			Assigned Phs		
Approach LOS	D			B			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0	67.0						
Change Period (Y+Rc), s	5.0			4.0	9.0	9.0						
Max Green (Gmax), s	20.0			19.0	35.0	58.0						
Max Allow Headway (MAH), s	4.6			3.8	5.4	5.4						
Max Q Clear (g_c+I1), s	15.2			5.8	29.4	13.3						
Green Ext Time (g_e), s	1.1			0.4	4.7	21.6						
Prob of Phs Call (p_c)	1.00			1.00	1.00	1.00						
Prob of Max Out (p_x)	0.00			0.00	0.00	0.00						
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	595							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	864			2575	3087							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	813			722	408							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	253	170	23	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	595	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

Q Serve Time (g_s), s	0.0	12.0	3.8	2.3	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	12.0	3.8	2.3	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	526	595	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	7.6	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	7.6	2.3	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	488	305	0	0	0	0
V/C Ratio (X)	0.00	0.66	0.35	0.08	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	488	305	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	32.9	14.2	18.4	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	8.4	2.0	0.5	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	41.3	16.2	18.8	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	5.8	1.8	0.4	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	6.7	2.1	0.4	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	2.85	1.05	0.30	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	573	0	0	0	442
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	27.3	0.0	0.0	0.0	11.3
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	27.3	0.0	0.0	0.0	11.3
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	26.1	0.0	0.0	0.0	8.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	12.8	0.0	0.0	0.0	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	38.9	0.0	0.0	0.0	9.4
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	13.2	0.0	0.0	0.0	5.4
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	15.6	0.0	0.0	0.0	5.7
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.12	0.00	0.00	0.00	1.08
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	260	0	495	0	0	0	431
Grp Sat Flow (s), veh/h/ln	0	1677	0	1527	0	0	0	1726
Q Serve Time (g_s), s	0.0	13.2	0.0	27.4	0.0	0.0	0.0	11.3
Cycle Q Clear Time (g_c), s	0.0	13.2	0.0	27.4	0.0	0.0	0.0	11.3
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.48	0.00	0.47	0.00	0.00	0.00	0.24
Lane Grp Cap (c), veh/h	0	364	0	581	0	0	0	1088
V/C Ratio (X)	0.00	0.71	0.00	0.85	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	364	0	581	0	0	0	1088
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	33.3	0.0	26.1	0.0	0.0	0.0	8.4
Incr Delay (d2), s/veh	0.0	11.3	0.0	14.7	0.0	0.0	0.0	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	44.6	0.0	40.8	0.0	0.0	0.0	9.5
1st-Term Q (Q1), veh/ln	0.0	6.1	0.0	11.4	0.0	0.0	0.0	5.3
2nd-Term Q (Q2), veh/ln	0.0	1.1	0.0	2.4	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	7.3	0.0	13.8	0.0	0.0	0.0	5.6
%ile Storage Ratio (RQ%)	0.00	0.14	0.00	0.99	0.00	0.00	0.00	1.05
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	28.7							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	837	56	88	456	153	62	369	196	101	330	205
Future Volume (veh/h)	311	837	56	88	456	153	62	369	196	101	330	205
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	338	910	61	96	496	166	67	401	213	110	359	223
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	429	1068	895	183	795	663	88	359	191	88	337	209
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	29.1	23.2	7.9	44.6	22.0	16.0	87.1	0.0	102.4	219.5	0.0	85.2
Ln Grp LOS	C	C	A	D	C	B	F		F	F		F
Approach Vol, veh/h		1309			758			681			692	
Approach Delay, s/veh		24.0			23.6			100.9			106.6	
Approach LOS		C			C			F			F	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.4		5.2		5.4	3.8	5.2				
Max Q Clear (g_c+I1), s		28.0		35.4		28.0	10.0	37.0				
Green Ext Time (g_e), s		0.0		8.2		0.0	0.0	0.0				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt			5				1	7	3			
Mvmt Sat Flow, veh/h			829				805	1774	577			
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1133		1863		1062		1863				
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			602		1561		660		1554			
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
AM Peak

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	67	0	0	0	110	338	96
Grp Sat Flow (s), veh/h/ln	0	829	0	0	0	805	1774	577
Q Serve Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	8.0	13.6
Cycle Q Clear Time (g_c), s	0.0	26.0	0.0	0.0	0.0	26.0	8.0	35.0
Perm LT Sat Flow (s_l), veh/h/ln	0	829	0	0	0	805	770	577
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	17.9	13.6
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	17.3	13.6
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	88	0	0	0	88	429	183
V/C Ratio (X)	0.00	0.76	0.00	0.00	0.00	1.25	0.79	0.52
Avail Cap (c_a), veh/h	0	88	0	0	0	88	429	183
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	41.0	0.0	0.0	0.0	41.0	15.5	34.3
Incr Delay (d2), s/veh	0.0	46.1	0.0	0.0	0.0	178.5	13.6	10.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	87.1	0.0	0.0	0.0	219.5	29.1	44.6
1st-Term Q (Q1), veh/ln	0.0	1.5	0.0	0.0	0.0	2.0	3.6	2.2
2nd-Term Q (Q2), veh/ln	0.0	1.1	0.0	0.0	0.0	4.4	1.6	0.5
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.6	0.0	0.0	0.0	6.3	5.2	2.7
%ile Storage Ratio (RQ%)	0.00	0.74	0.00	0.00	0.00	2.47	1.65	0.68
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	910	0	0	0	496
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	33.4	0.0	0.0	0.0	17.1
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	33.4	0.0	0.0	0.0	17.1
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.62
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	14.6	0.0	0.0	0.0	18.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	8.6	0.0	0.0	0.0	3.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	23.2	0.0	0.0	0.0	22.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	16.9	0.0	0.0	0.0	8.7

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
AM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.8
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	19.5	0.0	0.0	0.0	9.5
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	2.24	0.00	0.00	0.00	0.77
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	614	0	61	0	582	0	166
Grp Sat Flow (s), veh/h/ln	0	1735	0	1561	0	1722	0	1554
Q Serve Time (g_s), s	0.0	26.0	0.0	1.4	0.0	26.0	0.0	5.6
Cycle Q Clear Time (g_c), s	0.0	26.0	0.0	1.4	0.0	26.0	0.0	5.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.35	0.00	1.00	0.00	0.38	0.00	1.00
Lane Grp Cap (c), veh/h	0	550	0	895	0	546	0	663
V/C Ratio (X)	0.00	1.12	0.00	0.07	0.00	1.07	0.00	0.25
Avail Cap (c_a), veh/h	0	550	0	895	0	546	0	663
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	28.0	0.0	7.8	0.0	28.0	0.0	15.1
Incr Delay (d2), s/veh	0.0	74.4	0.0	0.1	0.0	57.2	0.0	0.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	102.4	0.0	7.9	0.0	85.2	0.0	16.0
1st-Term Q (Q1), veh/ln	0.0	12.4	0.0	0.6	0.0	12.3	0.0	2.4
2nd-Term Q (Q2), veh/ln	0.0	11.4	0.0	0.0	0.0	8.7	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	23.7	0.0	0.6	0.0	21.0	0.0	2.6
%ile Storage Ratio (RQ%)	0.00	1.87	0.00	0.22	0.00	1.26	0.00	0.65
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	16.0	0.0	0.0	0.0	9.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	55.8							
HCM 2010 LOS	E							

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

								
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑			↑↑	↘	↘		
Traffic Volume (veh/h)	1272	0	0	1131	626	49		
Future Volume (veh/h)	1272	0	0	1131	626	49		
Number	4	14	3	8	5	12		
Initial Q, veh	0	0	0	0	0	0		
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1383	0	0	1229	680	53		
Adj No. of Lanes	2	0	0	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Opposing Right Turn Influence			No		Yes			
Cap, veh/h	1971	0	0	1971	539	481		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30		
Ln Grp Delay, s/veh	14.8	0.0	0.0	13.4	159.6	20.3		
Ln Grp LOS	B			B	F	C		
Approach Vol, veh/h	1383			1229	733			
Approach Delay, s/veh	14.8			13.4	149.5			
Approach LOS	B			B	F			
Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Case No		9.0		8.0				8.0
Phs Duration (G+Y+Rc), s		29.5		49.5				49.5
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green (Gmax), s		24.0		44.0				44.0
Max Allow Headway (MAH), s		3.8		5.2				5.2
Max Q Clear (g_c+I1), s		26.0		24.4				20.6
Green Ext Time (g_e), s		0.0		16.8				19.6
Prob of Phs Call (p_c)		1.00		1.00				1.00
Prob of Max Out (p_x)		0.00		0.00				0.00
Left-Turn Movement Data								
Assigned Mvmt		5		7				3
Mvmt Sat Flow, veh/h		1774		0				0
Through Movement Data								
Assigned Mvmt		2		4				8
Mvmt Sat Flow, veh/h		0		3725				3725
Right-Turn Movement Data								
Assigned Mvmt		12		14				18
Mvmt Sat Flow, veh/h		1583		0				0
Left Lane Group Data								
Assigned Mvmt	0	5	0	7	0	0	0	3
Lane Assignment								

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	680	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	24.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	27.5	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	132.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	159.6	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	11.7	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	19.8	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	31.5	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	10.65	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	35.3	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	1383	0	0	0	1229
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	22.4	0.0	0.0	0.0	18.6
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	22.4	0.0	0.0	0.0	18.6
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.62
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	12.7	0.0	0.0	0.0	11.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.1	0.0	0.0	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	14.8	0.0	0.0	0.0	13.4
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	10.8	0.0	0.0	0.0	9.0

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
AM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	11.3	0.0	0.0	0.0	9.5
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	15.99	0.00	0.00	0.00	0.68
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	53	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	19.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.3	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	43.8							
HCM 2010 LOS	D							

HCM Unsignalized Intersection Capacity Analysis
5: Waverly Ave & Plaza Ave

2036 Future (2% GR)
AM Peak

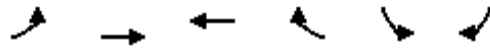
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	42	624	317	523	0	0
Future Volume (vph)	42	624	317	523	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	46	678	345	568	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	724	913				
Volume Left (vph)	46	345				
Volume Right (vph)	678	0				
Hadj (s)	-0.52	0.11				
Departure Headway (s)	5.3	5.9				
Degree Utilization, x	1.06	1.49				
Capacity (veh/h)	694	617				
Control Delay (s)	72.9	246.5				
Approach Delay (s)	72.9	246.5				
Approach LOS	F	F				
Intersection Summary						
Delay			169.7			
Level of Service			F			
Intersection Capacity Utilization			92.6%		ICU Level of Service	
Analysis Period (min)			15		F	

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

8: Plaza Ave & Center Ave

AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	183	322	0	431	27
Future Volume (vph)	0	183	322	0	431	27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	199	350	0	468	29
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	199	350	497			
Volume Left (vph)	0	0	468			
Volume Right (vph)	0	0	29			
Hadj (s)	0.03	0.03	0.19			
Departure Headway (s)	6.1	5.9	5.7			
Degree Utilization, x	0.34	0.57	0.79			
Capacity (veh/h)	541	582	614			
Control Delay (s)	12.2	16.3	26.4			
Approach Delay (s)	12.2	16.3	26.4			
Approach LOS	B	C	D			
Intersection Summary						
Delay			20.3			
Level of Service			C			
Intersection Capacity Utilization			49.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

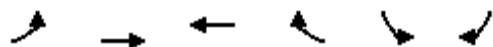
14: Madison St & Old White Plains Rd

AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	272	48	31	314	46	0	0	0	0	0	0
Future Volume (Veh/h)	27	272	48	31	314	46	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	296	52	34	341	50	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	391			348			814	839	322	814	840	366
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	391			348			814	839	322	814	840	366
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			100	100	100	100	100	100
cM capacity (veh/h)	1168			1211			285	286	719	285	286	679
Direction, Lane #	EB 1	WB 1										
Volume Total	377	425										
Volume Left	29	34										
Volume Right	52	50										
cSH	1168	1211										
Volume to Capacity	0.02	0.03										
Queue Length 95th (ft)	2	2										
Control Delay (s)	0.9	0.9										
Lane LOS	A	A										
Approach Delay (s)	0.9	0.9										
Approach LOS												
Intersection Summary												
Average Delay		0.9										
Intersection Capacity Utilization		30.9%	ICU Level of Service					A				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
16: Plaza Ave & Washington St

2036 Future (2% GR)
AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	31	113	0	401	0	0
Future Volume (vph)	31	113	0	401	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	123	0	436	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	157	436				
Volume Left (vph)	34	0				
Volume Right (vph)	0	436				
Hadj (s)	0.08	-0.57				
Departure Headway (s)	4.3	3.5				
Degree Utilization, x	0.19	0.42				
Capacity (veh/h)	811	1024				
Control Delay (s)	8.3	9.0				
Approach Delay (s)	8.3	9.0				
Approach LOS	A	A				
Intersection Summary						
Delay			8.8			
Level of Service			A			
Intersection Capacity Utilization			39.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2036 Future (2% GR)
AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	273	0	0	380	302	59
Future Volume (Veh/h)	273	0	0	380	302	59
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	297	0	0	413	328	64
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			297		710	297
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			297		710	297
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		18	91
cM capacity (veh/h)			1264		400	742
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	297	413	392			
Volume Left	0	0	328			
Volume Right	0	0	64			
cSH	1700	1700	433			
Volume to Capacity	0.17	0.24	0.91			
Queue Length 95th (ft)	0	0	246			
Control Delay (s)	0.0	0.0	54.2			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	54.2			
Approach LOS			F			
Intersection Summary						
Average Delay			19.3			
Intersection Capacity Utilization			47.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

19: Grand St & Old White Plains Rd

AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	168	168	36	39	325	318	0	0	0	106	55	104
Future Volume (vph)	168	168	36	39	325	318	0	0	0	106	55	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	183	183	39	42	353	346	0	0	0	115	60	113
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	405	741	288									
Volume Left (vph)	183	42	115									
Volume Right (vph)	39	346	113									
Hadj (s)	0.07	-0.23	-0.12									
Departure Headway (s)	6.0	5.4	6.5									
Degree Utilization, x	0.67	1.11	0.52									
Capacity (veh/h)	592	666	533									
Control Delay (s)	20.2	89.7	16.2									
Approach Delay (s)	20.2	89.7	16.2									
Approach LOS	C	F	C									
Intersection Summary												
Delay			55.3									
Level of Service			F									
Intersection Capacity Utilization			84.2%	ICU Level of Service	E							
Analysis Period (min)			15									

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	328	734	459	159	135	269
Future Vol, veh/h	328	734	459	159	135	269
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	357	798	499	173	147	292

Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	1511	0
Stage 1	-	-	0	-
Stage 2	-	-	1511	-
Critical Hdwy	4.12	-	7.12	6.22
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	6.12	-
Follow-up Hdwy	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	~ 99	-
Stage 1	-	-	-	-
Stage 2	-	-	150	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	~ 99	-
Mov Cap-2 Maneuver	-	-	~ 99	-
Stage 1	-	-	-	-
Stage 2	-	-	150	-

Approach	EB	SB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

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

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	199	73	0	0	0	0	0	0	0	318	391
Future Vol, veh/h	0	199	73	0	0	0	0	0	0	0	318	391
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	216	79	0	0	0	0	0	0	0	346	425

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	558	558	0	0	0
Stage 1	-	558	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	438	529	-	-	-
Stage 1	0	512	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	529	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	20.1	0
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	529	-	-	-
HCM Lane V/C Ratio	0.559	-	-	-
HCM Control Delay (s)	20.1	0	-	-
HCM Lane LOS	C	A	-	-
HCM 95th %tile Q(veh)	3.4	-	-	-

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	73	364	0	123	31
Future Vol, veh/h	0	73	364	0	123	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	79	396	0	134	34

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	- 0	- 0	475 396
Stage 1	- -	- -	396 -
Stage 2	- -	- -	79 -
Critical Hdwy	- -	- -	6.42 6.22
Critical Hdwy Stg 1	- -	- -	5.42 -
Critical Hdwy Stg 2	- -	- -	5.42 -
Follow-up Hdwy	- -	- -	3.518 3.318
Pot Cap-1 Maneuver	0 -	- 0	548 653
Stage 1	0 -	- 0	680 -
Stage 2	0 -	- 0	944 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	- -	- -	548 653
Mov Cap-2 Maneuver	- -	- -	548 -
Stage 1	- -	- -	680 -
Stage 2	- -	- -	944 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	566
HCM Lane V/C Ratio	-	-	0.296
HCM Control Delay (s)	-	-	14
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	1.2

Intersection

Int Delay, s/veh 19.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	273	0	0	380	302	59
Future Vol, veh/h	273	0	0	380	302	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	0	0	413	328	64

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	710
Stage 1	-	-	297
Stage 2	-	-	413
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	400
Stage 1	-	0	754
Stage 2	-	0	668
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	400
Mov Cap-2 Maneuver	-	-	400
Stage 1	-	-	754
Stage 2	-	-	668

Approach	EB	WB	NB
HCM Control Delay, s	0	0	54.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	433	-	-
HCM Lane V/C Ratio	0.906	-	-
HCM Control Delay (s)	54.1	-	-
HCM Lane LOS	F	-	-
HCM 95th %tile Q(veh)	9.9	-	-

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	580	151	132	553	14	174	74	96	0	0	0
Future Volume (veh/h)	7	580	151	132	553	14	174	74	96	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.87	1.00		0.92	1.00		0.98			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	8	630	164	143	601	15	189	80	104			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	367	1022	265	574	2219	55	386	158	205			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.0	27.2	27.7	11.3	8.2	8.2	35.9	0.0	36.6			
Ln Grp LOS	B	C	C	B	A	A	D		D			
Approach Vol, veh/h	802			759			373			Timer: 10.00		
Approach Delay, s/veh	27.4			8.8			36.3			Assigned Phs		
Approach LOS	C			A			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0	67.0						
Change Period (Y+Rc), s	5.0			4.0	9.0	9.0						
Max Green (Gmax), s	20.0			19.0	35.0	58.0						
Max Allow Headway (MAH), s	4.6			3.8	5.3	5.3						
Max Q Clear (g_c+I1), s	10.9			5.2	19.5	9.0						
Green Ext Time (g_e), s	1.1			0.3	8.1	12.8						
Prob of Phs Call (p_c)	1.00			1.00	1.00	1.00						
Prob of Max Out (p_x)	0.00			0.00	0.00	0.00						
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	758							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	727			2686	3520							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	945			697	88							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	189	143	8	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	758	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
PM Peak

Q Serve Time (g_s), s	0.0	8.6	3.2	0.6	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	8.6	3.2	0.6	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	681	758	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	17.5	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	5.2	0.6	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	574	367	0	0	0	0
V/C Ratio (X)	0.00	0.49	0.25	0.02	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	574	367	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	31.5	10.3	17.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.4	1.0	0.1	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	35.9	11.3	18.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	4.2	1.5	0.1	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.2	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	4.7	1.7	0.1	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	1.98	0.85	0.10	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	414	0	0	0	302
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	7.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	7.0
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.27
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	23.1	0.0	0.0	0.0	7.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	27.2	0.0	0.0	0.0	8.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.5	0.0	0.0	0.0	3.4
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2016 Existing
PM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.3	0.0	0.0	0.0	3.5
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.67
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	184	0	380	0	0	0	314
Grp Sat Flow (s), veh/h/ln	0	1672	0	1614	0	0	0	1838
Q Serve Time (g_s), s	0.0	8.9	0.0	17.5	0.0	0.0	0.0	7.0
Cycle Q Clear Time (g_c), s	0.0	8.9	0.0	17.5	0.0	0.0	0.0	7.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.57	0.00	0.43	0.00	0.00	0.00	0.05
Lane Grp Cap (c), veh/h	0	364	0	614	0	0	0	1159
V/C Ratio (X)	0.00	0.51	0.00	0.62	0.00	0.00	0.00	0.27
Avail Cap (c_a), veh/h	0	364	0	614	0	0	0	1159
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	31.7	0.0	23.1	0.0	0.0	0.0	7.6
Incr Delay (d2), s/veh	0.0	5.0	0.0	4.6	0.0	0.0	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	36.6	0.0	27.7	0.0	0.0	0.0	8.2
1st-Term Q (Q1), veh/ln	0.0	4.1	0.0	7.8	0.0	0.0	0.0	3.5
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.8	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.6	0.0	8.6	0.0	0.0	0.0	3.7
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.61	0.00	0.00	0.00	0.69
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	21.8							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Existing
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	565	39	53	291	109	51	249	120	58	197	127
Future Volume (veh/h)	200	565	39	53	291	109	51	249	120	58	197	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	217	614	42	58	316	118	55	271	130	63	214	138
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	555	1068	898	368	795	666	234	376	180	200	334	216
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	12.6	13.4	7.8	18.9	17.7	15.2	34.2	0.0	32.6	38.4	0.0	29.6
Ln Grp LOS	B	B	A	B	B	B	C		C	D		C
Approach Vol, veh/h		873			492			456			415	
Approach Delay, s/veh		12.9			17.2			32.8			31.0	
Approach LOS		B			B			C			C	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1				
Max Q Clear (g_c+I1), s		20.3		19.2		23.6	7.2	11.6				
Green Ext Time (g_e), s		2.6		8.2		1.3	0.1	7.7				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt		5				1	7	3				
Mvmt Sat Flow, veh/h		1023				979	1774	771				
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1186		1863		1054		1863				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		569		1567		680		1561				
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Existing
PM Peak

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	55	0	0	0	63	217	58
Grp Sat Flow (s), veh/h/ln	0	1023	0	0	0	979	1774	771
Q Serve Time (g_s), s	0.0	4.0	0.0	0.0	0.0	5.0	5.2	4.2
Cycle Q Clear Time (g_c), s	0.0	18.3	0.0	0.0	0.0	21.6	5.2	9.5
Perm LT Sat Flow (s_l), veh/h/ln	0	1023	0	0	0	979	948	771
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	11.7	0.0	0.0	0.0	9.4	25.4	29.8
Perm LT Q Serve Time (g_ps), s	0.0	4.0	0.0	0.0	0.0	5.0	3.4	4.2
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	234	0	0	0	200	555	368
V/C Ratio (X)	0.00	0.23	0.00	0.00	0.00	0.31	0.39	0.16
Avail Cap (c_a), veh/h	0	234	0	0	0	200	555	368
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	31.8	0.0	0.0	0.0	34.3	10.6	18.0
Incr Delay (d2), s/veh	0.0	2.3	0.0	0.0	0.0	4.1	2.1	0.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.2	0.0	0.0	0.0	38.4	12.6	18.9
1st-Term Q (Q1), veh/ln	0.0	1.1	0.0	0.0	0.0	1.3	2.5	0.9
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.3	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.3	0.0	0.0	0.0	1.6	2.8	1.0
%ile Storage Ratio (RQ%)	0.00	0.36	0.00	0.00	0.00	0.62	0.89	0.25
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	614	0	0	0	316
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.2	0.0	0.0	0.0	9.6
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.2	0.0	0.0	0.0	9.6
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.1	0.0	0.0	0.0	16.2
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.4	0.0	0.0	0.0	17.7
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.7	0.0	0.0	0.0	4.9

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Existing
PM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.4	0.0	0.0	0.0	5.2
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.08	0.00	0.00	0.00	0.43
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	401	0	42	0	352	0	118
Grp Sat Flow (s), veh/h/ln	0	1755	0	1567	0	1734	0	1561
Q Serve Time (g_s), s	0.0	16.6	0.0	1.0	0.0	14.3	0.0	3.8
Cycle Q Clear Time (g_c), s	0.0	16.6	0.0	1.0	0.0	14.3	0.0	3.8
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.32	0.00	1.00	0.00	0.39	0.00	1.00
Lane Grp Cap (c), veh/h	0	556	0	898	0	550	0	666
V/C Ratio (X)	0.00	0.72	0.00	0.05	0.00	0.64	0.00	0.18
Avail Cap (c_a), veh/h	0	556	0	898	0	550	0	666
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	24.8	0.0	7.7	0.0	24.0	0.0	14.6
Incr Delay (d2), s/veh	0.0	7.9	0.0	0.1	0.0	5.6	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	32.6	0.0	7.8	0.0	29.6	0.0	15.2
1st-Term Q (Q1), veh/ln	0.0	8.0	0.0	0.4	0.0	6.8	0.0	1.6
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.0	0.0	0.0	0.9	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	9.2	0.0	0.4	0.0	7.7	0.0	1.7
%ile Storage Ratio (RQ%)	0.00	0.73	0.00	0.15	0.00	0.46	0.00	0.44
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	21.3							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
 9: Waverly Ave & Mamaroneck Ave

2016 Existing
 PM Peak

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑			↑↑	↑	↑			
Traffic Volume (veh/h)	774	0	0	659	325	41			
Future Volume (veh/h)	774	0	0	659	325	41			
Number	4	14	3	8	5	12			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863			
Adj Flow Rate, veh/h	841	0	0	716	353	45			
Adj No. of Lanes	2	0	0	2	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	0	0	2	2	2			
Opposing Right Turn Influence			No		Yes				
Cap, veh/h	1971	0	0	1971	539	481			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30			
Ln Grp Delay, s/veh	10.8	0.0	0.0	10.2	30.0	20.1			
Ln Grp LOS	B			B	C	C			
Approach Vol, veh/h	841			716	398				
Approach Delay, s/veh	10.8			10.2	28.9				
Approach LOS	B			B	C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4				8
Case No			9.0		8.0				8.0
Phs Duration (G+Y+Rc), s			29.5		49.5				49.5
Change Period (Y+Rc), s			5.5		5.5				5.5
Max Green (Gmax), s			24.0		44.0				44.0
Max Allow Headway (MAH), s			3.8		5.2				5.2
Max Q Clear (g_c+I1), s			15.7		12.9				10.9
Green Ext Time (g_e), s			0.8		14.0				14.4
Prob of Phs Call (p_c)			1.00		1.00				1.00
Prob of Max Out (p_x)			0.00		0.00				0.00
Left-Turn Movement Data									
Assigned Mvmt			5		7				3
Mvmt Sat Flow, veh/h			1774		0				0
Through Movement Data									
Assigned Mvmt			2		4				8
Mvmt Sat Flow, veh/h			0		3725				3725
Right-Turn Movement Data									
Assigned Mvmt			12		14				18
Mvmt Sat Flow, veh/h			1583		0				0
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	0	0	3
Lane Assignment									

HCM 2010 Signalized Intersection Capacity Analysis
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2016 Existing
PM Peak

Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	353	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	13.7	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	13.7	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.65	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	23.9	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	6.7	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	7.6	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	2.57	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	841	0	0	0	716
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	10.9	0.0	0.0	0.0	8.9
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	10.9	0.0	0.0	0.0	8.9
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.36
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	10.2	0.0	0.0	0.0	9.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	10.8	0.0	0.0	0.0	10.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	5.3	0.0	0.0	0.0	4.3

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2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	5.4	0.0	0.0	0.0	4.4
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	7.68	0.00	0.00	0.00	0.32
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	45	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	19.7	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.1	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	14.3							
HCM 2010 LOS	B							

HCM Unsignalized Intersection Capacity Analysis
5: Waverly Ave & Plaza Ave

2016 Existing
PM Peak

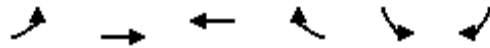
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	34	316	136	328	0	0
Future Volume (vph)	34	316	136	328	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	37	343	148	357	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	380	505				
Volume Left (vph)	37	148				
Volume Right (vph)	343	0				
Hadj (s)	-0.49	0.09				
Departure Headway (s)	4.7	5.0				
Degree Utilization, x	0.50	0.70				
Capacity (veh/h)	715	701				
Control Delay (s)	12.4	18.5				
Approach Delay (s)	12.4	18.5				
Approach LOS	B	C				
Intersection Summary						
Delay			15.9			
Level of Service			C			
Intersection Capacity Utilization			52.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2016 Existing

8: Plaza Ave & Center Ave

PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	79	151	0	274	11
Future Volume (vph)	0	79	151	0	274	11
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	86	164	0	298	12
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	86	164	310			
Volume Left (vph)	0	0	298			
Volume Right (vph)	0	0	12			
Hadj (s)	0.03	0.03	0.20			
Departure Headway (s)	5.0	4.8	4.7			
Degree Utilization, x	0.12	0.22	0.41			
Capacity (veh/h)	672	694	732			
Control Delay (s)	8.6	9.2	11.0			
Approach Delay (s)	8.6	9.2	11.0			
Approach LOS	A	A	B			
Intersection Summary						
Delay			10.1			
Level of Service			B			
Intersection Capacity Utilization			30.5%	ICU Level of Service	A	
Analysis Period (min)			15			

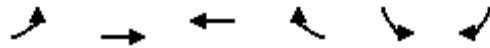
HCM Unsignalized Intersection Capacity Analysis
14: Madison St & Old White Plains Rd

2016 Existing
 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	148	34	28	226	31	0	0	0	0	0	0
Future Volume (Veh/h)	30	148	34	28	226	31	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	161	37	30	246	34	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	280			198			568	586	180	568	587	263
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280			198			568	586	180	568	587	263
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			98			100	100	100	100	100	100
cM capacity (veh/h)	1283			1375			418	403	863	418	402	776
Direction, Lane #	EB 1	WB 1										
Volume Total	231	310										
Volume Left	33	30										
Volume Right	37	34										
cSH	1283	1375										
Volume to Capacity	0.03	0.02										
Queue Length 95th (ft)	2	2										
Control Delay (s)	1.3	0.9										
Lane LOS	A	A										
Approach Delay (s)	1.3	0.9										
Approach LOS												
Intersection Summary												
Average Delay		1.1										
Intersection Capacity Utilization		22.0%	ICU Level of Service				A					
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
16: Plaza Ave & Washington St

2016 Existing
PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	19	41	0	174	0	0
Future Volume (vph)	19	41	0	174	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	45	0	189	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	66	189				
Volume Left (vph)	21	0				
Volume Right (vph)	0	189				
Hadj (s)	0.10	-0.57				
Departure Headway (s)	4.1	3.4				
Degree Utilization, x	0.08	0.18				
Capacity (veh/h)	850	1052				
Control Delay (s)	7.5	7.1				
Approach Delay (s)	7.5	7.1				
Approach LOS	A	A				
Intersection Summary						
Delay			7.2			
Level of Service			A			
Intersection Capacity Utilization			20.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2016 Existing
PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations					 	
Traffic Volume (veh/h)	186	0	0	278	102	44
Future Volume (Veh/h)	186	0	0	278	102	44
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	202	0	0	302	111	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			202		504	202
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			202		504	202
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		79	94
cM capacity (veh/h)			1370		528	839
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	202	302	159			
Volume Left	0	0	111			
Volume Right	0	0	48			
cSH	1700	1700	594			
Volume to Capacity	0.12	0.18	0.27			
Queue Length 95th (ft)	0	0	27			
Control Delay (s)	0.0	0.0	13.3			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	13.3			
Approach LOS			B			
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			29.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
19: Grand St & Old White Plains Rd

2016 Existing
 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	98	149	19	34	251	95	0	0	0	37	38	253
Future Volume (vph)	98	149	19	34	251	95	0	0	0	37	38	253
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	162	21	37	273	103	0	0	0	40	41	275
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	290	413	356									
Volume Left (vph)	107	37	40									
Volume Right (vph)	21	103	275									
Hadj (s)	0.06	-0.10	-0.41									
Departure Headway (s)	5.6	5.3	5.3									
Degree Utilization, x	0.45	0.61	0.53									
Capacity (veh/h)	601	652	627									
Control Delay (s)	13.2	16.2	14.2									
Approach Delay (s)	13.2	16.2	14.2									
Approach LOS	B	C	B									
Intersection Summary												
Delay			14.7									
Level of Service			B									
Intersection Capacity Utilization			64.9%	ICU Level of Service		C						
Analysis Period (min)			15									

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	213	379	316	127	136	200
Future Vol, veh/h	213	379	316	127	136	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	232	412	343	138	148	217
Major/Minor	Major1		Minor2			
Conflicting Flow All	0	0			875	0
Stage 1	-	-			0	-
Stage 2	-	-			875	-
Critical Hdwy	4.12	-			7.12	6.22
Critical Hdwy Stg 1	-	-			-	-
Critical Hdwy Stg 2	-	-			6.12	-
Follow-up Hdwy	2.218	-			3.518	3.318
Pot Cap-1 Maneuver	-	-			270	-
Stage 1	-	-			-	-
Stage 2	-	-			344	-
Platoon blocked, %		-				
Mov Cap-1 Maneuver	-	-			270	-
Mov Cap-2 Maneuver	-	-			270	-
Stage 1	-	-			-	-
Stage 2	-	-			344	-
Approach	EB		SB			
HCM Control Delay, s						
HCM LOS	-					
Minor Lane/Major Mvmt	EBL	EBT	SBLn1			
Capacity (veh/h)	-	-	-			
HCM Lane V/C Ratio	-	-	-			
HCM Control Delay (s)	-	-	-			
HCM Lane LOS	-	-	-			
HCM 95th %tile Q(veh)	-	-	-			

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	119	29	0	0	0	0	0	0	3	210	285
Future Vol, veh/h	0	119	29	0	0	0	0	0	0	3	210	285
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	129	32	0	0	0	0	0	0	3	228	310

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	390	383	0	0	0
Stage 1	-	390	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	545	664	-	-	-
Stage 1	0	608	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	664	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	12.1	
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	664	-	-	-
HCM Lane V/C Ratio	0.242	-	-	-
HCM Control Delay (s)	12.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	37	144	0	49	16
Future Vol, veh/h	0	37	144	0	49	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	40	157	0	53	17
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	197	157
Stage 1	-	-	-	-	157	-
Stage 2	-	-	-	-	40	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	792	889
Stage 1	0	-	-	0	871	-
Stage 2	0	-	-	0	982	-
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	-	-	-	-	792	889
Mov Cap-2 Maneuver	-	-	-	-	792	-
Stage 1	-	-	-	-	871	-
Stage 2	-	-	-	-	982	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		9.8	
HCM LOS					A	
Minor Lane/Major Mvmt	EBT	WBT	SBLn1			
Capacity (veh/h)	-	-	814			
HCM Lane V/C Ratio	-	-	0.087			
HCM Control Delay (s)	-	-	9.8			
HCM Lane LOS	-	-	A			
HCM 95th %tile Q(veh)	-	-	0.3			

Intersection

Int Delay, s/veh 3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	186	0	0	278	102	44
Future Vol, veh/h	186	0	0	278	102	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	202	0	0	302	111	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	504
Stage 1	-	-	202
Stage 2	-	-	302
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	528
Stage 1	-	0	832
Stage 2	-	0	750
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	528
Mov Cap-2 Maneuver	-	-	528
Stage 1	-	-	832
Stage 2	-	-	750

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	594	-	-
HCM Lane V/C Ratio	0.267	-	-
HCM Control Delay (s)	13.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	1.1	-	-

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	862	224	196	822	21	259	110	143	0	0	0
Future Volume (veh/h)	10	862	224	196	822	21	259	110	143	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.80	1.00		0.88	1.00		0.97			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	11	937	243	213	893	23	282	120	155			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	296	1003	259	462	2214	57	386	158	204			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.2	48.9	52.3	18.6	9.5	9.5	45.1	0.0	47.8			
Ln Grp LOS	B	D	D	B	A	A	D		D			
Approach Vol, veh/h	1191			1129			557			Timer: 10.00		
Approach Delay, s/veh	50.2			11.2			46.4			Assigned Phs		
Approach LOS	D			B			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0	67.0						
Change Period (Y+Rc), s	5.0			4.0	9.0	9.0						
Max Green (Gmax), s	20.0			19.0	35.0	58.0						
Max Allow Headway (MAH), s	4.6			3.8	5.4	5.4						
Max Q Clear (g_c+I1), s	16.3			6.9	33.7	13.6						
Green Ext Time (g_e), s	1.0			0.5	1.2	23.7						
Prob of Phs Call (p_c)	1.00			1.00	1.00	1.00						
Prob of Max Out (p_x)	0.00			0.00	0.00	0.00						
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	574							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	726			2636	3512							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	937			680	90							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	282	213	11	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	574	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

Q Serve Time (g_s), s	0.0	13.6	4.9	1.1	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	13.6	4.9	1.1	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	473	574	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	3.3	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	3.3	1.1	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	462	296	0	0	0	0
V/C Ratio (X)	0.00	0.73	0.46	0.04	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	462	296	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	33.5	15.3	18.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	11.6	3.3	0.2	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	45.1	18.6	18.2	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	6.7	2.3	0.2	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.4	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	7.9	2.7	0.2	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	3.34	1.39	0.14	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	627	0	0	0	450
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	31.3	0.0	0.0	0.0	11.6
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	31.3	0.0	0.0	0.0	11.6
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.93	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	27.4	0.0	0.0	0.0	8.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	21.5	0.0	0.0	0.0	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	48.9	0.0	0.0	0.0	9.5
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	15.2	0.0	0.0	0.0	5.6
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	19.2	0.0	0.0	0.0	6.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.37	0.00	0.00	0.00	1.12
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	275	0	553	0	0	0	466
Grp Sat Flow (s), veh/h/ln	0	1663	0	1546	0	0	0	1832
Q Serve Time (g_s), s	0.0	14.3	0.0	31.7	0.0	0.0	0.0	11.6
Cycle Q Clear Time (g_c), s	0.0	14.3	0.0	31.7	0.0	0.0	0.0	11.6
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.56	0.00	0.44	0.00	0.00	0.00	0.05
Lane Grp Cap (c), veh/h	0	361	0	588	0	0	0	1155
V/C Ratio (X)	0.00	0.76	0.00	0.94	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	361	0	588	0	0	0	1155
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	33.8	0.0	27.5	0.0	0.0	0.0	8.4
Incr Delay (d2), s/veh	0.0	14.0	0.0	24.8	0.0	0.0	0.0	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	47.8	0.0	52.3	0.0	0.0	0.0	9.5
1st-Term Q (Q1), veh/ln	0.0	6.6	0.0	13.5	0.0	0.0	0.0	5.8
2nd-Term Q (Q2), veh/ln	0.0	1.4	0.0	4.1	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	8.0	0.0	17.6	0.0	0.0	0.0	6.2
%ile Storage Ratio (RQ%)	0.00	0.15	0.00	1.26	0.00	0.00	0.00	1.16
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	34.2							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	840	58	79	432	162	76	370	178	86	293	189
Future Volume (veh/h)	297	840	58	79	432	162	76	370	178	86	293	189
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	323	913	63	86	470	176	83	402	193	93	318	205
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	443	1068	893	181	795	662	106	375	180	88	334	215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	24.0	23.4	7.9	42.4	21.2	16.2	82.9	0.0	86.7	155.0	0.0	55.9
Ln Grp LOS	C	C	A	D	C	B	F		F	F		E
Approach Vol, veh/h		1299			732			678			616	
Approach Delay, s/veh		22.8			22.5			86.2			70.8	
Approach LOS		C			C			F			E	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.4		5.2		5.4	3.8	5.2				
Max Q Clear (g_c+I1), s		28.0		35.6		28.0	10.0	35.7				
Green Ext Time (g_e), s		0.0		8.0		0.0	0.0	0.0				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt		5				1	7	3				
Mvmt Sat Flow, veh/h		876				819	1774	574				
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1184		1863		1052		1863				
Right-Turn Movement Data												
Assigned Mvmt		12		14		16		18				
Mvmt Sat Flow, veh/h		568		1558		678		1550				
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
PM Peak

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	83	0	0	0	93	323	86
Grp Sat Flow (s), veh/h/ln	0	876	0	0	0	819	1774	574
Q Serve Time (g_s), s	0.0	1.7	0.0	0.0	0.0	0.0	8.0	12.1
Cycle Q Clear Time (g_c), s	0.0	26.0	0.0	0.0	0.0	26.0	8.0	33.7
Perm LT Sat Flow (s_l), veh/h/ln	0	876	0	0	0	819	781	574
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	1.7	0.0	0.0	0.0	0.0	19.1	13.4
Perm LT Q Serve Time (g_ps), s	0.0	1.7	0.0	0.0	0.0	0.0	13.3	12.1
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	106	0	0	0	88	443	181
V/C Ratio (X)	0.00	0.78	0.00	0.00	0.00	1.06	0.73	0.47
Avail Cap (c_a), veh/h	0	106	0	0	0	88	443	181
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	40.8	0.0	0.0	0.0	41.0	13.9	33.8
Incr Delay (d2), s/veh	0.0	42.1	0.0	0.0	0.0	113.1	10.1	8.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Control Delay (d), s/veh	0.0	82.9	0.0	0.0	0.0	155.0	24.0	42.4
1st-Term Q (Q1), veh/ln	0.0	1.9	0.0	0.0	0.0	2.0	2.8	1.9
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.0	0.0	0.0	2.8	1.2	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	3.1	0.0	0.0	0.0	4.7	4.0	2.3
%ile Storage Ratio (RQ%)	0.00	0.88	0.00	0.00	0.00	1.85	1.28	0.60
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0

Middle Lane Group Data

Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	913	0	0	0	470
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	33.6	0.0	0.0	0.0	15.9
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	33.6	0.0	0.0	0.0	15.9
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.59
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	14.7	0.0	0.0	0.0	18.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	8.8	0.0	0.0	0.0	3.2
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	23.4	0.0	0.0	0.0	21.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	17.0	0.0	0.0	0.0	8.1

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (2% GR)
PM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.7
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	19.6	0.0	0.0	0.0	8.8
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	2.25	0.00	0.00	0.00	0.71
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	595	0	63	0	523	0	176
Grp Sat Flow (s), veh/h/ln	0	1752	0	1558	0	1730	0	1550
Q Serve Time (g_s), s	0.0	26.0	0.0	1.5	0.0	24.3	0.0	6.0
Cycle Q Clear Time (g_c), s	0.0	26.0	0.0	1.5	0.0	24.3	0.0	6.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.32	0.00	1.00	0.00	0.39	0.00	1.00
Lane Grp Cap (c), veh/h	0	555	0	893	0	549	0	662
V/C Ratio (X)	0.00	1.07	0.00	0.07	0.00	0.95	0.00	0.27
Avail Cap (c_a), veh/h	0	555	0	893	0	549	0	662
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	28.0	0.0	7.8	0.0	27.4	0.0	15.2
Incr Delay (d2), s/veh	0.0	58.7	0.0	0.2	0.0	28.5	0.0	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	86.7	0.0	7.9	0.0	55.9	0.0	16.2
1st-Term Q (Q1), veh/ln	0.0	12.5	0.0	0.6	0.0	11.5	0.0	2.5
2nd-Term Q (Q2), veh/ln	0.0	9.1	0.0	0.0	0.0	4.3	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	21.6	0.0	0.7	0.0	15.8	0.0	2.7
%ile Storage Ratio (RQ%)	0.00	1.69	0.00	0.23	0.00	0.95	0.00	0.69
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	9.9	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	44.6							
HCM 2010 LOS	D							

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑			↑↑	↱	↱			
Traffic Volume (veh/h)	1272	0	0	979	483	61			
Future Volume (veh/h)	1272	0	0	979	483	61			
Number	4	14	3	8	5	12			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863			
Adj Flow Rate, veh/h	1383	0	0	1064	525	66			
Adj No. of Lanes	2	0	0	2	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	0	0	2	2	2			
Opposing Right Turn Influence			No		Yes				
Cap, veh/h	1971	0	0	1971	539	481			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30			
Ln Grp Delay, s/veh	14.8	0.0	0.0	12.2	60.1	20.6			
Ln Grp LOS	B			B	E	C			
Approach Vol, veh/h	1383			1064	591				
Approach Delay, s/veh	14.8			12.2	55.7				
Approach LOS	B			B	E				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4				8
Case No			9.0		8.0				8.0
Phs Duration (G+Y+Rc), s			29.5		49.5				49.5
Change Period (Y+Rc), s			5.5		5.5				5.5
Max Green (Gmax), s			24.0		44.0				44.0
Max Allow Headway (MAH), s			3.8		5.2				5.2
Max Q Clear (g_c+I1), s			25.1		24.4				17.0
Green Ext Time (g_e), s			0.0		16.2				21.1
Prob of Phs Call (p_c)			1.00		1.00				1.00
Prob of Max Out (p_x)			0.00		0.00				0.00
Left-Turn Movement Data									
Assigned Mvmt			5		7				3
Mvmt Sat Flow, veh/h			1774		0				0
Through Movement Data									
Assigned Mvmt			2		4				8
Mvmt Sat Flow, veh/h			0		3725				3725
Right-Turn Movement Data									
Assigned Mvmt			12		14				18
Mvmt Sat Flow, veh/h			1583		0				0
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	0	0	3
Lane Assignment									

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	525	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	27.2	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	32.9	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	60.1	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	4.9	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	16.2	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	5.47	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	1383	0	0	0	1064
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	22.4	0.0	0.0	0.0	15.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	22.4	0.0	0.0	0.0	15.0
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.54
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	12.7	0.0	0.0	0.0	11.1
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.1	0.0	0.0	0.0	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	14.8	0.0	0.0	0.0	12.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	10.8	0.0	0.0	0.0	7.2

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2036 Future (2% GR)
PM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	11.3	0.0	0.0	0.0	7.5
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	15.99	0.00	0.00	0.00	0.54
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	66	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.6	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	21.8							
HCM 2010 LOS	C							

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

5: Waverly Ave & Plaza Ave

PM Peak



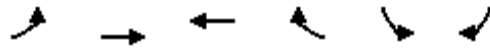
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W		
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	51	470	202	487	0	0
Future Volume (vph)	51	470	202	487	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	511	220	529	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	566	749				
Volume Left (vph)	55	220				
Volume Right (vph)	511	0				
Hadj (s)	-0.49	0.09				
Departure Headway (s)	5.3	5.6				
Degree Utilization, x	0.83	1.17				
Capacity (veh/h)	674	648				
Control Delay (s)	28.8	112.6				
Approach Delay (s)	28.8	112.6				
Approach LOS	D	F				
Intersection Summary						
Delay		76.5				
Level of Service		F				
Intersection Capacity Utilization		75.3%		ICU Level of Service		D
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

8: Plaza Ave & Center Ave

PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↑	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	117	224	0	407	16
Future Volume (vph)	0	117	224	0	407	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	127	243	0	442	17
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	127	243	459			
Volume Left (vph)	0	0	442			
Volume Right (vph)	0	0	17			
Hadj (s)	0.03	0.03	0.20			
Departure Headway (s)	5.6	5.4	5.1			
Degree Utilization, x	0.20	0.37	0.66			
Capacity (veh/h)	584	617	675			
Control Delay (s)	10.0	11.6	17.4			
Approach Delay (s)	10.0	11.6	17.4			
Approach LOS	B	B	C			
Intersection Summary						
Delay			14.5			
Level of Service			B			
Intersection Capacity Utilization			42.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

14: Madison St & Old White Plains Rd

PM Peak

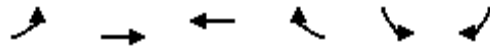
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	220	51	42	336	46	0	0	0	0	0	0
Future Volume (Veh/h)	45	220	51	42	336	46	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	239	55	46	365	50	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	415			294			846	872	266	846	874	390
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			294			846	872	266	846	874	390
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			100	100	100	100	100	100
cM capacity (veh/h)	1144			1268			265	267	772	265	266	658
Direction, Lane #	EB 1	WB 1										
Volume Total	343	461										
Volume Left	49	46										
Volume Right	55	50										
cSH	1144	1268										
Volume to Capacity	0.04	0.04										
Queue Length 95th (ft)	3	3										
Control Delay (s)	1.6	1.1										
Lane LOS	A	A										
Approach Delay (s)	1.6	1.1										
Approach LOS												
Intersection Summary												
Average Delay		1.3										
Intersection Capacity Utilization		31.1%	ICU Level of Service					A				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

16: Plaza Ave & Washington St

PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	28	61	0	259	0	0
Future Volume (vph)	28	61	0	259	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	66	0	282	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	96	282				
Volume Left (vph)	30	0				
Volume Right (vph)	0	282				
Hadj (s)	0.10	-0.57				
Departure Headway (s)	4.2	3.4				
Degree Utilization, x	0.11	0.27				
Capacity (veh/h)	834	1042				
Control Delay (s)	7.7	7.7				
Approach Delay (s)	7.7	7.7				
Approach LOS	A	A				
Intersection Summary						
Delay			7.7			
Level of Service			A			
Intersection Capacity Utilization			27.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2036 Future (2% GR)
PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	276	0	0	413	152	65
Future Volume (Veh/h)	276	0	0	413	152	65
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	300	0	0	449	165	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			300		749	300
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			300		749	300
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		57	90
cM capacity (veh/h)			1261		379	740
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	300	449	236			
Volume Left	0	0	165			
Volume Right	0	0	71			
cSH	1700	1700	445			
Volume to Capacity	0.18	0.26	0.53			
Queue Length 95th (ft)	0	0	76			
Control Delay (s)	0.0	0.0	21.9			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	21.9			
Approach LOS			C			
Intersection Summary						
Average Delay		5.2				
Intersection Capacity Utilization		40.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

2036 Future (2% GR)

19: Grand St & Old White Plains Rd

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	146	221	28	51	373	141	0	0	0	55	56	376
Future Volume (vph)	146	221	28	51	373	141	0	0	0	55	56	376
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	159	240	30	55	405	153	0	0	0	60	61	409
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	429	613	530									
Volume Left (vph)	159	55	60									
Volume Right (vph)	30	153	409									
Hadj (s)	0.07	-0.10	-0.41									
Departure Headway (s)	6.9	6.7	6.4									
Degree Utilization, x	0.83	1.14	0.94									
Capacity (veh/h)	509	542	556									
Control Delay (s)	34.9	106.0	49.2									
Approach Delay (s)	34.9	106.0	49.2									
Approach LOS	D	F	E									
Intersection Summary												
Delay			67.4									
Level of Service			F									
Intersection Capacity Utilization			91.6%	ICU Level of Service		F						
Analysis Period (min)			15									

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	317	563	470	189	202	297
Future Vol, veh/h	317	563	470	189	202	297
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	345	612	511	205	220	323

Major/Minor	Major1	Minor2
Conflicting Flow All	0 0	1301 0
Stage 1	- -	0 -
Stage 2	- -	1301 -
Critical Hdwy	4.12 -	7.12 6.22
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	6.12 -
Follow-up Hdwy	2.218 -	3.518 3.318
Pot Cap-1 Maneuver	- -	~ 138 -
Stage 1	- -	- -
Stage 2	- -	~ 198 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- -	~ 138 -
Mov Cap-2 Maneuver	- -	~ 138 -
Stage 1	- -	- -
Stage 2	- -	~ 198 -

Approach	EB	SB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Notes

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

Intersection

Int Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	177	43	0	0	0	0	0	0	4	312	423
Future Vol, veh/h	0	177	43	0	0	0	0	0	0	4	312	423
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	192	47	0	0	0	0	0	0	4	339	460

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	578	569	0	0	0
Stage 1	-	578	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	427	522	-	-	-
Stage 1	0	501	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	522	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	17.6	
HCM LOS	C	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	522	-	-	-
HCM Lane V/C Ratio	0.458	-	-	-
HCM Control Delay (s)	17.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2.4	-	-	-

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	55	214	0	73	24
Future Vol, veh/h	0	55	214	0	73	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	60	233	0	79	26

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	- 0	- 0	293 233
Stage 1	- -	- -	233 -
Stage 2	- -	- -	60 -
Critical Hdwy	- -	- -	6.42 6.22
Critical Hdwy Stg 1	- -	- -	5.42 -
Critical Hdwy Stg 2	- -	- -	5.42 -
Follow-up Hdwy	- -	- -	3.518 3.318
Pot Cap-1 Maneuver	0 -	- 0	698 806
Stage 1	0 -	- 0	806 -
Stage 2	0 -	- 0	963 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	- -	- -	698 806
Mov Cap-2 Maneuver	- -	- -	698 -
Stage 1	- -	- -	806 -
Stage 2	- -	- -	963 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	722
HCM Lane V/C Ratio	-	-	0.146
HCM Control Delay (s)	-	-	10.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.5

Intersection

Int Delay, s/veh 5.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	276	0	0	413	152	65
Future Vol, veh/h	276	0	0	413	152	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	300	0	0	449	165	71

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	749
Stage 1	-	-	300
Stage 2	-	-	449
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	379
Stage 1	-	0	752
Stage 2	-	0	643
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	379
Mov Cap-2 Maneuver	-	-	379
Stage 1	-	-	752
Stage 2	-	-	643

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	444	-	-
HCM Lane V/C Ratio	0.531	-	-
HCM Control Delay (s)	21.9	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3	-	-

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (0.5% GR)
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	570	160	116	527	70	173	92	86	0	0	0
Future Volume (veh/h)	15	570	160	116	527	70	173	92	86	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.85	1.00		0.91	1.00		0.97			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	16	620	174	126	573	76	188	100	93			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	357	997	279	572	1956	258	386	190	177			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.3	27.4	28.0	11.1	8.4	8.4	35.9	0.0	37.1			
Ln Grp LOS	B	C	C	B	A	A	D		D			
Approach Vol, veh/h	810			775			381			Timer: 10.00		
Approach Delay, s/veh	27.5			8.8			36.5			Assigned Phs		
Approach LOS	C			A			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0				67.0			
Change Period (Y+Rc), s	5.0			4.0	9.0				9.0			
Max Green (Gmax), s	20.0			19.0	35.0				58.0			
Max Allow Headway (MAH), s	4.6			3.8	5.4				5.4			
Max Q Clear (g_c+I1), s	11.3			4.8	19.7				9.7			
Green Ext Time (g_e), s	1.1			0.2	8.3				13.6			
Prob of Phs Call (p_c)	1.00			1.00	1.00				1.00			
Prob of Max Out (p_x)	0.00			0.00	0.00				0.00			
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	733							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	875			2621	3103							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	813			733	410							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	188	126	16	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	733	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (0.5% GR)
AM Peak

Q Serve Time (g_s), s	0.0	8.5	2.8	1.3	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	8.5	2.8	1.3	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	681	733	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	17.3	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	4.5	1.3	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	572	357	0	0	0	0
V/C Ratio (X)	0.00	0.49	0.22	0.04	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	572	357	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	31.5	10.2	18.1	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	4.4	0.9	0.2	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	35.9	11.1	18.3	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	4.2	1.3	0.3	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	4.6	1.4	0.3	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	1.97	0.73	0.20	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	418	0	0	0	326
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	17.6	0.0	0.0	0.0	7.7
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.6	0.0	0.0	0.0	7.7
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.62	0.00	0.00	0.00	0.29
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	23.1	0.0	0.0	0.0	7.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	27.4	0.0	0.0	0.0	8.4
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.6	0.0	0.0	0.0	3.7
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis
1: Hoyt Ave & Mamaroneck Ave

2036 Future (0.5% GR)
AM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.4	0.0	0.0	0.0	3.9
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.74
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	193	0	376	0	0	0	323
Grp Sat Flow (s), veh/h/ln	0	1688	0	1585	0	0	0	1743
Q Serve Time (g_s), s	0.0	9.3	0.0	17.7	0.0	0.0	0.0	7.7
Cycle Q Clear Time (g_c), s	0.0	9.3	0.0	17.7	0.0	0.0	0.0	7.7
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.48	0.00	0.46	0.00	0.00	0.00	0.24
Lane Grp Cap (c), veh/h	0	367	0	603	0	0	0	1099
V/C Ratio (X)	0.00	0.53	0.00	0.62	0.00	0.00	0.00	0.29
Avail Cap (c_a), veh/h	0	367	0	603	0	0	0	1099
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	31.8	0.0	23.2	0.0	0.0	0.0	7.7
Incr Delay (d2), s/veh	0.0	5.3	0.0	4.8	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	37.1	0.0	28.0	0.0	0.0	0.0	8.4
1st-Term Q (Q1), veh/ln	0.0	4.3	0.0	7.7	0.0	0.0	0.0	3.7
2nd-Term Q (Q2), veh/ln	0.0	0.5	0.0	0.8	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	4.9	0.0	8.5	0.0	0.0	0.0	3.9
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.61	0.00	0.00	0.00	0.73
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	21.9							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2036 Future (0.5% GR)
AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	622	42	65	339	114	46	274	146	75	245	152
Future Volume (veh/h)	231	622	42	65	339	114	46	274	146	75	245	152
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	251	676	46	71	368	124	50	298	159	82	266	165
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	518	1068	898	327	795	666	174	360	192	156	338	210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	14.5	14.6	7.8	21.9	18.7	15.2	39.9	0.0	39.4	50.5	0.0	36.3
Ln Grp LOS	B	B	A	C	B	B	D		D	D		D
Approach Vol, veh/h		973			563			507			513	
Approach Delay, s/veh		14.2			18.4			39.4			38.6	
Approach LOS		B			B			D			D	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1				
Max Q Clear (g_c+I1), s		24.7		21.9		28.0	8.1	15.9				
Green Ext Time (g_e), s		0.8		9.2		0.0	0.0	8.2				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt			5				1	7	3			
Mvmt Sat Flow, veh/h			953				931	1774	726			
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1135		1863		1067		1863				
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			605		1567		662		1561			
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

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Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	50	0	0	0	82	251	71
Grp Sat Flow (s), veh/h/ln	0	953	0	0	0	931	1774	726
Q Serve Time (g_s), s	0.0	4.1	0.0	0.0	0.0	6.1	6.1	6.0
Cycle Q Clear Time (g_c), s	0.0	22.7	0.0	0.0	0.0	26.0	6.1	13.9
Perm LT Sat Flow (s_l), veh/h/ln	0	953	0	0	0	931	900	726
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	7.4	0.0	0.0	0.0	6.1	23.4	27.1
Perm LT Q Serve Time (g_ps), s	0.0	4.1	0.0	0.0	0.0	6.1	5.3	6.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	174	0	0	0	156	518	327
V/C Ratio (X)	0.00	0.29	0.00	0.00	0.00	0.52	0.48	0.22
Avail Cap (c_a), veh/h	0	174	0	0	0	156	518	327
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	35.8	0.0	0.0	0.0	38.5	11.3	20.4
Incr Delay (d2), s/veh	0.0	4.1	0.0	0.0	0.0	12.0	3.2	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	39.9	0.0	0.0	0.0	50.5	14.5	21.9
1st-Term Q (Q1), veh/ln	0.0	1.1	0.0	0.0	0.0	1.8	2.9	1.2
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.5	0.5	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.3	0.0	0.0	0.0	2.4	3.3	1.3
%ile Storage Ratio (RQ%)	0.00	0.36	0.00	0.00	0.00	0.92	1.05	0.34
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	676	0	0	0	368
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	19.9	0.0	0.0	0.0	11.6
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	19.9	0.0	0.0	0.0	11.6
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.46
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.7	0.0	0.0	0.0	16.8
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.9	0.0	0.0	0.0	1.9
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	14.6	0.0	0.0	0.0	18.7
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	10.1	0.0	0.0	0.0	5.9

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2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	11.0	0.0	0.0	0.0	6.4
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.52
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	457	0	46	0	431	0	124
Grp Sat Flow (s), veh/h/ln	0	1740	0	1567	0	1728	0	1561
Q Serve Time (g_s), s	0.0	19.9	0.0	1.1	0.0	18.6	0.0	4.1
Cycle Q Clear Time (g_c), s	0.0	19.9	0.0	1.1	0.0	18.6	0.0	4.1
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.35	0.00	1.00	0.00	0.38	0.00	1.00
Lane Grp Cap (c), veh/h	0	552	0	898	0	548	0	666
V/C Ratio (X)	0.00	0.83	0.00	0.05	0.00	0.79	0.00	0.19
Avail Cap (c_a), veh/h	0	552	0	898	0	548	0	666
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.9	0.0	7.7	0.0	25.5	0.0	14.6
Incr Delay (d2), s/veh	0.0	13.4	0.0	0.1	0.0	10.9	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	39.4	0.0	7.8	0.0	36.3	0.0	15.2
1st-Term Q (Q1), veh/ln	0.0	9.5	0.0	0.5	0.0	8.9	0.0	1.7
2nd-Term Q (Q2), veh/ln	0.0	2.1	0.0	0.0	0.0	1.7	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	11.6	0.0	0.5	0.0	10.5	0.0	1.8
%ile Storage Ratio (RQ%)	0.00	0.91	0.00	0.16	0.00	0.63	0.00	0.47
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	25.0							
HCM 2010 LOS	C							

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Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑			↑↑	↗	↗		
Traffic Volume (veh/h)	946	0	0	841	465	36		
Future Volume (veh/h)	946	0	0	841	465	36		
Number	4	14	3	8	5	12		
Initial Q, veh	0	0	0	0	0	0		
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863		
Adj Flow Rate, veh/h	1028	0	0	914	505	39		
Adj No. of Lanes	2	0	0	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	0	0	2	2	2		
Opposing Right Turn Influence			No		Yes			
Cap, veh/h	1971	0	0	1971	539	481		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30		
Ln Grp Delay, s/veh	11.9	0.0	0.0	11.2	52.7	20.0		
Ln Grp LOS	B			B	D	B		
Approach Vol, veh/h	1028			914	544			
Approach Delay, s/veh	11.9			11.2	50.4			
Approach LOS	B			B	D			
Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Case No		9.0		8.0				8.0
Phs Duration (G+Y+Rc), s		29.5		49.5				49.5
Change Period (Y+Rc), s		5.5		5.5				5.5
Max Green (Gmax), s		24.0		44.0				44.0
Max Allow Headway (MAH), s		3.8		5.2				5.2
Max Q Clear (g_c+I1), s		23.9		16.3				14.2
Green Ext Time (g_e), s		0.0		17.2				18.0
Prob of Phs Call (p_c)		1.00		1.00				1.00
Prob of Max Out (p_x)		0.00		0.00				0.00
Left-Turn Movement Data								
Assigned Mvmt		5		7				3
Mvmt Sat Flow, veh/h		1774		0				0
Through Movement Data								
Assigned Mvmt		2		4				8
Mvmt Sat Flow, veh/h		0		3725				3725
Right-Turn Movement Data								
Assigned Mvmt		12		14				18
Mvmt Sat Flow, veh/h		1583		0				0
Left Lane Group Data								
Assigned Mvmt	0	5	0	7	0	0	0	3
Lane Assignment								

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Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	505	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	21.9	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	21.9	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.94	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	26.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	25.9	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	52.7	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	10.7	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	14.5	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	4.93	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	1028	0	0	0	914
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	14.3	0.0	0.0	0.0	12.2
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	14.3	0.0	0.0	0.0	12.2
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.46
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	10.9	0.0	0.0	0.0	10.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	11.9	0.0	0.0	0.0	11.2
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	6.9	0.0	0.0	0.0	5.8

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2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	7.1	0.0	0.0	0.0	6.1
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	10.05	0.00	0.00	0.00	0.43
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	39	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	19.6	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	20.1							
HCM 2010 LOS	C							

HCM Unsignalized Intersection Capacity Analysis

5: Waverly Ave & Plaza Ave

2036 Future (0.5% GR)

AM Peak

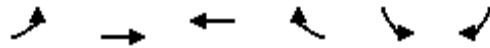
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	31	464	235	389	0	0
Future Volume (vph)	31	464	235	389	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	504	255	423	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	538	678				
Volume Left (vph)	34	255				
Volume Right (vph)	504	0				
Hadj (s)	-0.52	0.11				
Departure Headway (s)	5.3	5.5				
Degree Utilization, x	0.79	1.04				
Capacity (veh/h)	675	657				
Control Delay (s)	24.7	70.3				
Approach Delay (s)	24.7	70.3				
Approach LOS	C	F				
Intersection Summary						
Delay			50.2			
Level of Service			F			
Intersection Capacity Utilization			70.5%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (0.5% GR)

8: Plaza Ave & Center Ave

AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	136	240	0	320	20
Future Volume (vph)	0	136	240	0	320	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	148	261	0	348	22
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	148	261	370			
Volume Left (vph)	0	0	348			
Volume Right (vph)	0	0	22			
Hadj (s)	0.03	0.03	0.19			
Departure Headway (s)	5.4	5.2	5.2			
Degree Utilization, x	0.22	0.38	0.53			
Capacity (veh/h)	618	651	660			
Control Delay (s)	9.9	11.3	13.8			
Approach Delay (s)	9.9	11.3	13.8			
Approach LOS	A	B	B			
Intersection Summary						
Delay			12.2			
Level of Service			B			
Intersection Capacity Utilization			38.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (0.5% GR)

14: Madison St & Old White Plains Rd

AM Peak

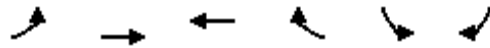
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	202	35	23	233	34	0	0	0	0	0	0
Future Volume (Veh/h)	20	202	35	23	233	34	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	220	38	25	253	37	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	290			258			604	623	239	604	624	272
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	290			258			604	623	239	604	624	272
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			100	100	100	100	100	100
cM capacity (veh/h)	1272			1307			399	388	800	399	388	767
Direction, Lane #	EB 1	WB 1										
Volume Total	280	315										
Volume Left	22	25										
Volume Right	38	37										
cSH	1272	1307										
Volume to Capacity	0.02	0.02										
Queue Length 95th (ft)	1	1										
Control Delay (s)	0.8	0.8										
Lane LOS	A	A										
Approach Delay (s)	0.8	0.8										
Approach LOS												
Intersection Summary												
Average Delay		0.8										
Intersection Capacity Utilization		23.8%	ICU Level of Service				A					
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis

2036 Future (0.5% GR)

16: Plaza Ave & Washington St

AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	23	84	0	298	0	0
Future Volume (vph)	23	84	0	298	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	91	0	324	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	116	324				
Volume Left (vph)	25	0				
Volume Right (vph)	0	324				
Hadj (s)	0.08	-0.57				
Departure Headway (s)	4.2	3.4				
Degree Utilization, x	0.14	0.31				
Capacity (veh/h)	830	1036				
Control Delay (s)	7.9	8.0				
Approach Delay (s)	7.9	8.0				
Approach LOS	A	A				
Intersection Summary						
Delay			8.0			
Level of Service			A			
Intersection Capacity Utilization			30.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2036 Future (0.5% GR)
AM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	203	0	0	283	224	44
Future Volume (Veh/h)	203	0	0	283	224	44
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	221	0	0	308	243	48
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			221		529	221
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			221		529	221
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		52	94
cM capacity (veh/h)			1348		510	819
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	221	308	291			
Volume Left	0	0	243			
Volume Right	0	0	48			
cSH	1700	1700	544			
Volume to Capacity	0.13	0.18	0.53			
Queue Length 95th (ft)	0	0	78			
Control Delay (s)	0.0	0.0	19.0			
Lane LOS			C			
Approach Delay (s)	0.0	0.0	19.0			
Approach LOS			C			
Intersection Summary						
Average Delay			6.7			
Intersection Capacity Utilization			36.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2036 Future (0.5% GR)

19: Grand St & Old White Plains Rd

AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	125	125	27	29	242	236	0	0	0	78	41	77
Future Volume (vph)	125	125	27	29	242	236	0	0	0	78	41	77
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	136	136	29	32	263	257	0	0	0	85	45	84
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	301	552	214									
Volume Left (vph)	136	32	85									
Volume Right (vph)	29	257	84									
Hadj (s)	0.07	-0.23	-0.12									
Departure Headway (s)	5.4	4.8	5.8									
Degree Utilization, x	0.45	0.73	0.35									
Capacity (veh/h)	639	737	556									
Control Delay (s)	12.6	19.7	11.9									
Approach Delay (s)	12.6	19.7	11.9									
Approach LOS	B	C	B									
Intersection Summary												
Delay			16.1									
Level of Service			C									
Intersection Capacity Utilization			65.1%	ICU Level of Service		C						
Analysis Period (min)			15									

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	244	546	341	118	101	200
Future Vol, veh/h	244	546	341	118	101	200
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	265	593	371	128	110	217

Major/Minor	Major1	Minor2
Conflicting Flow All	0 0	1124 0
Stage 1	- -	0 -
Stage 2	- -	1124 -
Critical Hdwy	4.12 -	7.12 6.22
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	6.12 -
Follow-up Hdwy	2.218 -	3.518 3.318
Pot Cap-1 Maneuver	- -	183 -
Stage 1	- -	- -
Stage 2	- -	249 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- -	183 -
Mov Cap-2 Maneuver	- -	183 -
Stage 1	- -	- -
Stage 2	- -	249 -

Approach	EB	SB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection

Int Delay, s/veh 3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	148	54	0	0	0	0	0	0	0	236	291
Future Vol, veh/h	0	148	54	0	0	0	0	0	0	0	236	291
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	161	59	0	0	0	0	0	0	0	257	316

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	415	415	0	0	0
Stage 1	-	415	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	528	637	-	-	-
Stage 1	0	592	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	637	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	13.6	0
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	-
HCM Lane V/C Ratio	0.345	-	-	-
HCM Control Delay (s)	13.6	0	-	-
HCM Lane LOS	B	A	-	-
HCM 95th %tile Q(veh)	1.5	-	-	-

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	59	271	0	92	23
Future Vol, veh/h	0	59	271	0	92	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	64	295	0	100	25

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	- 0	- 0	359 295
Stage 1	- -	- -	295 -
Stage 2	- -	- -	64 -
Critical Hdwy	- -	- -	6.42 6.22
Critical Hdwy Stg 1	- -	- -	5.42 -
Critical Hdwy Stg 2	- -	- -	5.42 -
Follow-up Hdwy	- -	- -	3.518 3.318
Pot Cap-1 Maneuver	0 -	- 0	640 744
Stage 1	0 -	- 0	755 -
Stage 2	0 -	- 0	959 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	- -	- -	640 744
Mov Cap-2 Maneuver	- -	- -	640 -
Stage 1	- -	- -	755 -
Stage 2	- -	- -	959 -

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

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	658
HCM Lane V/C Ratio	-	-	0.19
HCM Control Delay (s)	-	-	11.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.7

Intersection

Int Delay, s/veh 6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	203	0	0	283	224	44
Future Vol, veh/h	203	0	0	283	224	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	221	0	0	308	243	48

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	529
Stage 1	-	-	221
Stage 2	-	-	308
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	510
Stage 1	-	0	816
Stage 2	-	0	745
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	510
Mov Cap-2 Maneuver	-	-	510
Stage 1	-	-	816
Stage 2	-	-	745

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	544	-	-
HCM Lane V/C Ratio	0.535	-	-
HCM Control Delay (s)	19	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	3.1	-	-

HCM 2010 Signalized Intersection Capacity Analysis

1: Hoyt Ave & Mamaroneck Ave

2016 Future (0.5% GR)

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	641	167	146	611	15	192	82	106	0	0	0
Future Volume (veh/h)	8	641	167	146	611	15	192	82	106	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q, veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)	0.94		0.85	1.00		0.91	1.00		0.98			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900			
Adj Flow Rate, veh/h	9	697	182	159	664	16	209	89	115			
Adj No. of Lanes	1	2	0	1	2	0	1	1	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2			
Opposing Right Turn Influence	Yes			Yes			Yes					
Cap, veh/h	350	1016	265	546	2221	53	386	158	205			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.38	0.38	0.38	0.21	0.63	0.63	0.22	0.22	0.22			
Ln Grp Delay, s/veh	18.0	29.5	30.1	12.7	8.4	8.4	37.3	0.0	38.3			
Ln Grp LOS	B	C	C	B	A	A	D		D			
Approach Vol, veh/h	888			839			413			Timer: 10.00		
Approach Delay, s/veh	29.7			9.2			37.8			Assigned Phs		
Approach LOS	C			A			D			Case No		
Phs Duration (G+Y+Rc), s	25.0			23.0	44.0	67.0						
Change Period (Y+Rc), s	5.0			4.0	9.0	9.0						
Max Green (Gmax), s	20.0			19.0	35.0	58.0						
Max Allow Headway (MAH), s	4.6			3.8	5.3	5.3						
Max Q Clear (g_c+I1), s	12.0			5.5	22.1	9.9						
Green Ext Time (g_e), s	1.2			0.3	7.9	15.0						
Prob of Phs Call (p_c)	1.00			1.00	1.00	1.00						
Prob of Max Out (p_x)	0.00			0.00	0.00	0.00						
Left-Turn Movement Data												
Assigned Mvmt	5			3	7							
Mvmt Sat Flow, veh/h	1774			1774	714							
Through Movement Data												
Assigned Mvmt	2			4	8							
Mvmt Sat Flow, veh/h	729			2671	3523							
Right-Turn Movement Data												
Assigned Mvmt	12			14	18							
Mvmt Sat Flow, veh/h	941			697	85							
Left Lane Group Data												
Assigned Mvmt	0	5	3	7	0	0	0	0				
Lane Assignment	(Pr/Pm)											
Lanes in Grp	0	1	1	1	0	0	0	0				
Grp Vol (v), veh/h	0	209	159	9	0	0	0	0				
Grp Sat Flow (s), veh/h/ln	0	1774	1774	714	0	0	0	0				

HCM 2010 Signalized Intersection Capacity Analysis

1: Hoyt Ave & Mamaroneck Ave

2016 Future (0.5% GR)

PM Peak

Q Serve Time (g_s), s	0.0	9.6	3.5	0.7	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	9.6	3.5	0.7	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	629	714	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	37.0	35.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	14.9	35.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	7.5	0.7	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	386	546	350	0	0	0	0
V/C Ratio (X)	0.00	0.54	0.29	0.03	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	386	546	350	0	0	0	0
Upstream Filter (I)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	31.9	11.3	17.9	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	5.4	1.3	0.1	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	37.3	12.7	18.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	4.7	1.7	0.1	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.6	0.2	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	5.3	1.9	0.2	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	2.23	0.96	0.11	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment	T				T			
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	462	0	0	0	333
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	20.1	0.0	0.0	0.0	7.9
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	20.1	0.0	0.0	0.0	7.9
Lane Grp Cap (c), veh/h	0	0	0	673	0	0	0	1116
V/C Ratio (X)	0.00	0.00	0.00	0.69	0.00	0.00	0.00	0.30
Avail Cap (c_a), veh/h	0	0	0	673	0	0	0	1116
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	23.9	0.0	0.0	0.0	7.7
Incr Delay (d2), s/veh	0.0	0.0	0.0	5.6	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	29.5	0.0	0.0	0.0	8.4
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	9.7	0.0	0.0	0.0	3.8
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00

HCM 2010 Signalized Intersection Capacity Analysis

1: Hoyt Ave & Mamaroneck Ave

2016 Future (0.5% GR)

PM Peak

%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	10.8	0.0	0.0	0.0	4.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.77	0.00	0.00	0.00	0.75
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	T+R		T+R		T+R		T+R	
Lanes in Grp	0	1	0	1	0	0	0	1
Grp Vol (v), veh/h	0	204	0	417	0	0	0	347
Grp Sat Flow (s), veh/h/ln	0	1670	0	1598	0	0	0	1838
Q Serve Time (g_s), s	0.0	10.0	0.0	20.1	0.0	0.0	0.0	7.9
Cycle Q Clear Time (g_c), s	0.0	10.0	0.0	20.1	0.0	0.0	0.0	7.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.56	0.00	0.44	0.00	0.00	0.00	0.05
Lane Grp Cap (c), veh/h	0	363	0	608	0	0	0	1159
V/C Ratio (X)	0.00	0.56	0.00	0.69	0.00	0.00	0.00	0.30
Avail Cap (c_a), veh/h	0	363	0	608	0	0	0	1159
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	32.1	0.0	23.9	0.0	0.0	0.0	7.7
Incr Delay (d2), s/veh	0.0	6.2	0.0	6.2	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	38.3	0.0	30.1	0.0	0.0	0.0	8.4
1st-Term Q (Q1), veh/ln	0.0	4.6	0.0	8.8	0.0	0.0	0.0	3.9
2nd-Term Q (Q2), veh/ln	0.0	0.6	0.0	1.0	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	5.2	0.0	9.9	0.0	0.0	0.0	4.2
%ile Storage Ratio (RQ%)	0.00	0.10	0.00	0.71	0.00	0.00	0.00	0.78
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	23.2							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Future (0.5% GR)
PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	624	43	59	322	120	56	275	133	64	218	140
Future Volume (veh/h)	221	624	43	59	322	120	56	275	133	64	218	140
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.98	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	240	678	47	64	350	130	61	299	145	70	237	152
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	528	1068	897	326	795	666	206	374	182	168	335	215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	13.8	14.6	7.8	21.6	18.4	15.4	37.5	0.0	37.0	44.5	0.0	32.2
Ln Grp LOS	B	B	A	C	B	B	D		D	D		C
Approach Vol, veh/h		965			544			505			459	
Approach Delay, s/veh		14.1			18.0			37.1			34.0	
Approach LOS		B			B			D			C	
Timer:	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6	7	8				
Case No		6.0		3.0		6.0	1.2	5.0				
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0				
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0				
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0				
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1				
Max Q Clear (g_c+I1), s		23.0		22.0		27.0	7.8	15.4				
Green Ext Time (g_e), s		1.7		9.1		0.0	0.0	8.2				
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00				
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00				
Left-Turn Movement Data												
Assigned Mvmt			5				1	7	3			
Mvmt Sat Flow, veh/h			990				942	1774	724			
Through Movement Data												
Assigned Mvmt		2		4		6		8				
Mvmt Sat Flow, veh/h		1181		1863		1056		1863				
Right-Turn Movement Data												
Assigned Mvmt			12		14		16		18			
Mvmt Sat Flow, veh/h			573		1565		677		1559			
Left Lane Group Data												
Assigned Mvmt		0	5	0	0	0	1	7	3			
Lane Assignment							(Pr/Pm)					

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Future (0.5% GR)
PM Peak

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	61	0	0	0	70	240	64
Grp Sat Flow (s), veh/h/ln	0	990	0	0	0	942	1774	724
Q Serve Time (g_s), s	0.0	4.7	0.0	0.0	0.0	6.0	5.8	5.3
Cycle Q Clear Time (g_c), s	0.0	21.0	0.0	0.0	0.0	25.0	5.8	13.4
Perm LT Sat Flow (s_l), veh/h/ln	0	990	0	0	0	942	909	724
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	9.8	0.0	0.0	0.0	7.0	24.1	27.0
Perm LT Q Serve Time (g_ps), s	0.0	4.7	0.0	0.0	0.0	6.0	4.6	5.3
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	206	0	0	0	168	528	326
V/C Ratio (X)	0.00	0.30	0.00	0.00	0.00	0.42	0.45	0.20
Avail Cap (c_a), veh/h	0	206	0	0	0	168	528	326
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	33.9	0.0	0.0	0.0	37.0	11.0	20.3
Incr Delay (d2), s/veh	0.0	3.6	0.0	0.0	0.0	7.4	2.8	1.3
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	37.5	0.0	0.0	0.0	44.5	13.8	21.6
1st-Term Q (Q1), veh/ln	0.0	1.3	0.0	0.0	0.0	1.6	2.7	1.1
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.3	0.4	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.5	0.0	0.0	0.0	1.9	3.1	1.2
%ile Storage Ratio (RQ%)	0.00	0.42	0.00	0.00	0.00	0.74	1.00	0.30
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	678	0	0	0	350
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	20.0	0.0	0.0	0.0	10.9
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	20.0	0.0	0.0	0.0	10.9
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.44
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.7	0.0	0.0	0.0	16.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.9	0.0	0.0	0.0	1.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	14.6	0.0	0.0	0.0	18.4
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	10.2	0.0	0.0	0.0	5.5

HCM 2010 Signalized Intersection Capacity Analysis
3: Waverly Ave & Fenimore Rd

2016 Future (0.5% GR)
PM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	11.0	0.0	0.0	0.0	5.9
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.27	0.00	0.00	0.00	0.48
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment	T+R		R		T+R		R	
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	444	0	47	0	389	0	130
Grp Sat Flow (s), veh/h/ln	0	1753	0	1565	0	1733	0	1559
Q Serve Time (g_s), s	0.0	19.0	0.0	1.1	0.0	16.2	0.0	4.3
Cycle Q Clear Time (g_c), s	0.0	19.0	0.0	1.1	0.0	16.2	0.0	4.3
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.33	0.00	1.00	0.00	0.39	0.00	1.00
Lane Grp Cap (c), veh/h	0	556	0	897	0	550	0	666
V/C Ratio (X)	0.00	0.80	0.00	0.05	0.00	0.71	0.00	0.20
Avail Cap (c_a), veh/h	0	556	0	897	0	550	0	666
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.6	0.0	7.7	0.0	24.7	0.0	14.7
Incr Delay (d2), s/veh	0.0	11.4	0.0	0.1	0.0	7.5	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	37.0	0.0	7.8	0.0	32.2	0.0	15.4
1st-Term Q (Q1), veh/ln	0.0	9.1	0.0	0.5	0.0	7.7	0.0	1.8
2nd-Term Q (Q2), veh/ln	0.0	1.8	0.0	0.0	0.0	1.1	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	10.9	0.0	0.5	0.0	8.8	0.0	2.0
%ile Storage Ratio (RQ%)	0.00	0.86	0.00	0.17	0.00	0.53	0.00	0.50
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	23.4							
HCM 2010 LOS	C							

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2016 Future (0.5% GR)
PM Peak

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	↑↑			↑↑	↗	↗			
Traffic Volume (veh/h)	855	0	0	728	359	45			
Future Volume (veh/h)	855	0	0	728	359	45			
Number	4	14	3	8	5	12			
Initial Q, veh	0	0	0	0	0	0			
Ped-Bike Adj (A_pbT)		1.00	1.00		1.00	1.00			
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1863	0	0	1863	1863	1863			
Adj Flow Rate, veh/h	929	0	0	791	390	49			
Adj No. of Lanes	2	0	0	2	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	0	0	2	2	2			
Opposing Right Turn Influence			No		Yes				
Cap, veh/h	1971	0	0	1971	539	481			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00			
Prop Arrive On Green	0.56	0.00	0.00	0.56	0.30	0.30			
Ln Grp Delay, s/veh	11.3	0.0	0.0	10.6	32.7	20.2			
Ln Grp LOS	B			B	C	C			
Approach Vol, veh/h	929			791	439				
Approach Delay, s/veh	11.3			10.6	31.3				
Approach LOS	B			B	C				
Timer:		1	2	3	4	5	6	7	8
Assigned Phs			2		4				8
Case No			9.0		8.0				8.0
Phs Duration (G+Y+Rc), s			29.5		49.5				49.5
Change Period (Y+Rc), s			5.5		5.5				5.5
Max Green (Gmax), s			24.0		44.0				44.0
Max Allow Headway (MAH), s			3.8		5.2				5.2
Max Q Clear (g_c+l1), s			17.5		14.5				12.1
Green Ext Time (g_e), s			0.8		15.5				16.1
Prob of Phs Call (p_c)			1.00		1.00				1.00
Prob of Max Out (p_x)			0.00		0.00				0.00
Left-Turn Movement Data									
Assigned Mvmt			5		7				3
Mvmt Sat Flow, veh/h			1774		0				0
Through Movement Data									
Assigned Mvmt			2		4				8
Mvmt Sat Flow, veh/h			0		3725				3725
Right-Turn Movement Data									
Assigned Mvmt			12		14				18
Mvmt Sat Flow, veh/h			1583		0				0
Left Lane Group Data									
Assigned Mvmt		0	5	0	7	0	0	0	3
Lane Assignment									

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2016 Future (0.5% GR)
PM Peak

Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	390	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1774	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1774	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	44.0	0.0	0.0	0.0	44.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	539	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	539	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	24.5	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	32.7	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	7.6	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	2.98	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	0	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	2	0	0	0	2
Grp Vol (v), veh/h	0	0	0	929	0	0	0	791
Grp Sat Flow (s), veh/h/ln	0	0	0	1770	0	0	0	1770
Q Serve Time (g_s), s	0.0	0.0	0.0	12.5	0.0	0.0	0.0	10.1
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	12.5	0.0	0.0	0.0	10.1
Lane Grp Cap (c), veh/h	0	0	0	1971	0	0	0	1971
V/C Ratio (X)	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	1971	0	0	0	1971
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	10.5	0.0	0.0	0.0	10.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	11.3	0.0	0.0	0.0	10.6
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	6.1	0.0	0.0	0.0	4.8

HCM 2010 Signalized Intersection Capacity Analysis
9: Waverly Ave & Mamaroneck Ave

2016 Future (0.5% GR)
PM Peak

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	6.3	0.0	0.0	0.0	5.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	8.87	0.00	0.00	0.00	0.36
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	0	0	18
Lane Assignment	R							
Lanes in Grp	0	1	0	0	0	0	0	0
Grp Vol (v), veh/h	0	49	0	0	0	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1583	0	0	0	0	0	0
Q Serve Time (g_s), s	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	481	0	0	0	0	0	0
V/C Ratio (X)	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	481	0	0	0	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	19.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	20.2	0.0	0.0	0.0	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay	15.1							
HCM 2010 LOS	B							

HCM Unsignalized Intersection Capacity Analysis

5: Waverly Ave & Plaza Ave

2016 Future (0.5% GR)

PM Peak

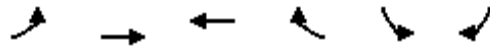
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	38	349	150	362	0	0
Future Volume (vph)	38	349	150	362	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	379	163	393	0	0
Direction, Lane #	EB 1	NB 1				
Volume Total (vph)	420	556				
Volume Left (vph)	41	163				
Volume Right (vph)	379	0				
Hadj (s)	-0.49	0.09				
Departure Headway (s)	4.9	5.1				
Degree Utilization, x	0.58	0.79				
Capacity (veh/h)	694	688				
Control Delay (s)	14.4	24.4				
Approach Delay (s)	14.4	24.4				
Approach LOS	B	C				
Intersection Summary						
Delay			20.1			
Level of Service			C			
Intersection Capacity Utilization			57.7%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2016 Future (0.5% GR)

8: Plaza Ave & Center Ave

PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↘	
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	87	167	0	303	12
Future Volume (vph)	0	87	167	0	303	12
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	95	182	0	329	13
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	95	182	342			
Volume Left (vph)	0	0	329			
Volume Right (vph)	0	0	13			
Hadj (s)	0.03	0.03	0.20			
Departure Headway (s)	5.1	5.0	4.8			
Degree Utilization, x	0.13	0.25	0.46			
Capacity (veh/h)	652	677	720			
Control Delay (s)	8.9	9.6	11.8			
Approach Delay (s)	8.9	9.6	11.8			
Approach LOS	A	A	B			
Intersection Summary						
Delay			10.7			
Level of Service			B			
Intersection Capacity Utilization			33.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2016 Future (0.5% GR)

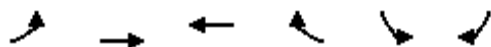
14: Madison St & Old White Plains Rd

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	164	38	31	250	34	0	0	0	0	0	0
Future Volume (Veh/h)	33	164	38	31	250	34	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	178	41	34	272	37	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	309			219			629	648	198	629	650	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	309			219			629	648	198	629	650	290
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			100	100	100	100	100	100
cM capacity (veh/h)	1252			1350			379	369	843	379	368	749
Direction, Lane #	EB 1	WB 1										
Volume Total	255	343										
Volume Left	36	34										
Volume Right	41	37										
cSH	1252	1350										
Volume to Capacity	0.03	0.03										
Queue Length 95th (ft)	2	2										
Control Delay (s)	1.3	1.0										
Lane LOS	A	A										
Approach Delay (s)	1.3	1.0										
Approach LOS												
Intersection Summary												
Average Delay		1.1										
Intersection Capacity Utilization		24.0%	ICU Level of Service				A					
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis
16: Plaza Ave & Washington St

2016 Future (0.5% GR)
PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰		↱		
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	21	45	0	192	0	0
Future Volume (vph)	21	45	0	192	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	49	0	209	0	0
Direction, Lane #	EB 1	WB 1				
Volume Total (vph)	72	209				
Volume Left (vph)	23	0				
Volume Right (vph)	0	209				
Hadj (s)	0.10	-0.57				
Departure Headway (s)	4.2	3.4				
Degree Utilization, x	0.08	0.20				
Capacity (veh/h)	847	1050				
Control Delay (s)	7.5	7.2				
Approach Delay (s)	7.5	7.2				
Approach LOS	A	A				
Intersection Summary						
Delay			7.3			
Level of Service			A			
Intersection Capacity Utilization			22.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
17: Washington St & Old White Plains Rd

2016 Future (0.5% GR)
PM Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations					 	
Traffic Volume (veh/h)	206	0	0	307	113	49
Future Volume (Veh/h)	206	0	0	307	113	49
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	224	0	0	334	123	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			224		558	224
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			224		558	224
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		75	94
cM capacity (veh/h)			1345		491	815
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	224	334	176			
Volume Left	0	0	123			
Volume Right	0	0	53			
cSH	1700	1700	558			
Volume to Capacity	0.13	0.20	0.32			
Queue Length 95th (ft)	0	0	34			
Control Delay (s)	0.0	0.0	14.4			
Lane LOS			B			
Approach Delay (s)	0.0	0.0	14.4			
Approach LOS			B			
Intersection Summary						
Average Delay		3.5				
Intersection Capacity Utilization		32.1%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

2016 Future (0.5% GR)

19: Grand St & Old White Plains Rd

PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	108	165	21	38	277	105	0	0	0	41	42	280
Future Volume (vph)	108	165	21	38	277	105	0	0	0	41	42	280
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	179	23	41	301	114	0	0	0	45	46	304
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total (vph)	319	456	395									
Volume Left (vph)	117	41	45									
Volume Right (vph)	23	114	304									
Hadj (s)	0.06	-0.10	-0.40									
Departure Headway (s)	5.9	5.6	5.6									
Degree Utilization, x	0.52	0.70	0.61									
Capacity (veh/h)	574	615	604									
Control Delay (s)	15.3	20.7	17.1									
Approach Delay (s)	15.3	20.7	17.1									
Approach LOS	C	C	C									
Intersection Summary												
Delay			18.0									
Level of Service			C									
Intersection Capacity Utilization			70.7%	ICU Level of Service					C			
Analysis Period (min)			15									

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	235	419	349	140	150	221
Future Vol, veh/h	235	419	349	140	150	221
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	-	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	255	455	379	152	163	240

Major/Minor	Major1	Minor2
Conflicting Flow All	0 0	966 0
Stage 1	- -	0 -
Stage 2	- -	966 -
Critical Hdwy	4.12 -	7.12 6.22
Critical Hdwy Stg 1	- -	- -
Critical Hdwy Stg 2	- -	6.12 -
Follow-up Hdwy	2.218 -	3.518 3.318
Pot Cap-1 Maneuver	- -	234 -
Stage 1	- -	- -
Stage 2	- -	306 -
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	- -	234 -
Mov Cap-2 Maneuver	- -	234 -
Stage 1	- -	- -
Stage 2	- -	306 -

Approach	EB	SB
HCM Control Delay, s		
HCM LOS		-

Minor Lane/Major Mvmt	EBL	EBT	SBLn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	131	32	0	0	0	0	0	0	3	232	315
Future Vol, veh/h	0	131	32	0	0	0	0	0	0	3	232	315
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	-	-	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	142	35	0	0	0	0	0	0	3	252	342

Major/Minor	Minor2			Major2		
Conflicting Flow All	-	430	423	0	0	0
Stage 1	-	430	-	-	-	-
Stage 2	-	0	-	-	-	-
Critical Hdwy	-	6.52	6.22	4.12	-	-
Critical Hdwy Stg 1	-	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	3.318	2.218	-	-
Pot Cap-1 Maneuver	0	518	631	-	-	-
Stage 1	0	583	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	-	0	631	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-
Stage 1	-	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	EB	SB
HCM Control Delay, s	12.9	
HCM LOS	B	

Minor Lane/Major Mvmt	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	631	-	-	-
HCM Lane V/C Ratio	0.281	-	-	-
HCM Control Delay (s)	12.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↓	
Traffic Vol, veh/h	0	41	159	0	54	18
Future Vol, veh/h	0	41	159	0	54	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	173	0	59	20

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	- 0	- 0	218 173
Stage 1	- -	- -	173 -
Stage 2	- -	- -	45 -
Critical Hdwy	- -	- -	6.42 6.22
Critical Hdwy Stg 1	- -	- -	5.42 -
Critical Hdwy Stg 2	- -	- -	5.42 -
Follow-up Hdwy	- -	- -	3.518 3.318
Pot Cap-1 Maneuver	0 -	- 0	770 871
Stage 1	0 -	- 0	857 -
Stage 2	0 -	- 0	977 -
Platoon blocked, %	-	-	
Mov Cap-1 Maneuver	- -	- -	770 871
Mov Cap-2 Maneuver	- -	- -	770 -
Stage 1	- -	- -	857 -
Stage 2	- -	- -	977 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	793
HCM Lane V/C Ratio	-	-	0.099
HCM Control Delay (s)	-	-	10
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection

Int Delay, s/veh 3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↓	
Traffic Vol, veh/h	206	0	0	307	113	49
Future Vol, veh/h	206	0	0	307	113	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	0	0	334	123	53

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	-	558
Stage 1	-	-	224
Stage 2	-	-	334
Critical Hdwy	-	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	-	3.518
Pot Cap-1 Maneuver	-	0	491
Stage 1	-	0	813
Stage 2	-	0	725
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	491
Mov Cap-2 Maneuver	-	-	491
Stage 1	-	-	813
Stage 2	-	-	725

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	558	-	-
HCM Lane V/C Ratio	0.316	-	-
HCM Control Delay (s)	14.4	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	1.3	-	-