

TRAFFIC IMPACT STUDY

Circle K Store and Gas Station
Northwest Corner of N. Farnsworth Ave. & Molitor Rd.
City of Aurora, Illinois

February 05, 2020

Prepared for:
Circle K Store, Inc. – Heartland Division

Bowman

Traffic Impact Study

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Aurora, Illinois

Prepared February 05, 2020

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Table of Contents

Executive Summary	iii
Introduction.....	1
Background Information	1
Traffic Impact Analysis Methodology	1
Roadway Network	3
Intersection Characteristics	3
Data Collection	4
Traffic Forecast and Background Traffic	4
Trip Generation	5
Trip Distribution	5
Capacity Analysis	6
Capacity Analysis Comparison – No Build vs Build Conditions (Year 2021).....	7
Capacity Analysis Comparison – No Build vs Build Conditions (Year 2031).....	9
Capacity Analysis Comparison – No Build vs Build with Improvements Conditions (Year 2021)	10
Capacity Analysis Comparison – No Build vs Build with Improvement Conditions (Year 2031)	12
Turn Lane Warrant Analysis.....	14
Right Turn Lane Warrant Driveway 1.....	14
Right Turn Lane Warrant Driveway 2.....	15
Left Turn Lane Warrant Driveway 2	16
Proposed Improvements	17
Conclusions and Recommendations	17

List of Figures

Figure 1. Site location.	1
Figure 2 Study Area	2
Figure 3 N Farnsworth Ave. and Molitor Rd.....	3
Figure 4 Regional Trip Distribution	6
Figure 5 Right Turn Lane Evaluation Warrant at Site Driveway 1	14
Figure 6 Right Turn Lane Evaluation Warrant at Site Driveway 2	15
Figure 7 Left Turn Lane Evaluation Warrant at Site Driveway 2.....	16

List of Tables

Table 1 Historical AADT and Annual Growth Rates	5
Table 2. Site Trip Generation	5
Table 3 HCM Level of Service Criteria.....	6
Table 4 2021 Capacity Analysis – N. Farnsworth Ave. and Molitor Rd.	7
Table 5 2021 Capacity Analysis – N. Farnsworth Ave. and Driveway 1.....	8
Table 6 2021 Capacity Analysis – Molitor Rd. and Driveway 2	8
Table 7 2031 Capacity Analysis – N. Farnsworth Ave. and Molitor Rd.	9
Table 8 2031 Capacity Analysis – N. Farnsworth Ave. and Driveway 1.....	10
Table 9 2021 Capacity Analysis – Molitor Rd. and Driveway 2	10
Table 10 2021 Capacity Analysis (Improved)– N. Farnsworth Ave. and Molitor Rd.....	11
Table 11 2021 Capacity Analysis (Improved) – N. Farnsworth Ave. and Driveway 1	11
Table 12 2021 Capacity Analysis (Improved) – Molitor Rd. and Driveway 2.....	12
Table 13 2031 Capacity Analysis (Improved) – N. Farnsworth Ave. and Molitor Rd.....	13
Table 14 2031 Capacity Analysis (Improved) – N. Farnsworth Ave. and Driveway 1	13
Table 15 2031 Capacity Analysis (Improved) – Molitor Rd. and Driveway 2.....	14

Table 16 Right Turn Lane Warrant Criteria Results at Site Driveway 1	15
Table 17. Right Turn Lane Warrant Criteria Results at Molitor Rd and Site Driveway #2	16
Table 18. Left Turn Lane Warrant Criteria Results at Molitor Rd and Site Driveway #2	17

Appendices

Appendix A: Site Plan
Appendix B: Scope/Methodology
Appendix C: Traffic Counts
Appendix D: Traffic Volume and Traffic Distribution Exhibits
Appendix E: Capacity Analysis Reports

Executive Summary

- This report summarizes the findings of the Traffic Impact Study performed by Bowman Consulting Group (BCG) for the proposed Circle K Development located in the city of Aurora, Illinois.
- The purpose of this study is to determine the potential impact (if any) to the existing traffic operations within the surrounding roadway network caused by the proposed development.
- The project is located at the northwest corner of the intersection of N Farnsworth Ave. and Molitor Road, Kane County, Illinois.
- The proposed development entails a 5,200 SF Convenience Store, and Gas Station with 14 Vehicle Fueling Positions.
- A Traffic Impact Analysis Methodology Statement was prepared and shared with representatives from the City of Aurora.
- For purposes of this analysis and in accordance with the approved/ scope and methodology, the following intersections were analyzed in this report:
 - N Farnsworth Ave. & Molitor Rd.- (Signalized Intersection)
 - N Farnsworth Ave. & Site Driveway 1
 - Molitor Rd. and & Site Driveway 2
- Turning movement counts were collected Thursday, January 19, 2021 and January 03, 2021 for the morning (7:00 AM – 9:00 AM) and evening (4:00 PM – 6:00 PM) peak periods.
- The proposed development is expected to generate a total of 444 trips during the morning peak hour and 366 trips during the evening peak hour. It is anticipated that during the morning peak hour 338 of these are existing trips while the remaining 106 are expected to be primary trips. During the evening peak hour 278 of these trips are expected to be existing trips and the remaining 88 are expected to be new trips.
- For the purposes of this analysis, it is anticipated that the proposed development will be constructed and fully operational by the year 2021.
- The following scenarios were evaluated as part of this study:
 - 2021 Conditions without the proposed development - (2021 No Build)
 - 2021 Conditions with the proposed development - (2021 Build)
 - 2031 Conditions without the proposed development - (2031 No Build)
 - 2031 Conditions with the proposed development - (2031 Build)

- To evaluate the traffic operations, intersection capacity analyses were completed. The results indicate the following:
 - The intersection of N Farnsworth Ave. and Molitor Rd. is expected to operate at acceptable LOS C during No Build and LOS D under Build conditions, with an increase in overall delay of less than 5 seconds for both the 2021 and 2031 horizon.

The eastbound left turning movement is expected to degrade from LOS D to LOS F under build conditions. Westbound thru/right movement is expected to maintain a LOS F during the morning and LOS E during the evening peak hours, under both the No Build and Build Conditions. All other turning movements are projected to operate at acceptable LOS D or better during both the No Build and Build Conditions for both the 2021 and 2031 horizon.

- The intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at an acceptable overall LOS A. Site driveway 1 is projected to operate at acceptable LOS C or better under build and Build with Improvement conditions. All other turning movements and approaches are projected to operate at LOS A.
- The intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A. Site driveway 2 is projected to operate at acceptable LOS C or better under build and Build with Improvement conditions. All other turning movements and approaches are projected to operate at LOS A.
- Turn lane warrant analysis were performed to determine whether the proposed site will warrant the installation of turn lanes at the proposed site driveways. The results indicate that a right turn lane will be warranted at driveway 1 based on the criteria presented on the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*.
- Considering the results of the capacity analysis, the following improvements are recommended:
 - **Improvements on N. Farnsworth Ave. and Molitor Rd.**
 - Eastbound left turn increase storage from 75 feet to 150 storage and 125 taper.
 - Northbound left turn increase storage from 150 feet to 180 feet. (stripped)
 - Optimize splits.
 - **Improvements on N. Farnsworth Ave. and Driveway 1**
 - Southbound right turn lane.
 - **Improvements on Molitor Rd. and Driveway 2**
 - Southbound (Driveway 2) one entry Lane/Two Exit Lanes (without a median). The two exit lanes to be dedicated right and left turn lane.

Introduction

This report summarizes the findings of the Traffic Impact Study performed by Bowman Consulting Group (BCG) for the proposed Circle K located in the city of Aurora, Illinois.

The purpose of this study is to determine the potential impacts (if any) to the existing traffic operations within the surrounding roadway network caused by the inclusion of the proposed development site traffic.

Background Information

The proposed development entails a 5,200 SF Convenience Store and Gas Station with 14 Vehicle Fueling Positions. The project is located at the northwest corner of the intersection of N Farnsworth Ave. and Molitor Rd., Illinois. **Figure 1** depicts the site location.

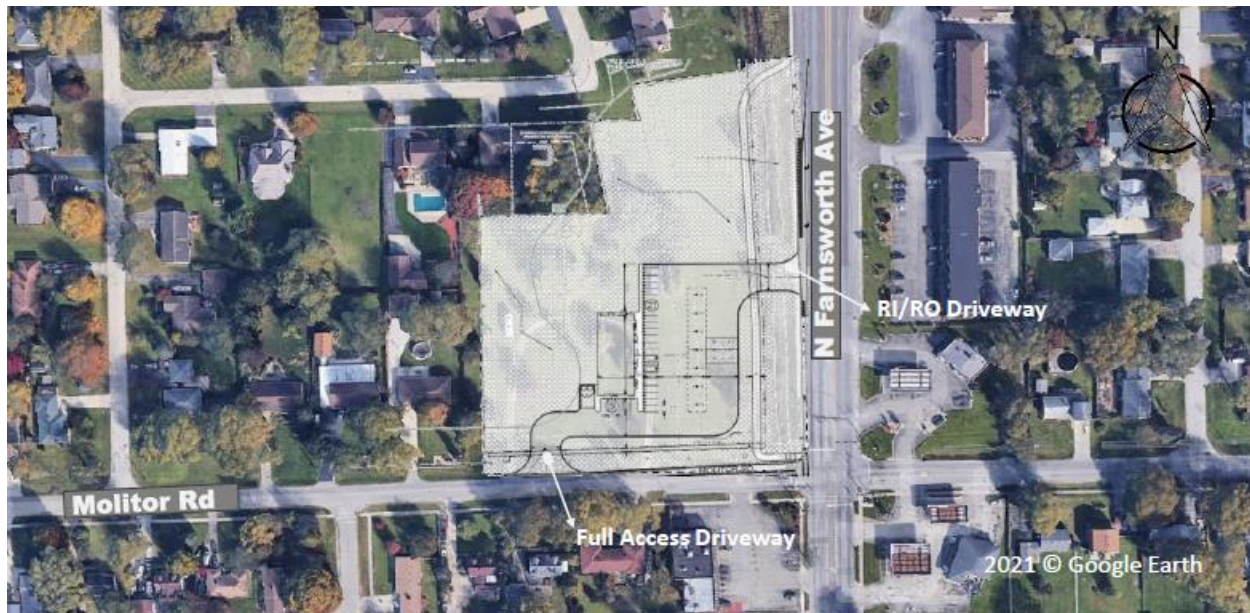


Figure 1. Site location.

Access to the site would be provided via one (1) Full Access driveway along Molitor Rd. and one (1) Right-In/Right-Out driveway along N. Farnsworth Ave. The site plan is presented in **Appendix A**.

Traffic Impact Analysis Methodology

A Traffic Impact Analysis Methodology Statement was prepared and shared with representatives from the City of Aurora. A copy of the approved Traffic Impact Analysis Methodology Statement and proof of the coordination with the agencies is contained in **Appendix B**.

As shown in the Traffic Impact Analysis Methodology Statement and coordination the following items are to be analyzed in this report:

- Trip generation calculations (for the proposed site).
- Traffic assignment (trip distribution) for the proposed development.
- Capacity and queuing analyses.
- Right turn lane warrants at the proposed site driveways.

For purposes of this analysis and in accordance with the approved/ scope and methodology, the following intersections were analyzed in this report:

1. N Farnsworth Ave. & Molitor Rd.- (Signalized Intersection)
2. N Farnsworth Ave. & Site Driveway 1
3. Molitor Rd. and & Site Driveway 2

Figure 2 depicts the study area.

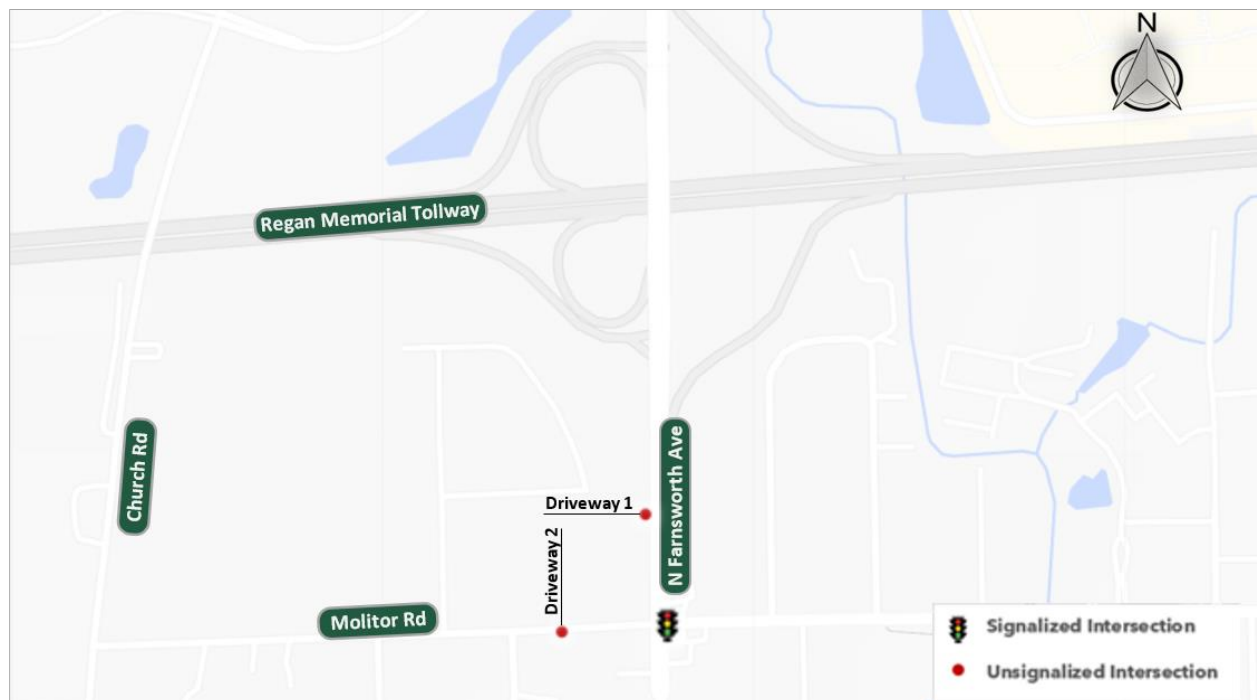


Figure 2 Study Area

To assess the traffic operation at the driveways, the following tasks were undertaken:

- Turning movement counts were collected during an Average weekday (January 19, 2021) for the morning (7:00 AM - 9:00 AM) and evening (4:00 PM - 6:00 PM) peak periods. These counts were used to identify peak hours, determine traffic patterns, and evaluate intersection Levels of Service.
- Trip generation calculations for the proposed development utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition

- Trip Distribution for the existing and proposed development based on trip distribution patterns from Illinois Department of Transportation (IDOT) Traffic count information online.
- Capacity analyses were prepared to determine existing and projected Levels of Service (LOS) and maximum queue lengths.

Roadway Network

N. Farnsworth Ave.:

Within the identified study area is a City-Maintained four-lane undivided roadway identified as an Urban Principal Arterial according to the IDOT Traffic Count Information online. It has a north-south alignment with a posted speed limit of 35 miles per hour.

Molitor Rd.:

Within the identified study area is a City-Maintained two-lane undivided roadway, identified as an Urban Major Collector according to the IDOT Traffic Count Information online. It has an east-west alignment and a 30 miles per hour posted speed limit.

Intersection Characteristics

Intersection of N. Farnsworth Ave. and Molitor Rd.

This intersection is currently a four-legged signalized intersection where Molitor Rd. has an east-west alignment, and N Farnsworth Ave. has a north-south alignment as shown in **Figure 3**.



Figure 3 N Farnsworth Ave. and Molitor Rd.

The Eastbound and Westbound approaches consist of one exclusive left-turn lane, and one shared through/right-turn lane. The Northbound and Southbound approaches consist of one exclusive left-turn lane, one exclusive through lane and one shared through/right-turn lane.

Site Access Driveways

Proposed conditions. As mentioned before, access to the site is proposed to be provided by one (1) right-in/right-out driveway along N Farnsworth Ave. and one (1) full-access driveway along Molitor Rd. The site plan is depicted in **Appendix A**.

Data Collection

For the purposes of this study the following data was collected:

- Inspections were conducted to obtain an inventory of existing roadway geometry, traffic control devices, and location of existing and proposed driveways.
- Published IDOT AADT information counts and functional classification information.
- Signal Phasing and timings.
- Turning movement counts were collected at the intersection of N Farnsworth Ave. & Molitor Rd.- (Signalized Intersection).

Traffic Forecast and Background Traffic

For the purposes of this analysis, it is anticipated that the proposed development will be constructed and fully operational by the year 2021. The following scenarios were evaluated as part of this study:

- 2021 Conditions without the proposed development - (2021 No Build)
- 2021 Conditions with the proposed development - (2021 Build)
- 2031 Conditions without the proposed development - (2031 No Build)
- 2031 Conditions with the proposed development - (2031 Build)

The existing peak hour traffic volumes extracted from the counts were used to determine the 2021 No Build traffic volumes, depicted on **Exhibit 1** in **Appendix C**.

To develop the 2031 No Build Traffic Volumes, the first step was to determine a background growth rate applicable for the study area roadway segments. For each roadway segment, the annual growth rate was calculated using the historical AADT information provided by the IDOT Average Annual Daily Traffic & Historical Counts 2010-2019 information. For a conservative approach a 0.5% minimum Average annual growth rate was used for all traffic in the study area.

The historical AADT information for the study area roadway, as well as the applied growth rates utilized for the analysis, are presented in **Table 1**.

Table 1 Historical AADT and Annual Growth Rates

Roadway	From	to	2010	2018	Avg Growth rate	Applied Growth rate
N Farnsworth Ave	Indian Tr	Dearborn Ave	23,500	23,500	0.0%	0.5%

Roadway	From	to	2010	2014	2017	2018	2017	2018	2019	Avg Growth rate	Applied Growth rate
Molitor Rd	Church Rd	Diehl Rd	6,400	8,300	8,750	6,050	7.4%	1.8%	-30.9%	-7.2%	0.5%

Source: IDOT Average Annual Daily Traffic & Historical Counts 2010-2019

These growth rates were applied to the 2021 No Build Traffic Volumes to develop the 2031 No Build Traffic Volumes, depicted on **Exhibit 2** in **Appendix C**.

Trip Generation

The applicant is proposing to develop the site with the following land uses generating site traffic:

- 5,200 S.F. convenience store with 14 vehicle fueling positions.

Comparable land uses for the proposed development as per the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* were used to determine the number of trips generated the proposed development. The comparable land uses are listed below:

- Super Convenience Store with Gas Station (Land Use 960).

Pass-by Rates of 76% for (LU-960) were extracted from The Institute of Transportation Engineers Trip Generation Handbook 3rd Edition.

Table 2 displays the trip generation for the proposed development.

Table 2. Site Trip Generation

Land Use (1)	Size	Time	Total Trips ⁽¹⁾			Pass-By Trips			Net New Trips ⁽²⁾		
			In	Out	Total	In	Out	Total	In	Out	Total
LU-960 Super Convenience Store with Gas Station	5,200 SF +14 VFP	AM	222	222	444	169	169	338	53	53	106
		PM	183	183	366	139	139	278	44	44	88

(1) Institute of Transportation Engineers Trip Generation (ITE), 10th Edition

(2) Pass-by Rates of 76% for LU-960 were extracted from the ITE Trip Generation Errata.

The proposed development is expected to generate a total of 444 trips during the morning peak hour and 366 trips during the evening peak hour. It is anticipated that during the morning peak hour 338 of these are existing trips while the remaining 106 are expected to be primary trips. During the evening peak hour 278 trips are expected to be existing trips and 88 are expected to be new trips.

Trip Distribution

The trip distribution was developed based on the trip distribution agreed upon coordination with the agencies. The regional trip distribution is presented in **Figure 4**.

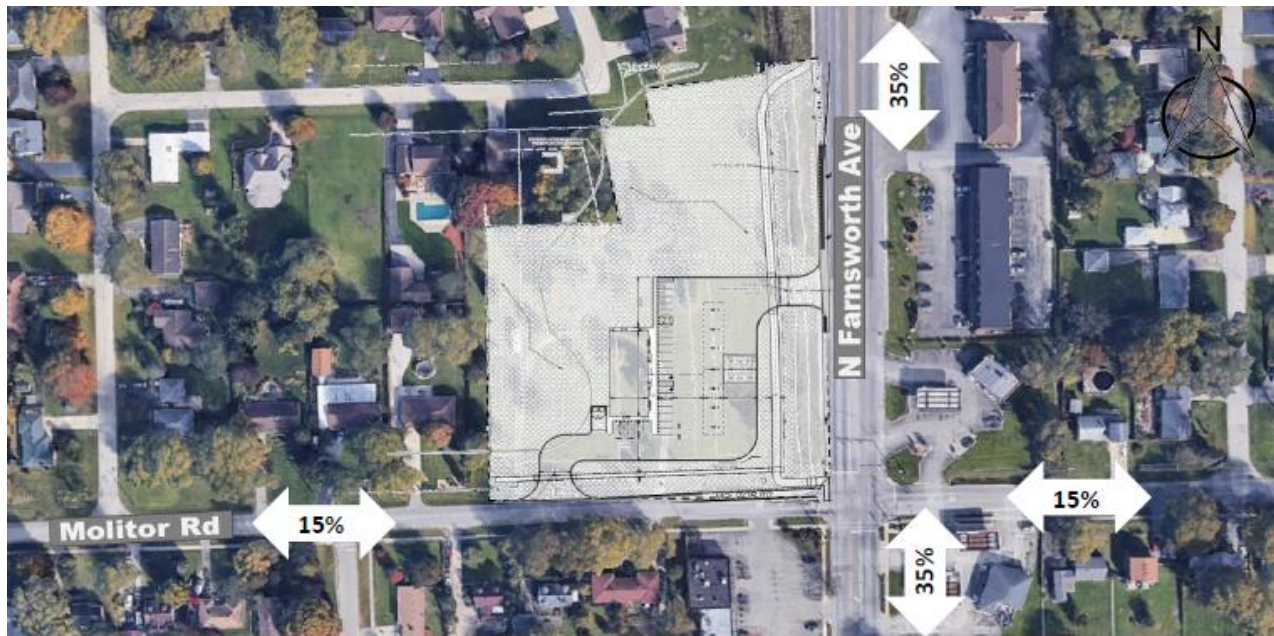


Figure 4 Regional Trip Distribution

The site trip distribution was assessed based on the regional trip distribution and the primary and pass by trip generation rates. The Site Trips are presented in **Exhibits 3** in **Appendix C**.

The Site Trips were added to the 2021 and 2031 No Build Traffic Volumes to yield the 2021 and 2031 Build Traffic Volumes presented in **Exhibit 4** and **5** in **Appendix C**.

Capacity Analysis

The study intersection was analyzed for each scenario following the Highway Capacity Manual (HCM 6th edition) methodologies using the computer software package Synchro 10 with SimTraffic. The analysis uses capacity, Level of Service, and control delay as the criteria for the performance of the driveways.

Capacity, as defined by the HCM, is a measure of the maximum number of vehicles in an hour that can travel through an intersection or section of roadway under typical conditions. Level of Service (LOS) is a marker of the driving conditions and perception of drivers while traveling during the given time period. LOS ranges from LOS A which represents free flow conditions, to LOS F which represents breakdown conditions. **Table 3** shows the LOS for signalized and unsignalized intersections as defined by the HCM.

Table 3 HCM Level of Service Criteria

Unsignalized Intersections		Signalized Intersections	
Level of Service	Average Control Delay (sec/veh)	Level of Service	Average Control Delay (sec/veh)
A	≤10	A	≤10
B	>10-15	B	>10-20
C	>15-25	C	>20-35
D	>25-35	D	>35-55
E	>35-50	E	>55-80
F	≥50	F	≥80

Control delay is a measure of the total amount of delay experienced by an individual vehicle and includes delay related to deceleration, queue delay, stopped delay, and acceleration. **Table 3** displays the amount of control delay (in seconds per vehicle) that corresponds to the LOS for signalized and unsignalized intersections.

Capacity analyses were completed for the following scenarios for the morning and evening peak hours:

- 2021 Conditions without the proposed development - (2021 No Build)
- 2021 Conditions with the proposed development - (2021 Build)
- 2031 Conditions without the proposed development - (2031 No Build)
- 2031 Conditions with the proposed development - (2031 Build)
- 2021 Conditions with the proposed development - (2021 Build with Improvements)
- 2031 Conditions with the proposed development - (2031 Build with Improvements)

Capacity Analysis Comparison – No Build vs Build Conditions (Year 2021)

Capacity Analyses were conducted for the No Build and Build conditions (year 2021). The primary purpose for this approach was to compare the results in order to identify areas impacted by the proposed development. The capacity results are included in **Appendix E**.

Intersection of N. Farnsworth Ave. and Molitor Rd. (2021)

Based on the results of the capacity analysis, during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Molitor Rd. is projected to operate at an acceptable overall LOS C under No Build conditions and LOS D under Build Conditions, with an increase in overall delay of only 4.1 seconds on the morning and 4.0 seconds on the evening peak hour.

The eastbound left turning movement is expected to degrade from LOS D to LOS F under build conditions. Westbound thru/right movement is expected to maintain a LOS F during the morning and LOS E during the evening peak hours, under both the No Build and Build Conditions. All other turning movements are projected to operate at acceptable LOS D or better during both the No Build and Build Conditions.

The capacity results for the intersection of N. Farnsworth Ave. and Molitor Rd. are summarized in **Table 4**.

Table 4 2021 Capacity Analysis - N. Farnsworth Ave. and Molitor Rd.

2021 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #1: N Farnsworth Ave & Molitor Rd (Signalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	L	52.2	D	85.0	F	47.3	D	80.9	F
		TR	60.1	E	58.2	E	46.9	D	46.2	D
		Approach	56.8	E	72.2	E	47.1	D	65.7	E
	WB	L	53.0	D	52.3	D	39.5	D	39.1	D
		TR	80.5	F	83.8	F	78.7	E	79.4	E
		Approach	73.1	E	77.3	E	67.4	E	68.8	E
	NB	LT	15.7	B	18.2	B	16.5	B	18.1	B
		T	32.1	C	33.1	C	21.0	C	21.1	C
		TR	32.1	C	33.0	C	21.0	C	21.1	C
	SB	Approach	31.6	C	31.4	C	20.8	C	20.8	C
		L	12.0	B	12.3	B	13.7	B	14.4	B
		T	14.9	B	16.3	B	20.8	C	23.9	C
		TR	14.9	B	16.3	B	20.8	C	23.9	C
		Approach	14.4	B	15.7	B	20.3	C	23.1	C
	Intersection	-	31.9	C	36.0	D	29.6	C	33.6	C

The queue results from SimTraffic exceed the available storage of the eastbound left turn lane under both No Build and Build Conditions. The northbound left turn lane storage is exceeded during the morning peak hour under Build conditions.

Intersection of N. Farnsworth Ave. and Driveway 1 (2021)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at an acceptable overall LOS A under Build Conditions. All turning movements and approaches are projected to operate at acceptable LOS C or better during the Build Conditions for both the morning and evening peak hours.

The capacity results for the intersection of N. Farnsworth Ave. and Driveway 1 are summarized in **Table 5**.

Table 5 2021 Capacity Analysis - N. Farnsworth Ave. and Driveway 1

2021 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #2: N Farnsworth Ave & Site Driveway 1 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			11.5	B			15.6	C
	NB	Approach			0.0	A			0.0	A
	SB	T			0.0	A			0.0	A
		TR			0.0	A			0.0	A
		Approach			0.0	A			0.0	A
	Intersection	-			0.5	A			0.4	A

The queue results from SimTraffic do not appear to exceed the available storage in either the No Build or Build Conditions.

Intersection of Molitor Rd. and Driveway 2 (2021)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A under the Build Conditions. The southbound approach is expected to operate at LOS B under Build Conditions. All other turning movements and approaches are projected to operate at acceptable LOS A during the Build Conditions for the morning peak hour.

The capacity results for the intersection of Molitor Rd. and Driveway 2 are summarized in **Table 6**.

Table 6 2021 Capacity Analysis - Molitor Rd. and Driveway 2

2021 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #3: Molitor Rd & Site Driveway 2 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			1.2	A			1.0	A
	WB	Approach			0.0	A			0.0	A
	SB	Approach			12.8	B			14.7	B
	Intersection				3.8	A			2.9	A

The queue results from SimTraffic do not appear to exceed the available storage of the proposed driveway under Build Conditions.

Capacity Analysis Comparison – No Build vs Build Conditions (Year 2031)

Capacity Analyses were conducted for the No Build and Build conditions (year 2031). The primary purpose for this approach was to compare the results in order to identify areas impacted by the proposed development in the 10-year horizon. The capacity results are included in **Appendix E**.

Intersection of N. Farnsworth Ave. and Molitor Rd. (2031)

Based on the results of the capacity analysis for the 10-year horizon, during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Molitor Rd. is projected to operate at an acceptable overall LOS C under No Build conditions and LOS D under Build Conditions, with an increase in overall delay of only 4.2 seconds for the morning and 4.3 seconds for the evening peak hour.

The eastbound left turning movement is expected to degrade from LOS D to LOS F under build conditions. Westbound thru/right movement is expected to maintain a LOS F during the morning and evening peak hours, under both the No Build and Build Conditions. All other turning movements are projected to operate at acceptable LOS D or better during both the No Build and Build Conditions.

The capacity results for the intersection of N. Farnsworth Ave. and Molitor Rd. are summarized in **Table 7**.

Table 7 2031 Capacity Analysis - N. Farnsworth Ave. and Molitor Rd.

2031 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #1: N Farnsworth Ave & Molitor Rd (Signalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	L	52.5	D	90.1	F	48.4	D	88.8	F
		TR	60.5	E	58.1	E	46.5	D	45.9	D
		Approach	57.2	E	74.7	E	47.4	D	69.9	E
	WB	L	52.9	D	52.0	D	38.8	D	38.4	D
		TR	84.8	F	84.3	F	80.2	F	81.2	F
		Approach	76.2	E	77.6	E	68.3	E	69.9	E
	NB	LT	15.9	B	18.6	B	17.6	B	19.5	B
		T	33.5	C	34.6	C	22.2	C	22.1	C
		TR	33.4	C	34.5	C	22.1	C	22.1	C
		Approach	32.9	C	32.8	C	22.0	C	21.8	C
	SB	L	12.9	B	13.2	B	14.5	B	15.1	B
		T	15.4	B	16.9	B	22.5	C	25.6	C
		TR	15.4	B	16.8	B	22.4	C	25.6	C
		Approach	15.0	B	16.3	B	21.8	C	24.8	C
	Intersection	-	33.0	C	37.2	D	30.9	C	35.2	D

The queue results from SimTraffic exceed the available storage of the eastbound left turn lane under both No Build and Build Conditions. The northbound left turn lane storage is exceeded under Build conditions.

Intersection of N. Farnsworth Ave. and Driveway 1 (2031)

Based on the results of the capacity analysis for the 2031 horizon during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at an acceptable overall LOS A during the Build Conditions. All turning movements and approaches are projected to operate at acceptable LOS C or better.

The capacity results for the intersection of N. Farnsworth Ave. and Driveway 1 are summarized in **Table 8**.

Table 8 2031 Capacity Analysis – N. Farnsworth Ave. and Driveway 1

2031 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #2: N Farnsworth Ave & Site Driveway 1 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			11.7	B			16.2	C
	NB	Approach			0.0	A			0.0	A
	SB	T			0.0	A			0.0	A
		TR			0.0	A			0.0	A
		Approach			0.0	A			0.0	A
	Intersection	-			0.5	A			0.4	A

The queue results from SimTraffic do not appear to exceed the available storage in either the No Build or Build Conditions.

Intersection of Molitor Rd. and Driveway 2 (2031)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A under the Build Conditions.

Under Build Conditions the southbound approach is expected to operate at LOS B during the morning peak hour and LOS C during the evening peak hour. All other turning movements and approaches are projected to operate at acceptable LOS A during the Build Conditions for the morning peak hour.

The capacity results for the intersection of Molitor Rd. and Driveway 2 are summarized in **Table 6**.

Table 9 2021 Capacity Analysis – Molitor Rd. and Driveway 2

2031 CONDITIONS			No Build (AM)		Build (AM)		No Build (PM)		Build (PM)	
Intersection #3: Molitor Rd & Site Driveway 2 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			1.1	A			0.9	A
	WB	Approach			0.0	A			0.0	A
	SB	Approach			12.9	B			15.2	C
	Intersection	-			3.7	A			2.9	A

The queue results from SimTraffic exceed the available storage under Build Conditions.

Capacity Analysis Comparison – No Build vs Build with Improvements Conditions (Year 2021)

Capacity Analyses were conducted for the No Build and Build with improvements conditions (year 2021). The primary purpose for this approach was to evaluate the results of the proposed improvements. The capacity results are included in **Appendix E**.

Intersection of N. Farnsworth Ave. and Molitor Rd. (2021)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Molitor Rd. is projected to operate at an acceptable

overall LOS C under No Build and Build with Improvements Conditions, with no increase in the overall delay.

Westbound thru/right movement is expected to maintain a LOS F during the morning and LOS E during the evening peak hours, under both the No Build and Build Conditions. All other turning movements are projected to maintain acceptable LOS D or better during both the No Build and Build Conditions.

The capacity results for the improved conditions for the intersection of N. Farnsworth Ave. and Molitor Rd. are summarized in **Table 10**.

Table 10 2021 Capacity Analysis (Improved)- N. Farnsworth Ave. and Molitor Rd.

2021 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #1: N Farnsworth Ave & Molitor Rd (Signalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	L	52.2	D	51.5	D	47.3	D	46.1	D
		TR	60.1	E	52.6	D	46.9	D	39.9	D
		Approach	56.8	E	52.1	D	47.1	D	43.4	D
	WB	L	53.0	D	52.0	D	39.5	D	39.6	D
		TR	80.5	F	3.8	A	78.7	E	65.3	E
		Approach	73.1	E	77.2	E	67.4	E	58.5	E
	NB	LT	15.7	B	12.8	B	16.5	B	21.0	C
		T	32.1	C	21.9	C	21.0	C	24.3	C
		TR	32.1	C	21.9	C	21.0	C	24.2	C
		Approach	31.6	C	20.9	C	20.8	C	23.9	C
	SB	L	12.0	B	13.4	B	13.7	B	16.7	B
		T	14.9	B	18.0	B	20.8	C	28.0	C
		TR	14.9	B	18.0	B	20.8	C	27.9	C
		Approach	14.4	B	17.3	B	20.3	C	27.1	C
	Intersection	-	31.9	C	29.0	C	29.6	C	32.4	C

The queue results from SimTraffic do not exceed the available storage during the morning peak hour. During the evening peak hour, the queue length is reduced under the Improved conditions.

Intersection of N. Farnsworth Ave. and Driveway 1 (2021)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at overall LOS A under the Build with Improvement Conditions.

All turning movements and approaches are projected to operate at acceptable LOS B or better during the Build with Improvement Conditions for both the morning and evening peak hours.

The capacity results for the improved conditions for the intersection of N. Farnsworth Ave. and Driveway 1 are summarized in **Table 11**.

Table 11 2021 Capacity Analysis (Improved) - N. Farnsworth Ave. and Driveway 1

2021 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #2: N Farnsworth Ave & Site Driveway 1 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			11.0	B			14.9	B
	NB	Approach			0.0	A			0.0	A
	SB	T			0.0	A			0.0	A
		R			0.0	A			0.0	A
		Approach			0.0	A			0.0	A
	Intersection	-			0.5	A			0.4	A

The queue results from SimTraffic do not appear to exceed the available storage in either the No Build or Build with Improvement Conditions.

Intersection of Molitor Rd. and Driveway 2 (2021)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A under the Build with Improvement Conditions.

All turning movements and approaches are projected to operate at acceptable LOS C or better during the Build Conditions.

The capacity results for the improved conditions for the intersection of Molitor Rd. and Driveway 2 are summarized in **Table 12**.

Table 12 2021 Capacity Analysis (Improved) - Molitor Rd. and Driveway 2

2021 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #3: Molitor Rd & Site Driveway 2 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			1.2	A			1.0	A
	WB	Approach			0.0	A			0.0	A
	SB	L			13.0	B			15.1	C
		R			9.2	A			10.1	B
		Approach			12.1	B			14.0	B
	Intersection	-			3.6	A			2.8	A

The queue results from SimTraffic do not appear to exceed the available storage of the proposed driveway under Improved Conditions.

Capacity Analysis Comparison – No Build vs Build with Improvement Conditions (Year 2031)

Capacity Analyses were conducted for the No Build and Build with Improvements conditions (year 2031). The primary purpose for this approach was to evaluate the results of the proposed improvements. The capacity results are included in **Appendix E**

Intersection of N. Farnsworth Ave. and Molitor Rd. (2031)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Molitor Rd. is projected to operate at an acceptable overall LOS C under No Build and Build with Improvement Conditions, with no increase in the overall delay.

Westbound thru/right movement is expected to maintain a LOS F during the morning and LOS E during the morning peak hour and to improve from LOS F to LOS E under Build with Improvement conditions during the evening peak hour. All other turning movements are projected to maintain acceptable LOS D or better during both the No Build and Build Conditions.

The capacity results for the intersection of N. Farnsworth Ave. and Molitor Rd. are summarized in **Table 7**.

Table 13 2031 Capacity Analysis (Improved) – N. Farnsworth Ave. and Molitor Rd.

2031 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #1: N Farnsworth Ave & Molitor Rd (Signalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	L	52.5	D	52.2	D	48.4	D	46.2	D
		TR	60.5	E	52.2	D	46.5	D	39.1	D
		Approach	57.2	E	52.2	D	47.4	D	43.1	D
	WB	L	52.9	D	51.6	D	38.8	D	39.0	D
		TR	84.8	F	84.3	F	80.2	F	65.9	E
		Approach	76.2	E	77.6	E	68.3	E	58.8	E
	NB	LT	15.9	B	13.6	B	17.6	B	22.9	C
		T	33.5	C	23.1	C	22.2	C	25.7	C
		TR	33.4	C	23.0	C	22.1	C	25.6	C
		Approach	32.9	C	22.0	C	22.0	C	25.4	C
	SB	L	12.9	B	14.3	B	14.5	B	17.8	B
		T	15.4	B	18.2	B	22.5	C	30.5	C
		TR	15.4	B	18.1	B	22.4	C	30.4	C
		Approach	15.0	B	17.6	B	21.8	C	29.4	C
	Intersection	-	33.0	C	29.6	C	30.9	C	33.9	C

For the eastbound left turn, the queue results from SimTraffic exceed the available storage under No Build and Build with Improvement conditions. The northbound left turn is not expected to exceed proposed available storage under Improved conditions.

Intersection of N. Farnsworth Ave. and Driveway 1 (2031)

Based on the results of the capacity analysis for the 2031 horizon during the morning and evening peak hour, the intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at an acceptable overall LOS A during the Build with Improvements Conditions.

All turning movements and approaches are projected to operate at acceptable LOS C or better during the Build with Improvements Conditions.

The capacity results for the intersection of N. Farnsworth Ave. and Driveway 1 are summarized in **Table 14**.

Table 14 2031 Capacity Analysis (Improved) – N. Farnsworth Ave. and Driveway 1

2031 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #2: N Farnsworth Ave & Site Driveway 1 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			11.2	B			15.5	C
	NB	Approach			0.0	A			0.0	A
	SB	T			0.0	A			0.0	A
		R			0.0	A			0.0	A
		Approach			0.0	A			0.0	A
	Intersection	-			0.5	A			0.4	A

The queue results from SimTraffic do not appear to exceed the available storage under the No Build or Build with Improvements Conditions.

Intersection of Molitor Rd. and Driveway 2 (2031)

Based on the results of the capacity analysis during the morning and evening peak hour, the intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A under the Build Conditions.

Under Build Conditions the southbound approach is expected to operate at LOS B during the morning peak hour and LOS C during the evening peak hour. All other turning movements and approaches are projected to operate at acceptable LOS B or better during the Build with Improvement Conditions.

The capacity results for the intersection of Molitor Rd. and Driveway 2 are summarized in **Table 15**.

Table 15 2031 Capacity Analysis (Improved) - Molitor Rd. and Driveway 2

2031 CONDITIONS			No Build (AM)		Build WI (AM)		No Build (PM)		Build WI (PM)	
Intersection #3: Molitor Rd & Site Driveway 2 (Unsignalized)	Approach	Movement	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS	Delay (S)	LOS
	EB	Approach			1.1	A			0.9	A
	WB	Approach			0.0	A			0.0	A
	SB	L			13.2	B			15.6	C
		R			9.2	A			10.2	B
		Approach			12.3	B			14.4	B
	Intersection	-			3.5	A			2.7	A

The queue results from SimTraffic do not appear to exceed the available storage of the proposed driveway under Build with Improvement Conditions.

Turn Lane Warrant Analysis

Turn lane warrant analysis were performed to determine whether the proposed site will warrant the installation of turn lanes at the proposed site driveways.

Right Turn Lane Warrant Driveway 1

Figure 5 has been extracted from Figure 36-3.A of the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*. This figure outlines the traffic volumes required to satisfy a right turn lane warrant at any unsignalized intersection on a high-speed, four-lane urban or rural highway.

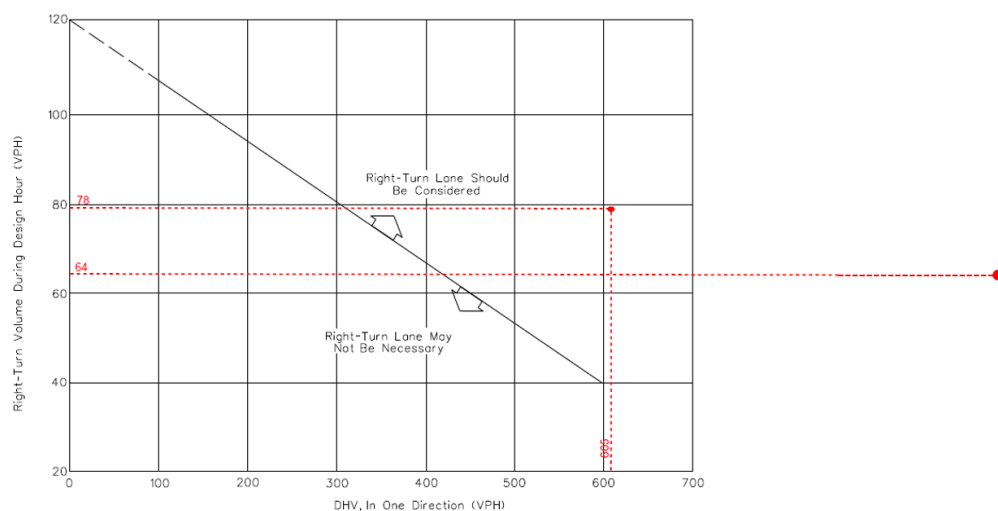


Figure 5 Right Turn Lane Evaluation Warrant at Site Driveway 1

As shown on **Figure 5**, the projected traffic volume falls above the volume threshold, therefore the right turn lane is warranted at this location.

Chapter Thirty-Six, *Intersection* contains additional criteria for the evaluation of a right turn lane warrant. A summary of the criteria is shown in **Table 16**.

Table 16 Right Turn Lane Warrant Criteria Results at Site Driveway 1

Exclusive Right-Turn Lane Criteria ⁽¹⁾	Criteria Met?
At any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 36-3.A;	Yes
At any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 36-3.B;	N/A
On expressways at all public road intersections where the current ADT on the side road is greater than 250;	No
At any intersection where a capacity analysis determines a right-turn lane is necessary to meet the level-of-service criteria;	N/A
At any signalized intersection where the right-turning volume is equal to or greater than 150 vph and where there is greater than 300 vphpl on the mainline;	No
For uniformity of intersection design along the highway if other intersections have right-turn lanes;	No
At any intersection where the mainline is curved to the left and where the mainline curve requires superelevation;	No
At railroad crossings where the railroad is located close to the intersection and a right-turn lane would be desirable to efficiently move through traffic on the	No
At any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to right-turning vehicles;	No

(1) From the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*.

Driveway 1 meets the criteria for the installation of a right turn lane based on the additional criteria presented in **Table 16**. Therefore, a right turn lane is warranted at site driveway 1.

Right Turn Lane Warrant Driveway 2

Figure 6 has been extracted from Figure 36-3.A of the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*. This figure outlines the traffic volumes required to satisfy a right turn lane warrant at any unsignalized intersection on a high-speed, four-lane urban or rural highway.

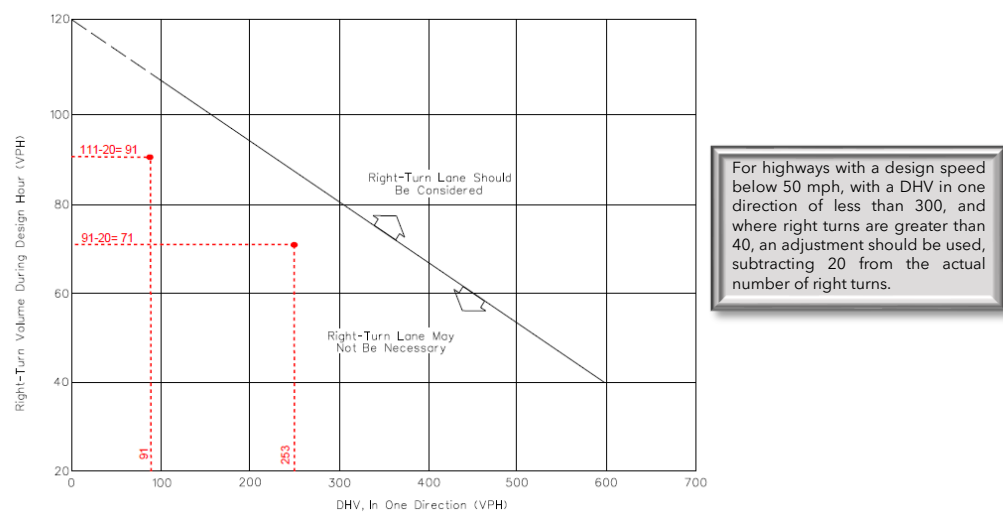


Figure 6 Right Turn Lane Evaluation Warrant at Site Driveway 2

As shown on **Figure 6**, the projected traffic volumes fall below the volume threshold defined by Chapter Thirty-Six, *Intersections*.

Chapter Thirty-Six, *Intersection* contains additional criteria for the evaluation of a right turn lane warrant. A summary of the criteria, and if the proposed site driveway meets the criteria, is shown in **Table 17**.

Table 17. Right Turn Lane Warrant Criteria Results at Molitor Rd and Site Driveway #2

Exclusive Right-Turn Lane Criteria ⁽¹⁾	Criteria Met?
At any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 36-3.A;	No
At any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 36-3.B;	N/A
On expressways at all public road intersections where the current ADT on the side road is greater than 250;	No
At any intersection where a capacity analysis determines a right-turn lane is necessary to meet the level-of-service criteria;	N/A
At any signalized intersection where the right-turning volume is equal to or greater than 150 vph and where there is greater than 300 vphpl on the mainline;	No
For uniformity of intersection design along the highway if other intersections have right-turn lanes;	No
At any intersection where the mainline is curved to the left and where the mainline curve requires superelevation;	No
At railroad crossings where the railroad is located close to the intersection and a right-turn lane would be desirable to efficiently move through traffic on the	No
At any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to right-turning vehicles;	No

(1) From the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*.

As shown in **Table 14**, based on the additional criteria the installation of a right turn lane is not warranted at this location.

Left Turn Lane Warrant Driveway 2

The Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections* do not provide left turn lane warrant analysis values for 30MPH roadways, for a conservative approach this study uses the values for a 40 MPH roadway presented in figure 36-3. G. , see **Figure 7**. This figure outlines the traffic volumes required to satisfy a left turn lane warrant at any unsignalized intersection on a high-speed, four-lane urban or rural highway.

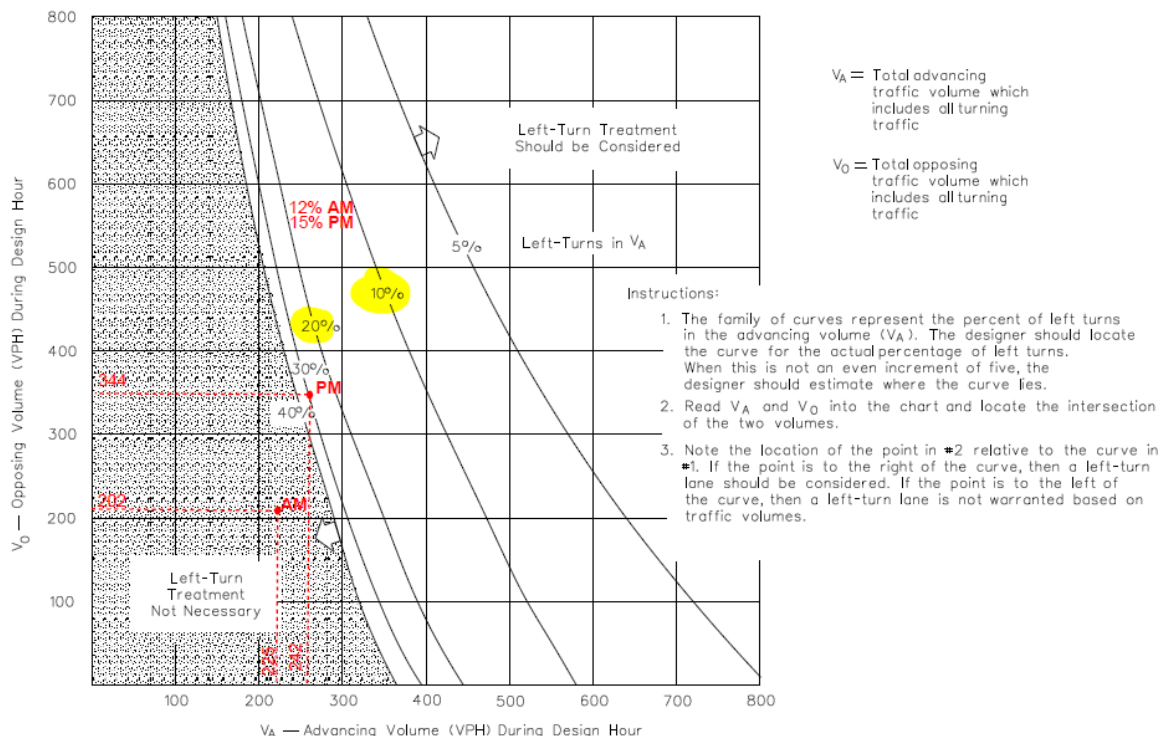


Figure 7 Left Turn Lane Evaluation Warrant at Site Driveway 2

As shown on **Figure 7**, the projected AM and PM traffic volumes do not fall above the threshold for the 12% and 15% curves respectively.

Table 18. Left Turn Lane Warrant Criteria Results at Molitor Rd and Site Driveway #2

Exclusive Left-Turn Lane Criteria ⁽¹⁾	Criteria Met?
At any unsignalized intersection on a two-lane urban or rural highway that satisfies the criteria in Figures 36-3.C, D, E, F, or G;	No
At any signalized intersection where the left-turning volume is equal to or greater than 75 vph for a single turn lane or 300 vph for a dual turn lane;	No
At any intersection where the capacity analysis determines a left-turn lane is necessary to meet the level-of-service criteria, including dual left-turn lanes;	No
For uniformity of intersection design along the highway if other intersections have left-turn lanes (i.e., to satisfy driver expectancy); or	No
At any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to left-turning vehicles	No
(1) From the Illinois Bureau of Design and Environmental Manual, Chapter Thirty-Six, Intersections .	

As shown in **Table 18**, the installation of a left turn lane is not warranted at this location.

Proposed Improvements

Considering the results of the capacity analysis and turn lane warrant analysis, under build conditions, the following improvements are recommended:

Improvements on N. Farnsworth Ave. and Molitor Rd.

- Eastbound left turn increase storage from 75 feet to 150 storage and 125 taper.
- Northbound left turn increase storage from 150 feet to 180 feet. (stripped)
- Optimize splits.

Improvements on N. Farnsworth Ave. and Driveway 1

- Southbound right turn lane.

Improvements on Molitor Rd. and Driveway 2

- Southbound (Driveway 2) one entry Lane/Two Exit Lanes (without a median). The two exit lanes to be dedicated right and left turn lane.

Conclusions and Recommendations

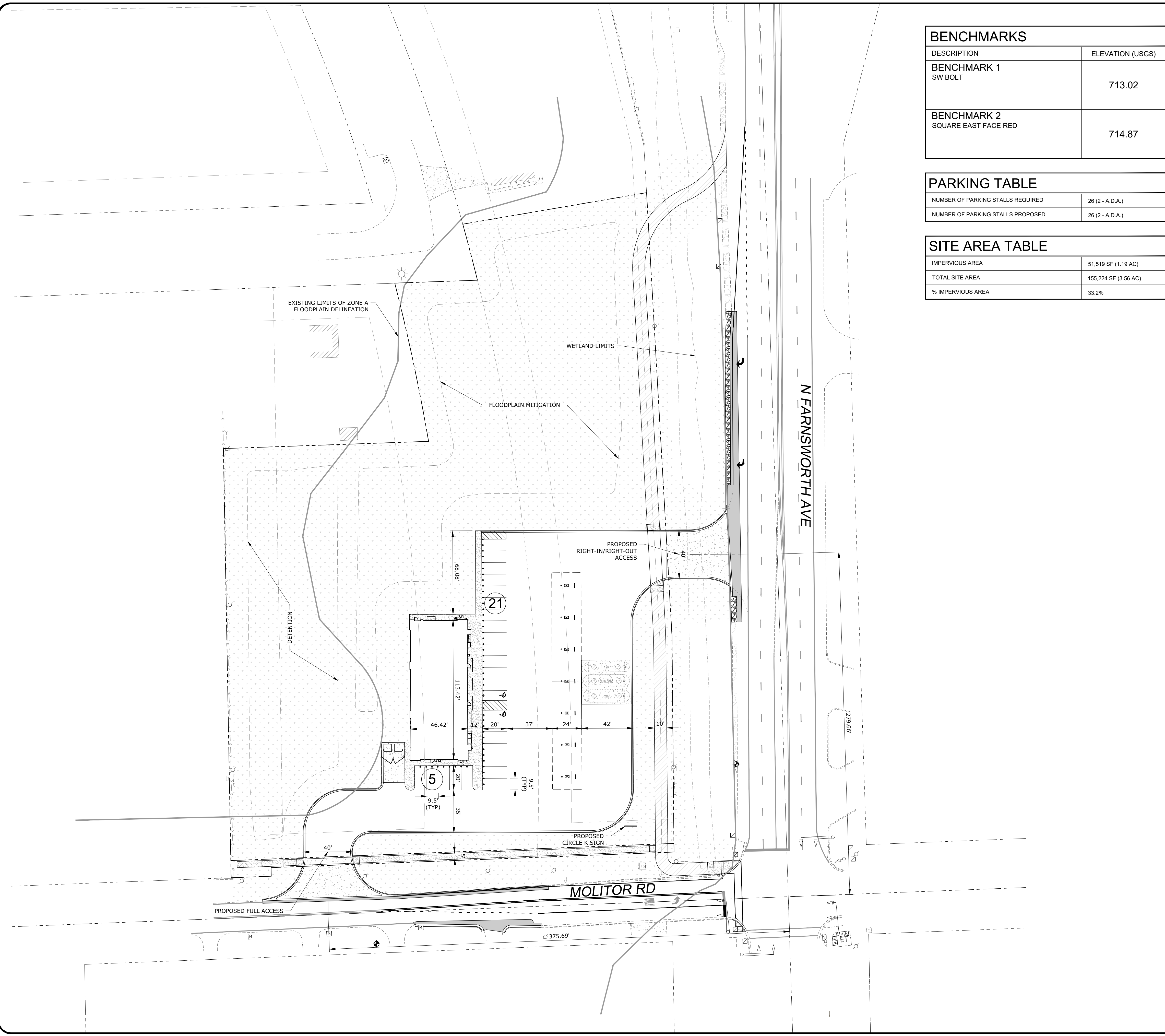
- The proposed development is expected to generate a total of 444 trips during the morning peak hour and 366 trips during the evening peak hour. It is anticipated that during the morning peak hour 338 of these are existing trips while the remaining 106 are expected to be primary trips. During the evening peak hour 278 of these trips are expected to be existing trips and the remaining 88 are expected to be new trips.
- For the purposes of this analysis, it is anticipated that the proposed development will be constructed and fully operational by the year 2021.
- The following scenarios were evaluated as part of this study:
 - 2021 Conditions without the proposed development - (2021 No Build)
 - 2021 Conditions with the proposed development - (2021 Build)
 - 2031 Conditions without the proposed development - (2031 No Build)
 - 2031 Conditions with the proposed development - (2031 Build)

- To evaluate the traffic operations, intersection capacity analyses were completed. The results indicate the following:
 - The intersection of N Farnsworth Ave. and Molitor Rd. is expected to operate at acceptable LOS C during No Build and LOS D under Build conditions, with an increase in overall delay of less than 5 seconds for both the 2021 and 2031 horizon.

The eastbound left turning movement is expected to degrade from LOS D to LOS F under build conditions. Westbound thru/right movement is expected to maintain a LOS F during the morning and LOS E during the evening peak hours, under both the No Build and Build Conditions. All other turning movements are projected to operate at acceptable LOS D or better during both the No Build and Build Conditions for both the 2021 and 2031 horizon.

- The intersection of N. Farnsworth Ave. and Driveway 1 is projected to operate at an acceptable overall LOS A. Site driveway 1 is projected to operate at acceptable LOS C or better under build and Build with Improvement conditions. All other turning movements and approaches are projected to operate at LOS A.
- The intersection of Molitor Rd. and Driveway 2 is projected to operate at an acceptable overall LOS A. Site driveway 2 is projected to operate at acceptable LOS C or better under build and Build with Improvement conditions. All other turning movements and approaches are projected to operate at LOS A.
- Turn lane warrant analysis were performed to determine whether the proposed site will warrant the installation of turn lanes at the proposed site driveways. The results indicate that a right turn lane will be warranted at driveway 1 based on the criteria presented on the Illinois Bureau of Design and Environment Manual, Chapter Thirty-Six, *Intersections*.
- Considering the results of the capacity analysis, the following improvements are recommended:
 - **Improvements on N. Farnsworth Ave. and Molitor Rd.**
 - Eastbound left turn increase storage from 75 feet to 150 storage and 125 taper.
 - Northbound left turn increase storage from 150 feet to 180 feet. (stripped)
 - Optimize splits.
 - **Improvements on N. Farnsworth Ave. and Driveway 1**
 - Southbound right turn lane.
 - **Improvements on Molitor Rd. and Driveway 2**
 - Southbound (Driveway 2) one entry Lane/Two Exit Lanes (without a median). The two exit lanes to be dedicated right and left turn lane.

APPENDIX A



BENCHMARKS	
DESCRIPTION	ELEVATION (USGS)
BENCHMARK 1 SW BOLT	713.02
BENCHMARK 2 SQUARE EAST FACE RED	714.87

PARKING TABLE	
NUMBER OF PARKING STALLS REQUIRED	26 (2 - A.D.A.)
NUMBER OF PARKING STALLS PROPOSED	26 (2 - A.D.A.)

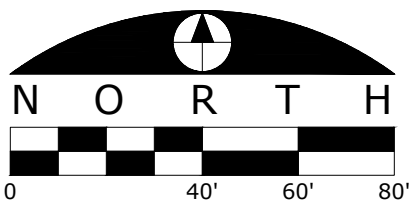
SITE AREA TABLE	
IMPERVIOUS AREA	51,519 SF (1.19 AC)
TOTAL SITE AREA	155,224 SF (3.56 AC)
% IMPERVIOUS AREA	33.2%

LEGEND

- PROPERTY LINE
- LOT LINE
- EXISTING RIGHT-OF-WAY
- SECTION LINE
- CENTERLINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- PROPOSED SETBACK LINE
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED FENCE (ORNAMENTAL/WOODEN)
- PROPOSED FENCE (CHAIN LINK)
- EXISTING FENCE
- LIGHT POLE AND FIXTURE (SEE DETAIL 10, SHEET C-601)
- PROPOSED ADA PARKING SPACE
- NUMBER OF PROPOSED PARKING SPACES IN A ROW
- PROPOSED PARKING STALLS
- PROPOSED CONCRETE SIDEWALK
- PROPOSED STANDARD DUTY CONCRETE PAVEMENT
- PROPOSED CONCRETE PAVEMENT (SEE DETAIL 2, SHEET C-601)
- EXISTING CONCRETE PAVEMENT
- PROPOSED ASPHALT MULTI-USE PATH
- PROPOSED TURF AREA
- EXISTING GRAVEL
- PROPOSED GRAVEL SHOULDER

LAYOUT NOTES

- THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS OF THE BENCHMARKS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ALSO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING PIPE INVERTS, FLOOR ELEVATIONS, CURB OR PAVEMENT WHERE MATCHING INTO EXISTING WORK. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL CONTROL BY REFERENCING SHOWN COORDINATES TO KNOWN PROPERTY LINES. NOTIFY ENGINEER OF DISCREPANCIES IN EITHER VERTICAL OR HORIZONTAL CONTROL PRIOR TO PROCEEDING WITH WORK.
- REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
- DIMENSIONS THAT LOCATE THE BUILDING ARE MEASURED TO THE OUTSIDE FACE OF THE BUILDING.
- SIGN CONSTRUCTION AND PAVEMENT MARKINGS SHALL CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION.
- COORDINATE WORK WITHIN FARNSWORTH AVE. AND MOLITOR RD. WITH THE CITY OF AURORA. TRAFFIC CONTROL SHALL CONFORM TO IDOT AND THE CITY OF AURORA STANDARDS FOR WORK WITHIN THE ROW.
- ALL RADII ARE DIMENSIONED TO THE BACK OF CURB.
- ALL CURB AND GUTTER IS INTEGRAL TO PAVEMENT UNLESS NOTED OTHERWISE. REFER TO THE DETAIL SHEETS FOR CURB DETAILS.
- SOME FIELD ADJUSTMENTS MAY BE NECESSARY AT POINTS WHERE PROPOSED PAVEMENT, CURB AND SIDEWALKS MEET EXISTING PAVEMENT, CURB AND SIDEWALKS. REVIEW ANY REQUIRED CHANGES WITH ENGINEER PRIOR TO CONSTRUCTION OF WORK.
- ELECTRICAL CIRCUITRY TO SITE LIGHTING AND PYLON SIGN SHOWN ON ARCHITECTURAL PLANS.
- FOR REQUIRED PAVEMENT REMOVAL ADJACENT TO THE CURB AND GUTTER REMOVAL WITHIN RIGHT OF WAY, A FULL DEPTH SAWCUT SHALL BE UTILIZED AND SHALL NOT BE LESS THAN 2' IN WIDTH.
- FOR ALL PAVEMENT PATCHING WITHIN THE RIGHT OF WAY THE BACKFILL MATERIAL USED SHALL BE CONTROLLED LOW STRENGTH MATERIAL UP TO THE BOTTOM OF THE PAVEMENT. THE THICKNESS OF THE HMA PAVEMENT REPLACEMENT SHALL BE A MINIMUM OF THE SAME THICKNESS AS THE EXISTING PAVEMENT STRUCTURE. THE MIXES USED SHALL CONFORM TO THE SPECIFICATIONS AND REQUIREMENTS SET BY THE WISCONSIN DEPARTMENT OF TRANSPORTATION (WisDOT).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION, COORDINATION AND OBTAINING APPROVAL OF A TRAFFIC MANAGEMENT PLAN IF CLOSURES OF LANES EXCEED THE CRITERIA SPECIFIED BY IDOT OR THE CITY OF AURORA.



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PROJECT NAME
OWNER'S NAME

CIRCLE K -
AURORA, IL

NW CORNER OF
FARNSWORTH AVE.
AND MOLITOR RD.

CIRCLE K
OWNER ADDRESS

CONSULTANTS

ISSUED FOR

	DATE
1. AGENCY REVIEW	11-18-2020
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

REVISIONS

ITEM	DATE
1.	
2.	
3.	
4.	
5.	
6.	

SHEET TITLE

COMPREHENSIVE
LAYOUT PLAN

DRAWN	DRH
CHECKED	LND
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17195

C3

APPENDIX B

From: Greene, Robert <RGreene@aurora-il.org>
Sent: Wednesday, January 13, 2021 9:44 AM
To: Daniela Jurado
Cc: Andrew Petersen; Phipps, Mark; Thavong, Souts
Subject: [EXTERNAL] RE: Convenience Store NWC N Farnsworth and Molitor, Aurora

Daniela,

Thanks for the response to my questions.

I am ok with the analysis focusing on the weekday peak periods, just wanted to check if a weekend period would be included.

Bob

From: Daniela Jurado [<mailto:djurado@bowmanconsulting.com>]
Sent: Wednesday, January 13, 2021 7:14 AM
To: Greene, Robert <RGreene@aurora-il.org>
Cc: Andrew Petersen <apetersen@bowmanconsulting.com>; Phipps, Mark <MPhipps@aurora-il.org>
Subject: RE: Convenience Store NWC N Farnsworth and Molitor, Aurora

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*Warning! This e-mail originated outside the organization. **DO NOT** click links or open attachments unless you confirm the incoming address of the sender and know the content is safe.*

Good Morning Robert,

Thank you for the comments.

The attached document contains the complete scope/methodology of the study. Please see the responses to your comments below:

1- *Turn lane warrant analysis for the proposed new driveway along E. Colonial Drive*

Where is this located, "E. Colonial Drive"?

Response: The turn lane warrant analysis will be conducted at the proposed site driveways along N Farnsworth Avenue and along Molitor Rd.

- 2- For the capacity analysis, I assume weekday peak hour periods for AM and PM but will there be an analysis involving a weekend peak hour period, say a Saturday afternoon?

Response: The capacity analysis is proposed for the weekday AM and PM peak hour. Let me know if you consider necessary to include Saturday mid-day in the scope.

Please let us know if you have any questions.

Best,



DANIELA JURADO

Engineer I | **BOWMAN**

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From: Greene, Robert <RGreene@aurora-il.org>

Sent: Tuesday, January 12, 2021 6:24 PM

To: Daniela Jurado <djurado@bowmanconsulting.com>

Cc: Andrew Petersen <apetersen@bowmanconsulting.com>; Phipps, Mark <MPhipps@aurora-il.org>

Subject: [EXTERNAL] RE: Convenience Store NWC N Farnsworth and Molitor, Aurora

Daniela,

Reviewed the scope and overall looks good to me.

Have a few questions which are the following:

Turn lane warrant analysis for the proposed new driveway along E. Colonial Drive

Where is this located, "E. Colonial Drive"?

For the capacity analysis, I assume weekday peak hour periods for AM and PM but will there be an analysis involving a weekend peak hour period, say a Saturday afternoon?

Thanks,

Robert Greene
City Traffic Engineer
Aurora Engineering Division
77 S. Broadway

Aurora, IL 60507
630-256-3200

From: Daniela Jurado [<mailto:djurado@bowmanconsulting.com>]
Sent: Monday, January 11, 2021 2:50 PM
To: Greene, Robert <RGreene@aurora-il.org>
Cc: Andrew Petersen <apetersen@bowmanconsulting.com>
Subject: Convenience Store NWC N Farnsworth and Molitor, Aurora

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*Warning! This e-mail originated outside the organization. **DO NOT** click links or open attachments unless you confirm the incoming address of the sender and know the content is safe.*

Good Morning Bob,

We are currently working on the traffic impact study for a Convenience Store Project to be relocated on the northwest corner of N Farnsworth Avenue and Molitor Road in the city of Aurora.

I am sending this email to discuss the TIA methodology. Our proposed scope is as follows:

1. Trip generation calculations for the proposed development – utilizing the ITE Trip Generation Manual, 10th Edition
2. Traffic assignment (trip distribution) for the proposed development
3. Manual Turning Movement Counts during the AM and PM peak hours at the following intersection:
 - a. N Farnsworth Avenue and Molitor Rd
4. Capacity analysis during the AM and PM peak hours at the following intersections:
 - a. N Farnsworth Avenue and Molitor Rd
 - b. N Farnsworth Avenue and site driveway 1
 - c. Molitor Rd and site driveway 2
- Study periods:
 - d. 2021/2031

- e. No Build and Build Scenarios
- 5. Turn lane warrant analysis for the proposed new driveway along E. Colonial Drive

We have attached the proposed methodology statement for the traffic impact study. Will the city concur with this methodology?

Please let us know if you have any questions or require further clarification.

Thank you in advance,



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TRAFFIC IMPACT STUDY C-STORE W GAS STATION N FARNSWORTH, AURORA IL SCOPING/METHODOLOGY STATEMENT

Scoping Meeting Date: Electronic Coordination

Applicant's Consultant: Bowman Consulting Group

Applicant's Contact information: Andrew J Petersen (321 -270 - 8987 / apetersen@bowmanconsulting.com)
Daniela Jurado (321 -270 - 8977 / djurado@bowmanconsulting.com)

(1) LOCATION OF PROPOSED PROJECT: **See Figure 1**

Municipality: City of Aurora, IL

Roadway Jurisdiction: N Farnsworth Avenue City of Aurora

Molitor Road City of Aurora

(2) DESCRIPTION OF PROPOSED PROJECT:

The proposed project consists on the development of a currently vacant parcel located on the Northwest corner of the intersection of N Farnsworth Avenue and Molitor Road, in the city of Aurora, Illinois. The proposed development comprises a 5,200 square feet Convenience Store and a canopy with 14 Vehicle Fueling Positions VFP. Access to the development will be provided by one Full-access driveway along Molitor Road and one Right-in/Right-out driveway along N Farnsworth Avenue.

Trip generation rates were extracted from the Institute of Transportation Engineers 10th Edition. the trip generation is presented in **Table 1**. The proposed Trip Distribution is presented in **Figure 2**.

(3) PURPOSE OF THE ASSESSMENT:

The purpose for the study is threefold: to determine the number of trips generated by the proposed site; to determine the potential impact, if any, of the proposed development on the roadway network; to propose improvements, if required.

Capacity analyses will be prepared for the existing, build out conditions, buildout 10 year horizon and build out conditions with improvements (if required). Turn lane warrant analyses will be completed at the proposed driveway access points along N Farnsworth and Molitor Road. The results of the study will be summarized in a report document with graphics and back up data.

(4) DEVELOPMENT SCHEDULE:

Anticipated Opening Date: 2021

Analysis Date: 2021/2031

(5) STUDY INTERSECTIONS (See Figure 2):

- N Farnsworth Avenue and Site Driveway 1 (Right-in/Right-out driveway)
- Molitor Road and Site Driveway 2 (Full access driveway)
- N Farnsworth Avenue and Molitor Road

(6) STUDY AREA TYPE: Urban: x Rural:

(7) ANALYSIS PERIODS AND TIMES:

AM Peak hour	7:00 AM - 09:00 AM
PM Peak hour	4:00 PM - 06:00 PM

(8) TRAFFIC ADJUSTMENT FACTORS:

(a) Seasonal Adjustment: N/A

(b) Annual Base Traffic Growth: See Table 2

Source: Approximate Growth average from ADT's
IDOT Traffic Count Data online

(9) OTHER PROJECTS WITHIN STUDY AREA TO BE ADDED TO BASE TRAFFIC:

No

(10) APPROVAL OF DATA COLLECTION ELEMENTS AND METHODOLOGIES:

<u>Proposed Location</u>	<u>Period (Avg Day)</u>	<u>Type</u>
-N Farnsworth Ave and Molitor Rd	AM/PM	Turning Movement Counts

(11) CAPACITY/LOS ANALYSIS

<u>Location</u>	<u>Period (Avg Day)</u>	<u>Type</u>
-N Farnsworth Avenue and Site Driveway 1 (Right-	AM/PM	Synchro (HCS)
-Molitor Road and Site Driveway 2 (Full access dri	AM/PM	Synchro (HCS)
-N Farnsworth Avenue and Molitor Road	AM/PM	Synchro (HCS)

(12) ROADWAY IMPROVEMENTS/MODIFICATIONS BY OTHERS TO BE INCLUDED:

No

(13) OTHER NEEDED ANALYSES:

(a) Signal Warrant Analysis:

No

(b) Required Signal Phasing/Timing Modifications:

TBD

(c) Analysis of the Need for Turning Lanes:

- N Farnsworth Avenue and Site Driveway 1 (Right-in/Right-out driveway)
- Molitor Road and Site Driveway 2 (Full access driveway)

(d) Turning Lane Lengths:

95th Percentile Synchro Queue

(e) Queuing Analysis:

- N Farnsworth Avenue and Site Driveway 1 (Right-in/Right-out driveway)
- Molitor Road and Site Driveway 2 (Full access driveway)
- N Farnsworth Avenue and Molitor Road

(14) ADDITIONAL COMMENTS OR RECOMMENDATIONS RELATIVE TO THE SCOPE OF THIS PROJECT:

TRAFFIC IMPACT STUDY
SCOPING/METHODOLOGY STATEMENT

FIGURE 1

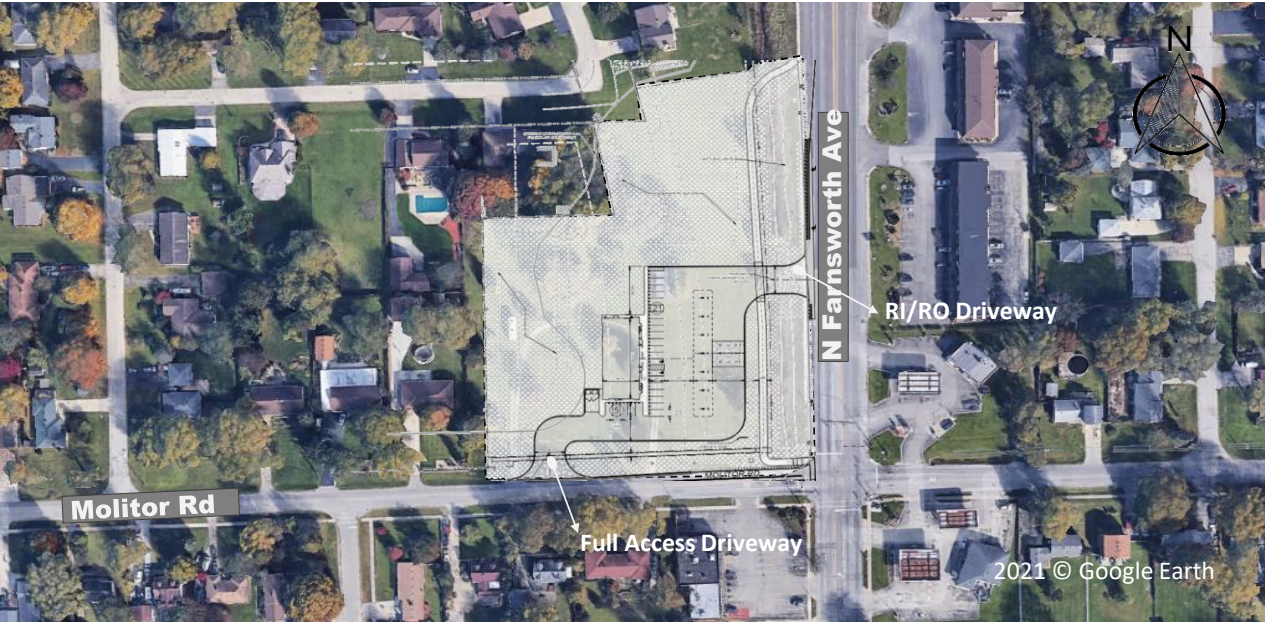
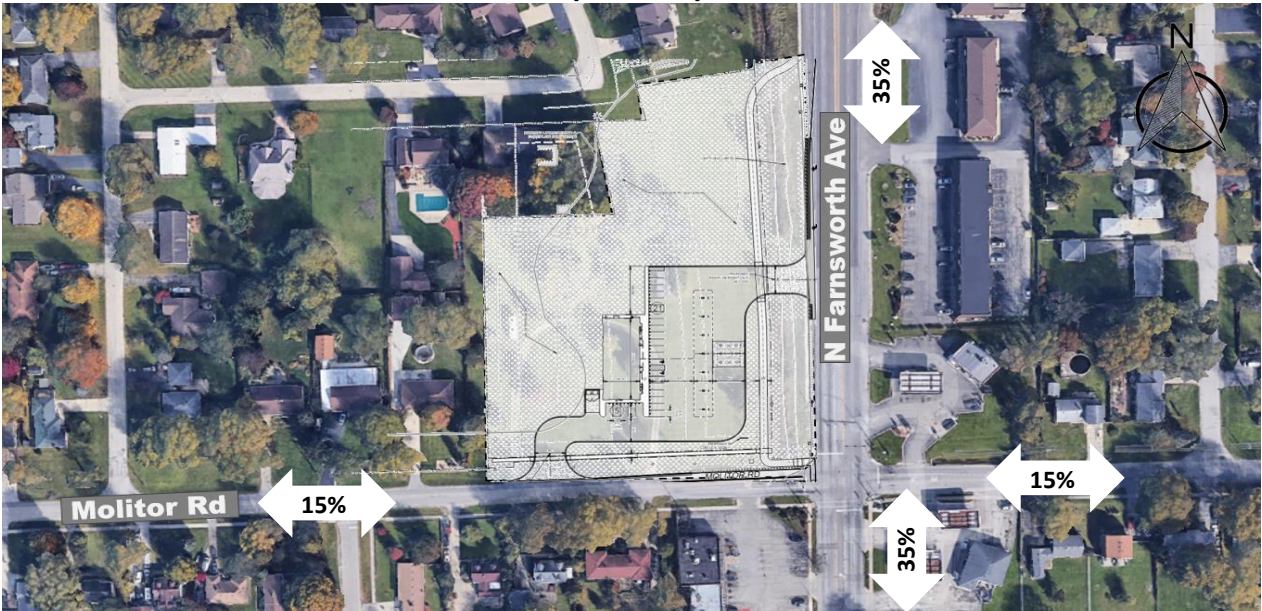


FIGURE 2 Proposed trip distribution



TRAFFIC IMPACT STUDY SCOPING/METHODOLOGY STATEMENT

TABLE 1

Land Use (1)	Size	Time	Total Trips ⁽¹⁾			Pass-By Trips			Net New Trips ⁽²⁾		
			In	Out	Total	In	Out	Total	In	Out	Total
LU-960	5,200 SF +14 VFP	AM	222	222	444	169	169	338	53	53	106
Super Convenience Store with Gas Station		PM	183	183	366	139	139	278	44	44	88

(1) Institute of Transportation Engineers Trip Generation (ITE), 10th Edition

(2) Pass-by Rates of 76% for LU-960 were extracted from the ITE Trip Generation Errata.

TABLE 2

Roadway	From	to	2010	2018	Avg Growth rate		Applied Growth rate	
N Farnsworth Ave	Indian Tr	Dearborn Ave	23,500	23,500	0.0%		0.5%	

Roadway	From	to	2010	2014	2017	2018	2017	2018	2019	Avg Growth rate	Applied Growth rate
Molitor Rd	Church Rd	Diehl Rd	6,400	8,300	8,750	6,050	7.4%	1.8%	-30.9%	-7.2%	0.5%

Source: Approximate Growth average from 2010-2018 AADT's IDOT Traffic Count Database System (TCDS).

<http://www.gettingaroundillinois.com/gai.htm?mt=aadt>

APPENDIX C

Leg	Farnsworth Rd							Molitor Rd							Farnsworth Rd							Molitor Rd							
Direction	Southbound							Westbound							Northbound							Eastbound							
Start Time	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2021-01-19 07:00:00	10	108	25	0	143	0	0	11	6	11	0	28	0	0	9	178	3	0	190	1	1	4	22	16	0	42	0	0	403
2021-01-19 07:15:00	5	118	17	0	140	0	0	17	12	10	0	39	0	0	14	186	6	0	206	0	1	4	24	21	0	49	0	0	434
2021-01-19 07:30:00	10	112	17	0	139	0	0	24	13	6	0	43	0	0	11	183	9	0	203	0	0	1	34	18	0	53	0	0	438
2021-01-19 07:45:00	19	151	41	0	211	0	0	14	11	13	0	38	0	0	27	186	7	0	220	1	0	7	26	30	0	63	0	0	532
Grand Total	44	489	100	0	633	0	0	66	42	40	0	148	0	0	61	733	25	0	819	2	2	16	106	85	0	207	0	0	1807
% Approach	7.0%	77.3%	15.8%	0.0%				44.6%	28.4%	27.0%	0.0%				7.4%	89.5%	3.1%	0.0%				7.7%	51.2%	41.1%	0.0%				
% Total	2.4%	27.1%	5.5%	0.0%	35.0%			3.7%	2.3%	2.2%	0.0%	8.2%			3.4%	40.6%	1.4%	0.0%	45.3%			0.9%	5.9%	4.7%	0.0%	11.5%			
PHF (7 AM - 8 AM)	0.579	0.81	0.61	0	0.75			0.688	0.808	0.769	0	0.86			0.565	0.985	0.694	0	0.931			0.571	0.779	0.708	0	0.821			0.849
Lights and Motorcycles	43	438	97	0	578			65	41	38	0	144			61	687	25	0	773			15	103	82	0	200			1695
% Lights and Motorcycles	97.7%	89.6%	97.0%	0.0%	91.3%			98.5%	97.6%	95.0%	0.0%	97.3%			100.0%	93.7%	100.0%	0.0%	94.4%			93.8%	97.2%	96.5%	0.0%	96.6%			93.8%
Heavy	1	51	3	0	55			1	1	2	0	4			0	46	0	0	46			1	3	3	0	7			112
% Heavy	2.3%	10.4%	3.0%	0.0%	8.7%			1.5%	2.4%	5.0%	0.0%	2.7%			0.0%	6.3%	0.0%	0.0%	5.6%			6.3%	2.8%	3.5%	0.0%	3.4%			6.2%
Bicycles on Road	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0			0	0	0	0	0			0
% Bicycles on Road	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%
Pedestrians						0	0						0	0						2	1						0	0	
% Pedestrians						0.0%	0.0%						0.0%	0.0%						100.0%	50.0%						0.0%	0.0%	
Bicycles on Crosswalk						0	0						0	0						0	1						0	0	
% Bicycles on Crosswalk						0.0%	0.0%						0.0%	0.0%						0.0%	50.0%						0.0%	0.0%	

Leg	Farnsworth Rd							Molitor Rd							Farnsworth Rd							Molitor Rd							
Direction	Southbound							Westbound							Northbound							Eastbound							
Start Time	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Right	Thru	Left	U-Turn	App Total	Peds CW	Peds CCW	Int Total
2021-01-19 16:15:00	20	262	25	0	307	0	0	34	32	23	0	89	0	0	11	166	6	0	183	0	0	11	18	26	0	55	0	0	634
2021-01-19 16:30:00	16	246	22	0	284	0	1	38	33	26	0	97	0	0	27	179	12	1	219	0	0	12	17	35	0	64	0	0	664
2021-01-19 16:45:00	21	248	24	0	293	0	0	29	29	31	0	89	0	0	18	178	7	0	203	0	2	13	13	24	0	50	0	0	635
2021-01-19 17:00:00	34	246	22	0	302	0	0	35	39	29	0	103	0	0	6	180	10	0	196	0	0	8	23	24	0	55	0	0	656
Grand Total	91	1002	93	0	1186		1	136	133	109	0	378	0	0	62	703	35	1	801	0	2	44	71	109	0	224	0	0	2589
% Approach	7.7%	84.5%	7.8%	0.0%				36.0%	35.2%	28.8%	0.0%				7.7%	87.8%	4.4%	0.1%				19.6%	31.7%	48.7%	0.0%				
% Total	3.5%	38.7%	3.6%	0.0%	45.8%			5.3%	5.1%	4.2%	0.0%	14.6%			2.4%	27.2%	1.4%	0.0%	30.9%			1.7%	2.7%	4.2%	0.0%	8.7%			
PHF (4:15 PM - 5:15 PM)	0.669	0.956	0.93	0	0.966			0.895	0.853	0.879	0	0.917			0.574	0.976	0.729	0.25	0.914			0.846	0.772	0.779	0	0.875			0.975
Lights and Motorcycles	90	979	90	0	1159			135	133	109	0	377			61	681	35	1	778			44	71	107	0	222			2536
% Lights and Motorcycles	98.9%	97.7%	96.8%	0.0%	97.7%			99.3%	100.0%	100.0%	0.0%	99.7%			98.4%	96.9%	100.0%	100.0%	97.1%			100.0%	100.0%	98.2%	0.0%	99.1%			98.0%
Heavy	1	23	3	0	27			1	0	0	0	1			1	22	0	0	23			0	0	2	0	2			53
% Heavy	1.1%	2.3%	3.2%	0.0%	2.3%			0.7%	0.0%	0.0%	0.0%	0.3%			1.6%	3.1%	0.0%	0.0%	2.9%			0.0%	0.0%	1.8%	0.0%	0.9%			2.0%
Bicycles on Road	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0			0	0	0	0	0			0
% Bicycles on Road	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%	0.0%	0.0%	0.0%			0.0%
Pedestrians						0	1						0	0						0	2						0	0	
% Pedestrians						0.0%	100.0%						0.0%	0.0%						0.0%	100.0%						0.0%	0.0%	
Bicycles on Crosswalk						0	0						0	0						0	0						0	0	
% Bicycles on Crosswalk						0.0%	0.0%						0.0%	0.0%						0.0%	0.0%						0.0%	0.0%	

APPENDIX D

PROPOSED LEGEND

REPRESENTS ONE TURNING MOVEMENT

XX/YY:

AM/PM
PEAK HOUR TRAFFIC

DJ

DJGN

RM

DRAWN

DJ

CHKD

010755-01-001

PROJECT NUMBER

SCALE

Non Scale

SHEET

1

NO BUILD 2021

CIRCLE K

NWC OF FARNSWORTH AV. & MOLITOR RD.

AURORA, ILLINOIS

Bowman

C O N S U L T I N G

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PROPOSED LEGEND

REPRESENTS ONE TURNING MOVEMENT

XX/YY:

AM/PM
PEAK HOUR TRAFFIC

The diagram illustrates the proposed site layout and its connection to surrounding roads. A large rectangle represents the 'PROPOSED SITE'. To its north is 'N Farnsworth Ave', and to its east is 'Molitor Road'. Two driveways, 'Driveway 1' and 'Driveway 2', provide access to the site. Traffic flow is indicated by arrows with associated counts for AM and PM peak hours. At the intersection of N Farnsworth Ave and Molitor Road, traffic counts are: N Farnsworth Ave (15/18), Molitor Road (7/8), and the intersection area (57/68, 14/17, 0/1). Driveway 1 has counts of 78/64 and 59/49. Driveway 2 has counts of 33/27 and 111/92. Molitor Road has counts of 20/15, 69/42, and 9/9. The intersection of Driveway 2 and Molitor Road has counts of 28/33 and 25/20. The intersection of Driveway 1 and N Farnsworth Ave has counts of 64/78 and 15/18.

IN OUT
AM 222 / (222)
PM 183 / (183)

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SITE TRIPS
CIRCLE K
NWC OF FARNSWORTH AV. & MOLITOR RD.
AURORA, ILLINOIS

Bowman

CONSULTING

Certificate of Authorization License No. 30462

DJ DSGN	RM DRAWN	DJ CHKD
010755-01-001 PROJECT NUMBER		
SCALE	Non Scale	
SHEET	3	

PROPOSED LEGEND

REPRESENTS ONE TURNING MOVEMENT

XX/YY:

AM/PM
PEAK HOUR TRAFFIC

IN OUT
AM 222 / (222)
PM 183 / (183)

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BUILD 2021
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AURORA, ILLINOIS

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DJ DSGN	RM DRAWN	DJ CHKD
010755-01-001 PROJECT NUMBER		
SCALE Non Scale		
SHEET		4

PROPOSED LEGEND

REPRESENTS ONE TURNING MOVEMENT

XX/YY:

AM/PM
PEAK HOUR TRAFFIC

IN OUT
AM 222 / (222)
PM 183 / (183)

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BUILD 2031
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DJ DSGN	RM DRAWN	DJ CHKD
010755-01-001 PROJECT NUMBER		
SCALE Non Scale		
SHEET		5

APPENDIX E

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

2-NB 2021-AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	106	16	40	42	66	25	733	61	100	489	44
Future Volume (vph)	85	106	16	40	42	66	25	733	61	100	489	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	15.0	28.0		17.0	30.0		15.0	60.0		35.0	80.0	
Total Split (%)	10.7%	20.0%		12.1%	21.4%		10.7%	42.9%		25.0%	57.1%	
Maximum Green (s)	10.5	21.5		13.5	23.5		11.5	53.5		31.5	73.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	29.8	19.4		28.2	15.8		76.2	53.5		99.7	73.5	
Actuated g/C Ratio	0.21	0.14		0.20	0.11		0.54	0.38		0.71	0.52	
v/c Ratio	0.41	0.57		0.19	0.54		0.05	0.72		0.19	0.36	
Control Delay	47.3	63.4		41.0	43.0		9.6	40.5		8.0	20.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.3	63.4		41.0	43.0		9.6	40.5		8.0	20.0	
LOS	D	E		D	D		A	D		A	B	
Approach Delay		56.8			42.5			39.5			18.0	
Approach LOS		E			D			D			B	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	34.3
Intersection LOS:	C
Intersection Capacity Utilization	58.2%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 35 s	 Ø2 (R) 60 s	 Ø3 17 s	 Ø4 28 s
 Ø5 15 s	 Ø6 (R) 80 s	 Ø7 15 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

2-NB 2021-AM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	106	16	40	42	66	25	733	61	100	489	44
Future Volume (veh/h)	85	106	16	40	42	66	25	733	61	100	489	44
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.90		1.00	1.00		0.77	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	100	125	19	47	49	78	29	862	72	118	575	44
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	187	224	34	201	61	96	569	1451	121	598	1862	142
Arrive On Green	0.06	0.14	0.14	0.04	0.11	0.11	0.08	0.45	0.45	0.22	0.59	0.59
Sat Flow, veh/h	1753	1573	239	1739	544	866	1810	3215	269	1767	3134	239
Grp Volume(v), veh/h	100	0	144	47	0	127	29	461	473	118	305	314
Grp Sat Flow(s),veh/h/ln	1753	0	1812	1739	0	1411	1810	1721	1763	1767	1664	1709
Q Serve(g_s), s	6.9	0.0	10.4	3.3	0.0	12.3	1.1	28.1	28.1	3.1	12.7	12.8
Cycle Q Clear(g_c), s	6.9	0.0	10.4	3.3	0.0	12.3	1.1	28.1	28.1	3.1	12.7	12.8
Prop In Lane	1.00		0.13	1.00		0.61	1.00		0.15	1.00		0.14
Lane Grp Cap(c), veh/h	187	0	258	201	0	157	569	776	796	598	989	1015
V/C Ratio(X)	0.53	0.00	0.56	0.23	0.00	0.81	0.05	0.59	0.59	0.20	0.31	0.31
Avail Cap(c_a), veh/h	209	0	278	302	0	237	569	776	796	598	989	1015
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	0.0	55.9	52.2	0.0	60.8	15.5	28.8	28.8	11.2	14.1	14.1
Incr Delay (d2), s/veh	2.4	0.0	4.1	0.8	0.0	19.8	0.2	3.3	3.3	0.7	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	5.1	1.5	0.0	5.3	0.5	12.2	12.5	1.2	5.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	60.1	53.0	0.0	80.5	15.7	32.1	32.1	12.0	14.9	14.9
LnGrp LOS	D	A	E	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h		244			174			963			737	
Approach Delay, s/veh		56.8			73.1			31.6			14.4	
Approach LOS		E			E			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	69.7	8.9	26.4	15.0	89.7	13.2	22.1				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	31.5	53.5	13.5	21.5	11.5	73.5	10.5	23.5				
Max Q Clear Time (g_c+I1), s	5.1	30.1	5.3	12.4	3.1	14.8	8.9	14.3				
Green Ext Time (p_c), s	0.5	15.6	0.1	0.8	0.0	15.6	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			31.9									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

2-NB 2021-AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	884	633	0
Future Volume (vph)	0	0	0	884	633	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	27.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	884	633	0
Future Vol, veh/h	0	0	0	884	633	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	0	0	961	688	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	344	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	652	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	652	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

2-NB 2021-AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	207	111	0	0	0
Future Volume (vph)	0	207	111	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.2% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	207	111	0	0	0
Future Vol, veh/h	0	207	111	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	225	121	0	0	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	121	0	-	0	346	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	225	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1467	-	-	-	651	930
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1467	-	-	-	651	930
Mov Cap-2 Maneuver	-	-	-	-	651	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	812	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1467	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	290	145	258	192	362	361	116	201	214
Average Queue (ft)	76	167	47	98	26	197	188	44	100	91
95th Queue (ft)	137	316	114	209	107	363	349	90	204	193
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		9								0
Queuing Penalty (veh)		20								0
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	26	46	6	24		23		0	3	
Queuing Penalty (veh)	32	39	6	9		6		0	3	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	NB	SB
Directions Served	T	T
Maximum Queue (ft)	4	6
Average Queue (ft)	0	0
95th Queue (ft)	4	6
Link Distance (ft)	252	1555
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB
Directions Served	LT
Maximum Queue (ft)	187
Average Queue (ft)	28
95th Queue (ft)	149
Link Distance (ft)	1878
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 116

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

2-NB 2021-PM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	71	44	109	133	136	35	703	62	93	1002	91
Future Volume (vph)	109	71	44	109	133	136	35	703	62	93	1002	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	13.0	30.0		17.0	34.0		15.0	65.0		18.0	68.0	
Total Split (%)	10.0%	23.1%		13.1%	26.2%		11.5%	50.0%		13.8%	52.3%	
Maximum Green (s)	8.5	23.5		12.5	27.5		10.5	58.5		13.5	61.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	31.3	20.8		37.2	23.8		75.7	66.2		81.0	72.7	
Actuated g/C Ratio	0.24	0.16		0.29	0.18		0.58	0.51		0.62	0.56	
v/c Ratio	0.52	0.39		0.32	0.80		0.13	0.45		0.24	0.57	
Control Delay	42.8	43.2		35.7	60.7		11.2	21.8		11.6	21.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.8	43.2		35.7	60.7		11.2	21.8		11.6	21.6	
LOS	D	D		D	E		B	C		B	C	
Approach Delay		43.0			53.5			21.3			20.8	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	105
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	27.7
Intersection LOS:	C
Intersection Capacity Utilization	73.6%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 18 s	 Ø2 (R) 65 s	 Ø3 17 s	 Ø4 30 s
 Ø5 15 s	 Ø6 (R) 68 s	 Ø7 13 s	 Ø8 34 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

2-NB 2021-PM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	71	44	109	133	136	35	703	62	93	1002	91
Future Volume (veh/h)	109	71	44	109	133	136	35	703	62	93	1002	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	112	73	45	112	137	140	36	725	64	96	1033	94
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	193	210	129	344	152	155	269	1691	149	419	1836	167
Arrive On Green	0.06	0.19	0.19	0.06	0.19	0.19	0.02	0.52	0.52	0.06	0.56	0.56
Sat Flow, veh/h	1781	1100	678	1810	794	812	1810	3277	289	1767	3294	300
Grp Volume(v), veh/h	112	0	118	112	0	277	36	390	399	96	557	570
Grp Sat Flow(s),veh/h/ln	1781	0	1778	1810	0	1606	1810	1763	1803	1767	1777	1816
Q Serve(g_s), s	6.5	0.0	7.5	6.4	0.0	21.9	1.2	17.9	17.9	3.1	26.3	26.3
Cycle Q Clear(g_c), s	6.5	0.0	7.5	6.4	0.0	21.9	1.2	17.9	17.9	3.1	26.3	26.3
Prop In Lane	1.00		0.38	1.00		0.51	1.00		0.16	1.00		0.16
Lane Grp Cap(c), veh/h	193	0	339	344	0	306	269	910	931	419	991	1013
V/C Ratio(X)	0.58	0.00	0.35	0.33	0.00	0.90	0.13	0.43	0.43	0.23	0.56	0.56
Avail Cap(c_a), veh/h	195	0	339	402	0	340	382	910	931	497	991	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.6	0.0	45.6	38.7	0.0	51.4	16.2	19.5	19.5	13.3	18.5	18.5
Incr Delay (d2), s/veh	6.8	0.0	1.3	0.8	0.0	27.2	0.3	1.5	1.4	0.4	2.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	3.5	2.9	0.0	11.1	0.5	7.6	7.7	1.2	11.1	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.3	0.0	46.9	39.5	0.0	78.7	16.5	21.0	21.0	13.7	20.8	20.8
LnGrp LOS	D	A	D	D	A	E	B	C	C	B	C	C
Approach Vol, veh/h		230			389			825			1223	
Approach Delay, s/veh		47.1			67.4			20.8			20.3	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	73.6	12.9	31.3	6.9	79.0	12.9	31.3				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	58.5	12.5	23.5	10.5	61.5	8.5	27.5				
Max Q Clear Time (g_c+I1), s	5.1	19.9	8.4	9.5	3.2	28.3	8.5	23.9				
Green Ext Time (p_c), s	0.2	18.0	0.1	0.8	0.0	23.8	0.0	0.9				
Intersection Summary												
HCM 6th Ctrl Delay			29.6									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

2-NB 2021-PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	948	1186	0
Future Volume (vph)	0	0	0	948	1186	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 36.1%				ICU Level of Service A		
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	948	1186	0
Future Vol, veh/h	0	0	0	948	1186	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	0	0	1030	1289	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 645	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 415	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 415	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

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

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

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

2-NB 2021-PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	224	259	0	0	0
Future Volume (vph)	0	224	259	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	17.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	224	259	0	0	0
Future Vol, veh/h	0	224	259	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	243	282	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	282	0	0 525 282
Stage 1	-	-	- 282 -
Stage 2	-	-	- 243 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1280	-	- 513 757
Stage 1	-	-	- 766 -
Stage 2	-	-	- 797 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1280	-	- 513 757
Mov Cap-2 Maneuver	-	-	- 513 -
Stage 1	-	-	- 766 -
Stage 2	-	-	- 797 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1280	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	282	160	709	140	307	291	228	268	275
Average Queue (ft)	80	129	100	287	27	153	142	54	185	187
95th Queue (ft)	134	271	183	595	82	262	251	138	298	301
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		4						0	2	2
Queuing Penalty (veh)		8						0	11	13
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	24	29	19	54		11			13	
Queuing Penalty (veh)	28	32	51	59		4			12	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	115	110
Average Queue (ft)	12	12
95th Queue (ft)	63	59
Link Distance (ft)	1555	1555
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB
Directions Served	LT
Maximum Queue (ft)	116
Average Queue (ft)	10
95th Queue (ft)	69
Link Distance (ft)	1878
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 217

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

3-B 2021-AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	123	17	32	67	58	94	691	52	100	516	36
Future Volume (vph)	153	123	17	32	67	58	94	691	52	100	516	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	15.0	28.0		17.0	30.0		15.0	60.0		35.0	80.0	
Total Split (%)	10.7%	20.0%		12.1%	21.4%		10.7%	42.9%		25.0%	57.1%	
Maximum Green (s)	10.5	21.5		13.5	23.5		11.5	53.5		31.5	73.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	32.3	21.9		29.0	17.2		74.3	53.5		97.8	73.5	
Actuated g/C Ratio	0.23	0.16		0.21	0.12		0.53	0.38		0.70	0.52	
v/c Ratio	0.73	0.58		0.15	0.62		0.20	0.67		0.19	0.37	
Control Delay	63.0	62.4		39.6	58.2		10.8	38.9		8.3	20.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	63.0	62.4		39.6	58.2		10.8	38.9		8.3	20.2	
LOS	E	E		D	E		B	D		A	C	
Approach Delay		62.7			54.4			35.7			18.4	
Approach LOS		E			D			D			B	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

3-B 2021-AM
01/26/2021

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	35.5
Intersection LOS:	D
Intersection Capacity Utilization	60.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 35 s	 Ø2 (R) 60 s	 Ø3 17 s	 Ø4 28 s
 Ø5 15 s	 Ø6 (R) 80 s	 Ø7 15 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary

1: N Farnsworth Ave & Molitor Rd

3-B 2021-AM

01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	123	17	32	67	58	94	691	52	100	516	36
Future Volume (veh/h)	153	123	17	32	67	58	94	691	52	100	516	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		1.00	1.00		0.78	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	180	145	20	38	79	68	111	813	61	118	607	36
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	205	258	36	206	94	81	547	1410	106	604	1844	109
Arrive On Green	0.08	0.16	0.16	0.04	0.12	0.12	0.08	0.43	0.43	0.22	0.58	0.58
Sat Flow, veh/h	1753	1596	220	1739	812	699	1810	3244	243	1767	3193	189
Grp Volume(v), veh/h	180	0	165	38	0	147	111	431	443	118	316	327
Grp Sat Flow(s),veh/h/ln	1753	0	1816	1739	0	1510	1810	1721	1767	1767	1664	1718
Q Serve(g_s), s	10.5	0.0	11.7	2.7	0.0	13.4	4.4	26.5	26.5	3.3	13.9	13.9
Cycle Q Clear(g_c), s	10.5	0.0	11.7	2.7	0.0	13.4	4.4	26.5	26.5	3.3	13.9	13.9
Prop In Lane	1.00		0.12	1.00		0.46	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	205	0	294	206	0	174	547	748	768	604	961	992
V/C Ratio(X)	0.88	0.00	0.56	0.18	0.00	0.84	0.20	0.58	0.58	0.20	0.33	0.33
Avail Cap(c_a), veh/h	205	0	294	312	0	254	547	748	768	604	961	992
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.7	0.0	54.1	51.7	0.0	60.7	17.4	29.8	29.9	11.5	15.4	15.4
Incr Delay (d2), s/veh	32.2	0.0	4.1	0.6	0.0	23.1	0.8	3.2	3.1	0.7	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	5.7	1.2	0.0	6.2	2.0	11.5	11.8	1.3	5.4	5.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.0	0.0	58.2	52.3	0.0	83.8	18.2	33.1	33.0	12.3	16.3	16.3
LnGrp LOS	F	A	E	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h	345			185			985			761		
Approach Delay, s/veh	72.2			77.3			31.4			15.7		
Approach LOS	E			E			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	67.4	8.5	29.1	15.0	87.4	15.0	22.6				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	31.5	53.5	13.5	21.5	11.5	73.5	10.5	23.5				
Max Q Clear Time (g_c+I1), s	5.3	28.5	4.7	13.7	6.4	15.9	12.5	15.4				
Green Ext Time (p_c), s	0.5	15.4	0.0	0.8	0.2	16.3	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			36.0									
HCM 6th LOS			D									
Notes												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

3-B 2021-AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	78	0	902	574	78
Future Volume (vph)	0	78	0	902	574	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	29.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	78	0	902	574	78
Future Vol, veh/h	0	78	0	902	574	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	85	0	980	624	85
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	355	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	641	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	641	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 641		-	-		
HCM Lane V/C Ratio	- 0.132		-	-		
HCM Control Delay (s)	- 11.5		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.5		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

3-B 2021-AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	182	86	111	111	33
Future Volume (vph)	33	182	86	111	111	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 40.9% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	182	86	111	111	33
Future Vol, veh/h	33	182	86	111	111	33
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	36	198	93	121	121	36
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	214	0	-	0	424	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	270	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1356	-	-	-	587	892
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1356	-	-	-	569	892
Mov Cap-2 Maneuver	-	-	-	-	569	-
Stage 1	-	-	-	-	848	-
Stage 2	-	-	-	-	775	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.2	0		12.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1356	-	-	-	620	
HCM Lane V/C Ratio	0.026	-	-	-	0.252	
HCM Control Delay (s)	7.7	0	-	-	12.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	297	145	300	205	368	355	120	224	227
Average Queue (ft)	97	197	35	116	63	206	198	45	117	109
95th Queue (ft)	137	340	94	247	172	344	333	92	211	204
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		13							0	0
Queuing Penalty (veh)		39							0	0
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	44	36	2	30		24			4	
Queuing Penalty (veh)	61	56	2	10		23			4	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (ft)	69	5	3
Average Queue (ft)	33	0	0
95th Queue (ft)	56	4	3
Link Distance (ft)	311	1555	1555
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Molitor Rd & Driveway 2

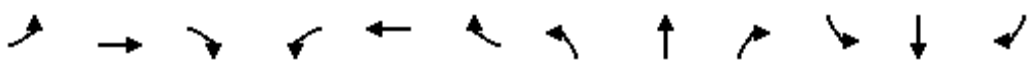
Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	297	3	180
Average Queue (ft)	47	0	66
95th Queue (ft)	199	4	146
Link Distance (ft)	1878	287	181
Upstream Blk Time (%)			6
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 194

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

3-B 2021-PM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	85	44	102	154	129	92	668	55	93	1024	84
Future Volume (vph)	166	85	44	102	154	129	92	668	55	93	1024	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	13.0	30.0		17.0	34.0		15.0	65.0		18.0	68.0	
Total Split (%)	10.0%	23.1%		13.1%	26.2%		11.5%	50.0%		13.8%	52.3%	
Maximum Green (s)	8.5	23.5		12.5	27.5		10.5	58.5		13.5	61.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	32.5	22.0		37.9	24.7		76.3	65.3		77.3	65.7	
Actuated g/C Ratio	0.25	0.17		0.29	0.19		0.59	0.50		0.59	0.51	
v/c Ratio	0.80	0.42		0.30	0.82		0.35	0.43		0.23	0.64	
Control Delay	64.1	45.8		34.9	63.5		14.0	21.9		11.8	26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.1	45.8		34.9	63.5		14.0	21.9		11.8	26.2	
LOS	E	D		C	E		B	C		B	C	
Approach Delay		56.1			56.0			21.0			25.1	
Approach LOS		E			E			C			C	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

3-B 2021-PM

01/26/2021

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 31.6

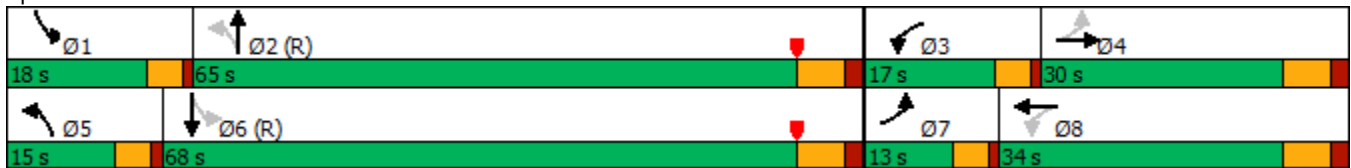
Intersection LOS: C

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd



HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

3-B 2021-PM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	85	44	102	154	129	92	668	55	93	1024	84
Future Volume (veh/h)	166	85	44	102	154	129	92	668	55	93	1024	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	171	88	45	105	159	133	95	689	57	96	1056	87
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	194	238	122	339	174	146	283	1681	139	430	1760	145
Arrive On Green	0.07	0.20	0.20	0.06	0.20	0.20	0.04	0.51	0.51	0.06	0.53	0.53
Sat Flow, veh/h	1781	1185	606	1810	890	744	1810	3297	273	1767	3324	274
Grp Volume(v), veh/h	171	0	133	105	0	292	95	368	378	96	564	579
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1810	0	1635	1810	1763	1806	1767	1777	1821
Q Serve(g_s), s	8.5	0.0	8.3	6.0	0.0	22.7	3.2	16.8	16.9	3.2	28.5	28.5
Cycle Q Clear(g_c), s	8.5	0.0	8.3	6.0	0.0	22.7	3.2	16.8	16.9	3.2	28.5	28.5
Prop In Lane	1.00		0.34	1.00		0.46	1.00		0.15	1.00		0.15
Lane Grp Cap(c), veh/h	194	0	359	339	0	320	283	899	921	430	941	964
V/C Ratio(X)	0.88	0.00	0.37	0.31	0.00	0.91	0.34	0.41	0.41	0.22	0.60	0.60
Avail Cap(c_a), veh/h	194	0	359	403	0	346	357	899	921	509	941	964
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	0.0	44.9	38.4	0.0	51.2	17.1	19.7	19.7	14.0	21.1	21.1
Incr Delay (d2), s/veh	36.3	0.0	1.4	0.7	0.0	28.3	1.0	1.4	1.4	0.4	2.8	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.9	2.7	0.0	11.8	1.4	7.1	7.3	1.3	12.2	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.9	0.0	46.2	39.1	0.0	79.4	18.1	21.1	21.1	14.4	23.9	23.9
LnGrp LOS	F	A	D	D	A	E	B	C	C	B	C	C
Approach Vol, veh/h		304			397			841			1239	
Approach Delay, s/veh		65.7			68.8			20.8			23.1	
Approach LOS		E			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	72.8	12.4	32.6	9.7	75.3	13.0	32.0				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	58.5	12.5	23.5	10.5	61.5	8.5	27.5				
Max Q Clear Time (g_c+I1), s	5.2	18.9	8.0	10.3	5.2	30.5	10.5	24.7				
Green Ext Time (p_c), s	0.2	17.1	0.1	0.9	0.1	22.9	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			33.6									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

3-B 2021-PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	64	0	963	1137	64
Future Volume (vph)	0	64	0	963	1137	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.1% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕↕	↕↗	
Traffic Vol, veh/h	0	64	0	963	1137	64
Future Vol, veh/h	0	64	0	963	1137	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	70	0	1047	1236	70
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	653	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	410	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	410	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.6	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 410		-	-		
HCM Lane V/C Ratio	- 0.17		-	-		
HCM Control Delay (s)	- 15.6		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.6		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

3-B 2021-PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	203	239	91	92	27
Future Volume (vph)	28	203	239	91	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	203	239	91	92	27
Future Vol, veh/h	28	203	239	91	92	27
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	30	221	260	99	100	29

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	359	0	0 591 310
Stage 1	-	-	- - 310 -
Stage 2	-	-	- - 281 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1200	-	- - 470 730
Stage 1	-	-	- - 744 -
Stage 2	-	-	- - 767 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1200	-	- - 457 730
Mov Cap-2 Maneuver	-	-	- - 457 -
Stage 1	-	-	- - 723 -
Stage 2	-	-	- - 767 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1200	-	-	-	499
HCM Lane V/C Ratio	0.025	-	-	-	0.259
HCM Control Delay (s)	8.1	0	-	-	14.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	115	297	160	1098	194	259	255	196	273	278
Average Queue (ft)	102	217	111	748	57	130	123	49	189	192
95th Queue (ft)	137	363	203	1309	126	246	239	122	326	327
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		22		18				0	3	4
Queuing Penalty (veh)		64		0				0	20	22
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	59	37	27	78	0	9			15	
Queuing Penalty (veh)	76	61	76	79	0	8			14	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	NB	SB	SB
Directions Served	R	T	T	TR
Maximum Queue (ft)	81	2	150	132
Average Queue (ft)	33	0	22	19
95th Queue (ft)	62	2	90	84
Link Distance (ft)	311	252	1555	1555
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Molitor Rd & Driveway 2

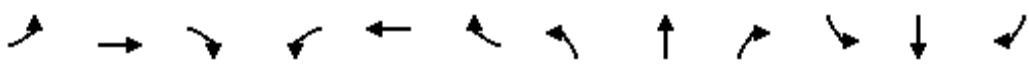
Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	325	10	202
Average Queue (ft)	70	0	81
95th Queue (ft)	228	6	180
Link Distance (ft)	1878	287	181
Upstream Blk Time (%)			10
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 421

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

4-NB 2031-AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	111	17	42	44	69	26	770	64	105	513	46
Future Volume (vph)	89	111	17	42	44	69	26	770	64	105	513	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	15.0	28.0		17.0	30.0		15.0	60.0		35.0	80.0	
Total Split (%)	10.7%	20.0%		12.1%	21.4%		10.7%	42.9%		25.0%	57.1%	
Maximum Green (s)	10.5	21.5		13.5	23.5		11.5	53.5		31.5	73.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	30.2	19.8		28.8	16.3		75.7	53.5		99.2	73.5	
Actuated g/C Ratio	0.22	0.14		0.21	0.12		0.54	0.38		0.71	0.52	
v/c Ratio	0.43	0.58		0.20	0.56		0.06	0.76		0.21	0.38	
Control Delay	47.6	63.8		40.8	44.8		9.8	41.9		8.2	20.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	47.6	63.8		40.8	44.8		9.8	41.9		8.2	20.2	
LOS	D	E		D	D		A	D		A	C	
Approach Delay		57.2			43.7			40.9			18.3	
Approach LOS		E			D			D			B	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	35.1
Intersection LOS:	D
Intersection Capacity Utilization	59.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 35 s	 Ø2 (R) 60 s	 Ø3 17 s	 Ø4 28 s
 Ø5 15 s	 Ø6 (R) 80 s	 Ø7 15 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

4-NB 2031-AM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	111	17	42	44	69	26	770	64	105	513	46
Future Volume (veh/h)	89	111	17	42	44	69	26	770	64	105	513	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.90		1.00	1.00		0.77	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	105	131	20	49	52	81	31	906	75	124	604	46
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	187	227	35	200	62	96	556	1442	119	581	1853	141
Arrive On Green	0.06	0.14	0.14	0.04	0.11	0.11	0.08	0.45	0.45	0.22	0.59	0.59
Sat Flow, veh/h	1753	1572	240	1739	553	862	1810	3217	266	1767	3135	238
Grp Volume(v), veh/h	105	0	151	49	0	133	31	484	497	124	320	330
Grp Sat Flow(s),veh/h/ln	1753	0	1812	1739	0	1415	1810	1721	1763	1767	1664	1709
Q Serve(g_s), s	7.2	0.0	10.9	3.4	0.0	12.9	1.1	30.3	30.3	3.3	13.6	13.7
Cycle Q Clear(g_c), s	7.2	0.0	10.9	3.4	0.0	12.9	1.1	30.3	30.3	3.3	13.6	13.7
Prop In Lane	1.00		0.13	1.00		0.61	1.00		0.15	1.00		0.14
Lane Grp Cap(c), veh/h	187	0	262	200	0	158	556	771	790	581	984	1010
V/C Ratio(X)	0.56	0.00	0.58	0.24	0.00	0.84	0.06	0.63	0.63	0.21	0.33	0.33
Avail Cap(c_a), veh/h	205	0	278	300	0	237	556	771	790	581	984	1010
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	0.0	55.9	52.1	0.0	61.0	15.7	29.7	29.7	12.1	14.5	14.5
Incr Delay (d2), s/veh	2.9	0.0	4.6	0.9	0.0	23.8	0.2	3.9	3.8	0.8	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	5.3	1.6	0.0	5.7	0.5	13.2	13.5	1.3	5.3	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	0.0	60.5	52.9	0.0	84.8	15.9	33.5	33.4	12.9	15.4	15.4
LnGrp LOS	D	A	E	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h	256		182				1012				774	
Approach Delay, s/veh	57.2		76.2				32.9				15.0	
Approach LOS	E		E				C				B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	69.3	9.0	26.7	15.0	89.3	13.6	22.1				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	31.5	53.5	13.5	21.5	11.5	73.5	10.5	23.5				
Max Q Clear Time (g_c+l1), s	5.3	32.3	5.4	12.9	3.1	15.7	9.2	14.9				
Green Ext Time (p_c), s	0.5	15.1	0.1	0.8	0.0	16.6	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			33.0									
HCM 6th LOS			C									
Notes												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

4-NB 2031-AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	928	664	0
Future Volume (vph)	0	0	0	928	664	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

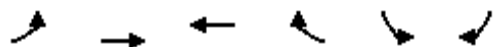
Intersection Capacity Utilization 29.0% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	928	664	0
Future Vol, veh/h	0	0	0	928	664	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	0	0	1009	722	0
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	361	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	636	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	636	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	-	-	-	-		
HCM Lane V/C Ratio	-	-	-	-		
HCM Control Delay (s)	-	0	-	-		
HCM Lane LOS	-	A	-	-		
HCM 95th %tile Q(veh)	-	-	-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

4-NB 2031-AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	217	116	0	0	0
Future Volume (vph)	0	217	116	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 14.8% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	217	116	0	0	0
Future Vol, veh/h	0	217	116	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	236	126	0	0	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	126	0	-	0	362	126
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	236	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1460	-	-	-	637	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	803	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1460	-	-	-	637	924
Mov Cap-2 Maneuver	-	-	-	-	637	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	803	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1460	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	296	153	278	190	364	366	116	214	209
Average Queue (ft)	82	198	51	106	22	208	198	46	99	92
95th Queue (ft)	140	352	120	221	104	381	365	91	203	194
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		23							0	0
Queuing Penalty (veh)		50							0	0
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	34	54	6	30		24		0	3	
Queuing Penalty (veh)	43	48	7	13		6		0	3	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB
Directions Served	LT
Maximum Queue (ft)	394
Average Queue (ft)	102
95th Queue (ft)	422
Link Distance (ft)	1878
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 170

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

4-NB 2031-PM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	75	46	114	140	143	37	738	65	98	1052	96
Future Volume (vph)	114	75	46	114	140	143	37	738	65	98	1052	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	13.0	30.0		17.0	34.0		15.0	65.0		18.0	68.0	
Total Split (%)	10.0%	23.1%		13.1%	26.2%		11.5%	50.0%		13.8%	52.3%	
Maximum Green (s)	8.5	23.5		12.5	27.5		10.5	58.5		13.5	61.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	31.9	21.4		38.0	24.4		75.0	65.4		79.8	69.7	
Actuated g/C Ratio	0.25	0.16		0.29	0.19		0.58	0.50		0.61	0.54	
v/c Ratio	0.56	0.40		0.34	0.82		0.15	0.47		0.26	0.63	
Control Delay	44.5	43.6		35.7	62.3		11.7	22.7		12.1	24.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.5	43.6		35.7	62.3		11.7	22.7		12.1	24.2	
LOS	D	D		D	E		B	C		B	C	
Approach Delay		44.0			54.6			22.2			23.2	
Approach LOS		D			D			C			C	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

4-NB 2031-PM
01/26/2021

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	29.3
Intersection LOS:	C
Intersection Capacity Utilization	76.2%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 18 s	 Ø2 (R) 65 s	 Ø3 17 s	 Ø4 30 s
 Ø5 15 s	 Ø6 (R) 68 s	 Ø7 13 s	 Ø8 34 s

HCM 6th Signalized Intersection Summary

1: N Farnsworth Ave & Molitor Rd

4-NB 2031-PM

01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	114	75	46	114	140	143	37	738	65	98	1052	96
Future Volume (veh/h)	114	75	46	114	140	143	37	738	65	98	1052	96
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	118	77	47	118	144	147	38	761	67	101	1085	99
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	193	216	132	351	157	161	247	1665	147	397	1807	165
Arrive On Green	0.07	0.20	0.20	0.07	0.20	0.20	0.02	0.51	0.51	0.06	0.55	0.55
Sat Flow, veh/h	1781	1104	674	1810	797	814	1810	3278	288	1767	3293	300
Grp Volume(v), veh/h	118	0	124	118	0	291	38	409	419	101	585	599
Grp Sat Flow(s),veh/h/ln	1781	0	1779	1810	0	1611	1810	1763	1804	1767	1777	1816
Q Serve(g_s), s	6.8	0.0	7.8	6.7	0.0	23.0	1.3	19.3	19.3	3.3	28.8	28.9
Cycle Q Clear(g_c), s	6.8	0.0	7.8	6.7	0.0	23.0	1.3	19.3	19.3	3.3	28.8	28.9
Prop In Lane	1.00		0.38	1.00		0.51	1.00		0.16	1.00		0.17
Lane Grp Cap(c), veh/h	193	0	349	351	0	318	247	895	916	397	975	997
V/C Ratio(X)	0.61	0.00	0.36	0.34	0.00	0.91	0.15	0.46	0.46	0.25	0.60	0.60
Avail Cap(c_a), veh/h	193	0	349	404	0	341	359	895	916	475	975	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.2	0.0	45.2	38.0	0.0	51.1	17.2	20.5	20.5	14.0	19.7	19.8
Incr Delay (d2), s/veh	8.1	0.0	1.3	0.8	0.0	29.1	0.4	1.7	1.6	0.5	2.7	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	3.6	3.1	0.0	11.8	0.6	8.2	8.4	1.3	12.2	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	46.5	38.8	0.0	80.2	17.6	22.2	22.1	14.5	22.5	22.4
LnGrp LOS	D	A	D	D	A	F	B	C	C	B	C	C
Approach Vol, veh/h		242			409			866			1285	
Approach Delay, s/veh		47.4			68.3			22.0			21.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	72.5	13.2	32.0	7.0	77.8	13.0	32.2				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	58.5	12.5	23.5	10.5	61.5	8.5	27.5				
Max Q Clear Time (g_c+I1), s	5.3	21.3	8.7	9.8	3.3	30.9	8.8	25.0				
Green Ext Time (p_c), s	0.2	18.7	0.1	0.9	0.0	23.3	0.0	0.7				
Intersection Summary												
HCM 6th Ctrl Delay			30.9									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

4-NB 2031-PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	995	1246	0
Future Volume (vph)	0	0	0	995	1246	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.8%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	0	0	995	1246	0
Future Vol, veh/h	0	0	0	995	1246	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	0	0	1082	1354	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 677	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 395	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 395	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

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

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

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

4-NB 2031-PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	235	273	0	0	0
Future Volume (vph)	0	235	273	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 17.7% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	235	273	0	0	0
Future Vol, veh/h	0	235	273	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	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	255	297	0	0	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	297	0	-	0	552	297
Stage 1	-	-	-	-	297	-
Stage 2	-	-	-	-	255	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1264	-	-	-	495	742
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	788	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1264	-	-	-	495	742
Mov Cap-2 Maneuver	-	-	-	-	495	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	788	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1264	-	-	-	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	0	-	-	-	0	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	-	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	289	160	795	152	278	274	227	278	278
Average Queue (ft)	84	135	111	419	29	158	151	57	193	196
95th Queue (ft)	134	279	195	874	87	261	257	137	317	321
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		4		1				0	3	3
Queuing Penalty (veh)		10		0				0	19	20
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	28	31	24	63		13		0	15	
Queuing Penalty (veh)	34	36	67	71		5		0	15	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	168	154
Average Queue (ft)	23	19
95th Queue (ft)	97	86
Link Distance (ft)	1555	1555
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB
Directions Served	LT
Maximum Queue (ft)	140
Average Queue (ft)	13
95th Queue (ft)	86
Link Distance (ft)	1878
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 277

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

5-B 2031-AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	128	18	34	69	61	95	728	55	105	540	38
Future Volume (vph)	157	128	18	34	69	61	95	728	55	105	540	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	15.0	28.0		17.0	30.0		15.0	60.0		35.0	80.0	
Total Split (%)	10.7%	20.0%		12.1%	21.4%		10.7%	42.9%		25.0%	57.1%	
Maximum Green (s)	10.5	21.5		13.5	23.5		11.5	53.5		31.5	73.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	32.6	22.2		29.5	17.6		73.9	53.5		97.4	73.5	
Actuated g/C Ratio	0.23	0.16		0.21	0.13		0.53	0.38		0.70	0.52	
v/c Ratio	0.76	0.60		0.16	0.63		0.21	0.71		0.21	0.39	
Control Delay	64.8	62.9		39.5	58.9		11.0	40.1		8.6	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	64.8	62.9		39.5	58.9		11.0	40.1		8.6	20.5	
LOS	E	E		D	E		B	D		A	C	
Approach Delay		63.9			54.9			37.0			18.6	
Approach LOS		E			D			D			B	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

5-B 2031-AM
01/26/2021

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	36.3
Intersection LOS:	D
Intersection Capacity Utilization	62.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 35 s	 Ø2 (R) 60 s	 Ø3 17 s	 Ø4 28 s
 Ø5 15 s	 Ø6 (R) 80 s	 Ø7 15 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary

1: N Farnsworth Ave & Molitor Rd

5-B 2031-AM

01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	128	18	34	69	61	95	728	55	105	540	38
Future Volume (veh/h)	157	128	18	34	69	61	95	728	55	105	540	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		1.00	1.00		0.79	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	185	151	21	40	81	72	112	856	65	124	635	38
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	205	264	37	206	95	85	535	1397	106	586	1831	109
Arrive On Green	0.08	0.17	0.17	0.04	0.12	0.12	0.08	0.43	0.43	0.22	0.57	0.57
Sat Flow, veh/h	1753	1594	222	1739	801	712	1810	3241	246	1767	3191	191
Grp Volume(v), veh/h	185	0	172	40	0	153	112	454	467	124	331	342
Grp Sat Flow(s),veh/h/ln	1753	0	1816	1739	0	1513	1810	1721	1767	1767	1664	1717
Q Serve(g_s), s	10.5	0.0	12.2	2.8	0.0	13.9	4.5	28.6	28.6	3.5	14.8	14.8
Cycle Q Clear(g_c), s	10.5	0.0	12.2	2.8	0.0	13.9	4.5	28.6	28.6	3.5	14.8	14.8
Prop In Lane	1.00		0.12	1.00		0.47	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	205	0	300	206	0	180	535	742	761	586	955	986
V/C Ratio(X)	0.90	0.00	0.57	0.19	0.00	0.85	0.21	0.61	0.61	0.21	0.35	0.35
Avail Cap(c_a), veh/h	205	0	300	312	0	254	535	742	761	586	955	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	0.0	53.9	51.3	0.0	60.4	17.7	30.8	30.8	12.4	15.9	15.9
Incr Delay (d2), s/veh	37.3	0.0	4.2	0.6	0.0	23.9	0.9	3.8	3.7	0.8	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	6.0	1.3	0.0	6.5	2.0	12.5	12.8	1.4	5.8	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.1	0.0	58.1	52.0	0.0	84.3	18.6	34.6	34.5	13.2	16.9	16.8
LnGrp LOS	F	A	E	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h	357		193				1033				797	
Approach Delay, s/veh	74.7		77.6				32.8				16.3	
Approach LOS	E		E				C				B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	66.8	8.5	29.7	15.0	86.8	15.0	23.2				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	31.5	53.5	13.5	21.5	11.5	73.5	10.5	23.5				
Max Q Clear Time (g_c+I1), s	5.5	30.6	4.8	14.2	6.5	16.8	12.5	15.9				
Green Ext Time (p_c), s	0.5	15.2	0.1	0.8	0.2	17.3	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	37.2											
HCM 6th LOS	D											
Notes												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

5-B 2031-AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	78	0	946	605	78
Future Volume (vph)	0	78	0	946	605	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 30.7%				ICU Level of Service A		
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	78	0	946	605	78
Future Vol, veh/h	0	78	0	946	605	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	85	0	1028	658	85
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	372	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	625	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	625	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 625		-	-		
HCM Lane V/C Ratio	- 0.136		-	-		
HCM Control Delay (s)	- 11.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.5		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

5-B 2031-AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	192	91	111	111	33
Future Volume (vph)	33	192	91	111	111	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	192	91	111	111	33
Future Vol, veh/h	33	192	91	111	111	33
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	36	209	99	121	121	36
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	220	0	-	0	441	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	281	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1349	-	-	-	574	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	767	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1349	-	-	-	557	885
Mov Cap-2 Maneuver	-	-	-	-	557	-
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	767	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.1	0		12.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1349	-	-	-	609	
HCM Lane V/C Ratio	0.027	-	-	-	0.257	
HCM Control Delay (s)	7.7	0	-	-	12.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	1	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	299	139	310	204	386	375	106	230	225
Average Queue (ft)	100	230	41	122	67	210	202	46	114	108
95th Queue (ft)	138	361	112	247	175	369	352	90	218	209
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		25							0	0
Queuing Penalty (veh)		75							0	0
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	52	43	3	33	0	25			4	
Queuing Penalty (veh)	76	68	4	11	0	24			4	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	NB	SB	SB
Directions Served	R	T	T	TR
Maximum Queue (ft)	66	4	8	6
Average Queue (ft)	32	0	0	0
95th Queue (ft)	54	4	6	4
Link Distance (ft)	311	252	1555	1555
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	391	12	189
Average Queue (ft)	92	1	95
95th Queue (ft)	337	6	204
Link Distance (ft)	1878	287	181
Upstream Blk Time (%)			19
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 262

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

5-B 2031-PM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	89	46	107	161	136	94	703	58	98	1074	89
Future Volume (vph)	171	89	46	107	161	136	94	703	58	98	1074	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	80		0	140		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	40			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	13.0	30.0		17.0	34.0		15.0	65.0		18.0	68.0	
Total Split (%)	10.0%	23.1%		13.1%	26.2%		11.5%	50.0%		13.8%	52.3%	
Maximum Green (s)	8.5	23.5		12.5	27.5		10.5	58.5		13.5	61.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	33.0	22.5		38.6	25.3		75.6	64.5		76.8	65.1	
Actuated g/C Ratio	0.25	0.17		0.30	0.19		0.58	0.50		0.59	0.50	
v/c Ratio	0.85	0.43		0.32	0.83		0.38	0.46		0.25	0.68	
Control Delay	70.5	46.1		34.9	64.8		15.0	22.8		12.2	27.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	70.5	46.1		34.9	64.8		15.0	22.8		12.2	27.6	
LOS	E	D		C	E		B	C		B	C	
Approach Delay		59.7			56.9			21.9			26.4	
Approach LOS		E			E			C			C	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

5-B 2031-PM
01/26/2021

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 33.0
 Intersection LOS: C
 Intersection Capacity Utilization 82.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1	 Ø2 (R)	 Ø3	 Ø4
18 s	65 s	17 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
15 s	68 s	13 s	34 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

5-B 2031-PM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	89	46	107	161	136	94	703	58	98	1074	89
Future Volume (veh/h)	171	89	46	107	161	136	94	703	58	98	1074	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	176	92	47	110	166	140	97	725	60	101	1107	92
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	191	243	124	344	180	152	264	1658	137	409	1734	144
Arrive On Green	0.07	0.21	0.21	0.06	0.20	0.20	0.04	0.50	0.50	0.06	0.52	0.52
Sat Flow, veh/h	1781	1185	606	1810	888	749	1810	3297	273	1767	3322	276
Grp Volume(v), veh/h	176	0	139	110	0	306	97	388	397	101	592	607
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1810	0	1638	1810	1763	1806	1767	1777	1821
Q Serve(g_s), s	8.5	0.0	8.7	6.2	0.0	23.8	3.4	18.2	18.2	3.4	31.0	31.1
Cycle Q Clear(g_c), s	8.5	0.0	8.7	6.2	0.0	23.8	3.4	18.2	18.2	3.4	31.0	31.1
Prop In Lane	1.00		0.34	1.00		0.46	1.00		0.15	1.00		0.15
Lane Grp Cap(c), veh/h	191	0	367	344	0	331	264	887	909	409	928	951
V/C Ratio(X)	0.92	0.00	0.38	0.32	0.00	0.92	0.37	0.44	0.44	0.25	0.64	0.64
Avail Cap(c_a), veh/h	191	0	367	405	0	346	336	887	909	487	928	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.6	0.0	44.5	37.7	0.0	50.9	18.2	20.6	20.6	14.7	22.3	22.3
Incr Delay (d2), s/veh	44.1	0.0	1.4	0.8	0.0	30.4	1.2	1.6	1.5	0.4	3.4	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	4.0	2.8	0.0	12.5	1.5	7.8	7.9	1.4	13.4	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.8	0.0	45.9	38.4	0.0	81.2	19.5	22.1	22.1	15.1	25.6	25.6
LnGrp LOS	F	A	D	D	A	F	B	C	C	B	C	C
Approach Vol, veh/h		315			416			882			1300	
Approach Delay, s/veh		69.9			69.9			21.8			24.8	
Approach LOS		E			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	71.9	12.7	33.2	9.8	74.4	13.0	32.8				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	58.5	12.5	23.5	10.5	61.5	8.5	27.5				
Max Q Clear Time (g_c+I1), s	5.4	20.2	8.2	10.7	5.4	33.1	10.5	25.8				
Green Ext Time (p_c), s	0.2	17.8	0.1	0.9	0.1	22.2	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			35.2									
HCM 6th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

5-B 2031-PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗↗	↗↗	
Traffic Volume (vph)	0	64	0	1010	1197	64
Future Volume (vph)	0	64	0	1010	1197	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.8% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	64	0	1010	1197	64
Future Vol, veh/h	0	64	0	1010	1197	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
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	70	0	1098	1301	70
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	686	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	390	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	390	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	16.2	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	390	-	-		
HCM Lane V/C Ratio	-	0.178	-	-		
HCM Control Delay (s)	-	16.2	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.6	-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

5-B 2031-PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	214	253	91	92	27
Future Volume (vph)	28	214	253	91	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 48.2%				ICU Level of Service A		
Analysis Period (min) 15						

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	214	253	91	92	27
Future Vol, veh/h	28	214	253	91	92	27
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	30	233	275	99	100	29
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	374	0	-	0	618	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1184	-	-	-	453	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	757	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1184	-	-	-	440	716
Mov Cap-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	757	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		15.2		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1184	-	-	-	482	
HCM Lane V/C Ratio	0.026	-	-	-	0.268	
HCM Control Delay (s)	8.1	0	-	-	15.2	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	1.1	

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	114	299	160	1090	180	278	270	236	276	279
Average Queue (ft)	105	230	114	824	59	139	134	56	193	196
95th Queue (ft)	135	369	206	1391	128	264	258	145	335	336
Link Distance (ft)		287		1136		1618	1618		252	252
Upstream Blk Time (%)		29		31				0	4	4
Queuing Penalty (veh)		90		0				0	25	28
Storage Bay Dist (ft)	75		80		140			160		
Storage Blk Time (%)	64	35	26	79	0	11			17	
Queuing Penalty (veh)	87	60	77	85	0	10			16	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	SB	SB
Directions Served	R	T	TR
Maximum Queue (ft)	74	157	180
Average Queue (ft)	33	27	25
95th Queue (ft)	61	102	102
Link Distance (ft)	311	1555	1555
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	456	7	202
Average Queue (ft)	124	0	100
95th Queue (ft)	449	6	215
Link Distance (ft)	1878	287	181
Upstream Blk Time (%)			24
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 477

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

6-BWI 2021-AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	123	17	32	67	58	94	691	52	100	516	36
Future Volume (vph)	153	123	17	32	67	58	94	691	52	100	516	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	80		0	160		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	125			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	25.0	45.8		9.2	30.0		14.0	68.0		17.0	71.0	
Total Split (%)	17.9%	32.7%		6.6%	21.4%		10.0%	48.6%		12.1%	50.7%	
Maximum Green (s)	20.5	39.3		5.7	23.5		10.5	61.5		13.5	64.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	40.9	31.6		25.7	17.0		84.6	61.5		90.6	64.5	
Actuated g/C Ratio	0.29	0.23		0.18	0.12		0.60	0.44		0.65	0.46	
v/c Ratio	0.53	0.40		0.17	0.63		0.20	0.59		0.25	0.43	
Control Delay	43.7	46.8		35.0	59.0		11.6	31.4		11.9	26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	43.7	46.8		35.0	59.0		11.6	31.4		11.9	26.2	
LOS	D	D		D	E		B	C		B	C	
Approach Delay		45.2			54.1			29.1			24.0	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	31.9
Intersection LOS:	C
Intersection Capacity Utilization	60.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 17 s	 Ø2 (R) 68 s	 Ø3 9.2 s	 Ø4 45.8 s
 Ø5 14 s	 Ø6 (R) 71 s	 Ø7 25 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary

1: N Farnsworth Ave & Molitor Rd

6-BWI 2021-AM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	153	123	17	32	67	58	94	691	52	100	516	36
Future Volume (veh/h)	153	123	17	32	67	58	94	691	52	100	516	36
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		1.00	1.00		0.78	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	180	145	20	38	79	68	111	813	61	118	607	36
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	255	304	42	244	94	81	548	1735	130	460	1775	105
Arrive On Green	0.10	0.19	0.19	0.04	0.12	0.12	0.08	0.53	0.53	0.10	0.56	0.56
Sat Flow, veh/h	1753	1596	220	1739	812	699	1810	3244	243	1767	3193	189
Grp Volume(v), veh/h	180	0	165	38	0	147	111	431	443	118	316	327
Grp Sat Flow(s),veh/h/ln	1753	0	1816	1739	0	1510	1810	1721	1767	1767	1664	1718
Q Serve(g_s), s	12.3	0.0	11.3	2.7	0.0	13.4	3.6	21.8	21.8	3.6	14.6	14.6
Cycle Q Clear(g_c), s	12.3	0.0	11.3	2.7	0.0	13.4	3.6	21.8	21.8	3.6	14.6	14.6
Prop In Lane	1.00		0.12	1.00		0.46	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	255	0	346	244	0	174	548	920	945	460	925	955
V/C Ratio(X)	0.71	0.00	0.48	0.16	0.00	0.84	0.20	0.47	0.47	0.26	0.34	0.34
Avail Cap(c_a), veh/h	330	0	510	253	0	254	548	920	945	460	925	955
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.9	0.0	50.5	51.6	0.0	60.7	11.9	20.2	20.2	12.0	17.0	17.0
Incr Delay (d2), s/veh	4.7	0.0	2.2	0.4	0.0	23.1	0.8	1.7	1.7	1.3	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	5.4	1.2	0.0	6.2	1.5	9.1	9.3	1.5	5.8	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.5	0.0	52.6	52.0	0.0	83.8	12.8	21.9	21.9	13.4	18.0	18.0
LnGrp LOS	D	A	D	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h	345			185			985			761		
Approach Delay, s/veh	52.1			77.2			20.9			17.3		
Approach LOS	D			E			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	81.3	8.5	33.2	14.0	84.3	19.0	22.6				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	61.5	5.7	39.3	10.5	64.5	20.5	23.5				
Max Q Clear Time (g_c+I1), s	5.6	23.8	4.7	13.3	5.6	16.6	14.3	15.4				
Green Ext Time (p_c), s	0.2	20.1	0.0	1.7	0.2	15.4	0.2	0.8				
Intersection Summary												
HCM 6th Ctrl Delay	29.0											
HCM 6th LOS	C											

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

6-BWI 2021-AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	78	0	902	574	78
Future Volume (vph)	0	78	0	902	574	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	0			20
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.3%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	78	0	902	574	78
Future Vol, veh/h	0	78	0	902	574	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	20
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	85	0	980	624	85
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	312	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	684	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	684	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 684		-	-		
HCM Lane V/C Ratio	- 0.124		-	-		
HCM Control Delay (s)	- 11		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.4		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

6-BWI 2021-AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	33	182	86	111	111	33
Future Volume (vph)	33	182	86	111	111	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 38.9% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	182	86	111	111	33
Future Vol, veh/h	33	182	86	111	111	33
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	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	36	198	93	121	121	36

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	214	0	0 424 154
Stage 1	-	-	- - 154 -
Stage 2	-	-	- - 270 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1356	-	- - 587 892
Stage 1	-	-	- - 874 -
Stage 2	-	-	- - 775 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1356	-	- - 569 892
Mov Cap-2 Maneuver	-	-	- - 569 -
Stage 1	-	-	- - 848 -
Stage 2	-	-	- - 775 -

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1356	-	-	-	569	892
HCM Lane V/C Ratio	0.026	-	-	-	0.212	0.04
HCM Control Delay (s)	7.7	0	-	-	13	9.2
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.1

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	208	152	53	154	50	247	228	75	150	159
Average Queue (ft)	114	98	36	63	27	195	163	43	108	106
95th Queue (ft)	194	150	59	140	53	254	253	73	162	165
Link Distance (ft)		286		1136		1617	1617		252	252
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	150		80		160			160		
Storage Blk Time (%)	10	0		13		16			0	
Queuing Penalty (veh)	14	0		4		15			0	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB
Directions Served	R
Maximum Queue (ft)	44
Average Queue (ft)	26
95th Queue (ft)	41
Link Distance (ft)	299
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Molitor Rd & Driveway 2

Movement	SB	SB
Directions Served	L	R
Maximum Queue (ft)	53	49
Average Queue (ft)	36	30
95th Queue (ft)	56	46
Link Distance (ft)	176	176
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 34

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

6-B WI 2021-PM

01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	85	44	102	154	129	92	668	55	93	1024	84
Future Volume (vph)	166	85	44	102	154	129	92	668	55	93	1024	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	80		0	160		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	125			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	16.7	50.6		10.0	43.9		12.0	56.1		13.3	57.4	
Total Split (%)	12.8%	38.9%		7.7%	33.8%		9.2%	43.2%		10.2%	44.2%	
Maximum Green (s)	12.2	44.1		5.5	37.4		7.5	49.6		8.8	50.9	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.3	33.3		34.1	26.6		70.7	59.7		71.7	60.2	
Actuated g/C Ratio	0.35	0.26		0.26	0.20		0.54	0.46		0.55	0.46	
v/c Ratio	0.61	0.28		0.32	0.76		0.39	0.47		0.25	0.70	
Control Delay	38.9	32.4		32.2	55.0		18.4	26.4		15.3	31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	38.9	32.4		32.2	55.0		18.4	26.4		15.3	31.9	
LOS	D	C		C	E		B	C		B	C	
Approach Delay		36.1			49.0			25.5			30.6	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 32.3

Intersection LOS: C

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1	 Ø2 (R)	 Ø3	 Ø4
13.3 s	56.1 s	10 s	50.6 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
12 s	57.4 s	16.7 s	43.9 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

6-B WI 2021-PM

01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	85	44	102	154	129	92	668	55	93	1024	84
Future Volume (veh/h)	166	85	44	102	154	129	92	668	55	93	1024	84
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	171	88	45	105	159	133	95	689	57	96	1056	87
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	250	300	153	379	185	155	259	1568	130	400	1642	135
Arrive On Green	0.09	0.25	0.25	0.04	0.21	0.21	0.04	0.48	0.48	0.06	0.49	0.49
Sat Flow, veh/h	1781	1185	606	1810	894	748	1810	3297	273	1767	3324	274
Grp Volume(v), veh/h	171	0	133	105	0	292	95	368	378	96	564	579
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1810	0	1641	1810	1763	1806	1767	1777	1821
Q Serve(g_s), s	9.5	0.0	7.8	5.5	0.0	22.3	3.5	18.0	18.0	3.5	30.6	30.6
Cycle Q Clear(g_c), s	9.5	0.0	7.8	5.5	0.0	22.3	3.5	18.0	18.0	3.5	30.6	30.6
Prop In Lane	1.00		0.34	1.00		0.46	1.00		0.15	1.00		0.15
Lane Grp Cap(c), veh/h	250	0	454	379	0	339	259	838	859	400	878	900
V/C Ratio(X)	0.68	0.00	0.29	0.28	0.00	0.86	0.37	0.44	0.44	0.24	0.64	0.64
Avail Cap(c_a), veh/h	259	0	608	379	0	472	289	838	859	414	878	900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	0.0	39.2	39.1	0.0	49.8	19.8	22.6	22.6	16.3	24.4	24.4
Incr Delay (d2), s/veh	9.3	0.0	0.8	0.6	0.0	15.5	1.2	1.7	1.6	0.4	3.6	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	3.6	2.8	0.0	10.6	1.5	7.8	7.9	1.4	13.4	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	39.9	39.6	0.0	65.3	21.0	24.3	24.2	16.7	28.0	27.9
LnGrp LOS	D	A	D	D	A	E	C	C	C	B	C	C
Approach Vol, veh/h		304			397			841			1239	
Approach Delay, s/veh		43.4			58.5			23.9			27.1	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	68.3	10.0	39.4	9.9	70.7	16.1	33.4				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	8.8	49.6	5.5	44.1	7.5	50.9	12.2	37.4				
Max Q Clear Time (g_c+I1), s	5.5	20.0	7.5	9.8	5.5	32.6	11.5	24.3				
Green Ext Time (p_c), s	0.1	14.6	0.0	1.5	0.1	14.8	0.1	2.5				
Intersection Summary												
HCM 6th Ctrl Delay			32.4									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

6-B WI 2021-PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	64	0	963	1137	64
Future Volume (vph)	0	64	0	963	1137	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	0			20
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.1%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Vol, veh/h	0	64	0	963	1137	64
Future Vol, veh/h	0	64	0	963	1137	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	20
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	70	0	1047	1236	70
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	618	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 432		-	-		
HCM Lane V/C Ratio	- 0.161		-	-		
HCM Control Delay (s)	- 14.9		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.6		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

6-B WI 2021-PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	203	239	91	92	27
Future Volume (vph)	28	203	239	91	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	45.4%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	203	239	91	92	27
Future Vol, veh/h	28	203	239	91	92	27
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	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	30	221	260	99	100	29

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	359	0	0 591 310
Stage 1	-	-	- - 310 -
Stage 2	-	-	- - 281 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1200	-	- - 470 730
Stage 1	-	-	- - 744 -
Stage 2	-	-	- - 767 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1200	-	- - 457 730
Mov Cap-2 Maneuver	-	-	- - 457 -
Stage 1	-	-	- - 723 -
Stage 2	-	-	- - 767 -

Approach	EB	WB	SB
HCM Control Delay, s	1	0	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1200	-	-	-	457	730
HCM Lane V/C Ratio	0.025	-	-	-	0.219	0.04
HCM Control Delay (s)	8.1	0	-	-	15.1	10.1
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.1

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	123	129	152	285	121	223	218	150	269	272
Average Queue (ft)	80	89	83	210	69	165	161	64	246	246
95th Queue (ft)	137	153	177	332	157	252	248	166	294	303
Link Distance (ft)		286		1136		1617	1617		252	252
Upstream Blk Time (%)								0	9	10
Queuing Penalty (veh)								0	56	60
Storage Bay Dist (ft)	150		80		160			160		
Storage Blk Time (%)	2	0	8	46		12			28	
Queuing Penalty (veh)	3	1	23	46		11			26	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	SB	SB	SB
Directions Served	R	T	T	R
Maximum Queue (ft)	47	134	135	13
Average Queue (ft)	27	60	55	3
95th Queue (ft)	54	153	152	34
Link Distance (ft)	299	1556	1556	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				20
Storage Blk Time (%)			8	
Queuing Penalty (veh)			5	

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	26	59	30
Average Queue (ft)	7	35	15
95th Queue (ft)	30	65	38
Link Distance (ft)	1866	176	176
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 230

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

7-B WI 2031- AM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	128	18	34	69	61	95	728	55	105	540	38
Future Volume (vph)	157	128	18	34	69	61	95	728	55	105	540	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	80		0	160		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	125			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Heavy Vehicles (%)	4%	3%	6%	5%	2%	2%	0%	6%	0%	3%	10%	2%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	14.5		8.5	14.5		7.5	21.5		11.5	21.5	
Total Split (s)	24.0	44.8		9.2	30.0		13.0	69.0		17.0	73.0	
Total Split (%)	17.1%	32.0%		6.6%	21.4%		9.3%	49.3%		12.1%	52.1%	
Maximum Green (s)	19.5	38.3		5.7	23.5		9.5	62.5		13.5	66.5	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		3.5	6.5		3.5	6.5		3.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	3.0	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		Max	C-Max		Max	C-Max	
Walk Time (s)		7.0		0.0	0.0		0.0	0.0		0.0	0.0	
Flash Dont Walk (s)		19.0		0.0	0.0		0.0	0.0		0.0	0.0	
Pedestrian Calls (#/hr)		0		0	0		0	0		0	0	
Act Effct Green (s)	41.2	31.8		26.1	17.4		83.3	62.5		90.8	66.5	
Actuated g/C Ratio	0.29	0.23		0.19	0.12		0.60	0.45		0.65	0.48	
v/c Ratio	0.55	0.42		0.18	0.64		0.21	0.61		0.28	0.43	
Control Delay	44.3	47.2		35.1	59.5		11.7	31.3		12.2	25.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	44.3	47.2		35.1	59.5		11.7	31.3		12.2	25.1	
LOS	D	D		D	E		B	C		B	C	
Approach Delay		45.7			54.5			29.2			23.1	
Approach LOS		D			D			C			C	

Lanes, Volumes, Timings

1: N Farnsworth Ave & Molitor Rd

7-B WI 2031- AM
01/26/2021

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	21.5 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	31.7
Intersection LOS:	C
Intersection Capacity Utilization	62.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 17 s	 Ø2 (R) 69 s	 Ø3 9.2 s	 Ø4 44.8 s
 Ø5 13 s	 Ø6 (R) 73 s	 Ø7 24 s	 Ø8 30 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

7-B WI 2031- AM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	128	18	34	69	61	95	728	55	105	540	38
Future Volume (veh/h)	157	128	18	34	69	61	95	728	55	105	540	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.91		1.00	1.00		0.79	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1856	1856	1826	1870	1870	1900	1811	1811	1856	1752	1752
Adj Flow Rate, veh/h	185	151	21	40	81	72	112	856	65	124	635	38
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00
Percent Heavy Veh, %	4	3	3	5	2	2	0	6	6	3	10	10
Cap, veh/h	258	312	43	246	95	85	522	1715	130	439	1779	106
Arrive On Green	0.11	0.20	0.20	0.04	0.12	0.12	0.07	0.53	0.53	0.10	0.56	0.56
Sat Flow, veh/h	1753	1594	222	1739	801	712	1810	3241	246	1767	3191	191
Grp Volume(v), veh/h	185	0	172	40	0	153	112	454	467	124	331	342
Grp Sat Flow(s),veh/h/ln	1753	0	1816	1739	0	1513	1810	1721	1767	1767	1664	1717
Q Serve(g_s), s	12.6	0.0	11.8	2.8	0.0	13.9	3.7	23.7	23.7	3.8	15.4	15.4
Cycle Q Clear(g_c), s	12.6	0.0	11.8	2.8	0.0	13.9	3.7	23.7	23.7	3.8	15.4	15.4
Prop In Lane	1.00		0.12	1.00		0.47	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	258	0	356	246	0	180	522	910	935	439	928	958
V/C Ratio(X)	0.72	0.00	0.48	0.16	0.00	0.85	0.21	0.50	0.50	0.28	0.36	0.36
Avail Cap(c_a), veh/h	318	0	497	255	0	254	522	910	935	439	928	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.4	0.0	50.0	51.2	0.0	60.4	12.7	21.1	21.1	12.7	17.1	17.1
Incr Delay (d2), s/veh	5.8	0.0	2.2	0.4	0.0	23.9	0.9	2.0	1.9	1.6	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	5.6	1.3	0.0	6.5	1.6	9.9	10.1	1.6	6.1	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	0.0	52.2	51.6	0.0	84.3	13.6	23.1	23.0	14.3	18.2	18.1
LnGrp LOS	D	A	D	D	A	F	B	C	C	B	B	B
Approach Vol, veh/h	357		193				1033			797		
Approach Delay, s/veh	52.2		77.6				22.0			17.6		
Approach LOS	D		E				C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	80.6	8.5	33.9	13.0	84.6	19.3	23.2				
Change Period (Y+Rc), s	3.5	6.5	3.5	6.5	3.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	13.5	62.5	5.7	38.3	9.5	66.5	19.5	23.5				
Max Q Clear Time (g_c+l1), s	5.8	25.7	4.8	13.8	5.7	17.4	14.6	15.9				
Green Ext Time (p_c), s	0.3	21.0	0.0	1.8	0.1	16.5	0.2	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			29.6									
HCM 6th LOS			C									

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

7-B WI 2031- AM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	78	0	946	605	78
Future Volume (vph)	0	78	0	946	605	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	0			20
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.5%
Analysis Period (min)	15
	ICU Level of Service A

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	78	0	946	605	78
Future Vol, veh/h	0	78	0	946	605	78
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	20
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	85	0	1028	658	85

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 329	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.94	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.32	- -	- -
Pot Cap-1 Maneuver	0 667	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 667	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

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

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 667	- -	- -
HCM Lane V/C Ratio	- 0.127	- -	- -
HCM Control Delay (s)	- 11.2	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.4	- -	- -

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

7-B WI 2031- AM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	↰
Traffic Volume (vph)	33	192	91	111	111	33
Future Volume (vph)	33	192	91	111	111	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.7% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	192	91	111	111	33
Future Vol, veh/h	33	192	91	111	111	33
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	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	36	209	99	121	121	36

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	220	0	0 441 160
Stage 1	-	-	- - 160 -
Stage 2	-	-	- - 281 -
Critical Hdwy	4.12	-	- - 6.42 6.22
Critical Hdwy Stg 1	-	-	- - 5.42 -
Critical Hdwy Stg 2	-	-	- - 5.42 -
Follow-up Hdwy	2.218	-	- - 3.518 3.318
Pot Cap-1 Maneuver	1349	-	- - 574 885
Stage 1	-	-	- - 869 -
Stage 2	-	-	- - 767 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1349	-	- - 557 885
Mov Cap-2 Maneuver	-	-	- - 557 -
Stage 1	-	-	- - 843 -
Stage 2	-	-	- - 767 -

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1349	-	-	-	557	885
HCM Lane V/C Ratio	0.027	-	-	-	0.217	0.041
HCM Control Delay (s)	7.7	0	-	-	13.2	9.2
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.1

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	228	226	159	243	224	349	350	152	247	246
Average Queue (ft)	110	107	38	104	64	212	206	53	148	144
95th Queue (ft)	192	189	101	194	170	315	308	105	229	228
Link Distance (ft)		286		1136		1617	1617		252	252
Upstream Blk Time (%)	0	0							0	0
Queuing Penalty (veh)	0	0							1	1
Storage Bay Dist (ft)	150		80		160			160		
Storage Blk Time (%)	4	4	2	25	0	17		0	7	
Queuing Penalty (veh)	6	6	2	8	0	16		0	7	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	SB	SB
Directions Served	R	T	T
Maximum Queue (ft)	59	14	14
Average Queue (ft)	25	1	1
95th Queue (ft)	45	10	11
Link Distance (ft)	299	1556	1556
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	59	10	71	50
Average Queue (ft)	9	0	37	19
95th Queue (ft)	39	5	61	43
Link Distance (ft)	1866	286	176	176
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 48

Lanes, Volumes, Timings
1: N Farnsworth Ave & Molitor Rd

7-B WI 2031- PM
01/26/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	171	89	46	107	161	136	94	703	58	98	1074	89
Future Volume (vph)	171	89	46	107	161	136	94	703	58	98	1074	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	80		0	160		0	160		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	125			80			65			130		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		370			1182			1653			316	
Travel Time (s)		8.4			26.9			32.2			6.2	
Confl. Peds. (#/hr)				85								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	1%	0%	3%	2%	3%	2%	1%
Shared Lane Traffic (%)												
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	8.0		5.0	8.0		3.0	15.0		8.0	15.0	
Minimum Split (s)	9.5	50.5		9.5	22.5		9.5	22.5		12.5	22.5	
Total Split (s)	17.1	50.6		10.0	43.5		12.0	55.4		14.0	57.4	
Total Split (%)	13.2%	38.9%		7.7%	33.5%		9.2%	42.6%		10.8%	44.2%	
Maximum Green (s)	12.6	44.1		5.5	37.0		7.5	48.9		9.5	50.9	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	1.0	2.0		1.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		4.5	6.5		4.5	6.5	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	5.0	5.0		4.0	5.0		4.0	7.0		4.0	7.0	
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	4.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	25.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	20.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			0.0			0.0			0.0	
Flash Dont Walk (s)		19.0			0.0			0.0			0.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	46.8	34.8		35.2	27.7		69.0	58.1		70.3	58.8	
Actuated g/C Ratio	0.36	0.27		0.27	0.21		0.53	0.45		0.54	0.45	
v/c Ratio	0.61	0.28		0.33	0.76		0.45	0.50		0.29	0.76	
Control Delay	37.9	31.7		31.3	54.7		21.3	28.1		16.5	34.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.9	31.7		31.3	54.7		21.3	28.1		16.5	34.5	
LOS	D	C		C	D		C	C		B	C	
Approach Delay		35.1			48.5			27.3			33.1	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	52.5 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	33.8
Intersection LOS:	C
Intersection Capacity Utilization	82.3%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 1: N Farnsworth Ave & Molitor Rd

 Ø1 14 s	 Ø2 (R) 55.4 s	 Ø3 10 s	 Ø4 50.6 s
 Ø5 12 s	 Ø6 (R) 57.4 s	 Ø7 17.1 s	 Ø8 43.5 s

HCM 6th Signalized Intersection Summary
1: N Farnsworth Ave & Molitor Rd

7-B WI 2031- PM
01/26/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	171	89	46	107	161	136	94	703	58	98	1074	89
Future Volume (veh/h)	171	89	46	107	161	136	94	703	58	98	1074	89
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1900	1900	1900	1900	1900	1900	1856	1856	1856	1870	1870
Adj Flow Rate, veh/h	176	92	47	110	166	140	97	725	60	101	1107	92
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0	0	0	0	0	3	3	3	2	2
Cap, veh/h	252	311	159	386	191	161	239	1537	127	377	1607	133
Arrive On Green	0.09	0.26	0.26	0.04	0.21	0.21	0.04	0.47	0.47	0.06	0.48	0.48
Sat Flow, veh/h	1781	1185	606	1810	892	752	1810	3297	273	1767	3322	276
Grp Volume(v), veh/h	176	0	139	110	0	306	97	388	397	101	592	607
Grp Sat Flow(s),veh/h/ln	1781	0	1791	1810	0	1645	1810	1763	1806	1767	1777	1821
Q Serve(g_s), s	9.7	0.0	8.1	5.5	0.0	23.4	3.6	19.6	19.6	3.7	33.5	33.6
Cycle Q Clear(g_c), s	9.7	0.0	8.1	5.5	0.0	23.4	3.6	19.6	19.6	3.7	33.5	33.6
Prop In Lane	1.00		0.34	1.00		0.46	1.00		0.15	1.00		0.15
Lane Grp Cap(c), veh/h	252	0	470	386	0	352	239	822	842	377	860	881
V/C Ratio(X)	0.70	0.00	0.30	0.28	0.00	0.87	0.41	0.47	0.47	0.27	0.69	0.69
Avail Cap(c_a), veh/h	264	0	608	386	0	468	267	822	842	400	860	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	38.3	38.5	0.0	49.3	21.3	23.7	23.8	17.2	26.0	26.0
Incr Delay (d2), s/veh	9.9	0.0	0.7	0.6	0.0	16.6	1.6	1.9	1.9	0.5	4.5	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	3.7	2.9	0.0	11.2	1.6	8.5	8.7	1.6	14.9	15.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.2	0.0	39.1	39.0	0.0	65.9	22.9	25.7	25.6	17.8	30.5	30.4
LnGrp LOS	D	A	D	D	A	E	C	C	C	B	C	C
Approach Vol, veh/h		315			416			882			1300	
Approach Delay, s/veh		43.1			58.8			25.4			29.4	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	67.1	10.0	40.6	10.0	69.4	16.3	34.3				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5				
Max Green Setting (Gmax), s	9.5	48.9	5.5	44.1	7.5	50.9	12.6	37.0				
Max Q Clear Time (g_c+I1), s	5.7	21.6	7.5	10.1	5.6	35.6	11.7	25.4				
Green Ext Time (p_c), s	0.1	14.7	0.0	1.6	0.1	13.0	0.1	2.5				
Intersection Summary												
HCM 6th Ctrl Delay			33.9									
HCM 6th LOS			C									

Lanes, Volumes, Timings
2: N Farnsworth Ave & Driveway 1

7-B WI 2031- PM
01/26/2021



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	↗
Traffic Volume (vph)	0	64	0	1010	1197	64
Future Volume (vph)	0	64	0	1010	1197	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	0			20
Storage Lanes	0	1	0			1
Taper Length (ft)	25		25			
Link Speed (mph)	30			30	35	
Link Distance (ft)	352			316	1583	
Travel Time (s)	8.0			7.2	30.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↗	↗	↗
Traffic Vol, veh/h	0	64	0	1010	1197	64
Future Vol, veh/h	0	64	0	1010	1197	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	20
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	70	0	1098	1301	70
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	651	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	411	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	411	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	15.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 411		-	-		
HCM Lane V/C Ratio	- 0.169		-	-		
HCM Control Delay (s)	- 15.5		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.6		-	-		

Lanes, Volumes, Timings
3: Molitor Rd & Driveway 2

7-B WI 2031- PM
01/26/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	214	253	91	92	27
Future Volume (vph)	28	214	253	91	92	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12
Link Speed (mph)		30	30		30	
Link Distance (ft)		1902	370		210	
Travel Time (s)		43.2	8.4		4.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)						
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 46.5% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	28	214	253	91	92	27
Future Vol, veh/h	28	214	253	91	92	27
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	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	30	233	275	99	100	29
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	374	0	-	0	618	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	293	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1184	-	-	-	453	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	757	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1184	-	-	-	440	716
Mov Cap-2 Maneuver	-	-	-	-	440	-
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	757	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		14.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1184	-	-	-	440	716
HCM Lane V/C Ratio	0.026	-	-	-	0.227	0.041
HCM Control Delay (s)	8.1	0	-	-	15.6	10.2
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.9	0.1

Intersection: 1: N Farnsworth Ave & Molitor Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	192	177	160	364	217	304	303	240	276	289
Average Queue (ft)	99	81	90	198	76	189	186	73	242	244
95th Queue (ft)	170	151	177	326	178	283	280	181	301	304
Link Distance (ft)		286		1136		1617	1617		252	252
Upstream Blk Time (%)								0	11	11
Queuing Penalty (veh)								0	67	69
Storage Bay Dist (ft)	150		80		160			160		
Storage Blk Time (%)	3	1	7	43	0	15		0	29	
Queuing Penalty (veh)	4	1	20	46	1	14		0	28	

Intersection: 2: N Farnsworth Ave & Driveway 1

Movement	EB	SB	SB	SB
Directions Served	R	T	T	R
Maximum Queue (ft)	100	224	232	94
Average Queue (ft)	34	71	64	7
95th Queue (ft)	72	186	179	57
Link Distance (ft)	299	1556	1556	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			20	
Storage Blk Time (%)			9	
Queuing Penalty (veh)			6	

Intersection: 3: Molitor Rd & Driveway 2

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	81	6	94	53
Average Queue (ft)	13	0	38	17
95th Queue (ft)	50	4	71	42
Link Distance (ft)	1866	286	176	176
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 256