

Traffic Impact Study Proposed Residential Development

Northbrook, Illinois



Prepared For:

LMC



September 13, 2022

1. Introduction

This report summarizes the methodologies, results, and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed mixed-use development to be located in Northbrook, Illinois.

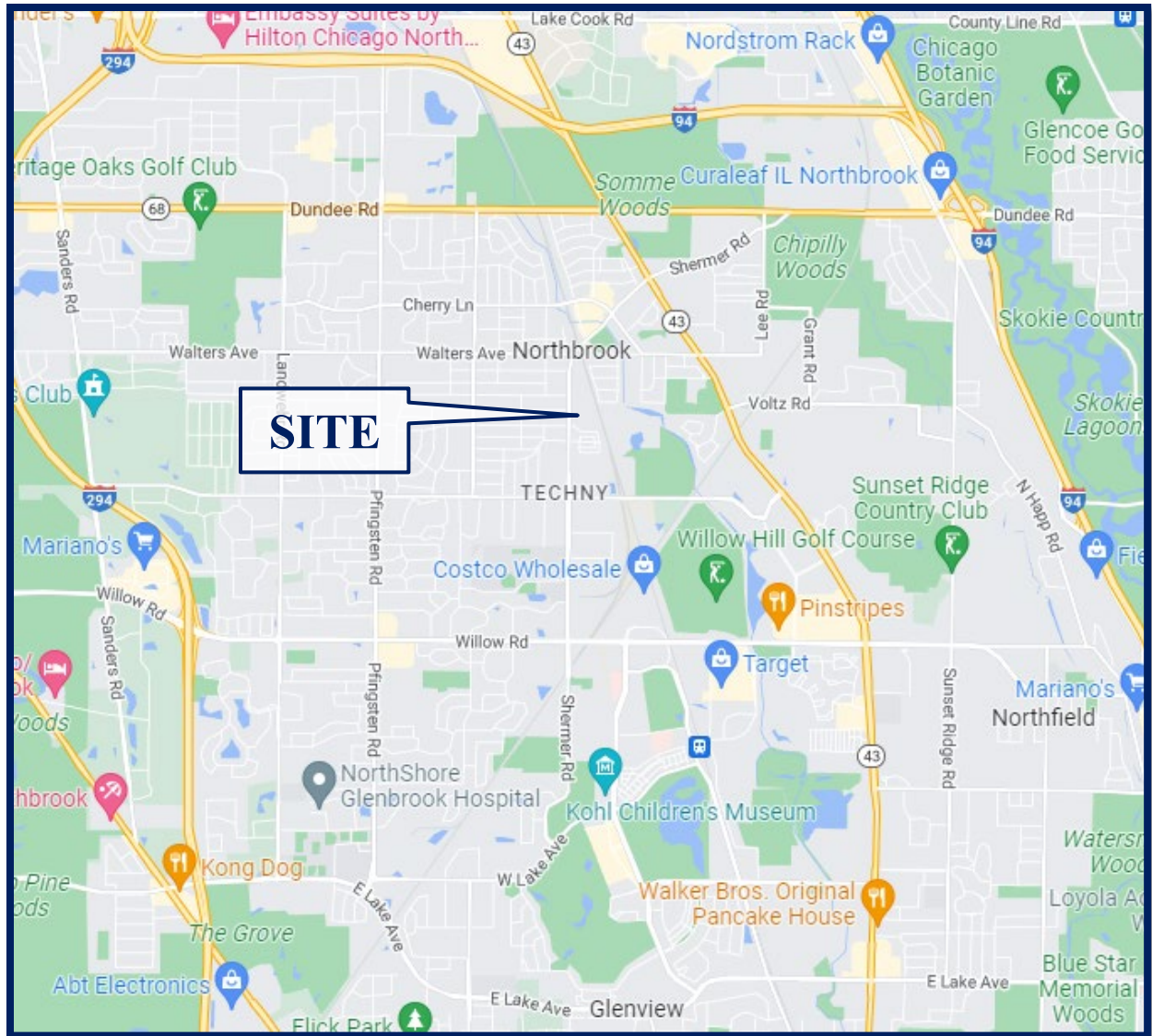
This site, which was previously occupied by Grainger, is located at 1657 Shermer Road. The plans call for a luxury apartment building with 335 units, an Affordable Housing/Supportive Care building with 48 units, and a 6,500 square-foot restaurant. Parking for the proposed luxury apartment building will be provided via an approximately 440 space parking garage and 63 parallel parking spaces, parking for the affordable housing units will be provided via a 62-space parking lot, and parking for the proposed restaurant will be provided via an approximately 51 space parking lot. Access to the proposed development will be provided off Shermer Road via the two existing full movement access drives, one of which is in alignment with Woodlawn Road.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed development will have on traffic conditions in the area, and determine if any roadway or access improvements are necessary to accommodate the traffic generated by the proposed development. **Figure 1** shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site. The sections of this report present the following:

- Existing roadway conditions
- A description of the proposed development
- Directional distribution of the development traffic
- Vehicle trip generation for the development
- Future traffic conditions including access to the development
- Traffic analyses for the weekday morning, evening, and Saturday midday peak hours
- Recommendations with respect to adequacy of the site access and adjacent roadway system
- Evaluation of on-site circulation
- Evaluation of the proposed parking supply

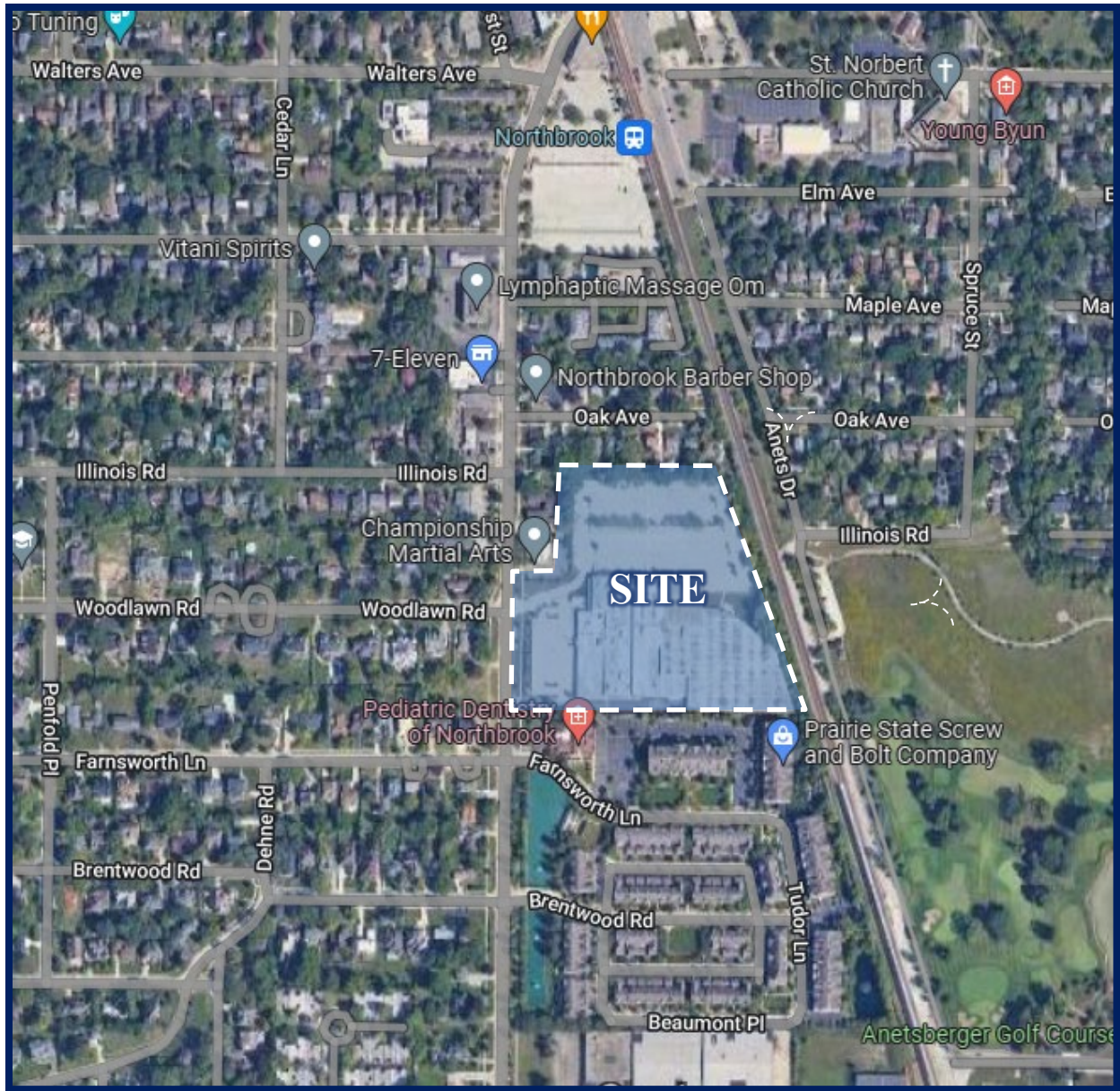
Traffic capacity analyses were conducted for the weekday morning, weekday evening peak hours for the following conditions:

1. Year 2022 Base Conditions – Analyze the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.
2. Year 2028 No-Build Conditions – Analyze the capacity of the future roadway system using the no-build traffic volumes that include the existing traffic volumes and ambient traffic growth factor.
3. Year 2028 Total Projected Conditions – Analyze the capacity of the future roadway system using the projected traffic volumes that include the existing traffic volumes, ambient traffic growth, and the traffic estimated to be generated by the full buildout of the proposed development.



Site Location

Figure 1



Aerial View of Site

Figure 2

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented in order to obtain a database for projecting future conditions. The following provides a description of the geographical location of the site, physical characteristics of the area roadway system including lane usage and traffic control devices, and existing peak hour traffic volumes.

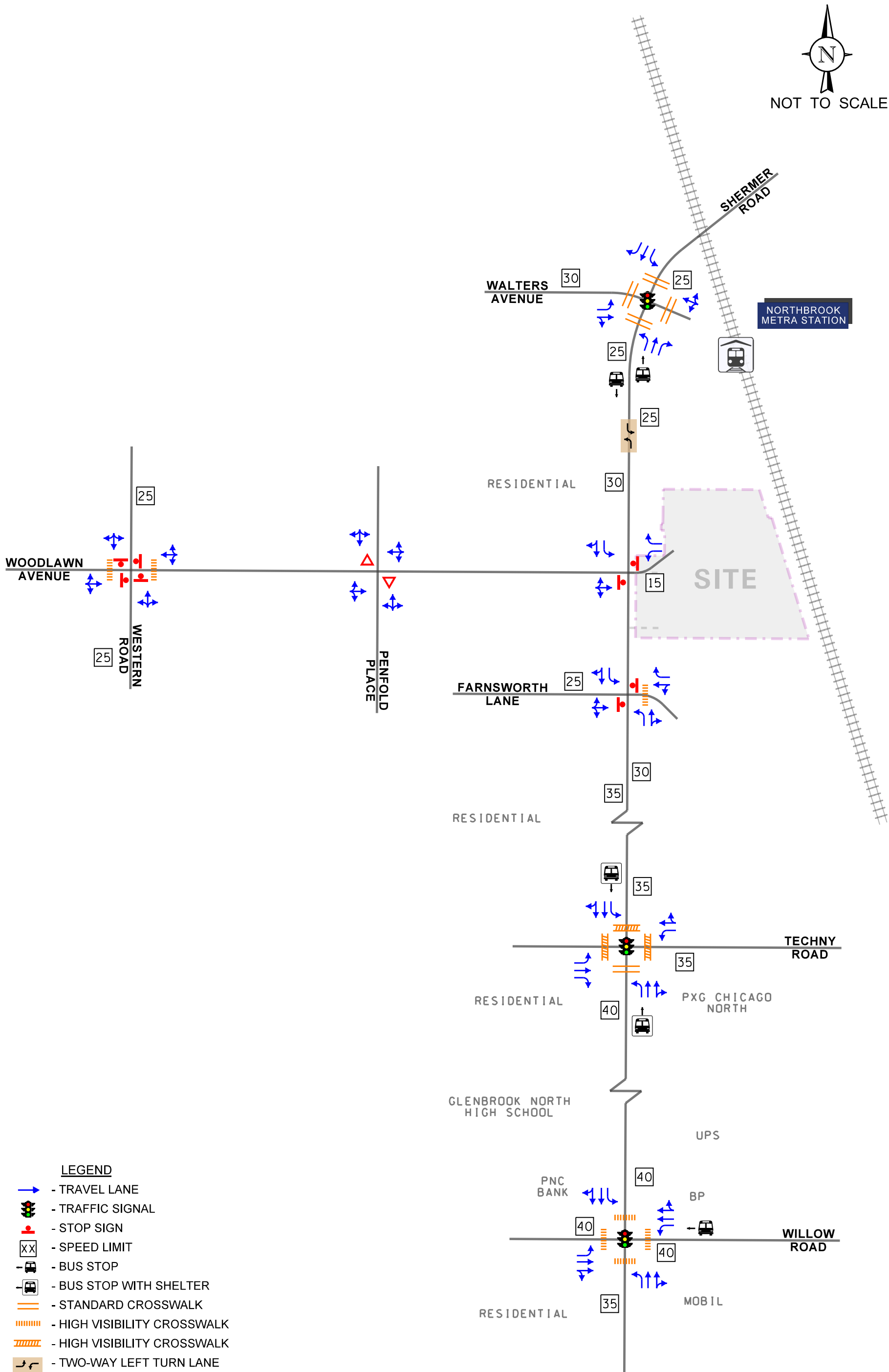
Site Location

The site is located on the east side of Shermer Road at Woodlawn Road. Land uses in the vicinity of the site are primarily residential in all directions, with office land uses bordering the site to the northeast and south including the Pediatric Dentistry of Northbrook and Prairie State Screw and Bolt Company to the south. It should be noted that the Milwaukee District North Metra commuter railroad borders the east side of the site and Glenbrook North High School is located approximately 4,400 feet southwest of the site.

Existing Roadway System Characteristics

The characteristics of the existing roadways near the development are described below and illustrated in **Figure 3**.

Shermer Road is a north-south major collector roadway that in the vicinity of the site provides one travel lane in each direction which widens to two travel lanes in each direction between Techny Road to Willow Road. At its signalized intersection with Walters Road, Shermer Road provides an exclusive left-turn lane, one through lane, and an exclusive right-turn lane on the southbound and northbound approaches. Both approaches provide a standard style crosswalk. At its signalized intersection with Techny Road, Shermer Road provides an exclusive left-turn lane, a through lane, and a shared through/right-turn lane on the northbound and southbound approaches. The north approach provides a high visibility crosswalk, and the south leg provides a standard style crosswalk. At its signalized intersection with Willow Road, Shermer Road provides an exclusive left-turn lane, a through lane and a shared through/right-turn lane on the northbound and southbound approaches. Both approaches provide a high visibility crosswalk and pedestrian countdown signals. At its unsignalized intersection with Woodlawn Road, Shermer Road provides an exclusive left-turn lane and a shared through/right-turn lane on both northbound and southbound approaches. At its unsignalized intersection with Farnsworth Lane, Shermer Road provides an exclusive left-turn lane and a shared through/right-turn lane on both northbound and southbound approaches. North of Willow Road, Shermer Road is under the jurisdiction of the Village of Northbrook and carries an annual average daily traffic (AADT) volume of 13,100 vehicles (IDOT 2021). South of Willow Road, Shermer Road is under the jurisdiction of the Illinois Department of Transportation (IDOT) and carries an AADT volume of 7,750 vehicles (IDOT 2021). Shermer Road has a posted speed limit of 25 miles per hour north of Maple Avenue, 30 miles per hour between Maple Avenue and Techny Road, 40 miles per hour between Techny Road and Willow Road, and 35 miles per hour south of Willow Road.



Walters Avenue is an east-west major collector roadway that in the vicinity of the site provides one travel lane in each direction. At its signalized intersection with Shermer Road, Walters Avenue provides a left-turn lane and one shared through/right-turn lane on the eastbound approach. The east leg of this intersection is the access drive serving the Northbrook Metra Station access drive. Both legs provide crosswalks and pedestrian signals. Walters Avenue is under the jurisdiction of the Village of Northbrook, carries an AADT volume of 4,000 vehicles (IDOT 2018) and has a posted speed limit of 30 miles per hour.

Techny Road is an east-west major collector roadway that in the vicinity of the site provides one travel lane in each direction. At its signalized intersection with Shermer Road, Techny Road provides an exclusive left-turn lane, a through lane, and an exclusive right-turn lane on the eastbound approach, and an exclusive left-turn lane, and a shared through/right-turn lane on the westbound approach. Both approaches provide a high visibility crosswalk. Techny Road is under the jurisdiction of the Village of Northbrook, carries an AADT volume of 7,750 vehicles (IDOT 2018) east of Shermer Road and an AADT volume of 6,100 vehicles (IDOT 2018) west of Shermer Road. Techny Road has a posted speed limit of 35 miles per hour.

Willow Road is an east-west principal arterial roadway that provides two travel lanes in each direction. At its signalized intersection with Shermer Road, Willow Road provides an exclusive left-turn lane, a through lane and a shared through/right-turn lane on both eastbound and westbound approaches. Both legs provide a high visibility style crosswalk and pedestrian countdown signals. Willow Road is under the jurisdiction of IDOT and carries an AADT volume of 35,600 vehicles (IDOT 2021) east of Shermer Road and an AADT volume of 34,500 vehicles (IDOT 2021) west of Shermer Road. Willow Road has a posted speed limit of 40 miles per hour.

Woodlawn Road is an east-west local roadway that in the vicinity of the site provides one travel lane in each direction. At its unsignalized intersection with Shermer Road, Woodlawn Road provides a shared left/through/right-turn lane that is under stop-sign control. The east leg of this intersection is the existing access drive serving the site. At its unsignalized intersection with Penfold Place, Woodlawn Road provides a shared left/through/right-turn lane on the eastbound and westbound approaches. At its unsignalized intersection with Western Avenue, Woodlawn Avenue provides a shared left/through/right-turn lane on the eastbound and westbound approaches that is under stop-sign control. Woodlawn Road is under the jurisdiction of the Village of Northbrook.

Farnsworth Lane is an east-west local roadway that in the vicinity of the site provides one travel lane in each direction. At its unsignalized intersection with Shermer Road, Farnsworth Lane provides an exclusive right-turn lane and a shared through/left-turn lane on the westbound approach and a shared left/through/right-turn lane on the eastbound approach and both approaches are under stop-sign control. Farnsworth Lane is under the jurisdiction of the Village of Northbrook and has a posted speed limit of 25 miles per hour.

Western Avenue is a north-south minor collector roadway that provides one travel lane in each direction. At its unsignalized intersection with Woodlawn Road, Western Avenue provides a shared left/through/right-turn lane. Western Avenue is under the jurisdiction of the Village of Northbrook and carries an AADT volume of 1,400 vehicles (IDOT 2018) and has a posted speed limit of 25 miles per hour.

Penfold Place is a north-south local roadway that in the vicinity of the site provides one travel lane in each direction. At its unsignalized intersection with Woodlawn Road, Penfold Place provides a shared left/through/right-turn lane on the northbound and southbound approaches that are under yield-sign control. Penfold Place is under the jurisdiction of the Village of Northbrook.

Traffic Signal Interconnect

The signalized intersection of Willow Road is part of a nine-signal coordinated system that extends along Willow Road between Patriot Boulevard to the east and Sanders Road to the west.

Public Transportation

The study area is also served by the Pace Suburban Bus Route 422 which provides weekday service from Wilmette to Northbrook. Service operates from Linden CTA Purple Line station to Northbrook Court, and it has several bus stops along the Shermer Road. Notable stops include Woodlawn Road and Shermer Road intersection in addition to Farnsworth Lane and Shermer Road intersection which both will benefit the proposed mixed-use development.

Furthermore, the Northbrook Metra Station is located in the southeast quadrant of Shermer Road and Walters Avenue intersection one-quarter mile north of the site. This station is for the Metra Milwaukee District North (MD-N) commuter railway and as of July 12, 2021 this railway carries approximately 38 trains per day of which nine trains are during the weekday morning peak period and six trains are during the weekday evening peak period.

Existing Traffic Volumes

In order to determine current traffic conditions in the vicinity of the site, KLOA, Inc. conducted peak period traffic counts utilizing Miovision Scout Collection Units on Thursday, May 12th, 2022, during the weekday morning (7:00 to 9:00 A.M.) and evening (2:00 to 6:00 P.M.) peak periods, at the following intersections:

- Shermer Road with Walter Avenue
- Shermer Road with Woodlawn Avenue
- Shermer Road with Farnsworth Place
- Shermer Road with Techny Road
- Shermer Road with Willow Road
- Woodlawn Road with Penfold Place
- Woodlawn Road with Western Avenue

The results of the traffic counts indicated that the weekday morning peak hour of traffic occurs from 7:30 A.M. to 8:30 A.M., the weekday afternoon peak hour of traffic occurs from 3:00 P.M. to 4:00 P.M., and the weekday evening peak hour of traffic occurs from 4:30 P.M. to 5:30 P.M.

It should be noted that on the days the counts were conducted, the schools within the vicinity of the site were in session, including Glenbrook North High School and that the weekday morning and weekday afternoon peak hours coincide with the Glenbrook North High School start and dismissal times.

In order to ensure that the traffic counts conducted reflect typical traffic conditions, the Year 2022 traffic counts at the intersection of Techny Road with Shermer Road were compared to counts previously conducted at the intersection by KLOA, Inc. in 2019, increased by a regional growth factor, as discussed later. The results of the comparison indicated that the Year 2022 traffic volumes were higher than the adjusted Year 2019 traffic volumes and as such no adjustment was made.

Figure 4 illustrates the existing peak hour traffic volumes. Copies of the traffic count summary sheets are included in the Appendix.

Crash Data Summary

KLOA, Inc. obtained crash data¹ for the most recent available past five years (2017 to 2021) for the following intersections:

- Shermer Road with Walters Avenue
- Shermer Road with Farnsworth Place
- Shermer Road with Techny Road
- Shermer Road with Willow Road
- Woodlawn Road with Penfold Place
- Woodlawn Road with Western Avenue

The crash data for the Shermer Road intersections are summarized in **Tables 1** through **4**. A review of the crash data indicated that there one fatality was reported at the intersection of Shermer Road with Willow Road in 2020, which involved a passenger car running off the road. Furthermore, the intersections of Woodlawn Road with Penfold Place and Western Avenue experienced an average of less than one crash per year. No fatalities were reported at any other location during the reviewed period.

¹ IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. The author is responsible for any data analyses and conclusions drawn.

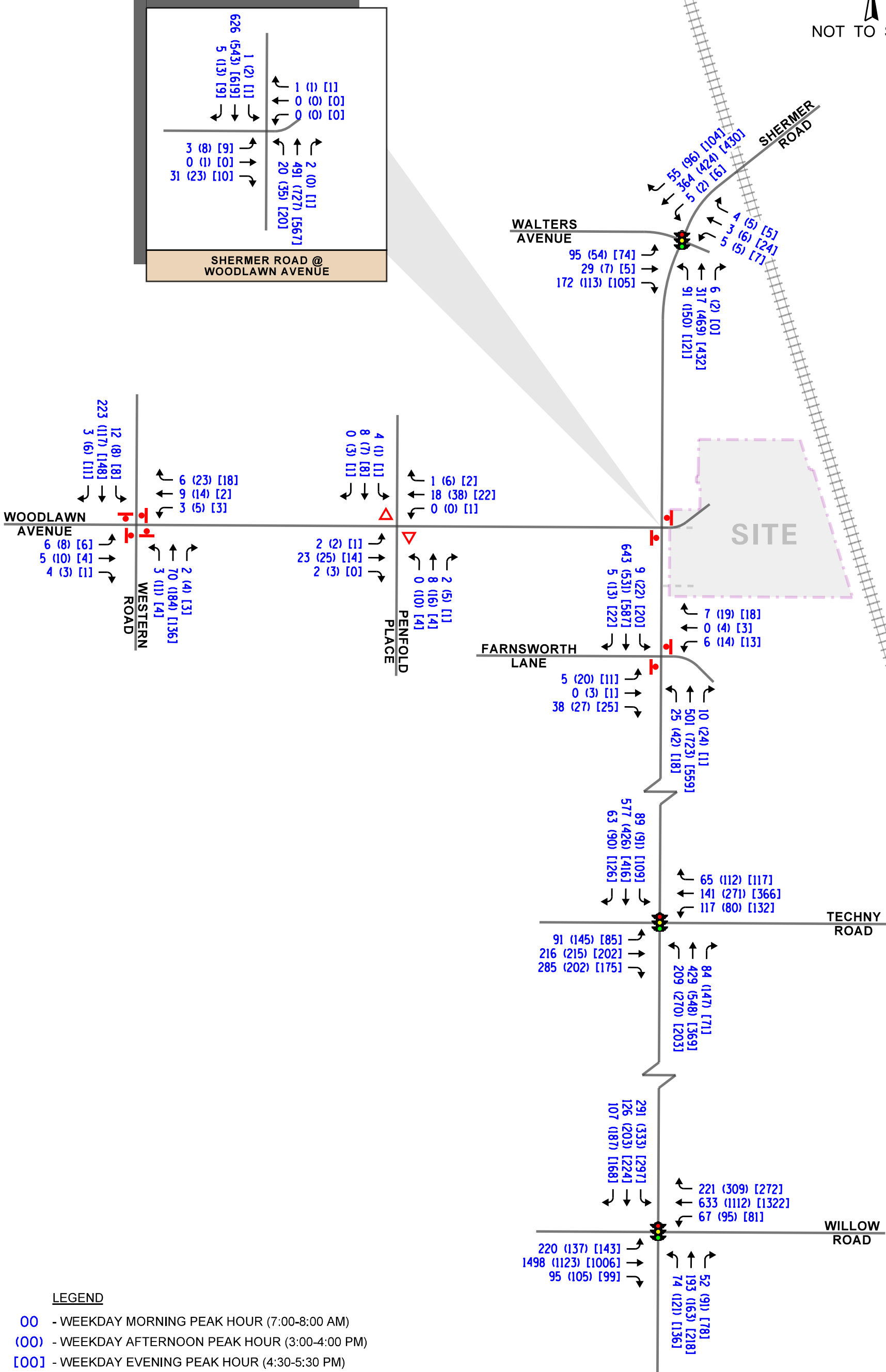
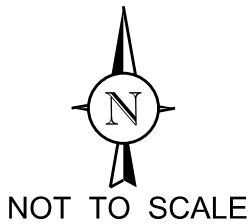


Table 1

SHERMER ROAD WITH WALTERS AVENUE – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	1	0	0	3	0	0	0	4
2018	0	0	0	2	0	1	0	3
2019	0	0	0	0	0	1	0	1
2020	0	0	0	0	0	0	0	0
2021	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	1	0	0	5	0	2	0	8
Average	<1.0	--	--	1	--	<1.0	--	1.6

Table 2

SHERMER ROAD WITH FARNSWORTH LANE – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0	0
2020	2	0	0	0	0	1	0	3
2021	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	2	0	0	0	0	1	0	3
Average	<1.0	--	--	--	--	<1.0	--	<1.0

Table 3

SHERMER ROAD WITH TECHNY ROAD – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	0	0	0	2	0	3	0	5
2018	1	0	0	3	0	1	1	5
2019	0	0	0	4	0	2	0	6
2020	0	0	1	3	0	0	0	4
2021	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>3</u>
Total	1	0	1	14	0	6	1	23
Average	<1.0	--	<1.0	2.8	--	1.2	<1.0	4.6

Table 4

SHERMER ROAD WITH WILLOW ROAD – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2017	1	0	0	8	3	8	0	20
2018	0	0	1	15	1	6	1	24
2019	1	0	1	8	2	9	0	21
2020	0	0	1	3	0	8	0	12
2021	<u>0</u>	<u>0</u>	<u>0</u>	<u>6</u>	<u>1</u>	<u>10</u>	<u>1</u>	<u>18</u>
Total	2	0	3	40	7	41	2	95
Average	<1.0	--	<1.0	8	1.4	8.2	<1.0	19

3. Traffic Characteristics of the Proposed Development

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed development, including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Development Plan

As proposed, the development includes a luxury apartment building with 335 units, an affordable housing/supportive care building with 48 units, and a 6,500 square-foot restaurant. Access to the development will be provided via the following:

- The existing full movement access drive off Shermer Road that is aligned opposite Woodlawn Road. Consistent with existing conditions, and to limit the amount of traffic traveling west on Woodlawn Road through the residential neighborhood, this access drive should provide one inbound lane and two outbound lanes striped to provide an exclusive left-turn lane and an exclusive right-turn lane. Signage should be added to further enforce the restriction. Outbound movements onto Shermer Road should be under stop-sign control. Left-turning movements onto the access drive will continue to be accommodated within the existing center two-way left-turn lane striped on Shermer Road.
- A full movement access drive off Shermer Road located approximately 150 feet north of Farnsworth Lane. This access drive will be located in the approximately location of the existing southerly full movement access drive (Private Access Drive) serving the site and will continue to provide one inbound lane and one outbound lane. Outbound movements will be under stop-sign control. Left-turning movements onto the access drive will continue to be accommodated within the exclusive turn lane striped on Shermer Road.

Parking for the luxury apartments will be provided via an approximately 440 space garage and 63 parallel parking spaces. Parking for the affordable housing building will be provided via a surface parking lot providing 62 parking spaces. Parking for the proposed restaurant will be provided via an approximately 51-space parking lot.

The main luxury apartment building will be centrally located to the site and will be served by a private circulation roadway. This circulation roadway will have connections to the two access drives connecting to Shermer Road and will provide access to the restaurant, the affordable housing building, and to the parking garage for the luxury apartment building. In order to ensure efficient flow of traffic throughout the site and to ensure inbound traffic does not extend to Shermer Road, the north-south portion of the circulation roadway should be under stop-sign control at its intersection with the Shermer Road access drives. Additionally, outbound movements from the parking garage should be under stop-sign control. Lastly, outbound movements from the restaurant parking lot onto the access drive/circulation roadway should be under stop-sign control.

A site plan depicting the proposed site and development plan is included in the Appendix.

Directional Distribution

The directions from which residents, patrons, and employees will approach and depart the site were estimated based on existing travel patterns, as determined from the traffic counts. **Figure 5** illustrates the directional distribution of the development-generated traffic.

Peak Hour Traffic Volumes

The number of peak hour trips estimated to be generated by the proposed development was based on vehicle trip generation rates contained in *Trip Generation Manual*, 11th Edition, published by the Institute of Transportation Engineers (ITE). The “Multifamily Housing – Mid Rise” (Land-Use Code 221) was utilized for the proposed residential units, “Affordable Housing” (Land-Use Code 223) was utilized for the proposed affordable housing units, and “High-Turnover Sit-Down Restaurant (Land-Use Code 932) was utilized for the proposed restaurant. For the purposes of this evaluation, it was conservatively assumed that the restaurant would be open and serve breakfast, lunch, and dinner.

It is important to note that based on the proposed land-uses, site location, and proximity of public transportation, the number of trips generated by the development may be reduced based on the following:

- Surveys conducted by ITE have shown that approximately 40 to 45 percent of trips made to high-turnover sit-down restaurants diverted from the existing traffic on the roadway system. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the home-to-work and work-to-home trips. Such diverted trips are referred to as pass-by traffic.
- Due to the proposed mixed-use nature of the proposed development and proximity to other office and residential land-uses developments, the trips estimated to be generated by the proposed development may be reduced to take into consideration interaction between the existing and proposed uses.
- Due to the proximity of the site to the Northbrook Metra Station and a Pace Suburban bus route, some of the trips generated by the proposed development may be reduced due to the utilization of public transportation. Based on census data for the residences within one-half mile of the Northbrook Metra Station, approximately 20 percent of residents take public transportation, bicycle, or walk to work.

However, in order to provide a conservative analysis, no trip generation reductions were applied to any of the proposed land-uses. **Table 5** summarizes the number of trips estimated to be generated by the full buildout of the proposed development

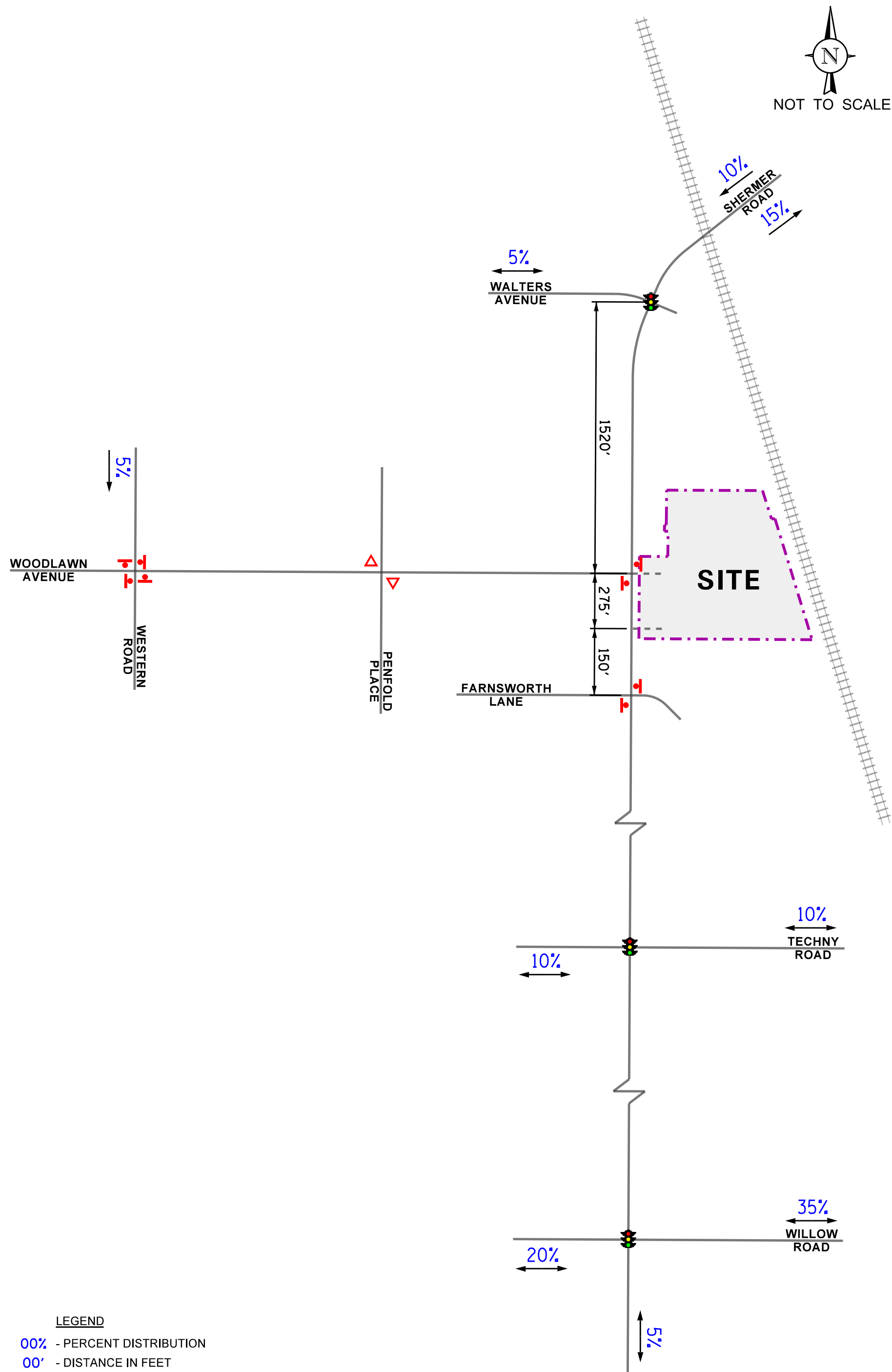


Table 5

ESTIMATED SITE GENERATED TRAFFIC VOLUMES

ITE Land Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Weekday Evening Peak Hour			Daily Two- Way Trips
		In	Out	Total	In	Out	Total	In	Out	Total	
221	Multifamily Housing (335 Units)	31	105	136	46	30	76	80	51	131	1,550
223	Affordable Housing (48 Units)	5	12	17	13	10	23	18	13	31	318
932	Restaurant (6,500 s.f.)	<u>34</u>	<u>28</u>	<u>62</u>	<u>11</u>	<u>14</u>	<u>25</u>	<u>36</u>	<u>23</u>	<u>59</u>	<u>698</u>
Total Development Trips		70	145	215	70	54	124	134	87	221	2,566

Trip Generation Comparison

As previously indicated, the site currently contains a vacant Grainger warehouse and office building. The approximately 176,955 square-foot building consisted of 81,472 square-feet of warehouse space, 83,251 square-feet of office space, and 12,232 square-feet of utility space (storage, boiler room, toilets, etc.). The volume of traffic that is estimated to be generated by the proposed development was compared to the trips that could have been generated by the Grainger building when it was fully occupied. As with the proposed development, the trips estimated to be generated by the Grainger building were also determined based on rates published in ITE's *Trip Generation Manual*, 11th Edition. The results of the comparison are shown in **Table 6**.

As can be seen, volume of traffic estimated to be generated by the proposed development will be slightly greater than was previously generated by the Grainger building during the peak hours and on a daily basis. However, this increase will be equal to only approximately one car every one and a half minutes confirming that not all trips to the area will be new trips. Furthermore, this comparison is conservative as it does not take into consideration the pass-by trips generated by the proposed restaurant or take into consideration interaction between the existing and proposed land-uses.

Table 6
TRIP GENERATION COMPARISON

ITE Land Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour			Weekday Evening Peak Hour			Daily Two- Way Trips
		In	Out	Total	In	Out	Total	In	Out	Total	
150	Warehouse (81,472 s.f.)	25	8	33	5	10	15	10	26	36	168
710	General Office Building (83,251 s.f)	126	17	143	39	36	75	24	119	143	990
Grainger Building Total		151	25	176	44	46	90	34	145	179	1,158
Proposed Development		<u>70</u>	<u>145</u>	<u>215</u>	<u>70</u>	<u>54</u>	<u>124</u>	<u>134</u>	<u>87</u>	<u>221</u>	<u>2,566</u>
Difference		-81	+120	+39	+26	+8	+34	+100	-58	+42	+1,408

4. Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed subject development.

Development Traffic Assignment

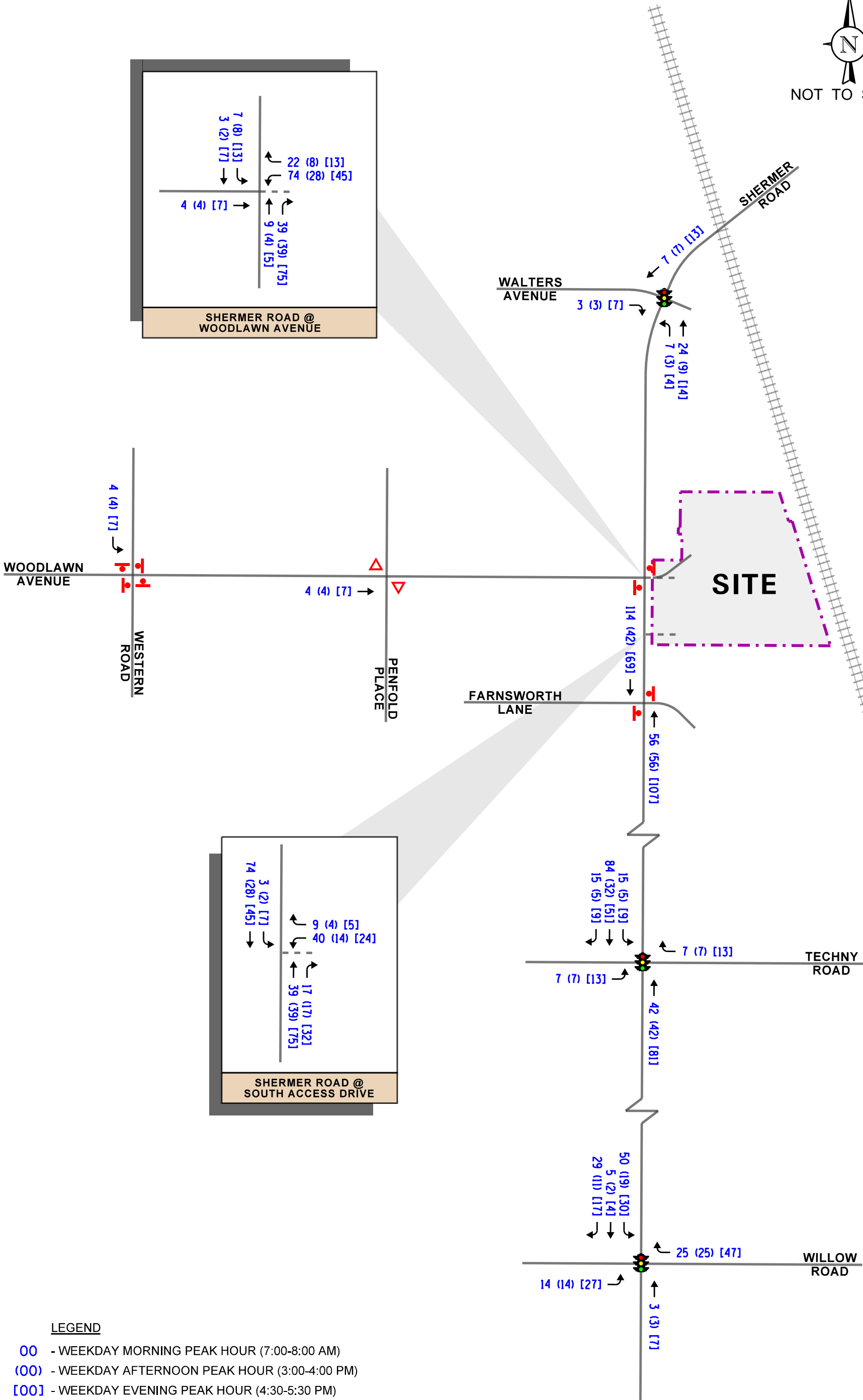
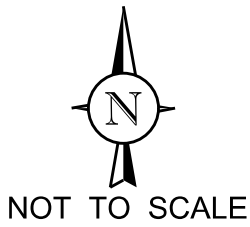
The estimated weekday morning, weekday afternoon, and weekday evening peak hour traffic volumes that will be generated by the proposed development were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). **Figure 6** illustrates the traffic assignment of the new passenger vehicle trips for the development.

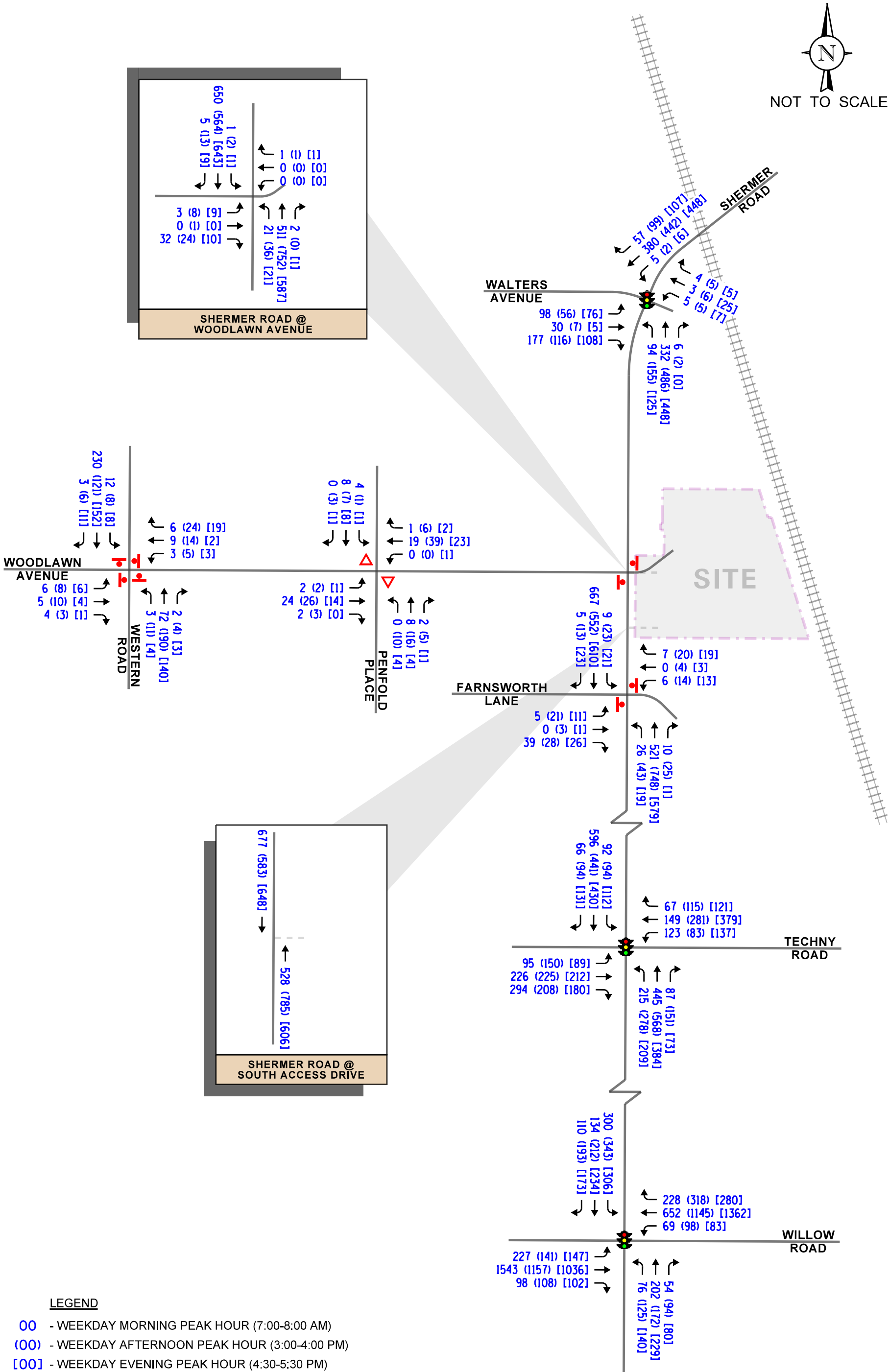
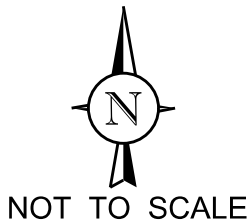
Background Traffic Conditions

The existing traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on Annual Average Daily Traffic (AADT) projections provided by the Chicago Metropolitan Agency for Planning (CMAP), the existing traffic volumes are projected to increase by an annual compounded growth rate of approximately 0.3 percent. As such, traffic volumes were increased by three percent to represent Year 2028 no-build conditions. Additionally, the Year 2028 no-build traffic volumes include the traffic estimated to be generated by under construction 7-Eleven fuel center to be located in the northeast corner of the intersection of Shermer Road with Techny Road. The Year 2028 no-build traffic volumes, which include the existing traffic volumes increased by the regional growth factor and the traffic generated by the 7-Eleven fuel center, are illustrated in **Figure 7**. A copy of the CMAP projections letter is included in the Appendix.

Total Projected Traffic Volumes

The development-generated traffic (Figure 6) was added to the existing traffic volumes taking into account background growth and the traffic generated by the 7-Eleven fuel center to determine the Year 2028 projected traffic volumes, as shown in **Figure 8**.





LEGEND

- 00 - WEEKDAY MORNING PEAK HOUR (7:00-8:00 AM)
- (00) - WEEKDAY AFTERNOON PEAK HOUR (3:00-4:00 PM)
- [00] - WEEKDAY EVENING PEAK HOUR (4:30-5:30 PM)



00 - WEEKDAY MORNING PEAK HOUR (7:00-8:00 AM)
 (00) - WEEKDAY AFTERNOON PEAK HOUR (3:00-4:00 PM)
 [00] - WEEKDAY EVENING PEAK HOUR (4:30-5:30 PM)

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning, weekday afternoon, and weekday evening peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Roadway and adjacent or nearby intersection analyses were performed for the weekday morning, weekday afternoon, and weekday evening peak hours for the Year 2022 base, Year 2028 no-build and Year 2028 projected traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6th Edition and analyzed using the Synchro/SimTraffic 11 software. The analysis for the traffic-signal controlled intersections, to determine the average overall vehicle delay and levels of service, were accomplished using field measured cycle lengths and phasings, except for the intersection of Shermer Road and Willow Road which were accomplished utilizing actual cycle lengths and phasings.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service and overall intersection delay (measured in seconds) for the base, no-build and total projected conditions are presented in **Tables 7** through **12**. A discussion of each intersection follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 7

CAPACITY ANALYSIS RESULTS – SHERMER ROAD WITH WALTERS AVENUE – SIGNALIZED

	Peak Hour	Eastbound		Westbound	Northbound			Southbound			Overall	
		L	T/R	L/T/R	L	T	R	L	T	R		
Year 2022 Base Conditions	Weekday Morning Peak Hour	C 29.5	B 10.7	C – 21.5	A 4.7	A 8.2	A 0.1	A 4.2	B 13.0	A 1.9	B 11.4	
		B – 16.7			A – 7.3			B – 11.4				
	Weekday Afternoon Peak Hour	C 32.9	B 11.0	C – 25.0	A 4.2	A 6.9	A 0.1	A 3.0	B 11.3	A 2.1	A 9.3	
		B – 17.8			A – 6.2			A – 9.6				
	Weekday Evening Peak Hour	C 33.8	B 10.4	C – 26.6	A 4.2	A 7.1	--	A 3.5	B 10.8	A 2.2	A 10.0	
		B – 19.7			A – 6.5			A – 9.1				
Year 2028 No-Build Conditions	Weekday Morning Peak Hour	C 30.3	B 10.7	C – 21.8	A 4.9	A 8.5	A 0.1	A 4.2	B 13.2	A 2.0	B 11.6	
		B – 17.0			A – 7.6			B – 11.6				
	Weekday Afternoon Peak Hour	C 33.5	B 10.9	C – 25.5	A 4.3	A 7.0	A 0.1	A 3.0	B 11.5	A 2.1	A 9.4	
		B – 18.0			A – 6.4			A – 9.8				
	Weekday Evening Peak Hour	C 34.2	B 10.3	C – 26.9	A 4.3	A 7.2	--	A 3.5	B 10.9	A 2.2	B 10.1	
		B – 19.9			A – 6.6			B – 9.2				
Year 2028 Total Projected Conditions	Weekday Morning Peak Hour	C 30.6	B 10.8	C – 22.0	A 4.9	A 8.6	A 0.1	A 4.2	B 13.2	A 2.0	B 11.6	
		B – 17.1			A – 7.7			B – 11.7				
	Weekday Afternoon Peak Hour	C 33.6	B 11.0	C 25.2	A 4.4	A 7.1	A 0.1	A 3.0	B 11.6	A 2.1	A 9.5	
		B – 18.0			A – 6.4			A – 9.8				
	Weekday Evening Peak Hour	C 34.3	B 10.2	C – 27.0	A 4.4	A 7.3	--	A 3.5	B 11.0	A 2.2	B 10.1	
		B – 19.5			A – 6.7			A – 9.3				
Letter denotes Level of Service Delay is measured in seconds.		L – Left Turns T – Through		R – Right Turns								

Table 8

CAPACITY ANALYSIS RESULTS – SHERMER ROAD WITH TECHNY ROAD – SIGNALIZED

	Peak Hour	Eastbound			Westbound		Northbound		Southbound		Overall
		L	T	R	L	T/R	L	T/R	L	T/R	
Year 2022 Base Conditions	Weekday Morning Peak Hour	B 17.5	C 30.1	B 13.5	C 21.0	C 34.2	E 65.0	C 28.5	B 16.6	D 35.3	C 31.2
		C – 20.2			C – 29.4		D – 39.1		C – 33.0		
	Weekday Afternoon Peak Hour	C 20.8	C 24.4	A 3.7	B 15.7	D 50.3	F 84.3	D 36.8	C 21.7	C 34.5	D 37.6
		B – 16.0			D – 44.3		D – 50.1		C – 32.5		
	Weekday Evening Peak Hour	B 16.4	C 24.2	A 2.7	B 16.8	D 42.8	C 24.1	C 62.5	B 17.2	C 30.2	C 27.2
		B – 14.6			D – 37.2		C – 25.8		C – 28.0		
Year 2028 No-Build Conditions	Weekday Morning Peak Hour	B 17.7	C 30.4	B 14.3	C 21.9	D 35.2	F 83.1	C 29.4	B 17.2	D 36.9	C 33.6
		C – 20.7			C – 30.4		D – 44.9		C – 34.5		
	Weekday Afternoon Peak Hour	C 23.3	C 24.8	A 4.3	B 15.9	E 55.2	F 95.2	D 42.4	C 22.8	C 34.6	D 41.1
		B – 16.8			D – 48.4		E – 57.1		C – 32.9		
	Weekday Evening Peak Hour	B 17.1	C 24.5	A 2.6	B 17.1	D 45.2	C 25.7	C 27.0	B 17.4	C 30.8	C 28.1
		B – 15.0			D – 39.1		C - 26.6		C – 28.6		
Year 2028 Total Projected Conditions	Weekday Morning Peak Hour	B 18.1	C 30.1	B 14.6	C 21.7	D 35.9	F 87.2	C 31.6	B 19.1	D 48.4	D 37.9
		C – 20.8			C – 30.8		D – 46.8		D – 44.8		
	Weekday Afternoon Peak Hour	C 24.6	C 24.8	A 4.8	B 15.9	E 57.7	F 99+	D 48.2	C 23.6	D 36.3	D 45.7
		B – 17.7			D – 50.6		E – 66.6		C – 34.4		
	Weekday Evening Peak Hour	B 18.5	C 25.0	A 2.9	B 17.6	D 51.7	C 27.9	C 29.9	B 18.6	C 32.2	C 30.7
		B – 15.6			D – 44.5		C – 29.3		C – 29.9		
Letter denotes Level of Service L – Left Turns R – Right Turns Delay is measured in seconds. T – Through											

Table 9

CAPACITY ANALYSIS RESULTS – SHERMER ROAD WITH WILLOW ROAD – SIGNALIZED

	Peak Hour	Eastbound		Westbound		Northbound		Southbound		Overall
		L	T/R	L	T/R	L	T/R	L	T/R	
Year 2022 Base Conditions	Weekday Morning Peak Hour	B 18.4	C 34.8	C 31.4	C 23.7	D 43.7	E 67.6	F 88.3	E 58.6	D 39.4
		C – 32.8		C – 24.2		E – 62.0		E – 75.1		
	Weekday Afternoon Peak Hour	D 40.6	C 24.3	B 15.30	C 30.6	E 56.2	E 71.3	F 99+	F 80.7	D 45.2
		C – 25.9		C – 29.6		E – 66.4		F – 99+		
	Weekday Evening Peak Hour	E 67.3	C 21.9	B 12.2	D 36.1	E 55.2	F 87.6	F 95.1	E 75.1	D 45.4
		C – 27.1		C – 35.0		E – 77.4		F – 83.7		
Year 2028 No-Build Conditions	Weekday Morning Peak Hour	C 20.0	D 37.5	C 31.8	C 24.4	D 43.7	E 68.8	F 97.1	E 58.9	D 41.8
		D – 35.4		C – 24.9		E – 63.0		E – 79.9		
	Weekday Afternoon Peak Hour	D 50.5	C 25.2	B 16.6	C 32.8	E 57.4	E 74.3	F 99+	F 82.6	D 48.2
		C – 27.7		C – 31.8		E – 68.9		F – 99+		
	Weekday Evening Peak Hour	E 74.6	C 22.4	B 12.6	D 38.5	E 56.7	F 92.2	F 99+	E 76.8	D 48.1
		C – 28.4		D – 37.3		F – 81.1		F – 89.2		
Year 2028 Total Projected Conditions	Weekday Morning Peak Hour	C 23.1	D 37.7	C 32.2	C 25.0	D 43.8	E 69.0	F 99+	E 60.6	D 47.4
		D – 35.8		C – 25.5		E – 63.2		F – 99+		
	Weekday Afternoon Peak Hour	E 65.0	C 25.2	B 16.7	C 34.4	E 58.6	E 75.8	F 99+	F 86.1	D 52.3
		C – 29.6		C - 33.4		E – 70.3		F – 99+		
	Weekday Evening Peak Hour	F 92.1	C 22.4	B 12.7	D 43.0	E 58.2	F 95.9	F 99+	F 80.2	D 54.1
		C – 31.7		D – 41.6		F – 84.3		F – 99+		
Letter denotes Level of Service Delay is measured in seconds.		L – Left Turns T – Through		R – Right Turns						

Table 10

CAPACITY ANALYSIS RESULTS – EXISTING CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Shermer Road with Woodlawn Road¹						
• Eastbound Approach	C	16.9	C	18.1	C	16.1
• Westbound Approach	B	12.5	C	15.4	B	12.0
• Northbound Left Turn	A	9.5	A	9.1	A	8.9
• Southbound Left Turn	A	8.8	A	9.7	A	8.6
Shermer Road with Farnsworth Lane¹						
• Eastbound Approach	C	23.6	F	73.2	C	21.6
• Westbound Approach	E	37.9	F	55.7	C	24.0
• Northbound Left Turn	A	9.8	A	9.2	A	8.9
• Southbound Left Turn	A	9.2	A	10.0	A	8.8
Western Avenue with Woodlawn Road¹						
• Eastbound Approach	B	11.6	B	13.1	B	11.5
• Westbound Approach	B	11.1	B	11.7	A	9.8
• Northbound Left Turn	A	7.8	A	7.7	A	7.6
• Southbound Left Turn	A	7.5	A	7.9	A	7.6
Woodlawn Road with Penfold Place²						
• Northbound Approach	A	9.3	A	9.8	A	9.1
• Southbound Approach	A	9.4	A	9.7	A	9.3
• Eastbound Left Turn	A	7.3	A	7.4	A	7.3
• Westbound Left Turn	A	--	A	--	A	0.1
LOS = Level of Service 1 – Two-Way Stop Sign Control Delay is measured in seconds. 2 – Yield Sign Control						

Table 11

CAPACITY ANALYSIS RESULTS – NO-BUILD CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Shermer Road with Woodlawn Road¹						
• Eastbound Approach	C	17.5	C	18.7	C	16.6
• Westbound Approach	B	12.8	C	15.9	B	12.2
• Northbound Left Turn	A	9.7	A	9.2	A	9.0
• Southbound Left Turn	A	8.9	A	9.8	A	8.7
Shermer Road with Farnsworth Lane¹						
• Eastbound Approach	D	25.3	F	93.9	C	22.8
• Westbound Approach	E	42.6	F	60.9	D	25.2
• Northbound Left Turn	A	9.9	A	9.3	A	8.9
• Southbound Left Turn	A	9.3	B	10.1	A	8.9
Western Avenue with Woodlawn Road¹						
• Eastbound Approach	B	11.7	B	13.3	B	11.6
• Westbound Approach	B	11.2	B	11.8	A	9.8
• Northbound Left Turn	A	7.8	A	7.7	A	7.6
• Southbound Left Turn	A	7.5	A	8.0	A	7.6
Woodlawn Road with Penfold Place²						
• Northbound Approach	A	9.3	A	9.9	A	9.2
• Southbound Approach	A	9.4	A	9.7	A	9.3
• Eastbound Left Turn	A	7.3	A	7.4	A	7.3
• Westbound Left Turn	A	--	A	--	A	7.2
LOS = Level of Service 1 – Two-Way Stop Sign Control Delay is measured in seconds. 2 – Yield Sign Control						

Table 12

CAPACITY ANALYSIS RESULTS – PROJECTED CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Afternoon Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
Shermer Road with Woodlawn Road¹						
• Eastbound Approach	C	18.9	C	20.8	C	18.6
• Westbound Approach	E	40.7	D	29.4	C	21.5
• Northbound Left Turn	A	9.7	A	9.2	A	9.0
• Southbound Left Turn	A	9.1	B	10.1	A	9.0
Shermer Road with Farnsworth Lane¹						
• Eastbound Approach	D	34.4	F	99+	D	28.8
• Westbound Approach	F	62.9	F	84.2	D	32.8
• Northbound Left Turn	B	10.6	A	9.5	A	9.2
• Southbound Left Turn	A	9.6	B	10.5	A	9.3
Western Avenue with Woodlawn Road¹						
• Eastbound Approach	B	11.9	B	13.5	B	11.8
• Westbound Approach	B	11.3	B	11.9	A	9.8
• Northbound Left Turn	A	7.8	A	7.7	A	7.6
• Southbound Left Turn	A	7.5	A	8.0	A	7.6
Woodlawn Road with Penfold Place²						
• Northbound Approach	A	9.3	A	9.9	A	9.2
• Southbound Approach	A	9.4	A	9.7	A	9.4
• Eastbound Left Turn	A	7.3	A	7.4	A	7.3
• Westbound Left Turn	A	--	A	--	A	7.3
Shermer Road with South Access Drive¹						
• Westbound Approach	D	33.1	D	32.0	D	33.4
• Southbound Left Turn	A	8.7	A	9.7	A	9.2
LOS = Level of Service 1 – Two-Way Stop Sign Control Delay is measured in seconds. 2 – Yield Sign Control						

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the development-generated traffic.

Shermer Road with Walters Avenue

The results of the capacity analysis indicate that overall, this intersection currently operates at level of service (LOS) LOS B during the weekday morning peak hour, LOS A during the weekday afternoon peak hour, and at LOS B during the weekday evening peak hour. Under Year 2028 no-build and total projected conditions, this intersection overall is projected to continue operating at the same levels of service during the weekday morning, weekday afternoon, and weekday evening peak hours with increases in delay of less than one second. Furthermore, all the approaches are projected to continue operating at existing levels of service (LOS C or better) during the peak hours with increases in delay of less than one second. As such, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development and no roadway improvements or traffic signal modifications will be required.

Shermer Road with Techny Road

The results of the capacity analysis indicate that overall, this intersection currently operate at LOS C during the weekday morning and weekday evening peak hours and at LOS D during the weekday afternoon peak hour. It should be noted that northbound left-turning movements from Shermer Road onto Techny Road currently operate at LOS D during the weekday morning peak hour and at LOS F during the weekday afternoon peak hour. However, this level of service is primarily a result of the surge in traffic resulting from the arrival and dismissal periods for Glenbrook North High School.

Under Year 2028 no-build conditions, this intersection is projected to continue operating overall at LOS C during the weekday morning and weekday evening peak hours and at LOS D during the weekday afternoon peak hour with increases in delay of approximately four seconds or less. All of the approaches are projected to continue operating at existing levels of service with increases in delay of approximately five seconds or less, except for the northbound approach during the afternoon peak hour which is projected to operate at LOS E. Additionally, the northbound left-turn movement is projected to operate at LOS F during the weekday morning and weekday afternoon peak hours. As previously indicated, this level of service is primarily a result of the surge in traffic resulting from the arrival and dismissal periods for Glenbrook North High School.

Under Year 2028 total projected conditions this intersection overall is projected to operate at the acceptable LOS D during the weekday morning and weekday afternoon peak hours and at LOS C during the weekday evening peak hour, with increase in delay of approximately four seconds or less over no-build conditions, all of the approaches are projected to continue operating at no-build levels of service with increases in delay of approximately nine seconds or less, with the exception of the southbound approach which is projected to operate at the acceptable LOS D during the weekday morning peak hour.

It should be noted that located approximately 1,520 feet east of Shermer Road on Techny Road is an at-grade railroad crossing of the Canadian Pacific Railway and the Metra – Milwaukee District North Line Railway. Based on available information of train activity by the Illinois Commerce Commission (ICC) prior to modified schedules as part of the COVID-19 pandemic, the Canadian Pacific Railroad tracks carries an average number of 24 freight trains per day. Additionally, Metra – Milwaukee District North Line railroad tracks, carried an average number of 74 passenger trains and 28 freight trains per day. Observations conducted at the intersection of Shermer Road with Techny Road during the peak periods during normal traffic and train schedule conditions indicated that eastbound traffic on Techny Road was observed to queue past Shermer Road during train events. However, these queues cleared within one to two green cycles following the train event.

While this intersection can experience some increased delays and queueing as a result in the surge of school traffic for Glenbrook North High School and during freight train events, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development based on the results of the capacity analyses.

Shermer Road with Willow Road

The results of the capacity analysis indicate that overall, this intersection currently operates at LOS D during the weekday morning, weekday afternoon, and weekday evening peak hours. It should be noted that the northbound and southbound approaches currently operate at LOS E/F during the peak hours. These levels of service are result of the long cycle length (150 to 160 seconds) and the limited amount of green time allocated to the northbound and southbound approaches (30-33% of the cycle length). Under Year 2028 no-build conditions, the intersection is projected to continue operating overall at LOS D during the peak hours with increases in delay of approximately three seconds or less. The northbound and southbound approaches are projected to continue operating at LOS E/F during the peak hours.

Under Year 2028 total projected conditions, the intersection overall is projected to continue operating at LOS D during the peak hours with increases in delay of approximately six seconds or less over no-build build conditions. The northbound and southbound approaches are projected to continue operating at LOS E/F during the peak hours and the eastbound left-turn movement is projected to operate at LOS E during the weekday afternoon peak hour and at LOS F during the weekday evening peak hour. However, the eastbound left-turn movement is projected to continue to have a volume to capacity ratio of less than 1.0.

Overall, the proposed development is only projected to increase the volume of traffic traversing this intersection by approximately three percent during the weekday morning and weekday evening peak hours and by approximately one percent during the weekday afternoon peak hour. As such, the intersection overall has sufficient capacity to accommodate the traffic estimated to be generated by the proposed development.

Shermer Road with Woodlawn Road

The results of the capacity analysis indicate that eastbound approach currently operate at LOS (Level of Service) C during weekday morning, weekday afternoon and weekday evening peak hours and northbound left-turn movements operate at LOS A during all three peak hours. Under Year 2028 no-build conditions the eastbound approach and northbound left-turn movement will continue to operate at the same existing level of services during all three peak hours with increases in delay of less than one second.

Under Year 2028 total projected conditions, eastbound approach is projected to continue operating at LOS C during all three peak hours with increases in delay of approximately two seconds. Outbound movements from the proposed access drive are projected to operate at LOS E during the weekday morning peak hour, LOS D during the weekday afternoon peak hour and at LOS C during the weekday evening peak hour. In addition, the northbound and southbound left-turn movements will continue to operate at LOS B or better during all three peak hours with increases in delay of less with 95th percentile queues of one to two vehicles which will continue to be accommodated with the left-turn lane storage provided along Shermer Road.

As such, the proposed development traffic will have a limited impact on the operations of the Woodlawn Road approach to Shermer Road, and the proposed access drive will be adequate in accommodating the traffic estimated to be generated by the proposed development and will ensure efficient and flexible access is provided.

Shermer Road with Farnsworth Lane

The results of the capacity analysis indicate that the eastbound and westbound approaches currently operate at LOS C and LOS E during the weekday morning peak hour respectively, at LOS F during the weekday afternoon peak hour and at LOS C during the weekday evening peak hour. Northbound left-turn and southbound left-turn movements operate at LOS A during all three peak hours. It should be noted that the LOS F experienced during the weekday afternoon peak hour is expected for a local roadway that has an unsignalized intersection with a major roadway such as Shermer Road. Additionally, the results of the capacity analyses do not take into consideration the gaps created in the traffic stream by the traffic signals along Shermer Road at Walters Avenue and Techny Road. Furthermore, with a volume-to-capacity ratio of less than 1.0, it is anticipated that this approach is operating better than the results of the capacity analyses indicate.

Under Year 2028 no-build conditions the eastbound approach will operate at LOS D during the weekday morning peak hour with an increase in delay of less than three seconds and will continue to operate at the same existing level of services during both weekday afternoon and evening peak hours with increases in delay of twenty seconds and less than two seconds respectively. The westbound approach is projected to continue operating at LOS E during the weekday morning peak hour, LOS F during the weekday afternoon peak hour and at LOS D during the weekday evening peak hour. Northbound left-turn and southbound left-turn movements will continue to operate at LOS A during all three peak hours with increases in delay of less than one second except for the southbound left-turn movements that will be operating at LOS B with an increase in delay of less than one second.

Under Year 2028 total projected conditions, the eastbound approach will continue to operate at LOS D during the weekday morning peak hour with an increase in delay of approximately nine seconds. The westbound approach is projected to operate at LOS F during the weekday morning peak hour. Both eastbound and westbound approaches are projected to continue operating at LOS F during the weekday afternoon peak hour and LOS D during the weekday evening peak hour with increases in delay of less than six seconds and less than seven seconds respectively.

As previously indicated, the results of these analyses are expected for a local roadway that has an unsignalized intersection with a major roadway such as Shermer Road and the results of the capacity analyses do not take into consideration the gaps created in the traffic stream by the traffic signals along Shermer Road at Walters Avenue and Techny Road. Furthermore, with the eastbound and westbound approaches are projected to continue to have a volume-to-capacity ratio of less than 1.0, indicating that these approaches will continue to have sufficient capacity to accommodate the existing traffic volumes.

Northbound left-turn and southbound left-turn movements are projected to continue to operate at LOS B or better during the weekday morning peak hour with 95th percentile queues of one to two vehicles which can continue to be accommodated within the left-turn lane storage provided.

Woodlawn Road with Western Avenue

The results of the capacity analysis indicate that eastbound approach currently operates at LOS B during all three peak hours. The westbound approaches operate at LOS B during the weekday morning and weekday afternoon peak hours and operates at LOS A during the weekday evening peak hour.

Under Year 2028 no-build conditions all the approaches and movements are projected to continue at the same existing level of services during all three peak hours with increases in delay of less than one second.

Under Year 2028 total projected conditions, all the approaches and movements will continue to operate at the same level of services during all three peak hours with increases in delay of less than one second over the no-build conditions. As such, the development generated traffic will have a limited impact on the operations of this intersection.

Woodlawn Road with Penfold Place

The results of the capacity analysis indicate that all the approaches and movements currently operate at LOS A during the weekday morning, weekday afternoon and weekday evening peak hours. Under Year 2028 no-build conditions all the approaches and movements will continue to operate at LOS A during all three peak hours with increases in delay of less than one second except for westbound left-turn movements that will have an increase in delay of approximately seven seconds during the weekday evening peak hour.

Under Year 2028 total projected conditions, all the approaches and movements are projected to continue at LOS A during all three peak hours with increases in delay of less than one second over the no-build conditions. As such, the development generated traffic will have a limited impact on the operations of this intersection.

Shermer Road with South Site Access Drive

The results of the capacity analysis indicate that the westbound approach will operate at LOS D during the weekday morning, weekday afternoon and weekday evening peak hours while the southbound left-turn movements will operate at LOS A during all three peak hours. As such, this access drive is will be adequate in accommodating the traffic estimated to be generated by the proposed development and will ensure efficient and flexible access is provided.

Parking Evaluation

As proposed, parking for the luxury apartments will be provided via an approximately 440 space garage and 63 parallel parking spaces. Parking for the affordable housing building will be provided via a surface parking lot providing 62 parking spaces. Parking for the proposed restaurant will be provided via an approximately 51 space parking lot.

In order to determine the adequacy of the proposed parking supply, the average peak parking demand for the development was estimated based on information published in the ITE *Parking Generation Manual*, 5th Edition. The following summarizes the average peak parking demands for the three land-uses:

- Multifamily Housing Mid-Rise (Land-Use Code 221) buildings have an average peak parking demand of 1.31 parking spaces per unit on a weekday (Monday through Friday) and 1.22 parking spaces per unit on Saturday.
- Affordable Housing (Land-Use Code 223) developments have an average peak parking demand of 0.99 spaces per unit on a weekday (Monday through Friday) and 0.79 spaces per unit on Saturday.
- High-Turnover Sit-Down restaurants (Land-Use Code 932) have an average peak parking demand of 9.44 space per 1,000 square feet on a weekday (Monday through Thursday), 11.33 spaces per 1,000 square feet on Friday, and 12.28 spaces per 1,000 square-feet on Saturday.

As such and based on the above requirements, the proposed luxury apartment units are projected to have an average peak parking demand of 439 spaces occurring on a weekday, the affordable housing units are projected to have an average peak parking demand of 48 spaces occurring on a weekday, and the restaurant is projected to have an estimated peak parking demand of 80 spaces occurring on Saturday.

As such, the proposed residential parking supply will be adequate in accommodating the estimated average peak parking demands for the residential units resulting in a surplus of at least 78 parking spaces.

For the proposed restaurant, during the weekday and on Saturday the estimated average peak parking demands will exceed the proposed parking spaces within the parking lot resulting in a deficit ranging between 10 to 29 spaces. However, this additional parking demand can be accommodated by the parallel parking spaces serving the luxury apartment building, of which 12 are located within close proximity of the restaurant. These parking spaces should be utilized by employees of the restaurant.

It should be noted that the parking demand, particularly for the proposed restaurant, is conservative as they do not take into consideration the proximity of nearby residential areas and other commercial land-uses, which may result in patrons walking nor does it take into account for the interaction that will occur with the future residents of the proposed development. In addition, the calculations were conducted utilizing the full 6,500 square feet which includes the rooftop patio area.

6. Conclusion

Based on existing conditions and the traffic capacity analyses for the full buildout of the development, the findings and recommendations of this study are outlined below:

- The total volume of traffic that will be generated by the proposed development will be reduced due to internal capture, pass-by trips, and proximity to public transportation.
- The results of the capacity analyses indicated that the existing roadway system will generally have sufficient reserve capacity to accommodate the traffic that will be generated by the proposed development.
- While the intersection of Shermer Road with Techny Road can experience some increased delays and queueing as a result in the surge of school traffic for Glenbrook North High School and during freight train events, this intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the proposed development based on the results of the capacity analyses.
- The proposed access system consisting of two full movement access drives off Shermer Road, consistent with existing conditions, will be adequate in accommodating the traffic estimated to be generated by the proposed development and will ensure efficient and flexible access is provided. Furthermore, southbound left-turning movements from Shermer Road onto the access drives will continue to be accommodated by the existing left-turn lanes on Shermer Road.
- The exiting movements onto Shermer Road at the access drive opposite Woodlawn Road will continue to be restricted to left and right turn movements only via the existing striping and added signage.
- The proposed 565 residential parking spaces and 51 restaurant parking spaces will be adequate in accommodating the estimated peak parking demand of the proposed development.

Appendix

Traffic Count Summary Sheets

Site Plan

ITE Trip Generation Summary Sheets

CMAP 2050 Projections Letter

Level of Service Criteria

Capacity Analysis Summary Sheets

Traffic Count Summary Sheets



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Count Name: Shermer Rd with Farnsworth Ln
TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Farnsworth Ln Eastbound						Farnsworth Ln Westbound						Shermer Rd Northbound						Shermer Rd Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
7:00 AM	0	0	0	3	1	3	0	0	0	1	0	1	0	0	0	62	1	0	63	0	1	72	1	0	74	141
7:15 AM	0	2	0	5	0	7	0	0	0	2	0	2	0	3	83	0	0	86	0	3	120	0	0	123	218	
7:30 AM	0	2	0	9	0	11	0	1	0	4	0	5	0	1	97	3	0	101	0	0	236	1	0	237	354	
7:45 AM	0	2	0	15	3	17	0	2	0	2	0	4	0	8	154	4	0	166	0	4	217	1	0	222	409	
Hourly Total	0	6	0	32	4	38	0	3	0	9	0	12	0	12	396	8	0	416	0	8	645	3	0	656	1122	
8:00 AM	0	0	0	3	2	3	0	1	0	0	0	1	0	4	142	1	0	147	0	5	95	1	0	101	252	
8:15 AM	0	1	0	11	0	12	0	2	0	1	0	3	0	12	98	2	0	112	0	0	90	2	0	92	219	
8:30 AM	0	3	0	5	2	8	0	3	1	4	0	8	0	14	90	3	0	107	0	3	89	1	0	93	216	
8:45 AM	0	3	0	5	1	8	0	0	0	1	0	1	0	0	64	5	0	69	0	3	91	1	0	95	173	
Hourly Total	0	7	0	24	5	31	0	6	1	6	0	13	0	30	394	11	0	435	0	11	365	5	0	381	860	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2:00 PM	0	1	0	2	0	3	0	1	0	5	0	6	0	4	108	3	0	115	0	7	110	2	0	119	243	
2:15 PM	0	2	0	6	0	8	0	2	0	6	0	8	0	3	97	3	0	103	0	6	101	6	0	113	232	
2:30 PM	0	1	0	0	0	1	0	3	0	4	0	7	0	4	110	2	0	116	0	4	96	2	0	102	226	
2:45 PM	0	2	1	2	1	5	0	3	0	3	0	6	0	2	106	3	0	111	0	5	128	5	0	138	260	
Hourly Total	0	6	1	10	1	17	0	9	0	18	0	27	0	13	421	11	0	445	0	22	435	15	0	472	961	
3:00 PM	0	6	0	4	0	10	0	5	1	3	0	9	0	5	120	5	0	130	0	6	150	2	0	158	307	
3:15 PM	0	2	1	14	1	17	0	4	2	5	0	11	0	17	247	8	0	272	0	5	133	4	0	142	442	
3:30 PM	0	8	1	4	2	13	0	2	1	3	0	6	0	10	210	4	1	224	0	6	125	4	0	135	378	
3:45 PM	0	4	1	5	0	10	0	3	0	8	0	11	0	10	144	7	0	161	0	5	123	3	0	131	313	
Hourly Total	0	20	3	27	3	50	0	14	4	19	0	37	0	42	721	24	1	787	0	22	531	13	0	566	1440	
4:00 PM	0	1	1	2	2	4	0	8	0	5	0	13	0	6	117	2	0	125	0	3	103	1	0	107	249	
4:15 PM	0	4	0	1	4	5	0	3	2	4	0	9	0	3	127	3	0	133	0	6	129	1	0	136	283	
4:30 PM	0	6	0	7	1	13	0	2	1	2	0	5	0	2	136	0	0	138	0	6	159	5	0	170	326	
4:45 PM	0	2	1	6	0	9	0	2	1	3	0	6	0	6	111	1	1	118	0	6	132	7	0	145	278	
Hourly Total	0	13	2	16	7	31	0	15	4	14	0	33	0	17	491	6	1	514	0	21	523	14	0	558	1136	
5:00 PM	0	1	0	5	2	6	0	4	1	8	0	13	0	5	167	0	0	172	0	3	141	2	0	146	337	
5:15 PM	0	2	0	7	2	9	0	5	0	5	0	10	0	5	145	0	0	150	0	5	153	8	0	166	335	
5:30 PM	0	2	1	5	0	8	0	4	1	1	0	6	0	4	154	0	0	158	0	5	121	2	0	128	300	
5:45 PM	0	4	0	7	2	11	0	1	1	3	0	5	0	3	142	0	0	145	0	2	122	4	0	128	289	
Hourly Total	0	9	1	24	6	34	0	14	3	17	0	34	0	17	608	0	0	625	0	15	537	16	0	568	1261	
Grand Total	0	61	7	133	26	201	0	61	12	83	0	156	0	131	3031	60	2	3222	0	99	3036	66	0	3201	6780	
Approach %	0.0	30.3	3.5	66.2	-	-	0.0	39.1	7.7	53.2	-	-	0.0	4.1	94.1	1.9	-	-	0.0	3.1	94.8	2.1	-	-	-	
Total %	0.0	0.9	0.1	2.0	-	3.0	0.0	0.9	0.2	1.2	-	2.3	0.0	1.9	44.7	0.9	-	47.5	0.0	1.5	44.8	1.0	-	47.2	-	
Lights	0	61	6	131	-	198	0	60	11	82	-	153	0	128	2928	57	-	3113	0	95	2905	64	-	3064	6528	

% Lights	-	100.0	85.7	98.5	-	98.5	-	98.4	91.7	98.8	-	98.1	-	97.7	96.6	95.0	-	96.6	-	96.0	95.7	97.0	-	95.7	96.3
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	1	20	1	-	22	0	1	34	1	-	36	59
% Buses	-	0.0	14.3	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	-	0.8	0.7	1.7	-	0.7	-	1.0	1.1	1.5	-	1.1	0.9
Single-Unit Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	2	52	1	-	55	0	2	74	0	-	76	132
% Single-Unit Trucks	-	0.0	0.0	0.0	-	0.0	-	1.6	0.0	0.0	-	0.6	-	1.5	1.7	1.7	-	1.7	-	2.0	2.4	0.0	-	2.4	1.9
Articulated Trucks	0	0	0	2	-	2	0	0	0	1	-	1	0	0	29	1	-	30	0	1	20	1	-	22	55
% Articulated Trucks	-	0.0	0.0	1.5	-	1.0	-	0.0	0.0	1.2	-	0.6	-	0.0	1.0	1.7	-	0.9	-	1.0	0.7	1.5	-	0.7	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	2	0	-	2	0	0	3	0	-	3	6
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	8.3	0.0	-	0.6	-	0.0	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	0.1	0.1
Pedestrians	-	-	-	-	26	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Site Code:
Start Date: 05/12/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

[illegible]



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Count Name: Shermer Rd with Farnsworth Ln
TMC
Site Code:
Start Date: 05/12/2022
Page No: 4

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Farnsworth Ln Eastbound						Farnsworth Ln Westbound						Shermer Rd Northbound						Shermer Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
3:00 PM	0	6	0	4	0	10	0	5	1	3	0	9	0	5	120	5	0	130	0	6	150	2	0	158	307
3:15 PM	0	2	1	14	1	17	0	4	2	5	0	11	0	17	247	8	0	272	0	5	133	4	0	142	442
3:30 PM	0	8	1	4	2	13	0	2	1	3	0	6	0	10	210	4	1	224	0	6	125	4	0	135	378
3:45 PM	0	4	1	5	0	10	0	3	0	8	0	11	0	10	144	7	0	161	0	5	123	3	0	131	313
Total	0	20	3	27	3	50	0	14	4	19	0	37	0	42	721	24	1	787	0	22	531	13	0	566	1440
Approach %	0.0	40.0	6.0	54.0	-	-	0.0	37.8	10.8	51.4	-	-	0.0	5.3	91.6	3.0	-	-	0.0	3.9	93.8	2.3	-	-	-
Total %	0.0	1.4	0.2	1.9	-	3.5	0.0	1.0	0.3	1.3	-	2.6	0.0	2.9	50.1	1.7	-	54.7	0.0	1.5	36.9	0.9	-	39.3	-
PHF	0.000	0.625	0.750	0.482	-	0.735	0.000	0.700	0.500	0.594	-	0.841	0.000	0.618	0.730	0.750	-	0.723	0.000	0.917	0.885	0.813	-	0.896	0.814
Lights	0	20	2	27	-	49	0	14	4	18	-	36	0	41	702	23	-	766	0	22	506	12	-	540	1391
% Lights	-	100.0	66.7	100.0	-	98.0	-	100.0	100.0	94.7	-	97.3	-	97.6	97.4	95.8	-	97.3	-	100.0	95.3	92.3	-	95.4	96.6
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	0	5	1	-	6	0	0	7	0	-	7	14
% Buses	-	0.0	33.3	0.0	-	2.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.7	4.2	-	0.8	-	0.0	1.3	0.0	-	1.2	1.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	7	0	-	8	0	0	12	0	-	12	20
% Single-Unit Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	2.4	1.0	0.0	-	1.0	-	0.0	2.3	0.0	-	2.1	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	1	-	1	0	0	6	0	-	6	0	0	6	1	-	7	14
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	5.3	-	2.7	-	0.0	0.8	0.0	-	0.8	-	0.0	1.1	7.7	-	1.2	1.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.1	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-



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Count Name: Shermer Rd with Farnsworth Ln
TMC
Site Code:
Start Date: 05/12/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Farnsworth Ln Eastbound						Farnsworth Ln Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:30 PM	0	6	0	7	1	13	0	2	1	2	0	5	0	2	136	0	0	138	0	6	159	5	0	170	326
4:45 PM	0	2	1	6	0	9	0	2	1	3	0	6	0	6	111	1	1	118	0	6	132	7	0	145	278
5:00 PM	0	1	0	5	2	6	0	4	1	8	0	13	0	5	167	0	0	172	0	3	141	2	0	146	337
5:15 PM	0	2	0	7	2	9	0	5	0	5	0	10	0	5	145	0	0	150	0	5	153	8	0	166	335
Total	0	11	1	25	5	37	0	13	3	18	0	34	0	18	559	1	1	578	0	20	585	22	0	627	1276
Approach %	0.0	29.7	2.7	67.6	-	-	0.0	38.2	8.8	52.9	-	-	0.0	3.1	96.7	0.2	-	-	0.0	3.2	93.3	3.5	-	-	-
Total %	0.0	0.9	0.1	2.0	-	2.9	0.0	1.0	0.2	1.4	-	2.7	0.0	1.4	43.8	0.1	-	45.3	0.0	1.6	45.8	1.7	-	49.1	-
PHF	0.000	0.458	0.250	0.893	-	0.712	0.000	0.650	0.750	0.563	-	0.654	0.000	0.750	0.837	0.250	-	0.840	0.000	0.833	0.920	0.688	-	0.922	0.947
Lights	0	11	1	25	-	37	0	13	3	18	-	34	0	18	554	1	-	573	0	19	577	22	-	618	1262
% Lights	-	100.0	100.0	100.0	-	100.0	-	100.0	100.0	100.0	-	100.0	-	100.0	99.1	100.0	-	99.1	-	95.0	98.6	100.0	-	98.6	98.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.2	0.0	-	0.2	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	4	0	1	7	0	-	8	12
% Single-Unit Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.7	0.0	-	0.7	-	5.0	1.2	0.0	-	1.3	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.2	0.0	-	0.2	-	0.0	0.0	0.0	-	0.0	0.1
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
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Shermer Rd with Walters Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Walters Ave Eastbound						Access Dr Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	7	3	12	0	22	0	0	1	0	0	1	0	12	31	2	1	45	0	0	47	1	1	48	116
7:15 AM	0	3	15	32	1	50	0	4	3	1	1	8	0	11	53	5	0	69	0	1	83	9	9	93	220
7:30 AM	0	14	2	67	0	83	0	3	1	0	1	4	0	23	70	0	0	93	0	1	110	3	2	114	294
7:45 AM	0	22	19	64	0	105	0	0	2	2	0	4	0	26	58	0	1	84	0	3	96	12	5	111	304
Hourly Total	0	46	39	175	1	260	0	7	7	3	2	17	0	72	212	7	2	291	0	5	336	25	17	366	934
8:00 AM	0	36	5	20	4	61	0	0	0	2	1	2	0	23	109	3	2	135	0	1	82	19	1	102	300
8:15 AM	0	23	3	21	0	47	0	2	0	0	2	2	0	19	80	3	1	102	0	0	76	21	3	97	248
8:30 AM	0	14	1	26	1	41	0	0	1	0	0	1	0	16	72	1	0	89	0	2	56	17	1	75	206
8:45 AM	0	17	0	27	1	44	0	1	0	1	0	2	0	22	48	0	2	70	0	0	62	19	0	81	197
Hourly Total	0	90	9	94	6	193	0	3	1	3	3	7	0	80	309	7	5	396	0	3	276	76	5	355	951
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	3	1	26	1	30	0	0	0	0	2	0	0	22	75	0	0	97	0	0	87	20	0	107	234
2:15 PM	0	11	0	15	2	26	0	0	0	1	0	1	0	23	80	0	0	103	0	0	90	14	0	104	234
2:30 PM	0	16	1	15	0	32	0	0	0	3	0	3	0	25	79	1	0	105	0	1	79	21	0	101	241
2:45 PM	0	10	1	26	2	37	0	0	0	0	2	0	0	19	86	0	1	105	0	0	104	22	1	126	268
Hourly Total	0	40	3	82	5	125	0	0	0	4	4	4	0	89	320	1	1	410	0	1	360	77	1	438	977
3:00 PM	0	6	2	28	1	36	0	0	0	2	1	2	0	31	82	1	0	114	0	2	121	21	0	144	296
3:15 PM	0	16	5	35	1	56	0	4	3	1	0	8	0	58	143	0	2	201	0	0	94	20	1	114	379
3:30 PM	0	20	0	24	3	44	0	1	2	2	0	5	0	38	136	1	0	175	0	0	109	20	1	129	353
3:45 PM	0	12	0	26	2	38	0	0	1	0	0	1	0	23	108	0	1	131	0	0	100	35	0	135	305
Hourly Total	0	54	7	113	7	174	0	5	6	5	1	16	0	150	469	2	3	621	0	2	424	96	2	522	1333
4:00 PM	0	16	0	20	5	36	0	0	0	1	0	1	0	30	99	0	0	129	0	1	73	10	1	84	250
4:15 PM	0	19	1	35	2	55	0	0	0	0	0	0	0	17	59	0	0	76	0	0	94	18	0	112	243
4:30 PM	0	17	1	26	2	44	0	0	14	1	1	15	0	27	126	0	0	153	0	2	125	27	1	154	366
4:45 PM	0	17	2	24	2	43	0	0	0	0	1	0	0	18	95	0	1	113	0	3	104	26	3	133	289
Hourly Total	0	69	4	105	11	178	0	0	14	2	2	16	0	92	379	0	1	471	0	6	396	81	5	483	1148
5:00 PM	1	14	2	22	0	39	0	5	3	2	0	10	1	33	106	0	1	140	0	1	109	22	6	132	321
5:15 PM	0	25	0	33	5	58	0	2	7	2	2	11	0	42	105	0	0	147	0	0	92	29	3	121	337
5:30 PM	0	16	1	19	2	36	0	0	1	0	1	1	0	20	102	0	1	122	0	0	94	21	0	115	274
5:45 PM	0	16	0	24	3	40	0	3	2	1	6	6	0	22	82	0	1	104	0	2	85	19	6	106	256
Hourly Total	1	71	3	98	10	173	0	10	13	5	9	28	1	117	395	0	3	513	0	3	380	91	15	474	1188
Grand Total	1	370	65	667	40	1103	0	25	41	22	21	88	1	600	2084	17	15	2702	0	20	2172	446	45	2638	6531
Approach %	0.1	33.5	5.9	60.5	-	-	0.0	28.4	46.6	25.0	-	-	0.0	22.2	77.1	0.6	-	-	0.0	0.8	82.3	16.9	-	-	-
Total %	0.0	5.7	1.0	10.2	-	16.9	0.0	0.4	0.6	0.3	-	1.3	0.0	9.2	31.9	0.3	-	41.4	0.0	0.3	33.3	6.8	-	40.4	-
Lights	1	360	62	632	-	1055	0	25	41	22	-	88	1	586	2011	17	-	2615	0	20	2064	426	-	2510	6268

% Lights	100.0	97.3	95.4	94.8	-	95.6	-	-	100.0	100.0	100.0	-	100.0	100.0	96.5	96.7	96.5	95.0	95.5	-	95.1	96.0
Buses	0	4	0	14	-	18	-	0	0	0	0	-	0	0	10	4	10	19	3	-	22	54
% Buses	0.0	1.1	0.0	2.1	-	1.6	-	-	0.0	0.0	0.0	-	0.0	0.0	0.5	0.7	0.5	0.9	0.7	-	0.8	0.8
Single-Unit Trucks	0	2	0	11	-	13	-	0	0	0	0	-	0	0	9	9	42	69	7	-	76	140
% Single-Unit Trucks	0.0	0.5	0.0	1.6	-	1.2	-	-	0.0	0.0	0.0	-	0.0	0.0	1.5	1.5	2.0	3.2	1.6	-	2.9	2.1
Articulated Trucks	0	3	0	3	-	6	-	0	0	0	0	-	0	0	1	1	19	14	4	-	18	44
% Articulated Trucks	0.0	0.8	0.0	0.4	-	0.5	-	-	0.0	0.0	0.0	-	0.0	0.0	0.2	0.2	0.9	0.6	0.9	-	0.7	0.7
Bicycles on Road	0	1	3	7	-	11	-	0	0	0	0	-	0	0	0	0	2	6	6	-	12	25
% Bicycles on Road	0.0	0.3	4.6	1.0	-	1.0	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.1	0.3	1.3	-	0.5	0.4
Pedestrians	-	-	-	-	-	40	-	-	-	-	-	21	-	-	-	-	-	-	-	45	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	100.0	-	-



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Count Name: Shermer Rd with Walters Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Walters Ave Eastbound						Access Dr Westbound						Shermer Rd Northbound						Shermer Rd Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
7:30 AM	0	14	2	67	0	83	0	3	1	0	0	1	4	0	23	70	0	0	93	0	1	110	3	2	114	294
7:45 AM	0	22	19	64	0	105	0	0	2	2	0	4	0	26	58	0	1	84	0	3	96	12	5	111	304	
8:00 AM	0	36	5	20	4	61	0	0	0	2	2	1	2	0	23	109	3	2	135	0	1	82	19	1	102	300
8:15 AM	0	23	3	21	0	47	0	2	0	0	2	2	0	0	19	80	3	1	102	0	0	76	21	3	97	248
Total	0	95	29	172	4	296	0	5	3	4	4	12	0	91	317	6	4	414	0	5	364	55	11	424	1146	
Approach %	0.0	32.1	9.8	58.1	-	-	0.0	41.7	25.0	33.3	-	-	-	0.0	22.0	76.6	1.4	-	-	0.0	1.2	85.8	13.0	-	-	-
Total %	0.0	8.3	2.5	15.0	-	25.8	0.0	0.4	0.3	0.3	-	1.0	-	0.0	7.9	27.7	0.5	-	36.1	0.0	0.4	31.8	4.8	-	37.0	-
PHF	0.000	0.660	0.382	0.642	-	0.705	0.000	0.417	0.375	0.500	-	0.750	-	0.000	0.875	0.727	0.500	-	0.767	0.000	0.417	0.827	0.655	-	0.930	0.942
Lights	0	93	27	166	-	286	0	5	3	4	-	12	-	0	88	293	6	-	387	0	5	349	52	-	406	1091
% Lights	-	97.9	93.1	96.5	-	96.6	-	100.0	100.0	100.0	-	100.0	-	-	96.7	92.4	100.0	-	93.5	-	100.0	95.9	94.5	-	95.8	95.2
Buses	0	1	0	5	-	6	0	0	0	0	-	0	-	0	1	3	0	-	4	0	0	2	0	-	2	12
% Buses	-	1.1	0.0	2.9	-	2.0	-	0.0	0.0	0.0	-	0.0	-	-	1.1	0.9	0.0	-	1.0	-	0.0	0.5	0.0	-	0.5	1.0
Single-Unit Trucks	0	1	0	1	-	2	0	0	0	0	-	0	-	0	2	16	0	-	18	0	0	9	1	-	10	30
% Single-Unit Trucks	-	1.1	0.0	0.6	-	0.7	-	0.0	0.0	0.0	-	0.0	-	-	2.2	5.0	0.0	-	4.3	-	0.0	2.5	1.8	-	2.4	2.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	5	0	-	5	0	0	3	1	-	4	9
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	-	0.0	1.6	0.0	-	1.2	-	0.0	0.8	1.8	-	0.9	0.8
Bicycles on Road	0	0	2	0	-	2	0	0	0	0	-	0	-	0	0	0	0	-	0	0	0	1	1	-	2	4
% Bicycles on Road	-	0.0	6.9	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	-	0.0	-	0.0	0.3	1.8	-	0.5	0.3
Pedestrians	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	-	4	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Shermer Rd with Walters Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 4

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Walters Ave Eastbound						Access Dr Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	6	2	28	1	36	0	0	0	2	1	2	0	31	82	1	0	114	0	2	121	21	0	144	296
3:15 PM	0	16	5	35	1	56	0	4	3	1	0	8	0	58	143	0	2	201	0	0	94	20	1	114	379
3:30 PM	0	20	0	24	3	44	0	1	2	2	0	5	0	38	136	1	0	175	0	0	109	20	1	129	353
3:45 PM	0	12	0	26	2	38	0	0	1	0	0	1	0	23	108	0	1	131	0	0	100	35	0	135	305
Total	0	54	7	113	7	174	0	5	6	5	1	16	0	150	469	2	3	621	0	2	424	96	2	522	1333
Approach %	0.0	31.0	4.0	64.9	-	-	0.0	31.3	37.5	31.3	-	-	0.0	24.2	75.5	0.3	-	-	0.0	0.4	81.2	18.4	-	-	-
Total %	0.0	4.1	0.5	8.5	-	13.1	0.0	0.4	0.5	0.4	-	1.2	0.0	11.3	35.2	0.2	-	46.6	0.0	0.2	31.8	7.2	-	39.2	-
PHF	0.000	0.675	0.350	0.807	-	0.777	0.000	0.313	0.500	0.625	-	0.500	0.000	0.647	0.820	0.500	-	0.772	0.000	0.250	0.876	0.686	-	0.906	0.879
Lights	0	53	7	109	-	169	0	5	6	5	-	16	0	146	458	2	-	606	0	2	400	93	-	495	1286
% Lights	-	98.1	100.0	96.5	-	97.1	-	100.0	100.0	100.0	-	100.0	-	97.3	97.7	100.0	-	97.6	-	100.0	94.3	96.9	-	94.8	96.5
Buses	0	1	0	1	-	2	0	0	0	0	-	0	0	2	1	0	-	3	0	0	6	1	-	7	12
% Buses	-	1.9	0.0	0.9	-	1.1	-	0.0	0.0	0.0	-	0.0	-	1.3	0.2	0.0	-	0.5	-	0.0	1.4	1.0	-	1.3	0.9
Single-Unit Trucks	0	0	0	2	-	2	0	0	0	0	-	0	0	2	3	0	-	5	0	0	12	1	-	13	20
% Single-Unit Trucks	-	0.0	0.0	1.8	-	1.1	-	0.0	0.0	0.0	-	0.0	-	1.3	0.6	0.0	-	0.8	-	0.0	2.8	1.0	-	2.5	1.5
Articulated Trucks	0	0	0	1	-	1	0	0	0	0	-	0	0	0	7	0	-	7	0	0	6	1	-	7	15
% Articulated Trucks	-	0.0	0.0	0.9	-	0.6	-	0.0	0.0	0.0	-	0.0	-	0.0	1.5	0.0	-	1.1	-	0.0	1.4	1.0	-	1.3	1.1
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
Pedestrians	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	-	3	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: Shermer Rd with Walters Ave
TMC
Site Code:
Start Date: 05/12/2022
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Turning Movement Peak Hour Data (4:30 PM)

Start Time	Walters Ave Eastbound						Access Dr Westbound						Shermer Rd Northbound						Shermer Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	17	1	26	2	44	0	0	14	1	1	15	0	27	126	0	0	153	0	2	125	27	1	154	366
4:45 PM	0	17	2	24	2	43	0	0	0	0	1	0	0	18	95	0	1	113	0	3	104	26	3	133	289
5:00 PM	1	14	2	22	0	39	0	5	3	2	0	10	1	33	106	0	1	140	0	1	109	22	6	132	321
5:15 PM	0	25	0	33	5	58	0	2	7	2	2	11	0	42	105	0	0	147	0	0	92	29	3	121	337
Total	1	73	5	105	9	184	0	7	24	5	4	36	1	120	432	0	2	553	0	6	430	104	13	540	1313
Approach %	0.5	39.7	2.7	57.1	-	-	0.0	19.4	66.7	13.9	-	-	0.2	21.7	78.1	0.0	-	-	0.0	1.1	79.6	19.3	-	-	-
Total %	0.1	5.6	0.4	8.0	-	14.0	0.0	0.5	1.8	0.4	-	2.7	0.1	9.1	32.9	0.0	-	42.1	0.0	0.5	32.7	7.9	-	41.1	-
PHF	0.250	0.730	0.625	0.795	-	0.793	0.000	0.350	0.429	0.625	-	0.600	0.250	0.714	0.857	0.000	-	0.904	0.000	0.500	0.860	0.897	-	0.877	0.897
Lights	1	73	5	101	-	180	0	7	24	5	-	36	1	120	427	0	-	548	0	6	420	102	-	528	1292
% Lights	100.0	100.0	100.0	96.2	-	97.8	-	100.0	100.0	100.0	-	100.0	100.0	100.0	98.8	-	-	99.1	-	100.0	97.7	98.1	-	97.8	98.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	2
% Buses	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	-	0.2	-	0.0	0.2	0.0	-	0.2	0.2
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	6	0	-	6	8
% Single-Unit Trucks	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.5	-	-	0.4	-	0.0	1.4	0.0	-	1.1	0.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	-	0.2	-	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	0	0	0	4	-	4	0	0	0	0	-	0	0	0	1	0	-	1	0	0	3	2	-	5	10
% Bicycles on Road	0.0	0.0	0.0	3.8	-	2.2	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	-	-	0.2	-	0.0	0.7	1.9	-	0.9	0.8
Pedestrians	-	-	-	-	9	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-



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Count Name: Shermer Rd with Willow Rd TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Willow Rd Eastbound						Willow Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	55	322	17	0	394	0	16	151	51	0	218	0	20	26	6	0	52	0	33	26	13	0	72	736
7:15 AM	0	54	405	21	0	480	0	12	161	43	0	216	0	21	40	28	0	89	0	48	25	17	0	90	875
7:30 AM	0	55	355	20	0	430	0	12	155	50	0	217	0	18	52	11	0	81	0	59	29	21	0	109	837
7:45 AM	0	57	393	26	0	476	0	18	180	60	0	258	0	27	40	13	0	80	0	82	26	31	0	139	953
Hourly Total	0	221	1475	84	0	1780	0	58	647	204	0	909	0	86	158	58	0	302	0	222	106	82	0	410	3401
8:00 AM	0	65	378	21	0	464	0	18	145	57	0	220	0	17	50	10	0	77	0	75	36	22	0	133	894
8:15 AM	0	43	372	28	0	443	0	19	153	54	1	226	0	12	51	18	0	81	1	75	35	33	0	144	894
8:30 AM	1	40	408	19	0	468	1	15	193	54	0	263	0	31	47	12	0	90	0	82	41	30	0	153	974
8:45 AM	0	48	370	19	1	437	0	18	157	43	0	218	0	17	36	21	0	74	0	83	45	15	0	143	872
Hourly Total	1	196	1528	87	1	1812	1	70	648	208	1	927	0	77	184	61	0	322	1	315	157	100	0	573	3634
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	23	210	19	0	252	3	20	242	92	1	357	0	20	32	23	0	75	0	76	32	37	0	145	829
2:15 PM	0	25	205	29	0	259	0	19	244	66	0	329	0	19	35	10	0	64	0	95	38	27	0	160	812
2:30 PM	0	33	216	21	0	270	1	31	247	83	0	362	0	28	42	24	0	94	0	70	45	26	0	141	867
2:45 PM	0	32	209	17	0	258	0	23	230	68	0	321	0	36	43	17	1	96	0	86	47	30	0	163	838
Hourly Total	0	113	840	86	0	1039	4	93	963	309	1	1369	0	103	152	74	1	329	0	327	162	120	0	609	3346
3:00 PM	0	45	251	19	0	315	2	29	229	102	0	362	0	28	41	23	0	92	0	76	45	31	0	152	921
3:15 PM	0	30	277	35	0	342	1	17	249	74	0	341	0	33	36	30	3	99	0	93	44	52	0	189	971
3:30 PM	0	31	311	27	0	369	2	22	292	73	1	389	0	31	38	16	1	85	0	94	49	47	0	190	1033
3:45 PM	0	31	284	24	0	339	1	21	342	60	1	424	0	29	48	22	0	99	0	70	65	57	0	192	1054
Hourly Total	0	137	1123	105	0	1365	6	89	1112	309	2	1516	0	121	163	91	4	375	0	333	203	187	0	723	3979
4:00 PM	0	33	273	30	2	336	3	24	348	72	1	447	0	34	37	18	0	89	0	80	54	46	0	180	1052
4:15 PM	0	36	285	26	0	347	0	15	359	68	0	442	0	23	42	19	0	84	0	69	60	38	0	167	1040
4:30 PM	0	39	233	23	0	295	0	25	331	60	0	416	0	40	45	23	0	108	0	82	54	55	0	191	1010
4:45 PM	0	42	245	30	0	317	0	23	337	65	0	425	0	28	47	11	0	86	0	61	49	28	0	138	966
Hourly Total	0	150	1036	109	2	1295	3	87	1375	265	1	1730	0	125	171	71	0	367	0	292	217	167	0	676	4068
5:00 PM	0	32	266	24	1	322	0	16	330	61	0	407	0	36	62	26	0	124	0	79	58	39	0	176	1029
5:15 PM	0	30	262	22	0	314	1	16	324	86	1	427	0	32	64	18	0	114	0	75	63	46	1	184	1039
5:30 PM	0	46	300	34	0	380	0	23	310	86	0	419	0	31	50	24	0	105	0	59	36	27	2	122	1026
5:45 PM	0	48	314	21	0	383	0	41	255	74	0	370	0	22	53	22	0	97	0	58	49	29	0	136	986
Hourly Total	0	156	1142	101	1	1399	1	96	1219	307	1	1623	0	121	229	90	0	440	0	271	206	141	3	618	4080
Grand Total	1	973	7144	572	4	8690	15	493	5964	1602	6	8074	0	633	1057	445	5	2135	1	1760	1051	797	3	3609	22508
Approach %	0.0	11.2	82.2	6.6	-	-	0.2	6.1	73.9	19.8	-	-	0.0	29.6	49.5	20.8	-	-	0.0	48.8	29.1	22.1	-	-	-
Total %	0.0	4.3	31.7	2.5	-	38.6	0.1	2.2	26.5	7.1	-	35.9	0.0	2.8	4.7	2.0	-	9.5	0.0	7.8	4.7	3.5	-	16.0	-
Lights	1	894	6895	517	-	8307	15	468	5760	1482	-	7725	0	582	992	411	-	1985	1	1651	986	730	-	3368	21385

% Lights Buses	100.0	91.9	96.5	90.4	-	95.6	100.0	94.9	96.6	92.5	-	95.7	-	91.9	93.9	92.4	-	93.0	100.0	93.8	93.8	91.6	-	93.3	95.0	
% Buses	0.0	8	32	2	-	42	0	2	21	31	-	54	-	2	2	2	-	6	0	36	3	5	-	44	146	
Single-Unit Trucks	0	38	133	22	-	193	0	15	102	75	-	192	-	0	27	43	23	-	93	0	62	48	32	-	142	620
% Single-Unit Trucks	0.0	3.9	1.9	3.8	-	2.2	0.0	3.0	1.7	4.7	-	2.4	-	-	4.3	4.1	5.2	-	4.4	0.0	3.5	4.6	4.0	-	3.9	2.8
Articulated Trucks	0	33	84	31	-	148	0	8	80	13	-	101	-	0	22	16	9	-	47	0	11	14	29	-	54	350
% Articulated Trucks	0.0	3.4	1.2	5.4	-	1.7	0.0	1.6	1.3	0.8	-	1.3	-	-	3.5	1.5	2.0	-	2.2	0.0	0.6	1.3	3.6	-	1.5	1.6
Bicycles on Road	0	0	0	0	-	0	0	0	1	1	-	2	-	0	0	4	0	-	4	0	0	0	1	-	1	7
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.1	-	0.0	-	-	0.0	0.4	0.0	-	0.2	0.0	0.0	0.0	0.1	-	0.0	0.0
Pedestrians	-	-	-	-	4	-	-	-	-	-	6	-	-	-	-	-	-	5	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Turning Movement Peak Hour Data (7:30 AM)

[illegible]



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400
Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Shermer Rd with Willow Rd TMC
Site Code:
Start Date: 05/12/2022
Page No: 4

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Willow Rd Eastbound						Willow Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	45	251	19	0	315	2	29	229	102	0	362	0	28	41	23	0	92	0	76	45	31	0	152	921
3:15 PM	0	30	277	35	0	342	1	17	249	74	0	341	0	33	36	30	3	99	0	93	44	52	0	189	971
3:30 PM	0	31	311	27	0	369	2	22	292	73	1	389	0	31	38	16	1	85	0	94	49	47	0	190	1033
3:45 PM	0	31	284	24	0	339	1	21	342	60	1	424	0	29	48	22	0	99	0	70	65	57	0	192	1054
Total	0	137	1123	105	0	1365	6	89	1112	309	2	1516	0	121	163	91	4	375	0	333	203	187	0	723	3979
Approach %	0.0	10.0	82.3	7.7	-	-	0.4	5.9	73.4	20.4	-	-	0.0	32.3	43.5	24.3	-	-	0.0	46.1	28.1	25.9	-	-	-
Total %	0.0	3.4	28.2	2.6	-	34.3	0.2	2.2	27.9	7.8	-	38.1	0.0	3.0	4.1	2.3	-	9.4	0.0	8.4	5.1	4.7	-	18.2	-
PHF	0.000	0.761	0.903	0.750	-	0.925	0.750	0.767	0.813	0.757	-	0.894	0.000	0.917	0.849	0.758	-	0.947	0.000	0.886	0.781	0.820	-	0.941	0.944
Lights	0	128	1078	96	-	1302	6	83	1073	294	-	1456	0	113	155	84	-	352	0	320	192	179	-	691	3801
% Lights	-	93.4	96.0	91.4	-	95.4	100.0	93.3	96.5	95.1	-	96.0	-	93.4	95.1	92.3	-	93.9	-	96.1	94.6	95.7	-	95.6	95.5
Buses	0	2	6	1	-	9	0	0	2	3	-	5	0	1	2	0	-	3	0	7	1	1	-	9	26
% Buses	-	1.5	0.5	1.0	-	0.7	0.0	0.0	0.2	1.0	-	0.3	-	0.8	1.2	0.0	-	0.8	-	2.1	0.5	0.5	-	1.2	0.7
Single-Unit Trucks	0	3	23	5	-	31	0	4	24	12	-	40	0	6	5	5	-	16	0	5	8	4	-	17	104
% Single-Unit Trucks	-	2.2	2.0	4.8	-	2.3	0.0	4.5	2.2	3.9	-	2.6	-	5.0	3.1	5.5	-	4.3	-	1.5	3.9	2.1	-	2.4	2.6
Articulated Trucks	0	4	16	3	-	23	0	2	13	0	-	15	0	1	1	2	-	4	0	1	2	3	-	6	48
% Articulated Trucks	-	2.9	1.4	2.9	-	1.7	0.0	2.2	1.2	0.0	-	1.0	-	0.8	0.6	2.2	-	1.1	-	0.3	1.0	1.6	-	0.8	1.2
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
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Turning Movement Peak Hour Data (4:30 PM)

[illegible]



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Shermer Rd with Woodlawn Rd
TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Woodlawn Rd Eastbound						Access Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
7:00 AM	0	2	0	2	0	4	0	0	0	0	0	1	0	0	0	64	1	0	65	0	1	75	2	0	78	147
7:15 AM	0	4	0	6	1	10	0	1	0	0	0	1	0	1	88	0	0	89	0	0	112	5	0	117	217	
7:30 AM	0	3	0	11	0	14	0	0	0	0	0	0	0	3	104	0	0	107	0	1	241	1	0	243	364	
7:45 AM	0	0	0	6	2	6	0	0	0	0	2	0	0	7	160	0	0	167	0	0	208	1	0	209	382	
Hourly Total	0	9	0	25	3	34	0	1	0	0	3	1	0	11	416	1	0	428	0	2	636	9	0	647	1110	
8:00 AM	0	0	0	5	3	5	0	0	0	1	1	1	0	7	130	2	0	139	0	0	87	1	0	88	233	
8:15 AM	0	0	0	9	0	9	0	0	0	0	0	0	0	3	97	0	0	100	0	0	90	2	0	92	201	
8:30 AM	0	2	0	4	2	6	0	0	0	1	0	1	0	5	89	0	0	94	0	2	87	1	0	90	191	
8:45 AM	0	1	0	5	0	6	0	0	0	0	0	0	0	2	72	0	0	74	0	0	87	1	0	88	168	
Hourly Total	0	3	0	23	5	26	0	0	0	2	1	2	0	17	388	2	0	407	0	2	351	5	0	358	793	
*** BREAK ***																										
2:00 PM	0	2	0	1	0	3	0	0	0	0	1	0	0	1	117	0	0	118	0	2	123	3	1	128	249	
2:15 PM	0	0	0	5	0	5	0	1	0	0	0	1	0	7	91	0	0	98	0	0	103	1	0	104	208	
2:30 PM	0	3	0	5	1	8	0	0	0	0	0	0	0	3	117	0	0	120	0	0	98	1	0	99	227	
2:45 PM	0	2	0	5	1	7	0	0	0	1	0	1	0	5	101	1	0	107	0	1	131	2	0	134	249	
Hourly Total	0	7	0	16	2	23	0	1	0	1	1	2	0	16	426	1	0	443	0	3	455	7	1	465	933	
3:00 PM	0	2	1	5	0	8	0	0	0	0	3	0	0	4	127	0	0	131	0	0	159	3	0	162	301	
3:15 PM	0	2	0	11	1	13	0	0	0	0	0	0	0	11	258	0	0	269	0	0	126	4	0	130	412	
3:30 PM	0	1	0	3	1	4	0	0	0	1	1	1	0	16	201	0	0	217	0	2	137	3	0	142	364	
3:45 PM	0	3	0	4	1	7	0	0	0	0	1	0	0	4	141	0	0	145	0	0	121	3	0	124	276	
Hourly Total	0	8	1	23	3	32	0	0	0	1	5	1	0	35	727	0	0	762	0	2	543	13	0	558	1353	
4:00 PM	0	1	0	4	4	5	0	0	0	0	1	0	0	5	122	0	0	127	0	0	103	3	0	106	238	
4:15 PM	0	1	0	1	2	2	0	0	0	1	1	1	0	3	125	0	0	128	0	1	137	1	0	139	270	
4:30 PM	0	1	0	5	2	6	0	0	0	1	1	1	0	2	144	0	0	146	0	0	164	3	0	167	320	
4:45 PM	0	4	0	1	2	5	0	0	0	0	1	0	0	5	120	0	0	125	0	0	148	3	0	151	281	
Hourly Total	0	7	0	11	10	18	0	0	0	2	4	2	0	15	511	0	0	526	0	1	552	10	0	563	1109	
5:00 PM	0	1	0	2	1	3	0	0	0	0	2	0	0	10	157	1	0	168	0	1	146	2	0	149	320	
5:15 PM	0	3	0	2	7	5	0	0	0	0	1	0	0	3	146	0	0	149	0	0	161	1	1	162	316	
5:30 PM	0	2	0	4	2	6	0	0	0	0	0	0	0	5	145	0	0	150	0	0	122	2	0	124	280	
5:45 PM	0	2	0	1	4	3	0	0	0	1	0	1	0	2	139	2	0	143	0	0	123	2	0	125	272	
Hourly Total	0	8	0	9	14	17	0	0	0	1	3	1	0	20	587	3	0	610	0	1	552	7	1	560	1188	
Grand Total	0	42	1	107	37	150	0	2	0	7	17	9	0	114	3055	7	0	3176	0	11	3089	51	2	3151	6486	
Approach %	0.0	28.0	0.7	71.3	-	-	0.0	22.2	0.0	77.8	-	-	0.0	3.6	96.2	0.2	-	-	0.0	0.3	98.0	1.6	-	-	-	
Total %	0.0	0.6	0.0	1.6	-	2.3	0.0	0.0	0.0	0.1	-	0.1	0.0	1.8	47.1	0.1	-	49.0	0.0	0.2	47.6	0.8	-	48.6	-	
Lights	0	38	0	103	-	141	0	0	0	7	-	7	0	112	2955	5	-	3072	0	9	2962	51	-	3022	6242	

% Lights	-	90.5	0.0	96.3	-	94.0	-	-	0.0	-	100.0	-	77.8	-	98.2	96.7	71.4	-	96.7	-	81.8	95.9	100.0	-	95.9	96.2		
Buses	0	1	0	3	-	4	0	0	0	0	0	0	0	0	0	2	18	1	-	21	0	0	38	0	-	38	63	
% Buses	-	2.4	0.0	2.8	-	2.7	-	0.0	-	0.0	-	0.0	-	0.0	-	1.8	0.6	14.3	-	0.7	-	0.0	1.2	0.0	-	1.2	1.0	
Single-Unit Trucks	0	2	0	0	-	2	0	1	0	0	0	-	1	-	0	50	0	0	-	50	0	2	69	0	-	71	124	
% Single-Unit Trucks	-	4.8	0.0	0.0	-	1.3	-	50.0	-	0.0	-	11.1	-	-	-	0.0	1.6	0.0	-	1.6	-	18.2	2.2	0.0	-	2.3	1.9	
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	0	-	1	-	0	0	30	1	-	31	0	0	17	0	-	17	49	
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	50.0	-	0.0	-	11.1	-	-	-	0.0	1.0	14.3	-	1.0	-	0.0	0.6	0.0	-	0.5	0.8	
Bicycles on Road	0	1	1	1	-	3	0	0	0	0	0	-	0	-	0	0	2	0	-	2	0	0	3	0	-	3	8	
% Bicycles on Road	-	2.4	100.0	0.9	-	2.0	-	0.0	-	0.0	-	0.0	-	-	-	0.0	0.1	0.0	-	0.1	-	0.0	0.1	0.0	-	0.1	0.1	
Pedestrians	-	-	-	-	37	-	-	-	-	-	-	17	-	-	-	-	-	-	0	-	-	-	-	-	2	-	-	
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-



Start Date: 05/12/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Woodlawn Rd Eastbound						Access Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
4:30 PM	0	1	0	5	2	6	0	0	0	1	1	1	0	0	2	144	0	0	146	0	0	164	3	0	167	320
4:45 PM	0	4	0	1	2	5	0	0	0	0	1	0	0	0	5	120	0	0	125	0	0	148	3	0	151	281
5:00 PM	0	1	0	2	1	3	0	0	0	0	2	0	0	0	10	157	1	0	168	0	1	146	2	0	149	320
5:15 PM	0	3	0	2	7	5	0	0	0	0	1	0	0	0	3	146	0	0	149	0	0	161	1	1	162	316
Total	0	9	0	10	12	19	0	0	0	1	5	1	0	0	20	567	1	0	588	0	1	619	9	1	629	1237
Approach %	0.0	47.4	0.0	52.6	-	-	0.0	0.0	0.0	100.0	-	-	0.0	0.0	3.4	96.4	0.2	-	-	0.0	0.2	98.4	1.4	-	-	-
Total %	0.0	0.7	0.0	0.8	-	1.5	0.0	0.0	0.0	0.1	-	0.1	-	0.0	1.6	45.8	0.1	-	47.5	0.0	0.1	50.0	0.7	-	50.8	-
PHE	0.000	0.563	0.000	0.500	-	0.792	0.000	0.000	0.000	0.250	-	0.250	-	0.000	0.500	0.903	0.250	-	0.875	0.000	0.250	0.944	0.750	-	0.942	0.966
Lights	0	8	0	10	-	18	0	0	0	1	-	1	-	0	20	563	1	-	584	0	1	607	9	-	617	1220
% Lights	-	88.9	-	100.0	-	94.7	-	-	-	100.0	-	100.0	-	-	100.0	99.3	100.0	-	99.3	-	100.0	98.1	100.0	-	98.1	98.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	1	0	-	1	0	0	1	0	-	1	2
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	-	0.0	0.0	0.2	0.0	-	0.2	-	0.0	0.2	0.0	-	0.2	0.2
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	2	0	-	2	0	0	8	0	-	8	10
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	-	0.0	0.0	0.4	0.0	-	0.3	-	0.0	1.3	0.0	-	1.3	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	-	0	0	1	0	-	1	0	0	3	0	-	3	4
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	0.0	-	0.0	-	0.0	0.0	0.2	0.0	-	0.2	-	0.0	0.5	0.0	-	0.5	0.3
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	-	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	-	11.1	-	0.0	-	5.3	-	-	-	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	12	-	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	1	-	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Kenig Lindgren O'Hara Aboona, Inc.
9575 W. Higgins Rd., Suite 400

Rosemont, Illinois, United States 60018
(847)518-9990 sainkeshavarzi@kloainc.com

Count Name: Techny+and+Shermer TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Techny Rd Eastbound						Techny Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	22	31	47	0	100	0	11	19	10	1	40	0	23	38	13	0	74	0	8	62	11	0	81	295
7:15 AM	0	21	46	47	0	114	0	17	26	13	0	56	0	36	51	14	0	101	0	18	94	19	0	131	402
7:30 AM	0	13	47	73	0	133	0	36	32	8	0	76	0	43	95	19	0	157	0	21	195	13	0	229	595
7:45 AM	0	28	53	98	0	179	0	57	41	14	0	112	0	61	147	28	0	236	0	23	218	18	0	259	786
Hourly Total	0	84	177	265	0	526	0	121	118	45	1	284	0	163	331	74	0	568	0	70	569	61	0	700	2078
8:00 AM	0	29	55	47	0	131	0	13	34	18	0	65	0	47	111	24	0	182	0	31	78	10	0	119	497
8:15 AM	0	21	61	67	0	149	0	11	34	25	0	70	0	58	76	13	0	147	0	14	86	22	1	122	488
8:30 AM	0	20	67	61	0	148	0	2	40	23	0	65	0	57	68	23	2	148	0	21	67	22	0	110	471
8:45 AM	0	15	38	42	0	95	0	6	34	18	0	58	1	32	55	16	0	104	0	15	61	12	0	88	345
Hourly Total	0	85	221	217	0	523	0	32	142	84	0	258	1	194	310	76	2	581	0	81	292	66	1	439	1801
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2:00 PM	0	13	48	40	0	101	0	9	55	17	0	81	0	50	89	18	0	157	0	16	76	21	0	113	452
2:15 PM	0	14	40	27	0	81	0	12	50	17	0	79	0	66	66	14	0	146	0	10	82	17	0	109	415
2:30 PM	0	12	23	30	0	65	0	11	52	24	0	87	0	69	90	10	0	169	0	14	69	22	0	105	426
2:45 PM	0	18	36	35	1	89	0	5	60	11	0	76	0	58	83	13	0	154	0	16	94	25	0	135	454
Hourly Total	0	57	147	132	1	336	0	37	217	69	0	323	0	243	328	55	0	626	0	56	321	85	0	462	1747
3:00 PM	0	27	31	40	0	98	0	10	86	21	0	117	0	67	76	11	0	154	0	15	112	31	0	158	527
3:15 PM	0	48	58	60	1	166	0	24	53	34	0	111	0	58	213	58	0	329	0	30	130	23	0	183	789
3:30 PM	0	46	73	58	1	177	0	20	42	28	0	90	0	71	160	53	0	284	0	27	95	17	0	139	690
3:45 PM	0	24	53	44	2	121	0	26	90	29	0	145	0	74	99	25	0	198	0	19	89	19	1	127	591
Hourly Total	0	145	215	202	4	562	0	80	271	112	0	463	0	270	548	147	0	965	0	91	426	90	1	607	2597
4:00 PM	0	20	29	43	1	92	0	16	82	25	0	123	0	60	92	26	1	178	0	21	73	30	2	124	517
4:15 PM	0	28	51	56	4	135	0	33	82	26	0	141	0	32	75	17	1	124	0	15	94	24	0	133	533
4:30 PM	0	21	42	44	1	107	0	45	69	24	0	138	0	52	94	26	0	172	0	28	113	22	0	163	580
4:45 PM	0	20	47	45	0	112	0	27	99	20	0	146	0	42	86	11	2	139	0	20	103	32	0	155	552
Hourly Total	0	89	169	188	6	446	0	121	332	95	0	548	0	186	347	80	4	613	0	84	383	108	2	575	2182
5:00 PM	0	23	65	34	3	122	0	22	94	37	0	153	0	44	102	17	0	163	0	32	100	42	3	174	612
5:15 PM	0	21	48	52	0	121	0	38	104	36	0	178	0	65	87	17	0	169	0	29	100	30	0	159	627
5:30 PM	0	16	55	27	0	98	0	20	88	19	0	127	0	59	113	28	0	200	0	32	84	25	0	141	566
5:45 PM	0	26	45	38	1	109	0	21	69	17	0	107	0	55	100	18	0	173	0	25	83	19	0	127	516
Hourly Total	0	86	213	151	4	450	0	101	355	109	0	565	0	223	402	80	0	705	0	118	367	116	3	601	2321
Grand Total	0	546	1142	1155	15	2843	0	492	1435	514	1	2441	1	1279	2266	512	6	4058	0	500	2358	526	7	3384	12726
Approach %	0.0	19.2	40.2	40.6	-	-	0.0	20.2	58.8	21.1	-	-	0.0	31.5	55.8	12.6	-	-	0.0	14.8	69.7	15.5	-	-	-
Total %	0.0	4.3	9.0	9.1	-	22.3	0.0	3.9	11.3	4.0	-	19.2	0.0	10.1	17.8	4.0	-	31.9	0.0	3.9	18.5	4.1	-	26.6	-
Lights	0	533	1125	1069	-	2727	0	449	1392	498	-	2339	1	1177	2178	479	-	3835	0	491	2246	504	-	3241	12142

% Lights	-	97.6	98.5	92.6	-	95.9	-	91.3	97.0	96.9	-	95.8	100.0	92.0	96.1	93.6	-	94.5	-	98.2	95.3	95.8	-	95.8	95.4
Buses	0	3	3	45	-	51	0	1	6	3	-	10	0	42	21	3	-	66	0	1	33	2	-	36	163
% Buses	-	0.5	0.3	3.9	-	1.8	-	0.2	0.4	0.6	-	0.4	0.0	3.3	0.9	0.6	-	1.6	-	0.2	1.4	0.4	-	1.1	1.3
Single-Unit Trucks	0	10	7	28	-	45	0	33	15	5	-	53	0	31	41	24	-	96	0	6	62	16	-	84	278
% Single-Unit Trucks	-	1.8	0.6	2.4	-	1.6	-	6.7	1.0	1.0	-	2.2	0.0	2.4	1.8	4.7	-	2.4	-	1.2	2.6	3.0	-	2.5	2.2
Articulated Trucks	0	0	6	13	-	19	0	7	14	6	-	27	0	29	24	3	-	56	0	2	15	3	-	20	122
% Articulated Trucks	-	0.0	0.5	1.1	-	0.7	-	1.4	1.0	1.2	-	1.1	0.0	2.3	1.1	0.6	-	1.4	-	0.4	0.6	0.6	-	0.6	1.0
Bicycles on Road	0	0	1	0	-	1	0	2	8	2	-	12	0	0	2	3	-	5	0	0	2	1	-	3	21
% Bicycles on Road	-	0.0	0.1	0.0	-	0.0	-	0.4	0.6	0.4	-	0.5	0.0	0.0	0.1	0.6	-	0.1	-	0.0	0.1	0.2	-	0.1	0.2
Pedestrians	-	-	-	-	15	-	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Count Name: Techny+and+Shermer TMC
Site Code:
Start Date: 05/12/2022
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Turning Movement Peak Hour Data (7:30 AM)

Start Time	Techy Rd Eastbound					Techy Rd Westbound					Shermer Rd Northbound					Shermer Rd Southbound					Int. Total					
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru		Right	Peds	App. Total		
7:30 AM	0	13	47	73	0	133	0	36	32	8	0	76	0	43	95	19	0	157	0	21	195	13	0	229	595	
7:45 AM	0	28	53	98	0	179	0	57	41	14	0	112	0	61	147	28	0	236	0	23	218	18	0	259	786	
8:00 AM	0	29	55	47	0	131	0	13	34	18	0	65	0	47	111	24	0	182	0	31	78	10	0	119	497	
8:15 AM	0	21	61	67	0	149	0	11	34	25	0	70	0	58	76	13	0	147	0	14	86	22	1	122	488	
Total	0	91	216	285	0	592	0	117	141	65	0	323	0	209	429	84	0	722	0	89	577	63	1	729	2366	
Approach %	0.0	15.4	36.5	48.1	-	-	0.0	36.2	43.7	20.1	-	-	-	0.0	28.9	59.4	11.6	-	-	0.0	12.2	79.1	8.6	-	-	-
Total %	0.0	3.8	9.1	12.0	-	25.0	0.0	4.9	6.0	2.7	-	13.7	-	8.8	18.1	3.6	-	30.5	0.0	3.8	24.4	2.7	-	30.8	-	
PHF	0.000	0.784	0.895	0.727	-	0.827	0.000	0.513	0.860	0.650	-	0.721	-	0.857	0.730	0.750	-	0.765	0.000	0.718	0.662	0.716	-	0.704	0.753	
Lights	0	89	212	267	-	568	0	108	133	62	-	303	-	0	193	398	77	-	668	0	87	561	60	-	708	2247
% Lights	-	97.8	98.1	93.7	-	95.9	-	92.3	94.3	95.4	-	93.8	-	-	92.3	92.8	91.7	-	92.5	-	97.8	97.2	95.2	-	97.1	95.0
Buses	0	1	1	8	-	10	0	0	1	2	-	3	-	0	2	4	1	-	7	0	0	5	2	-	7	27
% Buses	-	1.1	0.5	2.8	-	1.7	-	0.0	0.7	3.1	-	0.9	-	-	1.0	0.9	1.2	-	1.0	-	0.0	0.9	3.2	-	1.0	1.1
Single-Unit Trucks	0	1	0	9	-	10	0	5	1	0	-	6	-	0	8	16	5	-	29	0	1	7	0	-	8	53
% Single-Unit Trucks	-	1.1	0.0	3.2	-	1.7	-	4.3	0.7	0.0	-	1.9	-	-	3.8	3.7	6.0	-	4.0	-	1.1	1.2	0.0	-	1.1	2.2
Articulated Trucks	0	0	3	1	-	4	0	3	4	1	-	8	-	0	6	11	1	-	18	0	1	3	1	-	5	35
% Articulated Trucks	-	0.0	1.4	0.4	-	0.7	-	2.6	2.8	1.5	-	2.5	-	-	2.9	2.6	1.2	-	2.5	-	1.1	0.5	1.6	-	0.7	1.5
Bicycles on Road	0	0	0	0	-	0	0	1	2	0	-	3	-	0	0	0	0	-	0	0	0	1	0	-	1	4
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.9	1.4	0.0	-	0.9	-	-	0.0	0.0	0.0	-	0.0	-	0.0	0.2	0.0	-	0.1	0.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	1	-	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-

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Count Name: Techny+and+Shermer TMC
Site Code:
Start Date: 05/12/2022
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Turning Movement Peak Hour Data (3:00 PM)

[illegible]



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Count Name: Techny+and+Shermer TMC
Site Code:
Start Date: 05/12/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Techny Rd Eastbound						Techny Rd Westbound						Shermer Rd Northbound						Shermer Rd Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
4:30 PM	0	21	42	44	1	107	0	45	69	24	0	138	0	52	94	26	0	172	0	28	113	22	0	163	580
4:45 PM	0	20	47	45	0	112	0	27	99	20	0	146	0	42	86	11	2	139	0	20	103	32	0	155	552
5:00 PM	0	23	65	34	3	122	0	22	94	37	0	153	0	44	102	17	0	163	0	32	100	42	3	174	612
5:15 PM	0	21	48	52	0	121	0	38	104	36	0	178	0	65	87	17	0	169	0	29	100	30	0	159	627
Total	0	85	202	175	4	462	0	132	366	117	0	615	0	203	369	71	2	643	0	109	416	126	3	651	2371
Approach %	0.0	18.4	43.7	37.9	-	-	0.0	21.5	59.5	19.0	-	-	0.0	31.6	57.4	11.0	-	-	0.0	16.7	63.9	19.4	-	-	-
Total %	0.0	3.6	8.5	7.4	-	19.5	0.0	5.6	15.4	4.9	-	25.9	0.0	8.6	15.6	3.0	-	27.1	0.0	4.6	17.5	5.3	-	27.5	-
PHF	0.000	0.924	0.777	0.841	-	0.947	0.000	0.733	0.880	0.791	-	0.864	0.000	0.781	0.904	0.683	-	0.935	0.000	0.852	0.920	0.750	-	0.935	0.945
Lights	0	84	202	160	-	446	0	117	359	116	-	592	0	197	366	67	-	630	0	106	409	123	-	638	2306
% Lights	-	98.8	100.0	91.4	-	96.5	-	88.6	98.1	99.1	-	96.3	-	97.0	99.2	94.4	-	98.0	-	97.2	98.3	97.6	-	98.0	97.3
Buses	0	0	0	7	-	7	0	0	0	0	-	0	0	1	1	0	-	2	0	0	1	0	-	1	10
% Buses	-	0.0	0.0	4.0	-	1.5	-	0.0	0.0	0.0	-	0.0	-	0.5	0.3	0.0	-	0.3	-	0.0	0.2	0.0	-	0.2	0.4
Single-Unit Trucks	0	1	0	4	-	5	0	15	1	1	-	17	0	3	1	3	-	7	0	3	5	3	-	11	40
% Single-Unit Trucks	-	1.2	0.0	2.3	-	1.1	-	11.4	0.3	0.9	-	2.8	-	1.5	0.3	4.2	-	1.1	-	2.8	1.2	2.4	-	1.7	1.7
Articulated Trucks	0	0	0	4	-	4	0	0	2	0	-	2	0	2	1	1	-	4	0	0	1	0	-	1	11
% Articulated Trucks	-	0.0	0.0	2.3	-	0.9	-	0.0	0.5	0.0	-	0.3	-	1.0	0.3	1.4	-	0.6	-	0.0	0.2	0.0	-	0.2	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	4	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	4
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	1.1	0.0	-	0.7	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.2
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Woodlawn Rd with Penfold PI
TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Woodlawn Rd Eastbound						Woodlawn Rd Westbound						Penfold PI Northbound						Penfold PI Southbound						Int. Total	
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total		
7:00 AM	0	0	3	0	0	3	0	1	2	1	0	4	0	0	1	1	1	0	2	0	0	0	0	1	0	9
7:15 AM	0	2	10	1	0	13	0	0	5	0	1	5	0	0	3	0	0	0	3	0	1	0	0	0	1	22
7:30 AM	0	1	11	0	0	12	0	0	2	1	0	3	0	0	2	1	1	1	3	0	4	4	0	1	8	26
7:45 AM	0	0	3	1	2	4	0	0	6	0	3	6	0	0	3	1	0	4	4	0	0	1	0	1	1	15
Hourly Total	0	3	27	2	2	32	0	1	15	2	4	18	0	0	9	3	1	12	12	0	5	5	0	3	10	72
8:00 AM	0	1	3	1	1	5	0	0	4	0	0	4	0	0	2	0	0	2	2	0	0	3	0	0	3	14
8:15 AM	0	0	6	0	2	6	0	0	6	0	0	6	0	0	1	0	0	1	1	0	0	0	0	1	0	13
8:30 AM	0	0	5	1	1	6	0	0	10	0	0	10	0	1	2	0	0	3	3	0	1	2	1	4	4	23
8:45 AM	0	1	4	1	0	6	0	0	2	0	0	2	0	0	2	0	2	2	2	0	2	1	0	1	3	13
Hourly Total	0	2	18	3	4	23	0	0	22	0	0	22	0	1	7	0	2	8	8	0	3	6	1	6	10	63
*** BREAK ***																										
2:00 PM	0	0	3	0	3	3	0	0	3	0	0	3	0	0	2	0	0	1	2	0	0	0	1	0	1	9
2:15 PM	0	0	2	0	1	2	0	1	8	0	0	9	0	0	4	0	1	4	4	0	1	1	2	0	4	19
2:30 PM	0	0	7	1	2	8	0	0	4	1	0	5	0	0	2	0	0	2	2	0	0	3	1	0	4	19
2:45 PM	0	0	3	1	0	4	0	0	7	1	0	8	0	0	1	1	0	2	2	0	0	2	0	0	2	16
Hourly Total	0	0	15	2	6	17	0	1	22	2	0	25	0	0	9	1	2	10	10	0	1	6	4	0	11	63
3:00 PM	0	0	5	1	0	6	0	0	3	2	0	5	0	1	3	1	0	5	5	0	0	3	0	0	3	19
3:15 PM	0	2	12	2	0	16	0	0	14	0	1	14	0	6	8	3	2	17	17	0	1	4	2	0	7	54
3:30 PM	0	0	2	0	0	2	0	0	10	4	2	14	0	3	4	1	0	8	8	0	0	0	1	0	1	25
3:45 PM	0	0	6	0	0	6	0	0	11	0	0	11	0	0	1	0	0	1	1	0	0	0	0	0	0	18
Hourly Total	0	2	25	3	0	30	0	0	38	6	3	44	0	10	16	5	2	31	31	0	1	7	3	0	11	116
4:00 PM	0	1	4	0	1	5	0	0	4	2	0	6	0	2	1	1	0	4	4	0	0	1	1	0	2	17
4:15 PM	0	0	4	0	0	4	0	0	4	0	2	4	0	1	2	1	0	4	4	0	0	0	0	0	0	12
4:30 PM	0	0	4	0	0	4	0	1	3	1	2	5	0	0	0	0	0	4	4	0	1	2	0	0	3	12
4:45 PM	0	0	4	0	0	4	0	0	4	0	1	4	0	1	1	0	0	2	2	0	0	1	0	0	1	11
Hourly Total	0	1	16	0	1	17	0	1	15	3	5	19	0	4	4	2	0	10	10	0	1	4	1	0	6	52
5:00 PM	0	1	2	0	0	3	0	0	12	0	0	12	0	1	2	1	0	4	4	0	0	3	1	0	4	23
5:15 PM	0	0	4	0	0	4	0	0	3	1	1	4	0	2	1	0	0	3	3	0	0	2	0	0	2	13
5:30 PM	0	0	5	0	0	5	0	1	5	0	1	6	0	0	2	0	1	2	2	0	1	7	2	0	10	23
5:45 PM	0	1	3	0	1	4	0	1	4	1	0	6	0	0	3	0	0	3	3	0	1	1	0	0	2	15
Hourly Total	0	2	14	0	1	16	0	2	24	2	2	28	0	3	8	1	1	12	12	0	2	13	3	0	18	74
Grand Total	0	10	115	10	14	135	0	5	136	15	14	156	0	18	53	12	8	83	83	0	13	41	12	9	66	440
Approach %	0.0	7.4	85.2	7.4	-	-	0.0	3.2	87.2	9.6	-	-	0.0	21.7	63.9	14.5	-	-	-	0.0	19.7	62.1	18.2	-	-	-
Total %	0.0	2.3	26.1	2.3	-	30.7	0.0	1.1	30.9	3.4	-	35.5	0.0	4.1	12.0	2.7	-	18.9	18.9	0.0	3.0	9.3	2.7	-	15.0	-
Lights	0	10	108	10	-	128	0	5	133	14	-	152	0	17	48	10	-	75	75	0	9	34	10	-	53	408

% Lights	-	100.0	93.9	100.0	-	94.8	-	100.0	97.4	-	97.4	-	90.4	-	69.2	82.9	83.3	-	80.3	92.7
Buses	0	0	4	0	-	4	0	0	3	0	3	0	1	0	0	1	0	-	1	9
% Buses	-	0.0	3.5	0.0	-	3.0	-	0.0	2.2	0.0	1.9	-	1.2	-	0.0	2.4	0.0	-	1.5	2.0
Single-Unit Trucks	0	0	2	0	-	2	0	0	0	0	0	0	2	0	0	0	0	-	0	4
% Single-Unit Trucks	-	0.0	1.7	0.0	-	1.5	-	0.0	0.0	0.0	0.0	-	2.4	-	0.0	0.0	0.0	-	0.0	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	2.4	0.0	-	1.5	0.2
Bicycles on Road	0	0	1	0	-	1	0	0	0	1	1	-	5	0	4	5	2	-	11	18
% Bicycles on Road	-	0.0	0.9	0.0	-	0.7	-	0.0	0.0	6.7	0.6	-	6.0	-	30.8	12.2	16.7	-	16.7	4.1
Pedestrians	-	-	-	-	14	-	-	-	-	-	14	-	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	100.0	-	-	-	-	100.0	-	-



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Count Name: Woodlawn Rd with Penfold PI
TMC
Site Code:
Start Date: 05/12/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Woodlawn Rd Eastbound							Woodlawn Rd Westbound							Penfold PI Northbound							Penfold PI Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	0	1	11	0	0	12		0	0	2	1	0	3		0	0	2	1	1	3		0	4	4	0	1	8	26
7:45 AM	0	0	3	1	2	4		0	0	6	0	3	6		0	0	3	1	0	4		0	0	1	0	1	1	15
8:00 AM	0	1	3	1	1	5		0	0	4	0	0	4		0	0	2	0	0	2		0	0	3	0	0	3	14
8:15 AM	0	0	6	0	2	6		0	0	6	0	0	6		0	0	1	0	0	1		0	0	0	0	1	0	13
Total	0	2	23	2	5	27		0	0	18	1	3	19		0	0	8	2	1	10		0	4	8	0	3	12	68
Approach %	0.0	7.4	85.2	7.4	-	-		0.0	0.0	94.7	5.3	-	-		0.0	0.0	80.0	20.0	-	-		0.0	33.3	66.7	0.0	-	-	-
Total %	0.0	2.9	33.8	2.9	-	39.7		0.0	0.0	26.5	1.5	-	27.9		0.0	0.0	11.8	2.9	-	14.7		0.0	5.9	11.8	0.0	-	17.6	-
PHF	0.000	0.500	0.523	0.500	-	0.563		0.000	0.000	0.750	0.250	-	0.792		0.000	0.000	0.667	0.500	-	0.625		0.000	0.250	0.500	0.000	-	0.375	0.654
Lights	0	2	20	2	-	24		0	0	17	1	-	18		0	0	8	2	-	10		0	0	8	0	-	8	60
% Lights	-	100.0	87.0	100.0	-	88.9		-	-	94.4	100.0	-	94.7		-	-	100.0	100.0	-	100.0		-	0.0	100.0	-	-	66.7	88.2
Buses	0	0	1	0	-	1		0	0	1	0	-	1		0	0	0	0	-	0		0	0	0	0	-	0	2
% Buses	-	0.0	4.3	0.0	-	3.7		-	-	5.6	0.0	-	5.3		-	-	0.0	0.0	-	0.0		-	0.0	0.0	-	-	0.0	2.9
Single-Unit Trucks	0	0	1	0	-	1		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	1
% Single-Unit Trucks	-	0.0	4.3	0.0	-	3.7		-	-	0.0	0.0	-	0.0		-	-	0.0	0.0	-	0.0		-	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0		-	-	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	1	0	-	1		0	0	0	0	-	0		0	0	0	0	-	0		0	4	0	0	-	4	5
% Bicycles on Road	-	0.0	4.3	0.0	-	3.7		-	-	0.0	0.0	-	0.0		-	-	0.0	0.0	-	0.0		-	100.0	0.0	-	-	33.3	7.4
Pedestrians	-	-	-	-	5	-		-	-	-	-	3	-		-	-	-	-	-	1		-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-		-	-	-	-	100.0	-		-	-	-	-	-	100.0		-	-	-	-	100.0	-	-



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Count Name: Woodlawn Rd with Penfold PI
TMC
Site Code:
Start Date: 05/12/2022
Page No: 4

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Woodlawn Rd Eastbound						Woodlawn Rd Westbound						Penfold PI Northbound						Penfold PI Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	0	5	1	0	6	0	0	3	2	0	5	0	1	3	1	0	5	0	0	3	0	0	3	19
3:15 PM	0	2	12	2	0	16	0	0	14	0	1	14	0	6	8	3	2	17	0	1	4	2	0	7	54
3:30 PM	0	0	2	0	0	2	0	0	10	4	2	14	0	3	4	1	0	8	0	0	0	1	0	1	25
3:45 PM	0	0	6	0	0	6	0	0	11	0	0	11	0	0	1	0	0	1	0	0	0	0	0	0	18
Total	0	2	25	3	0	30	0	0	38	6	3	44	0	10	16	5	2	31	0	1	7	3	0	11	116
Approach %	0.0	6.7	83.3	10.0	-	-	0.0	0.0	86.4	13.6	-	-	0.0	32.3	51.6	16.1	-	-	0.0	9.1	63.6	27.3	-	-	-
Total %	0.0	1.7	21.6	2.6	-	25.9	0.0	0.0	32.8	5.2	-	37.9	0.0	8.6	13.8	4.3	-	26.7	0.0	0.9	6.0	2.6	-	-	9.5
PHF	0.000	0.250	0.521	0.375	-	0.469	0.000	0.000	0.679	0.375	-	0.786	0.000	0.417	0.500	0.417	-	0.456	0.000	0.250	0.438	0.375	-	0.393	0.537
Lights	0	2	22	3	-	27	0	0	38	6	-	44	0	9	15	5	-	29	0	1	4	3	-	8	108
% Lights	-	100.0	88.0	100.0	-	90.0	-	-	100.0	100.0	-	100.0	-	90.0	93.8	100.0	-	93.5	-	100.0	57.1	100.0	-	72.7	93.1
Buses	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	3
% Buses	-	0.0	8.0	0.0	-	6.7	-	-	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	14.3	0.0	-	9.1	2.6
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Single-Unit Trucks	-	0.0	4.0	0.0	-	3.3	-	-	0.0	0.0	-	0.0	-	10.0	0.0	0.0	-	3.2	-	0.0	0.0	0.0	-	0.0	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	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	1	0	-	1	0	0	2	0	-	2	3
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	0.0	6.3	0.0	-	3.2	-	0.0	28.6	0.0	-	18.2	2.6
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



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Count Name: Woodlawn Rd with Penfold PI
TMC
Site Code:
Start Date: 05/12/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Woodlawn Rd Eastbound							Woodlawn Rd Westbound							Penfold PI Northbound							Penfold PI Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
4:30 PM	0	0	4	0	0	4		0	1	3	1	2	5		0	0	0	0	0	0		0	1	2	0	0	3	12
4:45 PM	0	0	4	0	0	4		0	0	4	0	1	4		0	0	1	1	0	0		0	0	1	0	0	1	11
5:00 PM	0	1	2	0	0	3		0	0	12	0	0	12		0	0	1	2	1	0		0	0	3	1	0	4	23
5:15 PM	0	0	4	0	0	4		0	0	3	1	1	4		0	2	1	0	0	0		0	0	2	0	0	2	13
Total	0	1	14	0	0	15		0	1	22	2	4	25		0	4	4	1	0	0		0	1	8	1	0	10	59
Approach %	0.0	6.7	93.3	0.0	-	-		0.0	4.0	88.0	8.0	-	-		0.0	44.4	44.4	11.1	-	-		0.0	10.0	80.0	10.0	-	-	-
Total %	0.0	1.7	23.7	0.0	-	25.4		0.0	1.7	37.3	3.4	-	42.4		0.0	6.8	6.8	1.7	-	-		0.0	1.7	13.6	1.7	-	16.9	-
PHF	0.000	0.250	0.875	0.000	-	0.938		0.000	0.250	0.458	0.500	-	0.521		0.000	0.500	0.500	0.250	-	0.563		0.000	0.250	0.667	0.250	-	0.625	0.641
Lights	0	1	14	0	-	15		0	1	22	2	-	25		0	4	4	0	-	8		0	1	6	1	-	8	56
% Lights	-	100.0	100.0	-	-	100.0		-	100.0	100.0	100.0	-	100.0		-	100.0	100.0	0.0	-	88.9		-	100.0	75.0	100.0	-	80.0	94.9
Buses	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Buses	-	0.0	0.0	-	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Single-Unit Trucks	-	0.0	0.0	-	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0	0.0
Articulated Trucks	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	-	-	0.0		-	0.0	0.0	0.0	-	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	1	-	1		0	0	2	0	-	2	3
% Bicycles on Road	-	0.0	0.0	-	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	100.0	-	11.1		-	0.0	25.0	0.0	-	20.0	5.1
Pedestrians	-	-	-	-	0	-		-	-	-	-	4	-		-	-	-	-	0	-		-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-		-	-	-	-	100.0	-		-	-	-	-	-	-		-	-	-	-	-	-	-



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Count Name: Woodlawn Rd with Western Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 1

Turning Movement Data

Start Time	Woodlawn Rd Eastbound						Woodlawn Rd Westbound						Western Ave Northbound						Western Ave Southbound							
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total	
7:00 AM	0	1	0	0	3	1	0	1	0	1	4	2	0	0	5	0	0	0	5	0	0	10	1	0	11	19
7:15 AM	0	0	5	0	1	5	0	1	2	1	0	4	0	0	10	1	1	11	0	4	24	0	0	28	48	
7:30 AM	0	1	2	3	1	6	0	2	2	0	0	4	0	2	12	1	0	15	0	5	83	0	2	88	113	
7:45 AM	0	1	0	1	2	2	0	0	3	1	2	4	0	0	1	14	1	0	16	0	3	85	1	0	89	111
Hourly Total	0	3	7	4	7	14	0	4	7	3	6	14	0	3	41	3	1	47	0	12	202	2	2	216	291	
8:00 AM	0	1	3	0	1	4	0	1	1	4	1	6	0	0	26	0	0	26	0	2	27	0	0	29	65	
8:15 AM	0	3	0	0	0	3	0	0	3	1	1	4	0	0	18	0	0	18	0	2	28	2	0	32	57	
8:30 AM	0	2	3	2	0	7	0	10	2	3	4	15	0	2	29	4	0	35	0	2	16	0	0	18	75	
8:45 AM	0	1	1	0	5	2	0	3	0	1	1	4	0	0	21	2	0	23	0	2	13	1	0	16	45	
Hourly Total	0	7	7	2	6	16	0	14	6	9	7	29	0	2	94	6	0	102	0	8	84	3	0	95	242	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2:00 PM	0	0	1	0	2	1	0	0	1	0	0	1	0	1	19	1	0	21	0	0	19	1	0	20	43	
2:15 PM	0	2	1	0	0	3	0	2	0	5	2	7	0	0	21	0	0	21	0	1	22	3	1	26	57	
2:30 PM	0	0	1	2	0	3	0	2	0	2	0	4	0	0	14	1	0	15	0	4	21	1	0	26	48	
2:45 PM	0	2	3	0	1	5	0	1	1	6	0	8	0	0	13	0	0	13	0	1	22	0	0	23	49	
Hourly Total	0	4	6	2	3	12	0	5	2	13	2	20	0	1	67	2	0	70	0	6	84	5	1	95	197	
3:00 PM	0	1	2	0	1	3	0	2	0	1	0	3	0	1	17	2	1	20	0	3	25	2	0	30	56	
3:15 PM	0	2	5	0	1	7	0	2	6	8	2	16	0	2	79	2	0	83	0	4	26	2	0	32	138	
3:30 PM	0	1	1	2	2	4	0	1	4	10	0	15	0	4	58	0	0	62	0	0	36	2	0	38	119	
3:45 PM	0	4	2	1	1	7	0	0	4	4	0	8	0	4	30	0	0	34	0	1	30	0	0	31	80	
Hourly Total	0	8	10	3	5	21	0	5	14	23	2	42	0	11	184	4	1	199	0	8	117	6	0	131	393	
4:00 PM	0	2	3	0	2	5	0	3	0	4	1	7	0	0	22	1	0	23	0	2	23	4	0	29	64	
4:15 PM	0	1	1	0	1	2	0	1	1	3	0	5	0	0	23	2	0	25	0	1	32	2	0	35	67	
4:30 PM	0	1	1	1	2	3	0	1	0	1	1	2	0	0	20	2	0	22	0	3	39	3	0	45	72	
4:45 PM	0	2	1	0	0	3	0	1	0	1	1	2	0	3	29	0	0	32	0	2	26	2	0	30	67	
Hourly Total	0	6	6	1	5	13	0	6	1	9	3	16	0	3	94	5	0	102	0	8	120	11	0	139	270	
5:00 PM	0	1	0	0	2	1	0	1	2	7	0	10	0	0	37	0	0	37	0	2	46	4	0	52	100	
5:15 PM	0	2	2	0	2	4	0	0	0	9	0	9	0	1	50	1	0	52	0	1	37	2	0	40	105	
5:30 PM	0	1	2	1	0	4	0	0	1	2	3	3	0	0	32	1	0	33	0	2	23	2	0	27	67	
5:45 PM	0	1	1	1	1	3	0	1	1	2	0	4	0	2	28	1	0	31	0	3	28	1	0	32	70	
Hourly Total	0	5	5	2	5	12	0	2	4	20	3	26	0	3	147	3	0	153	0	8	134	9	0	151	342	
Grand Total	0	33	41	14	31	88	0	36	34	77	23	147	0	23	627	23	2	673	0	50	741	36	3	827	1735	
Approach %	0.0	37.5	46.6	15.9	-	-	0.0	24.5	23.1	52.4	-	-	0.0	3.4	93.2	3.4	-	-	0.0	6.0	89.6	4.4	-	-	-	
Total %	0.0	1.9	2.4	0.8	-	5.1	0.0	2.1	2.0	4.4	-	8.5	0.0	1.3	36.1	1.3	-	38.8	0.0	2.9	42.7	2.1	-	47.7	-	
Lights	0	31	38	14	-	83	0	36	34	74	-	144	0	22	613	21	-	656	0	47	728	35	-	810	1693	

% Lights	-	93.9	92.7	100.0	-	94.3	-	100.0	100.0	96.1	-	98.0	-	95.7	97.8	91.3	-	97.5	-	94.0	98.2	97.2	-	97.9	97.6
Buses	0	1	0	0	-	1	0	0	0	2	-	2	0	0	1	1	-	2	0	3	4	1	-	8	13
% Buses	-	3.0	0.0	0.0	-	1.1	-	0.0	0.0	2.6	-	1.4	-	0.0	0.2	4.3	-	0.3	-	6.0	0.5	2.8	-	1.0	0.7
Single-Unit Trucks	0	1	1	0	-	2	0	0	0	1	-	1	0	1	4	1	-	6	0	0	4	0	-	4	13
% Single-Unit Trucks	-	3.0	2.4	0.0	-	2.3	-	0.0	0.0	1.3	-	0.7	-	4.3	0.6	4.3	-	0.9	-	0.0	0.5	0.0	-	0.5	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	3	0	0	3	0	-	3	6
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.5	0.0	-	0.4	-	0.0	0.4	0.0	-	0.4	0.3
Bicycles on Road	0	0	2	0	-	2	0	0	0	0	-	0	0	0	6	0	-	6	0	0	2	0	-	2	10
% Bicycles on Road	-	0.0	4.9	0.0	-	2.3	-	0.0	0.0	0.0	-	0.0	-	0.0	1.0	0.0	-	0.9	-	0.0	0.3	0.0	-	0.2	0.6
Pedestrians	-	-	-	-	31	-	-	-	-	-	23	-	-	-	-	-	2	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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Count Name: Woodlawn Rd with Western Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Woodlawn Rd Eastbound							Woodlawn Rd Westbound							Western Ave Northbound							Western Ave Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total		U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:30 AM	0	1	2	3	1	6		0	2	2	0	0	4		0	2	12	1	0	15		0	5	83	0	2	88	113
7:45 AM	0	1	0	1	2	2		0	0	3	1	2	4		0	1	14	1	0	16		0	3	85	1	0	89	111
8:00 AM	0	1	3	0	1	4		0	1	1	4	1	6		0	0	26	0	0	26		0	2	27	0	0	29	65
8:15 AM	0	3	0	0	0	3		0	0	3	1	1	4		0	0	18	0	0	18		0	2	28	2	0	32	57
Total	0	6	5	4	4	15		0	3	9	6	4	18		0	3	70	2	0	75		0	12	223	3	2	238	346
Approach %	0.0	40.0	33.3	26.7	-	-		0.0	16.7	50.0	33.3	-	-		0.0	4.0	93.3	2.7	-	-		0.0	5.0	93.7	1.3	-	-	-
Total %	0.0	1.7	1.4	1.2	-	4.3		0.0	0.9	2.6	1.7	-	5.2		0.0	0.9	20.2	0.6	-	21.7		0.0	3.5	64.5	0.9	-	68.8	-
PHF	0.000	0.500	0.417	0.333	-	0.625		0.000	0.375	0.750	0.375	-	0.750		0.000	0.375	0.673	0.500	-	0.721		0.000	0.600	0.656	0.375	-	0.669	0.765
Lights	0	6	5	4	-	15		0	3	9	6	-	18		0	3	66	1	-	70		0	11	220	3	-	234	337
% Lights	-	100.0	100.0	100.0	-	100.0		-	100.0	100.0	100.0	-	100.0		-	100.0	94.3	50.0	-	93.3		-	91.7	98.7	100.0	-	98.3	97.4
Buses	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	1	0	0	-	1	1
% Buses	-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	8.3	0.0	0.0	-	0.4	0.3
Single-Unit Trucks	0	0	0	0	-	0		0	0	0	0	-	0		0	0	2	1	-	3		0	0	0	0	-	0	3
% Single-Unit Trucks	-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	2.9	50.0	-	4.0		-	0.0	0.0	0.0	-	0.0	0.9
Articulated Trucks	0	0	0	0	-	0		0	0	0	0	-	0		0	0	0	0	-	0		0	0	1	0	-	1	1
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	0.4	0.0	-	0.4	0.3
Bicycles on Road	0	0	0	0	-	0		0	0	0	0	-	0		0	0	2	0	-	2		0	0	2	0	-	2	4
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0		-	0.0	0.0	0.0	-	0.0		-	0.0	2.9	0.0	-	2.7		-	0.0	0.9	0.0	-	0.8	1.2
Pedestrians	-	-	-	-	4	-		-	-	-	-	4	-		-	-	-	-	-	0		-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-		-	-	-	-	100.0	-		-	-	-	-	-	-		-	-	-	-	100.0	-	-



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Count Name: Woodlawn Rd with Western Ave
TMC
Site Code:
Start Date: 05/12/2022
Page No: 4

Turning Movement Peak Hour Data (3:00 PM)

Start Time	Woodlawn Rd Eastbound						Woodlawn Rd Westbound						Western Ave Northbound						Western Ave Southbound						Int. Total
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	
3:00 PM	0	1	2	0	1	3	0	2	0	1	0	3	0	1	17	2	1	20	0	3	25	2	0	30	56
3:15 PM	0	2	5	0	1	7	0	2	6	8	2	16	0	2	79	2	0	83	0	4	26	2	0	32	138
3:30 PM	0	1	1	2	2	4	0	1	4	10	0	15	0	4	58	0	0	62	0	0	36	2	0	38	119
3:45 PM	0	4	2	1	1	7	0	0	4	4	0	8	0	4	30	0	0	34	0	1	30	0	0	31	80
Total	0	8	10	3	5	21	0	5	14	23	2	42	0	11	184	4	1	199	0	8	117	6	0	131	393
Approach %	0.0	38.1	47.6	14.3	-	-	0.0	11.9	33.3	54.8	-	-	0.0	5.5	92.5	2.0	-	-	0.0	6.1	89.3	4.6	-	-	-
Total %	0.0	2.0	2.5	0.8	-	5.3	0.0	1.3	3.6	5.9	-	10.7	0.0	2.8	46.8	1.0	-	50.6	0.0	2.0	29.8	1.5	-	33.3	-
PHF	0.000	0.500	0.500	0.375	-	0.750	0.000	0.625	0.583	0.575	-	0.656	0.000	0.688	0.582	0.500	-	0.599	0.000	0.500	0.813	0.750	-	0.862	0.712
Lights	0	7	9	3	-	19	0	5	14	22	-	41	0	10	182	3	-	195	0	7	115	6	-	128	383
% Lights	-	87.5	90.0	100.0	-	90.5	-	100.0	100.0	95.7	-	97.6	-	90.9	98.9	75.0	-	98.0	-	87.5	98.3	100.0	-	97.7	97.5
Buses	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	1	-	1	0	1	2	0	-	3	5
% Buses	-	12.5	0.0	0.0	-	4.8	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	25.0	-	0.5	-	12.5	1.7	0.0	-	2.3	1.3
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	1	-	1	0	1	1	0	-	2	0	0	0	0	-	0	4
% Single-Unit Trucks	-	0.0	10.0	0.0	-	4.8	-	0.0	0.0	4.3	-	2.4	-	9.1	0.5	0.0	-	1.0	-	0.0	0.0	0.0	-	0.0	1.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.5	0.0	-	0.5	-	0.0	0.0	0.0	-	0.0	0.3
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
Pedestrians	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-



Site Code: _____
Start Date: 05/12/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

[illegible]

Site Plan

ITE Trip Generation Summary Sheets

Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments and condominiums located in a building that has between four and 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and a set of hallways.

Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (mid-rise) (Land Use 226), and mid-rise residential with ground-floor commercial (Land Use 231) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.5 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, Montana, New Jersey, New York, Ontario (CAN), Oregon, Utah, and Virginia.

Source Numbers

168, 188, 204, 305, 306, 321, 818, 857, 862, 866, 901, 904, 910, 949, 951, 959, 963, 964, 966, 967, 969, 970, 1004, 1014, 1022, 1023, 1025, 1031, 1032, 1035, 1047, 1056, 1057, 1058, 1071, 1076

Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 11

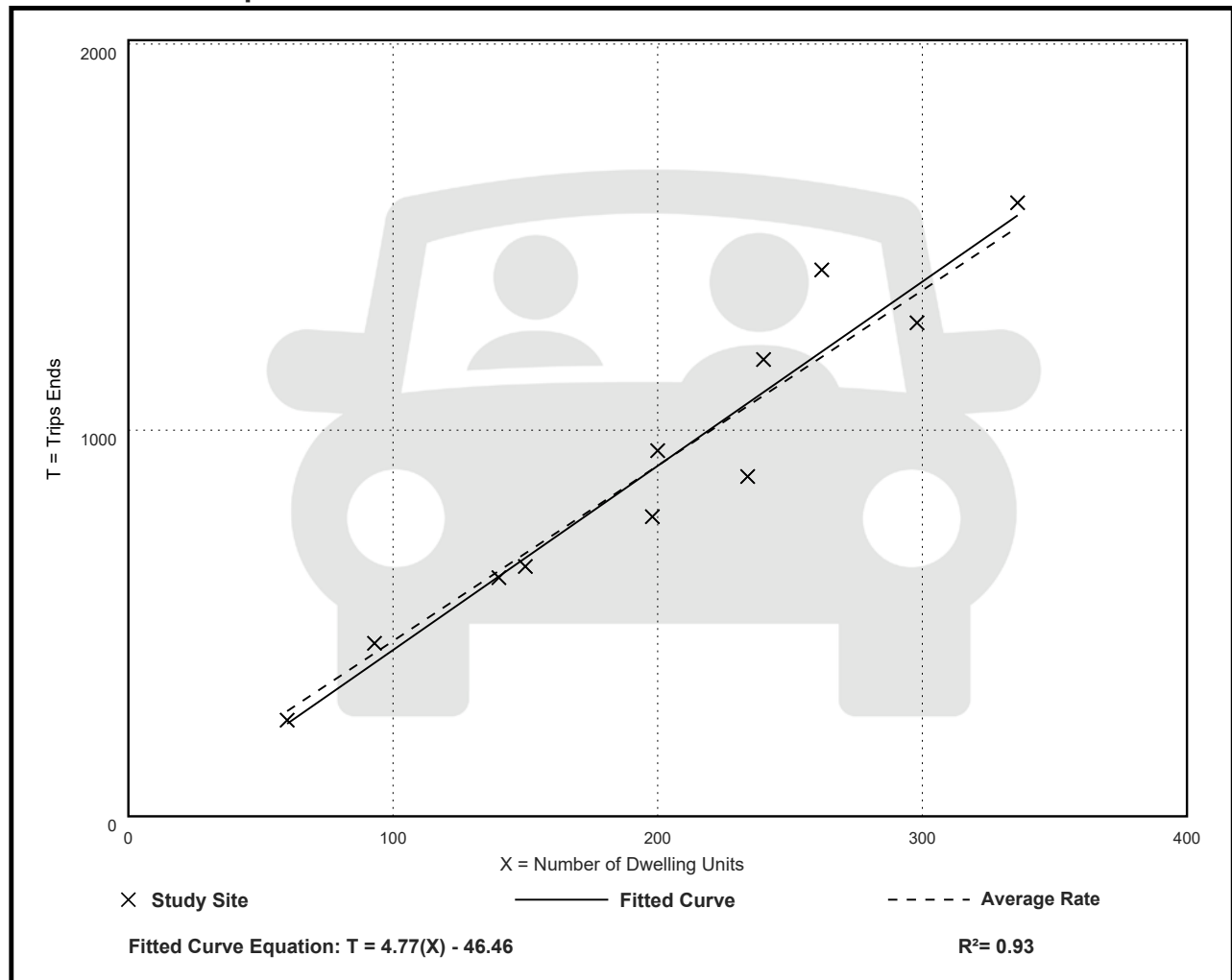
Avg. Num. of Dwelling Units: 201

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.54	3.76 - 5.40	0.51

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 30

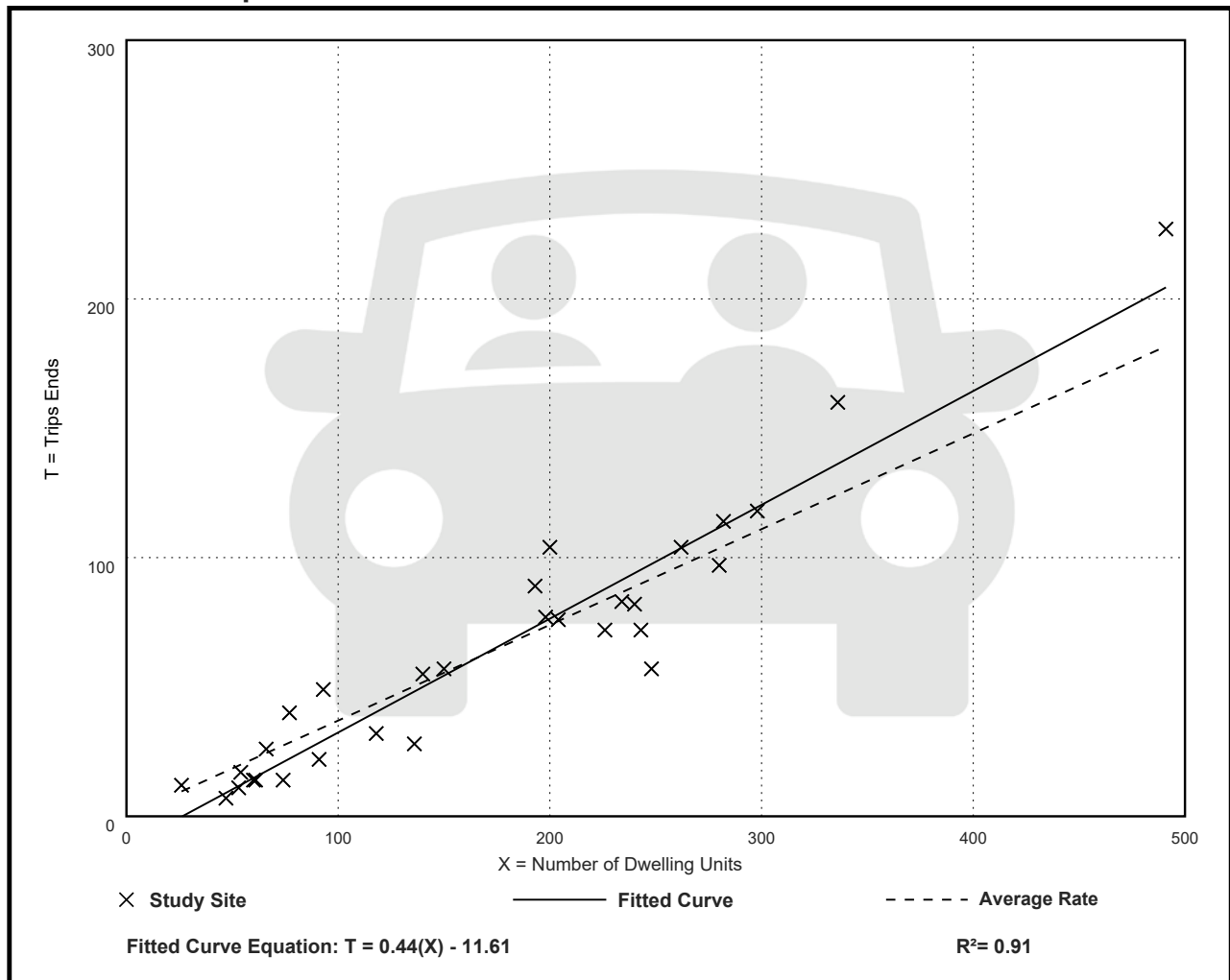
Avg. Num. of Dwelling Units: 173

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 31

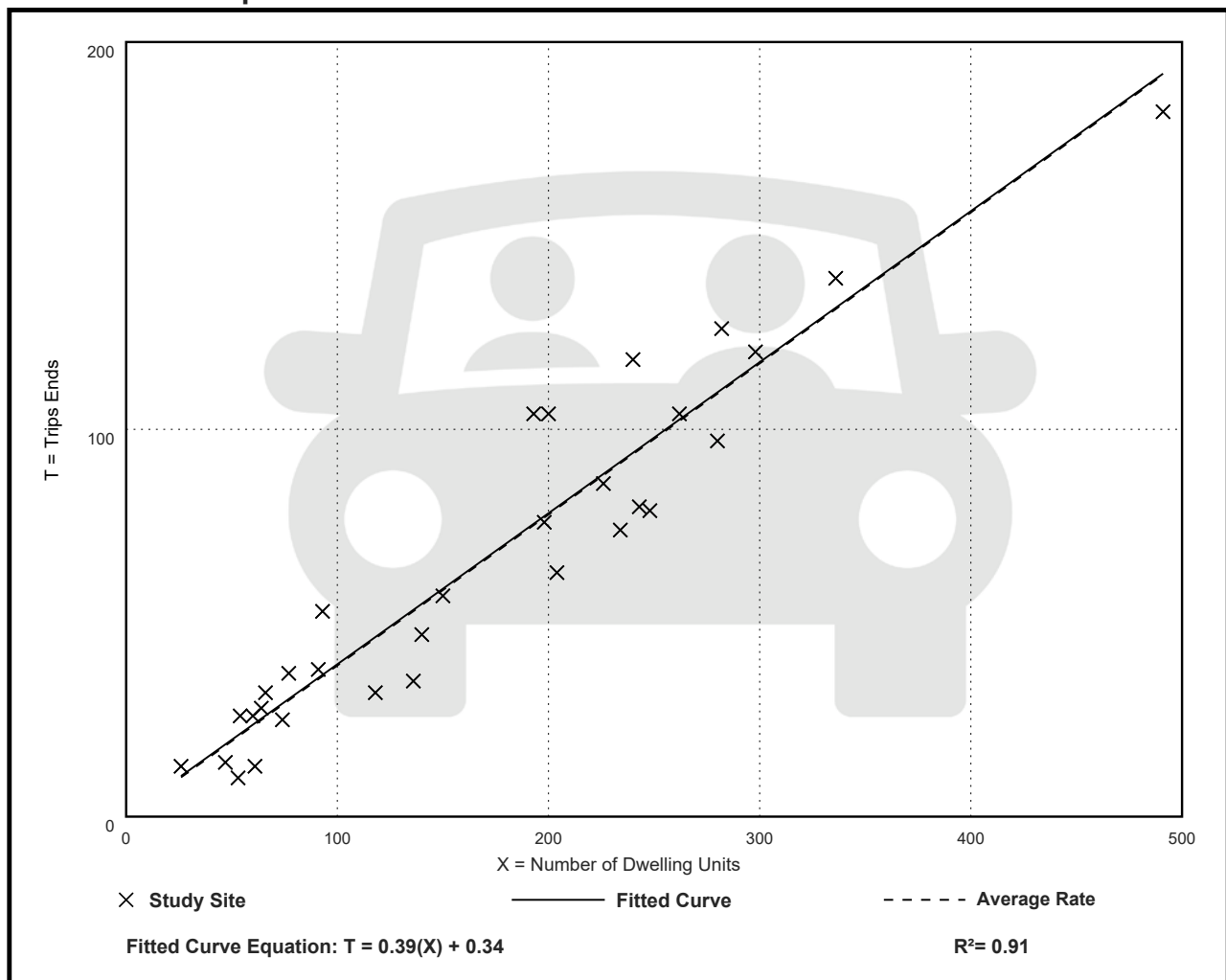
Avg. Num. of Dwelling Units: 169

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Land Use: 223

Affordable Housing

Description

Affordable housing includes all multifamily housing that is rented at below market rate to households that include at least one employed member. Eligibility to live in affordable housing can be a function of limited household income and resident age. Multifamily housing (low-rise) (Land Use 220), multifamily housing (mid-rise) (Land Use 221), and multifamily housing (high-rise) (Land Use 222) are related land uses.

Land Use Subcategory

Data are presented for three subcategories for this land use: (1) sites with income limitations for its tenants (denoted as income limits in the data plots), (2) sites with both minimum age thresholds and income limitations for its tenants (denoted as senior in the data plots), and (3) sites designed for and occupied by residents with special needs, such as persons with physical and mental impairments, single mothers, recovering addicts and others living in a group setting.

Additional Data

For most study sites contained in this land use, all dwelling units in the development are classified as affordable units. For residential study sites that provide a mix of market value and affordable units, the study sites with at least 75 percent of the dwelling units designated as affordable are also included in this land use database.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s and 2010s in California, Ontario (CAN), and New Jersey.

Source Numbers

237, 918, 1003, 1004, 1046, 1057

Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 5

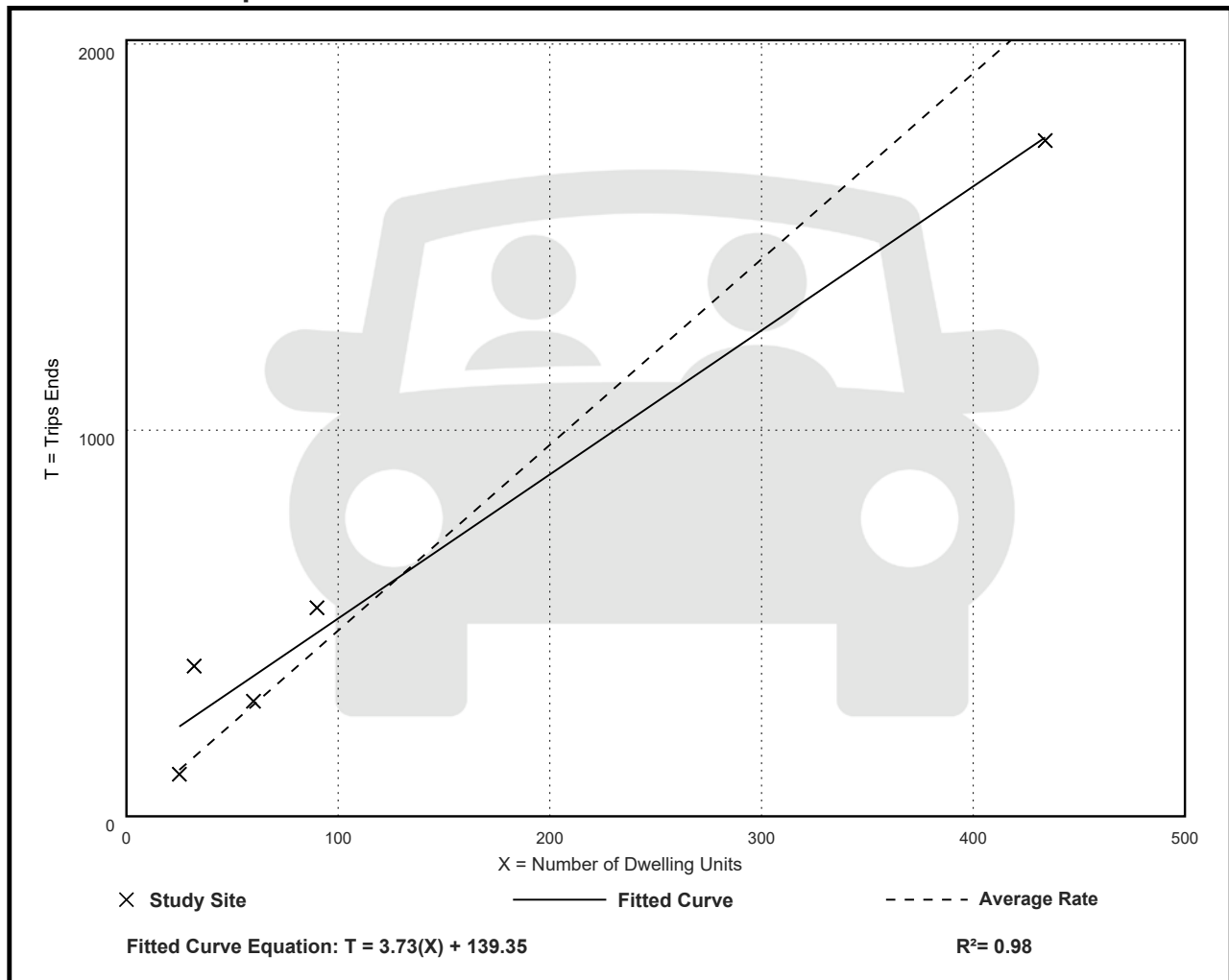
Avg. Num. of Dwelling Units: 128

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.81	4.03 - 12.16	2.03

Data Plot and Equation



Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 6

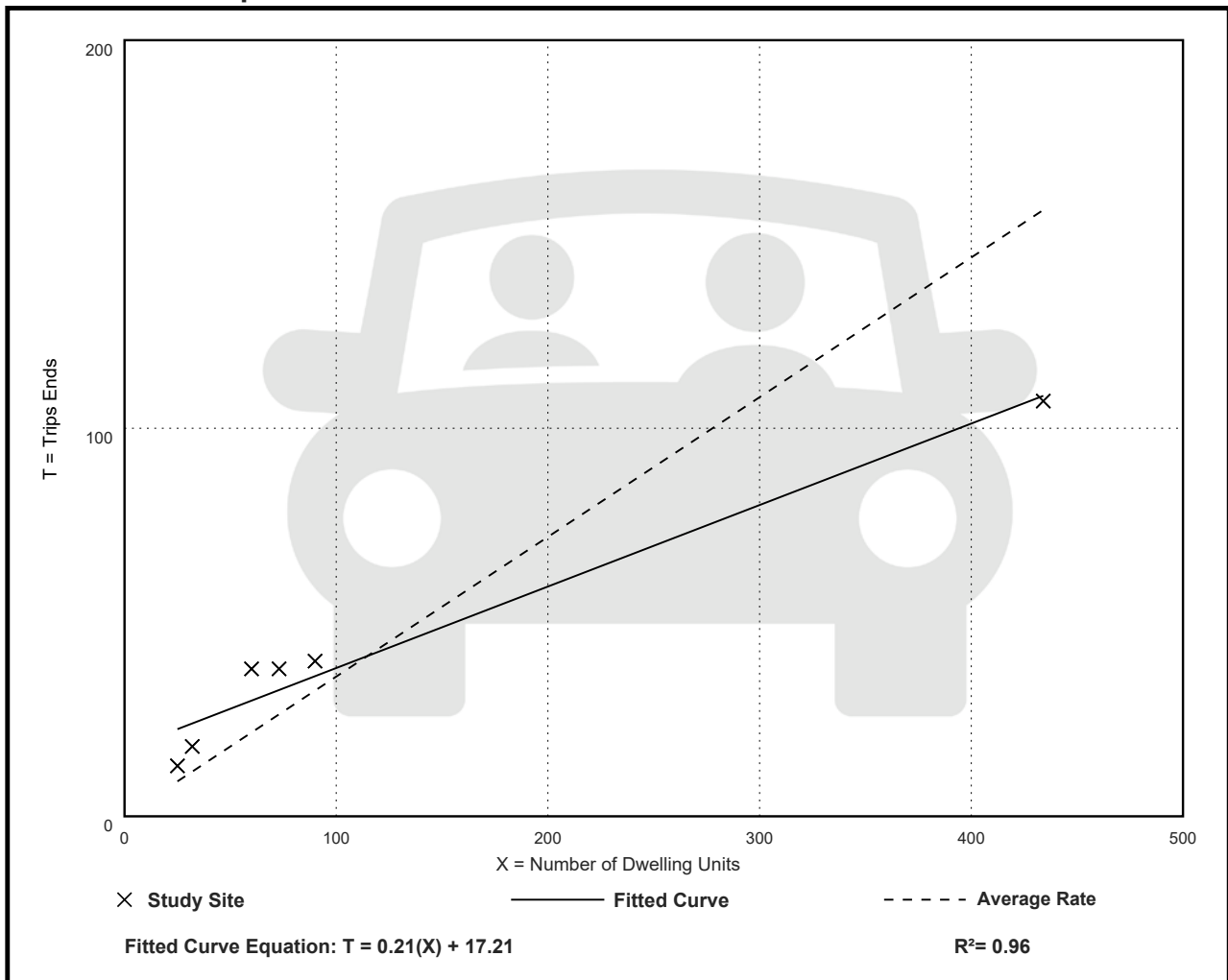
Avg. Num. of Dwelling Units: 119

Directional Distribution: 29% entering, 71% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.25 - 0.63	0.16

Data Plot and Equation



Affordable Housing - Income Limits (223)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 8

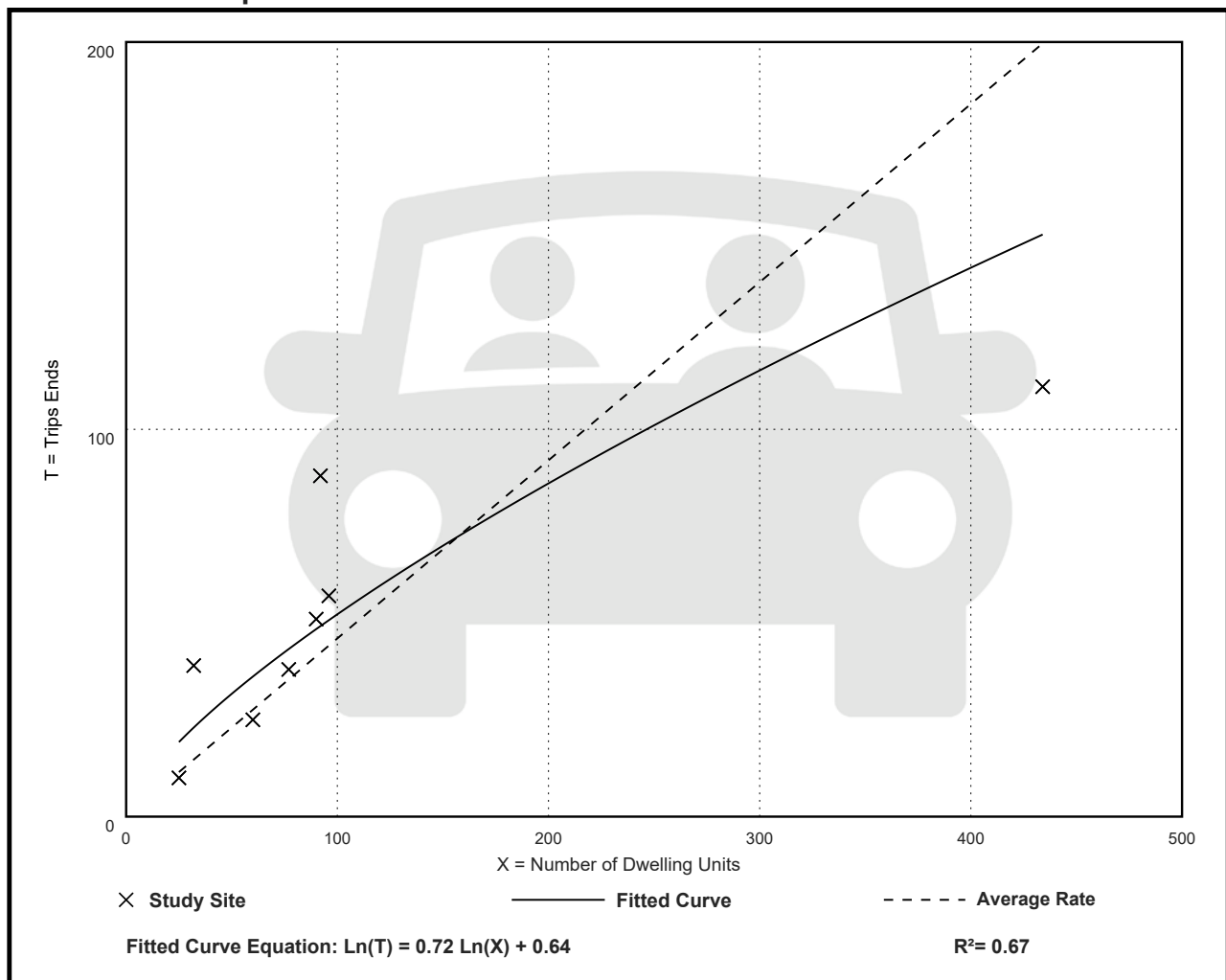
Avg. Num. of Dwelling Units: 113

Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.26 - 1.22	0.28

Data Plot and Equation



Land Use: 932

High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Some facilities offer carry-out for a small proportion of its customers. Some facilities within this land use may also contain a bar area for serving food and alcoholic drinks.

Fast casual restaurant (Land Use 930), fine dining restaurant (Land Use 931), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window (Land Use 934) are related uses.

Additional Data

Users should exercise caution when applying statistics during the AM peak periods, as the sites contained in the database for this land use may or may not be open for breakfast. In cases where it was confirmed that the sites were not open for breakfast, data for the AM peak hour of the adjacent street traffic were removed from the database.

If the restaurant has outdoor seating, its area is not included in the overall gross floor area. For a restaurant that has significant outdoor seating, the number of seats may be more reliable than GFA as an independent variable on which to establish a trip generation rate.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (<https://www.ite.org/technical-resources/topics/trip-and-parking-generation/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Florida, Georgia, Indiana, Kentucky, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Vermont, and Wisconsin.

Source Numbers

126, 269, 275, 280, 300, 301, 305, 338, 340, 341, 358, 384, 424, 432, 437, 438, 444, 507, 555, 577, 589, 617, 618, 728, 868, 884, 885, 903, 927, 939, 944, 961, 962, 977, 1048

High-Turnover (Sit-Down) Restaurant (932)

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

Setting/Location: General Urban/Suburban

Number of Studies: 50

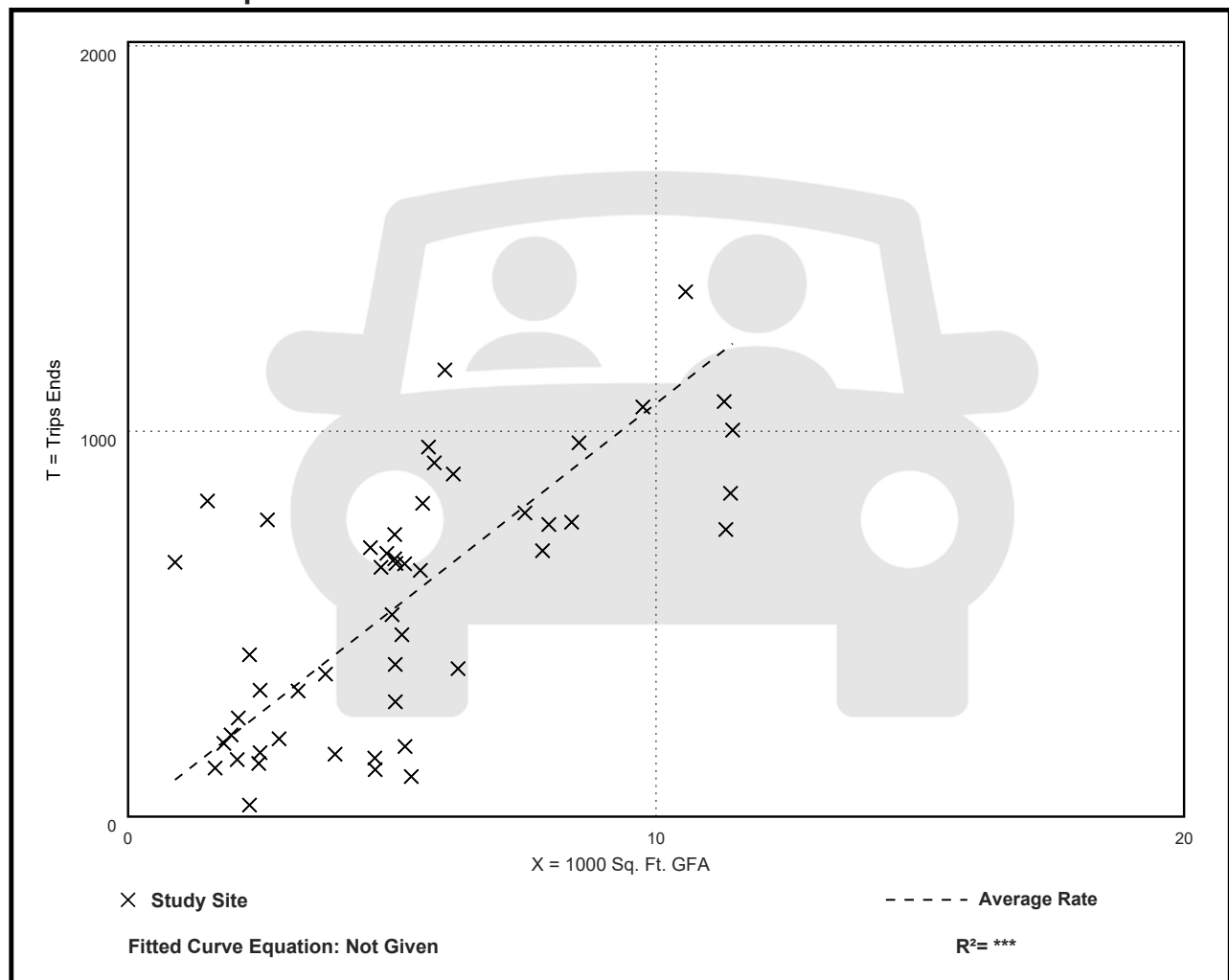
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
107.20	13.04 - 742.41	66.72

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 37

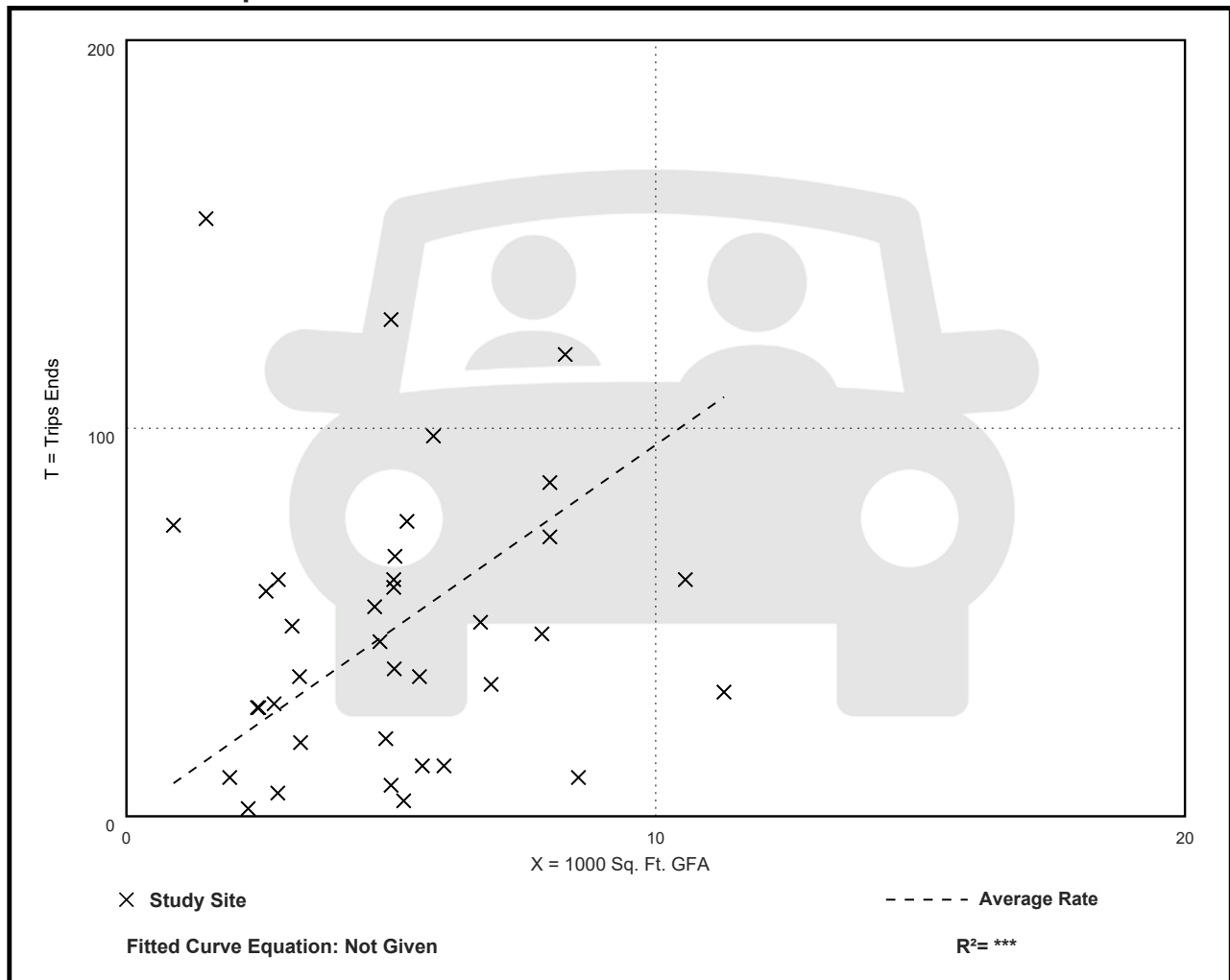
Avg. 1000 Sq. Ft. GFA: 5

Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.57	0.76 - 102.39	11.61

Data Plot and Equation



High-Turnover (Sit-Down) Restaurant (932)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 104

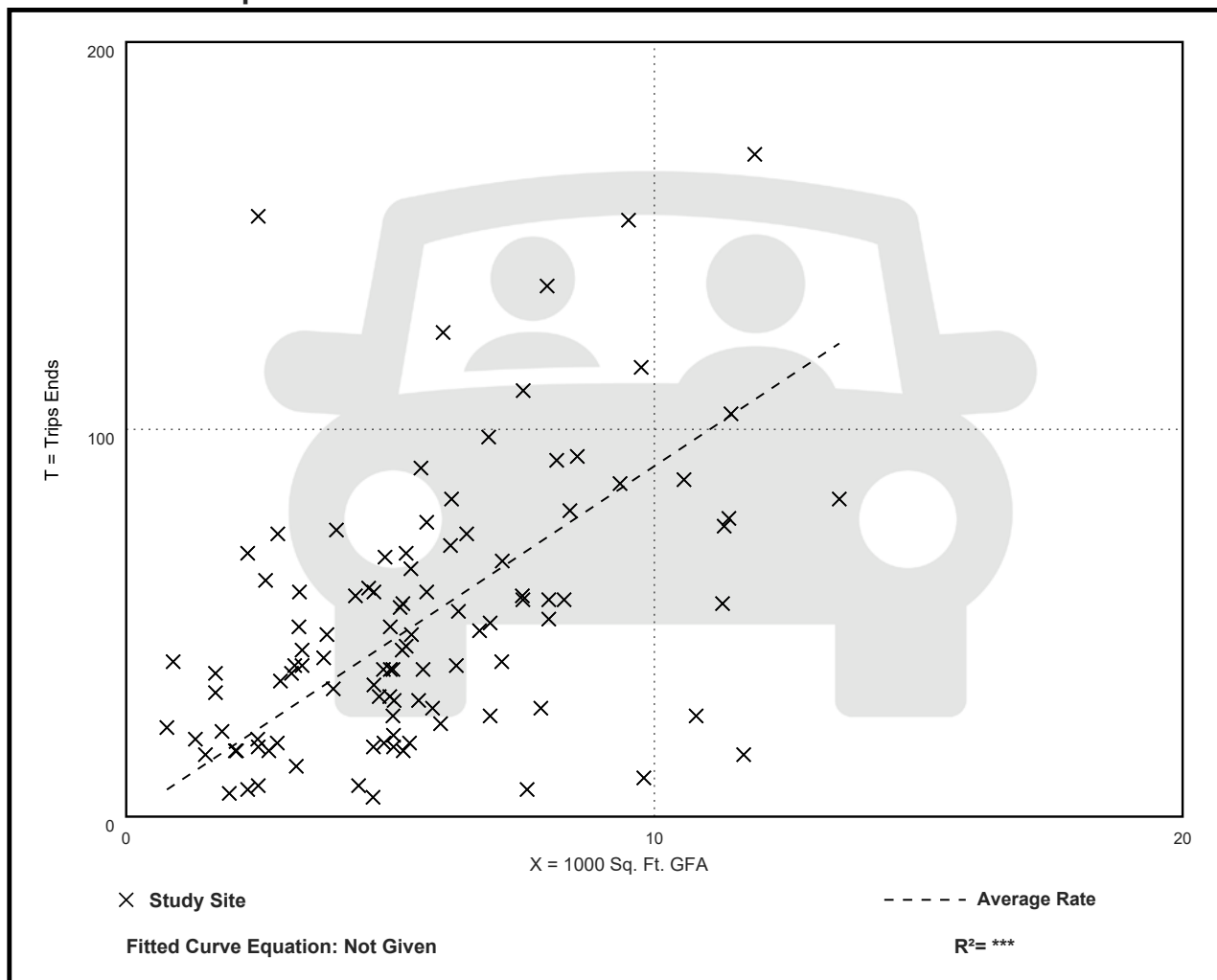
Avg. 1000 Sq. Ft. GFA: 6

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
9.05	0.92 - 62.00	6.18

Data Plot and Equation



Land Use Code	221		
Land Use	Multifamily Housing (Mid-Rise)		
Subcategory	Not Close to Rail transit		
Setting	General Urban/Suburban		
Time Period	Weekday		
# Data Sites	6		
	% of 24-Hour Vehicle Trips		
Time	Total	Entering	Exiting
12:00 - 1:00 AM	0.8%	1.2%	0.4%
1:00 - 2:00 AM	0.4%	0.6%	0.3%
2:00 - 3:00 AM	0.2%	0.3%	0.1%
3:00 - 4:00 AM	0.2%	0.2%	0.2%
4:00 - 5:00 AM	0.3%	0.1%	0.5%
5:00 - 6:00 AM	1.2%	0.4%	2.0%
6:00 - 7:00 AM	4.4%	1.0%	7.8%
7:00 - 8:00 AM	8.6%	2.5%	14.7%
8:00 - 9:00 AM	7.8%	3.0%	12.5%
9:00 - 10:00 AM	4.5%	2.2%	6.9%
10:00 - 11:00 AM	3.7%	2.7%	4.6%
11:00 - 12:00 PM	3.7%	3.4%	4.0%
12:00 - 1:00 PM	4.6%	4.3%	4.8%
1:00 - 2:00 PM	4.4%	4.4%	4.4%
2:00 - 3:00 PM	3.9%	4.1%	3.7%
3:00 - 4:00 PM	4.9%	5.9%	3.8%
4:00 - 5:00 PM	7.2%	9.2%	5.1%
5:00 - 6:00 PM	9.4%	13.1%	5.8%
6:00 - 7:00 PM	9.0%	12.1%	6.0%
7:00 - 8:00 PM	7.4%	9.4%	5.4%
8:00 - 9:00 PM	5.4%	7.7%	3.1%
9:00 - 10:00 PM	4.0%	6.5%	1.5%
10:00 - 11:00 PM	2.6%	3.7%	1.6%
11:00 - 12:00 AM	1.4%	2.1%	0.8%

Land Use Code	223		
Land Use	Affordable Housing		
Subcategory	Income Limits		
Setting	General Urban/Suburban		
Time Period	Weekday		
# Data Sites	2		
	% of 24-Hour Vehicle Trips		
Time	Total	Entering	Exiting
--	--	--	--
--	--	--	--
12:00 - 5:00 AM	1.3%	1.0%	1.7%
--	--	--	--
--	--	--	--
5:00 - 6:00 AM	2.0%	0.8%	3.3%
6:00 - 7:00 AM	4.9%	1.1%	8.8%
7:00 - 8:00 AM	7.7%	3.4%	12.3%
8:00 - 9:00 AM	5.3%	4.8%	5.9%
9:00 - 10:00 AM	3.7%	2.5%	5.0%
10:00 - 11:00 AM	3.4%	3.0%	3.8%
11:00 - 12:00 PM	4.0%	3.3%	4.7%
12:00 - 1:00 PM	5.4%	6.4%	4.4%
1:00 - 2:00 PM	5.6%	5.7%	5.5%
2:00 - 3:00 PM	5.9%	5.7%	6.1%
3:00 - 4:00 PM	7.2%	8.5%	6.0%
4:00 - 5:00 PM	9.2%	11.8%	6.5%
5:00 - 6:00 PM	7.5%	9.0%	6.0%
6:00 - 7:00 PM	7.4%	7.2%	7.7%
7:00 - 8:00 PM	5.7%	7.0%	4.4%
8:00 - 9:00 PM	6.4%	8.9%	3.7%
9:00 - 10:00 PM	4.6%	6.4%	2.6%
10:00 - 11:00 PM	2.0%	2.7%	1.3%
11:00 - 12:00 AM	0.8%	0.9%	0.7%

Land Use Code	932		
Land Use	High-Turnover (Sit-Down) Restaurant		
Setting	General Urban/Suburban		
Time Period	Weekday		
# Data Sites	37		
	% of 24-Hour Vehicle Trips		
Time	Total	Entering	Exiting
12:00 - 1:00 AM	0.5%	0.3%	0.8%
1:00 - 2:00 AM	0.2%	0.1%	0.3%
2:00 - 3:00 AM	0.3%	0.3%	0.2%
3:00 - 4:00 AM	0.3%	0.2%	0.4%
4:00 - 5:00 AM	0.3%	0.2%	0.3%
5:00 - 6:00 AM	0.5%	0.7%	0.2%
6:00 - 7:00 AM	1.3%	1.7%	0.9%
7:00 - 8:00 AM	2.3%	2.7%	1.8%
8:00 - 9:00 AM	3.2%	3.4%	3.1%
9:00 - 10:00 AM	3.7%	4.0%	3.4%
10:00 - 11:00 AM	4.9%	5.5%	4.4%
11:00 - 12:00 PM	9.5%	12.1%	6.9%
12:00 - 1:00 PM	12.3%	12.4%	12.3%
1:00 - 2:00 PM	8.8%	6.5%	11.2%
2:00 - 3:00 PM	4.5%	4.0%	5.1%
3:00 - 4:00 PM	3.6%	3.3%	4.0%
4:00 - 5:00 PM	5.1%	6.2%	3.9%
5:00 - 6:00 PM	8.5%	10.2%	6.8%
6:00 - 7:00 PM	9.4%	10.1%	8.7%
7:00 - 8:00 PM	8.2%	7.2%	9.2%
8:00 - 9:00 PM	5.7%	4.3%	7.1%
9:00 - 10:00 PM	3.7%	2.6%	4.8%
10:00 - 11:00 PM	2.2%	1.4%	2.9%
11:00 - 12:00 AM	0.9%	0.5%	1.4%

CMAP 2050 Projections Letter



Chicago Metropolitan
Agency for Planning

433 West Van Buren Street
Suite 450
Chicago, IL 60607

312-454-0400
cmap.illinois.gov

July 7, 2022

Shahrzad Ainkeshavarzi
Consultant
Kenig, Lindgren, O'Hara, Aboona, Inc.
9575 West Higgins Road, Suite 400
Rosemont, IL, 60018

Subject: 1657 Shermer Road Residential Development
IDOT

Dear Mr. Ainkeshavarzi:

In response to a request made on your behalf and dated July 6, 2022, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT (2018)	Year 2050 ADT
Walters Avenue west of Shermer Road	4,000	5,000
Shermer Road	15,800	18,500
Techny Road east of Shermer Road	7,750	9,200
Techny Road west of Shermer Road	6,100	7,400
Willow Road east of Shermer Road	42,500	47,000
Willow Road west of Shermer Road	35,700	42,000
Western Avenue	1,400	1,700

Traffic projections are developed using existing ADT data provided in the request letter and the results from the December 2021 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806.

Sincerely,

Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

Signalized Intersections		
Level of Service	Interpretation	Average Control Delay (seconds per vehicle)
A	Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Good progression, with more vehicles stopping than for Level of Service A.	>10 - 20
C	Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 - 35
D	The volume-to-capacity ratio is high and either progression is ineffective, or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable.	>35 - 55
E	Progression is unfavorable. The volume-to-capacity ratio is high, and the cycle length is long. Individual cycle failures are frequent.	>55 - 80
F	The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80.0
Unsignalized Intersections		
Level of Service	Average Total Delay (SEC/VEH)	
A	0 - 10	
B	> 10 - 15	
C	> 15 - 25	
D	> 25 - 35	
E	> 35 - 50	
F	> 50	

Source: *Highway Capacity Manual*, 2010.

Capacity Analysis Summary Sheets
Existing Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	29	172	5	3	4	91	317	6	5	364	55
Future Volume (vph)	95	29	172	5	3	4	91	317	6	5	364	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.872			0.955				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1770	1600	0	0	1778	0	1752	1852	1615	1805	1923	1538
Flt Permitted	0.750				0.841		0.431			0.558		
Satd. Flow (perm)	1397	1600	0	0	1526	0	795	1852	1615	1060	1923	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		183			4				79			79
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	7%	3%	0%	0%	0%	3%	8%	0%	0%	4%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	214	0	0	12	0	97	337	6	5	387	59
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	11.5	11.5			11.5		37.0	33.4	33.4	34.1	27.2	27.2
Actuated g/C Ratio	0.19	0.19			0.19		0.62	0.56	0.56	0.58	0.46	0.46

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.37	0.47			0.04		0.16	0.32	0.01	0.01	0.44	0.08
Control Delay	29.5	10.7			21.5		4.7	8.2	0.0	4.2	13.0	1.9
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	10.7			21.5		4.7	8.2	0.0	4.2	13.0	1.9
LOS	C	B			C		A	A	A	A	B	A
Approach Delay		16.7			21.5			7.3			11.4	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)	32	9			2		10	47	0	1	89	0
Queue Length 95th (ft)	93	72			18		29	146	0	4	172	11
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	513	703			563		610	1497	1320	710	1554	1258
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.30			0.02		0.16	0.23	0.00	0.01	0.25	0.05

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 59.3

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 11.4

Intersection LOS: B

Intersection Capacity Utilization 48.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	216	285	117	141	65	209	429	84	89	577	63
Future Volume (vph)	91	216	285	117	141	65	209	429	84	89	577	63
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.953			0.975			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1961	1524	1671	1713	0	1671	3284	0	1770	3446	0
Flt Permitted	0.378			0.498			0.147			0.297		
Satd. Flow (perm)	704	1961	1524	876	1713	0	259	3284	0	553	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			107		23			23			12	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	6%	8%	6%	5%	8%	7%	8%	2%	3%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	288	380	156	275	0	279	684	0	119	853	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	36.1	24.7	41.4	30.9	21.8		42.3	29.4		38.4	27.3	
Actuated g/C Ratio	0.41	0.28	0.47	0.35	0.25		0.48	0.33		0.43	0.31	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.30	0.53	0.49	0.43	0.63		0.95	0.62		0.33	0.79	
Control Delay	17.5	30.1	13.5	21.0	34.2		65.0	28.5		16.6	35.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.5	30.1	13.5	21.0	34.2		65.0	28.5		16.6	35.3	
LOS	B	C	B	C	C		E	C		B	D	
Approach Delay		20.2			29.4			39.1			33.0	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	41	136	99	54	126		98	160		34	223	
Queue Length 95th (ft)	61	167	124	76	168		#220	207		64	268	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	461	805	770	364	582		293	1107		399	1109	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.26	0.36	0.49	0.43	0.47		0.95	0.62		0.30	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 88.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 31.2

Intersection LOS: C

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	1498	95	67	633	221	74	193	52	291	126	107
Future Volume (vph)	220	1498	95	67	633	221	74	193	52	291	126	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991			0.961			0.968			0.931	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3401	0	1752	3264	0	1504	3247	0	1671	3032	0
Flt Permitted	0.227			0.050			0.598			0.349		
Satd. Flow (perm)	389	3401	0	92	3264	0	947	3247	0	614	3032	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		6			45			19				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	8%	3%	5%	10%	20%	7%	10%	8%	9%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	234	1695	0	71	908	0	79	260	0	310	248	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	21.0	85.0		15.0	79.0		18.0	26.0		24.0	32.0	
Total Split (%)	14.0%	56.7%		10.0%	52.7%		12.0%	17.3%		16.0%	21.3%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	99.4	85.2		90.1	79.5		30.8	17.1		43.6	26.5	
Actuated g/C Ratio	0.66	0.57		0.60	0.53		0.21	0.11		0.29	0.18	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.63	0.88		0.49	0.52		0.34	0.67		0.96	0.46	
Control Delay	18.4	34.8		31.4	23.7		43.7	67.6		88.3	58.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.4	34.8		31.4	23.7		43.7	67.6		88.3	58.6	
LOS	B	C		C	C		D	E		F	E	
Approach Delay		32.8			24.2			62.0			75.1	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	85	720		23	282		58	120		265	115	
Queue Length 95th (ft)	132	#988		72	375		101	168		#376	164	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	402	1934		184	1750		269	449		323	535	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.58	0.88		0.39	0.52		0.29	0.58		0.96	0.46	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 69 (46%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 39.4

Intersection LOS: D

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
15 s	85 s	18 s	32 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
21 s	79 s	24 s	26 s

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	31	0	0	1	20	491	2	1	626	5
Future Vol, veh/h	3	0	31	0	0	1	20	491	2	1	626	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	33	0	3	0	0	0	0	7	50	0	3	0
Mvmt Flow	4	0	40	0	0	1	26	638	3	1	813	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1510	1511	816	1530	1513	640	819	0	0	641	0	0
Stage 1	818	818	-	692	692	-	-	-	-	-	-	-
Stage 2	692	693	-	838	821	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	84	121	375	97	121	479	818	-	-	953	-	-
Stage 1	328	393	-	437	448	-	-	-	-	-	-	-
Stage 2	388	448	-	364	391	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	82	117	375	84	117	479	818	-	-	953	-	-
Mov Cap-2 Maneuver	194	241	-	84	117	-	-	-	-	-	-	-
Stage 1	318	393	-	423	434	-	-	-	-	-	-	-
Stage 2	375	434	-	325	391	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.9		12.5		0.4		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	818	-	-	346	-	479	953	-	-			
HCM Lane V/C Ratio	0.032	-	-	0.128	-	0.003	0.001	-	-			
HCM Control Delay (s)	9.5	-	-	16.9	0	12.5	8.8	-	-			
HCM Lane LOS	A	-	-	C	A	B	A	-	-			
HCM 95th %tile O(veh)	0.1	-	-	0.4	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	5	0	38	6	0	7	25	501	10	9	643	5
Future Vol, veh/h	5	0	38	6	0	7	25	501	10	9	643	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	0	0	0	0	7	10	11	3	20
Mvmt Flow	7	0	51	8	0	9	33	668	13	12	857	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1630	1632	861	1651	1629	675	864	0	0	681	0	0
Stage 1	885	885	-	741	741	-	-	-	-	-	-	-
Stage 2	745	747	-	910	888	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.21	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.299	-	-
Pot Cap-1 Maneuver	82	102	354	80	103	457	787	-	-	871	-	-
Stage 1	342	366	-	411	426	-	-	-	-	-	-	-
Stage 2	409	423	-	332	365	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	96	354	66	97	457	787	-	-	871	-	-
Mov Cap-2 Maneuver	77	96	-	66	97	-	-	-	-	-	-	-
Stage 1	328	361	-	394	408	-	-	-	-	-	-	-
Stage 2	384	405	-	281	360	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	23.6		37.9		0.5		0.1					
HCM LOS	C		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	787	-	-	250	66	457	871	-	-			
HCM Lane V/C Ratio	0.042	-	-	0.229	0.121	0.02	0.014	-	-			
HCM Control Delay (s)	9.8	-	-	23.6	66.9	13	9.2	-	-			
HCM Lane LOS	A	-	-	C	F	B	A	-	-			
HCM 95th %tile O(veh)	0.1	-	-	0.9	0.4	0.1	0	-	-			

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	4	3	9	6	3	70	2	12	223	3
Future Vol, veh/h	6	5	4	3	9	6	3	70	2	12	223	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0	0	6	50	8	1	0
Mvmt Flow	8	6	5	4	12	8	4	91	3	16	290	4
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	435	426	292	431	427	93	294	0	0	94	0	0
Stage 1	324	324	-	101	101	-	-	-	-	-	-	-
Stage 2	111	102	-	330	326	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	535	524	752	538	523	970	1279	-	-	1463	-	-
Stage 1	692	653	-	910	815	-	-	-	-	-	-	-
Stage 2	899	815	-	687	652	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	515	516	752	523	515	970	1279	-	-	1463	-	-
Mov Cap-2 Maneuver	515	516	-	523	515	-	-	-	-	-	-	-
Stage 1	690	645	-	907	813	-	-	-	-	-	-	-
Stage 2	876	813	-	667	644	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11.6		11.1			0.3			0.4			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1279	-	-	563	612	1463	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.035	0.038	0.011	-	-				
HCM Control Delay (s)	7.8	0	-	11.6	11.1	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	23	2	0	18	1	0	8	2	4	8	0
Future Vol, veh/h	2	23	2	0	18	1	0	8	2	4	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	0	8	0	0	6	0	0	0	0	0	0	0
Mvmt Flow	3	35	3	0	28	2	0	12	3	6	12	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	30	0	0	38	0	0	78	73	37	79	73	29
Stage 1	-	-	-	-	-	-	43	43	-	29	29	-
Stage 2	-	-	-	-	-	-	35	30	-	50	44	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1596	-	-	1585	-	-	916	821	1041	914	821	1052
Stage 1	-	-	-	-	-	-	976	863	-	993	875	-
Stage 2	-	-	-	-	-	-	986	874	-	968	862	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1596	-	-	1585	-	-	904	819	1041	899	819	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	904	819	-	899	819	-
Stage 1	-	-	-	-	-	-	974	861	-	991	875	-
Stage 2	-	-	-	-	-	-	972	874	-	949	860	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			9.3			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	855	1596	-	-	1585	-	-	844				
HCM Lane V/C Ratio	0.018	0.002	-	-	-	-	-	0.022				
HCM Control Delay (s)	9.3	7.3	0	-	0	-	-	9.4				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 6th TWSC
8: Shermer Road & South Site Access Drive

07/14/2022

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	513	0	0	657
Future Vol, veh/h	0	0	513	0	0	657
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	7	0	0	3
Mvmt Flow	0	0	540	0	0	692

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1232	540	0
Stage 1	540	-	-
Stage 2	692	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	197	546	-
Stage 1	588	-	-
Stage 2	500	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	197	546	-
Mov Cap-2 Maneuver	197	-	-
Stage 1	588	-	-
Stage 2	500	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1039
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Capacity Analysis Summary Sheets
Existing Weekday Afternoon Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	7	113	5	6	5	150	469	2	2	424	96
Future Volume (vph)	54	7	113	5	6	5	150	469	2	2	424	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.859			0.957				0.850			0.850
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1770	1573	0	0	1789	0	1752	1961	1615	1805	1887	1568
Flt Permitted	0.745				0.845		0.390			0.466		
Satd. Flow (perm)	1388	1573	0	0	1536	0	719	1961	1615	885	1887	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128			6				79			109
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	3%	2%	0%	0%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	61	136	0	0	19	0	170	533	2	2	482	109
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	10.4	10.4			10.4		48.9	47.3	47.3	44.5	35.8	35.8
Actuated g/C Ratio	0.16	0.16			0.16		0.75	0.73	0.73	0.68	0.55	0.55

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.28	0.38			0.08		0.26	0.37	0.00	0.00	0.47	0.12
Control Delay	32.9	11.0			25.0		4.2	6.9	0.0	3.0	11.3	2.1
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.9	11.0			25.0		4.2	6.9	0.0	3.0	11.3	2.1
LOS	C	B			C		A	A	A	A	B	A
Approach Delay		17.8			25.0			6.2			9.6	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	23	3			5		17	78	0	0	114	0
Queue Length 95th (ft)	63	49			24		39	211	0	2	196	19
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	463	610			516		651	1510	1262	717	1405	1195
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.22			0.04		0.26	0.35	0.00	0.00	0.34	0.09

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 65.2

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 50.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	215	202	80	271	112	270	548	147	91	426	90
Future Volume (vph)	145	215	202	80	271	112	270	548	147	91	426	90
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.956			0.968			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1980	1568	1736	1749	0	1719	3379	0	1787	3387	0
Flt Permitted	0.172			0.597			0.226			0.172		
Satd. Flow (perm)	317	1980	1568	1091	1749	0	409	3379	0	324	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203		21			34			25	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	3%	4%	5%	1%	5%	3%	5%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	177	262	246	98	467	0	329	847	0	111	630	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	46.0	35.8	52.4	37.1	28.2		40.0	29.4		36.5	25.2	
Actuated g/C Ratio	0.48	0.38	0.55	0.39	0.30		0.42	0.31		0.38	0.27	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.53	0.35	0.26	0.21	0.87		1.03	0.79		0.43	0.69	
Control Delay	20.8	24.4	3.7	15.7	50.3		84.3	36.8		21.7	34.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.8	24.4	3.7	15.7	50.3		84.3	36.8		21.7	34.5	
LOS	C	C	A	B	D		F	D		C	C	
Approach Delay		16.0			44.3			50.1			32.5	
Approach LOS		B			D			D			C	
Queue Length 50th (ft)	62	122	13	33	270		~150	252		40	176	
Queue Length 95th (ft)	93	169	40	56	#387		#269	297		67	212	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	359	759	956	472	553		318	1070		293	1024	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.35	0.26	0.21	0.84		1.03	0.79		0.38	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 94.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 37.6

Intersection LOS: D

Intersection Capacity Utilization 75.4%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	1123	105	95	1112	309	121	163	91	333	203	187
Future Volume (vph)	137	1123	105	95	1112	309	121	163	91	333	203	187
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.967			0.946			0.928	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3412	0	1687	3375	0	1687	3219	0	1736	3205	0
Flt Permitted	0.076			0.136			0.413			0.273		
Satd. Flow (perm)	135	3412	0	241	3375	0	733	3219	0	499	3205	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		10			35			54				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	4%	9%	7%	3%	5%	7%	5%	8%	4%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	1307	0	101	1512	0	129	270	0	354	415	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.6	93.7		102.0	90.8		31.3	15.1		44.6	24.9	
Actuated g/C Ratio	0.67	0.59		0.64	0.57		0.20	0.09		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.72	0.65		0.44	0.78		0.58	0.77		1.11	0.84	
Control Delay	40.6	24.3		15.3	30.6		56.2	71.3		129.2	80.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.6	24.3		15.3	30.6		56.2	71.3		129.2	80.7	
LOS	D	C		B	C		E	E		F	F	
Approach Delay		25.9			29.6			66.4			103.0	
Approach LOS		C			C			E			F	
Queue Length 50th (ft)	60	470		35	632		105	117		~341	225	
Queue Length 95th (ft)	140	562		58	757		167	171		#550	#315	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	232	2003		251	1929		244	370		320	497	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.63	0.65		0.40	0.78		0.53	0.73		1.11	0.84	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 45.2

Intersection LOS: D

Intersection Capacity Utilization 90.7%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	97 s	19 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	93 s	27 s	22 s

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	23	0	0	1	35	727	0	2	543	13
Future Vol, veh/h	8	1	23	0	0	1	35	727	0	2	543	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	25	0	4	0	0	0	0	3	0	0	4	0
Mvmt Flow	10	1	28	0	0	1	43	887	0	2	662	16
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1648	1647	670	1662	1655	887	678	0	0	887	0	0
Stage 1	674	674	-	973	973	-	-	-	-	-	-	-
Stage 2	974	973	-	689	682	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.24	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.336	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	70	100	454	78	99	346	923	-	-	772	-	-
Stage 1	409	457	-	306	333	-	-	-	-	-	-	-
Stage 2	275	333	-	439	453	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	95	454	70	94	346	923	-	-	772	-	-
Mov Cap-2 Maneuver	171	211	-	70	94	-	-	-	-	-	-	-
Stage 1	390	456	-	292	317	-	-	-	-	-	-	-
Stage 2	261	317	-	410	452	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	18.1		15.4			0.4			0			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	923	-	-	313	-	346	772	-	-			
HCM Lane V/C Ratio	0.046	-	-	0.125	-	0.004	0.003	-	-			
HCM Control Delay (s)	9.1	-	-	18.1	0	15.4	9.7	-	-			
HCM Lane LOS	A	-	-	C	A	C	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.4	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	3	27	14	4	19	42	723	24	22	531	13
Future Vol, veh/h	20	3	27	14	4	19	42	723	24	22	531	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	33	0	0	0	5	2	3	4	0	5	8
Mvmt Flow	25	4	33	17	5	23	52	893	30	27	656	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1744	1745	664	1749	1738	908	672	0	0	923	0	0
Stage 1	718	718	-	1012	1012	-	-	-	-	-	-	-
Stage 2	1026	1027	-	737	726	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.83	6.2	7.1	6.5	6.25	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.297	3.3	3.5	4	3.345	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	69	73	464	68	88	329	919	-	-	748	-	-
Stage 1	423	390	-	291	319	-	-	-	-	-	-	-
Stage 2	286	276	-	413	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	57	66	464	56	80	329	919	-	-	748	-	-
Mov Cap-2 Maneuver	57	66	-	56	80	-	-	-	-	-	-	-
Stage 1	399	376	-	274	301	-	-	-	-	-	-	-
Stage 2	246	260	-	366	417	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	73.2		55.7		0.5		0.4					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	919	-	-	110	60	329	748	-	-			
HCM Lane V/C Ratio	0.056	-	-	0.561	0.37	0.071	0.036	-	-			
HCM Control Delay (s)	9.2	-	-	73.2	96.7	16.8	10	-	-			
HCM Lane LOS	A	-	-	F	F	C	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-	2.7	1.4	0.2	0.1	-	-			

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	10	3	5	14	23	11	184	4	8	117	6
Future Vol, veh/h	8	10	3	5	14	23	11	184	4	8	117	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	13	10	0	0	0	4	9	1	25	13	2	0
Mvmt Flow	11	14	4	7	20	32	15	259	6	11	165	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	509	486	169	492	487	262	173	0	0	265	0	0
Stage 1	191	191	-	292	292	-	-	-	-	-	-	-
Stage 2	318	295	-	200	195	-	-	-	-	-	-	-
Critical Hdwy	7.23	6.6	6.2	7.1	6.5	6.24	4.19	-	-	4.23	-	-
Critical Hdwy Stg 1	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.617	4.09	3.3	3.5	4	3.336	2.281	-	-	2.317	-	-
Pot Cap-1 Maneuver	457	470	880	490	484	772	1362	-	-	1238	-	-
Stage 1	786	727	-	720	675	-	-	-	-	-	-	-
Stage 2	671	655	-	806	743	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	416	459	880	468	473	772	1362	-	-	1238	-	-
Mov Cap-2 Maneuver	416	459	-	468	473	-	-	-	-	-	-	-
Stage 1	776	720	-	711	666	-	-	-	-	-	-	-
Stage 2	616	646	-	779	736	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.1		11.7		0.4		0.5					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1362	-	-	473	599	1238	-	-				
HCM Lane V/C Ratio	0.011	-	-	0.063	0.099	0.009	-	-				
HCM Control Delay (s)	7.7	0	-	13.1	11.7	7.9	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	25	3	0	38	6	10	16	5	1	7	3
Future Vol, veh/h	2	25	3	0	38	6	10	16	5	1	7	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	54	54	54	54	54	54	54	54	54	54	54	54
Heavy Vehicles, %	0	12	0	0	0	0	10	0	0	0	14	0
Mvmt Flow	4	46	6	0	70	11	19	30	9	2	13	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	81	0	0	52	0	0	142	138	49	153	136	76
Stage 1	-	-	-	-	-	-	57	57	-	76	76	-
Stage 2	-	-	-	-	-	-	85	81	-	77	60	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.1	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	3.5	4.126	3.3
Pot Cap-1 Maneuver	1529	-	-	1567	-	-	810	757	1025	819	733	991
Stage 1	-	-	-	-	-	-	935	851	-	938	809	-
Stage 2	-	-	-	-	-	-	903	832	-	937	822	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1529	-	-	1567	-	-	793	755	1025	785	731	991
Mov Cap-2 Maneuver	-	-	-	-	-	-	793	755	-	785	731	-
Stage 1	-	-	-	-	-	-	932	848	-	935	809	-
Stage 2	-	-	-	-	-	-	884	832	-	893	820	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			9.8			9.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	801	1529	-	-	1567	-	-	793				
HCM Lane V/C Ratio	0.072	0.002	-	-	-	-	-	0.026				
HCM Control Delay (s)	9.8	7.4	0	-	0	-	-	9.7				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	762	0	0	566
Future Vol, veh/h	0	0	762	0	0	566
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	5
Mvmt Flow	0	0	802	0	0	596
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1398	802	0	0	802	0
Stage 1	802	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	157	387	-	-	830	-
Stage 1	445	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	157	387	-	-	830	-
Mov Cap-2 Maneuver	157	-	-	-	-	-
Stage 1	445	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	830	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Capacity Analysis Summary Sheets
Existing Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	5	105	7	24	5	121	432	0	6	430	104
Future Volume (vph)	74	5	105	7	24	5	121	432	0	6	430	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.857			0.980							0.850
Flt Protected	0.950				0.990		0.950			0.950		
Satd. Flow (prot)	1805	1569	0	0	1843	0	1805	1980	1900	1805	1961	1583
Flt Permitted	0.730				0.906		0.404			0.489		
Satd. Flow (perm)	1387	1569	0	0	1687	0	768	1980	1900	929	1961	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		117			6							116
Link Speed (mph)		30			25			30				25
Link Distance (ft)		136			160			478				380
Travel Time (s)		3.1			4.4			10.9				10.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	0%	1%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	123	0	0	41	0	134	480	0	7	478	116
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	11.2	11.2			11.2		49.4	47.7		46.6	41.7	41.7
Actuated g/C Ratio	0.17	0.17			0.17		0.74	0.72		0.70	0.63	0.63

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	0.34			0.14		0.20	0.34		0.01	0.39	0.11
Control Delay	33.8	10.4			26.6		4.2	7.1		3.5	10.8	2.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	33.8	10.4			26.6		4.2	7.1		3.5	10.8	2.2
LOS	C	B			C		A	A		A	B	A
Approach Delay		19.7			26.6			6.5			9.1	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	31	2			13		14	72		1	116	0
Queue Length 95th (ft)	81	47			43		35	205		4	209	21
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155			85		140
Base Capacity (vph)	449	587			550		679	1504		751	1443	1195
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.18	0.21			0.07		0.20	0.32		0.01	0.33	0.10

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 66.6

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 10.0

Intersection LOS: A

Intersection Capacity Utilization 52.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	202	175	132	366	117	203	369	71	109	416	126
Future Volume (vph)	85	202	175	132	366	117	203	369	71	109	416	126
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.964			0.976			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	2000	1482	1626	1800	0	1752	3461	0	1752	3415	0
Flt Permitted	0.187			0.589			0.273			0.472		
Satd. Flow (perm)	352	2000	1482	1008	1800	0	504	3461	0	871	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			184		16			22			40	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	9%	11%	2%	1%	3%	1%	6%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	89	213	184	139	508	0	214	463	0	115	571	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	39.1	28.2	44.3	36.2	28.8		36.9	26.5		33.8	22.6	
Actuated g/C Ratio	0.45	0.32	0.51	0.42	0.33		0.42	0.30		0.39	0.26	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.30	0.33	0.22	0.30	0.84		0.60	0.43		0.27	0.62	
Control Delay	16.4	24.2	2.7	16.8	42.8		24.1	26.5		17.2	30.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	16.4	24.2	2.7	16.8	42.8		24.1	26.5		17.2	30.2	
LOS	B	C	A	B	D		C	C		B	C	
Approach Delay		14.6			37.2			25.8			28.0	
Approach LOS		B			D			C			C	
Queue Length 50th (ft)	27	88	0	43	264		76	110		38	141	
Queue Length 95th (ft)	57	155	32	85	#503		132	166		75	203	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	394	849	858	467	626		369	1159		469	1155	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.23	0.25	0.21	0.30	0.81		0.58	0.40		0.25	0.49	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 86.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 27.2

Intersection LOS: C

Intersection Capacity Utilization 74.5%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	1006	99	81	1322	272	136	218	78	297	224	168
Future Volume (vph)	143	1006	99	81	1322	272	136	218	78	297	224	168
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.974			0.961			0.936	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3453	0	1719	3424	0	1752	3346	0	1752	3317	0
Flt Permitted	0.047			0.186			0.436			0.227		
Satd. Flow (perm)	83	3453	0	337	3424	0	804	3346	0	419	3317	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		11			24			25				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	8%	3%	5%	5%	2%	6%	3%	5%	0%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	147	1139	0	84	1643	0	140	305	0	306	404	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.3	93.5		99.4	88.7		32.3	15.9		45.4	25.4	
Actuated g/C Ratio	0.67	0.58		0.62	0.55		0.20	0.10		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.80	0.56		0.30	0.86		0.57	0.86		0.97	0.77	
Control Delay	67.3	21.9		12.2	36.1		55.2	87.6		95.1	75.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	67.3	21.9		12.2	36.1		55.2	87.6		95.1	75.1	
LOS	E	C		B	D		E	F		F	E	
Approach Delay		27.1			35.0			77.4			83.7	
Approach LOS		C			C			E			F	
Queue Length 50th (ft)	97	372		29	761		115	154		280	218	
Queue Length 95th (ft)	#203	451		49	877		179	#236		#457	#292	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	199	2021		305	1909		261	357		314	527	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.74	0.56		0.28	0.86		0.54	0.85		0.97	0.77	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 45.4

Intersection LOS: D

Intersection Capacity Utilization 94.8%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	97 s	19 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	93 s	27 s	22 s

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	0	10	0	0	1	20	567	1	1	619	9
Future Vol, veh/h	9	0	10	0	0	1	20	567	1	1	619	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	11	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	9	0	10	0	0	1	21	585	1	1	638	9
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1273	1273	643	1278	1277	586	647	0	0	586	0	0
Stage 1	645	645	-	628	628	-	-	-	-	-	-	-
Stage 2	628	628	-	650	649	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	138	169	477	144	168	514	948	-	-	999	-	-
Stage 1	446	471	-	474	479	-	-	-	-	-	-	-
Stage 2	456	479	-	461	469	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	135	165	477	138	164	514	948	-	-	999	-	-
Mov Cap-2 Maneuver	262	289	-	138	164	-	-	-	-	-	-	-
Stage 1	436	471	-	464	468	-	-	-	-	-	-	-
Stage 2	445	468	-	451	469	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.1		12		0.3		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	948	-	-	343	-	514	999	-	-			
HCM Lane V/C Ratio	0.022	-	-	0.057	-	0.002	0.001	-	-			
HCM Control Delay (s)	8.9	-	-	16.1	0	12	8.6	-	-			
HCM Lane LOS	A	-	-	C	A	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	11	1	25	13	3	18	18	559	1	20	587	22
Future Vol, veh/h	11	1	25	13	3	18	18	559	1	20	587	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	5	1	0
Mvmt Flow	12	1	26	14	3	19	19	588	1	21	618	23
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1310	1299	630	1312	1310	589	641	0	0	589	0	0
Stage 1	672	672	-	627	627	-	-	-	-	-	-	-
Stage 2	638	627	-	685	683	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	137	163	485	137	160	512	953	-	-	972	-	-
Stage 1	449	458	-	475	479	-	-	-	-	-	-	-
Stage 2	468	479	-	441	452	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	126	156	485	125	153	512	953	-	-	972	-	-
Mov Cap-2 Maneuver	126	156	-	125	153	-	-	-	-	-	-	-
Stage 1	440	448	-	466	469	-	-	-	-	-	-	-
Stage 2	439	469	-	407	442	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	21.6		24		0.3		0.3					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	953	-	-	255 129 512	972	-	-					
HCM Lane V/C Ratio	0.02	-	-	0.153 0.131 0.037	0.022	-	-					
HCM Control Delay (s)	8.9	-	-	21.6 37.1 12.3	8.8	-	-					
HCM Lane LOS	A	-	-	C E B	A	-	-					
HCM 95th %tile Q(veh)	0.1	-	-	0.5 0.4 0.1	0.1	-	-					

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	4	1	3	2	18	4	136	3	8	148	11
Future Vol, veh/h	6	4	1	3	2	18	4	136	3	8	148	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	7	5	1	4	2	22	5	166	4	10	180	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	397	387	187	388	391	168	193	0	0	170	0	0
Stage 1	207	207	-	178	178	-	-	-	-	-	-	-
Stage 2	190	180	-	210	213	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	567	551	860	574	548	881	1392	-	-	1420	-	-
Stage 1	800	734	-	828	756	-	-	-	-	-	-	-
Stage 2	816	754	-	797	730	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	546	544	860	564	541	881	1392	-	-	1420	-	-
Mov Cap-2 Maneuver	546	544	-	564	541	-	-	-	-	-	-	-
Stage 1	797	728	-	825	753	-	-	-	-	-	-	-
Stage 2	790	751	-	784	724	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.5		9.8		0.2		0.4					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1392	-	-	564	781	1420	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.024	0.036	0.007	-	-				
HCM Control Delay (s)	7.6	0	-	11.5	9.8	7.6	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	14	0	1	22	2	4	4	1	1	8	1
Future Vol, veh/h	1	14	0	1	22	2	4	4	1	1	8	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	64	65	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	22	0	2	34	3	6	6	2	2	13	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	37	0	0	22	0	0	73	67	22	70	66	36
Stage 1	-	-	-	-	-	-	26	26	-	40	40	-
Stage 2	-	-	-	-	-	-	47	41	-	30	26	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1587	-	-	1607	-	-	923	828	1061	927	829	1042
Stage 1	-	-	-	-	-	-	997	878	-	980	866	-
Stage 2	-	-	-	-	-	-	972	865	-	992	878	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1587	-	-	1607	-	-	909	826	1061	919	827	1042
Mov Cap-2 Maneuver	-	-	-	-	-	-	909	826	-	919	827	-
Stage 1	-	-	-	-	-	-	996	877	-	979	865	-
Stage 2	-	-	-	-	-	-	956	864	-	982	877	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.3			9.1			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	884	1587	-	-	1607	-	-	853				
HCM Lane V/C Ratio	0.016	0.001	-	-	0.001	-	-	0.018				
HCM Control Delay (s)	9.1	7.3	0	-	7.2	0	-	9.3				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	588	0	0	629
Future Vol, veh/h	0	0	588	0	0	629
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	619	0	0	662
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1281	619	0	0	619	0
Stage 1	619	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	184	492	-	-	971	-
Stage 1	541	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	184	492	-	-	971	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	517	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	971	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Capacity Analysis Summary Sheets
Year 2028 No-Build Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	30	177	5	3	4	94	332	6	57	380	57
Future Volume (vph)	98	30	177	5	3	4	94	332	6	57	380	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.872			0.955				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1770	1600	0	0	1778	0	1752	1852	1615	1805	1923	1538
Flt Permitted	0.750				0.844		0.440			0.550		
Satd. Flow (perm)	1397	1600	0	0	1531	0	812	1852	1615	1045	1923	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		188			4				79			79
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	7%	3%	0%	0%	0%	3%	8%	0%	0%	4%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	220	0	0	12	0	100	353	6	61	404	61
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	12.0	12.0			12.0		36.9	30.8	30.8	35.9	28.5	28.5
Actuated g/C Ratio	0.20	0.20			0.20		0.60	0.50	0.50	0.59	0.47	0.47

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.38	0.47			0.04		0.17	0.38	0.01	0.09	0.45	0.08
Control Delay	30.3	10.7			21.8		4.9	11.5	0.0	4.5	13.2	2.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	10.7			21.8		4.9	11.5	0.0	4.5	13.2	2.0
LOS	C	B			C		A	B	A	A	B	A
Approach Delay		17.0			21.8			9.9			10.9	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)	34	10			2		11	80	0	6	95	0
Queue Length 95th (ft)	98	75			18		32	163	0	22	188	12
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	502	695			553		600	1460	1290	705	1516	1230
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.32			0.02		0.17	0.24	0.00	0.09	0.27	0.05

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 61.1

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 50.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	226	294	123	149	67	215	445	87	92	596	66
Future Volume (vph)	95	226	294	123	149	67	215	445	87	92	596	66
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.954			0.975			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1961	1524	1671	1715	0	1671	3284	0	1770	3446	0
Flt Permitted	0.355			0.482			0.135			0.276		
Satd. Flow (perm)	661	1961	1524	848	1715	0	238	3284	0	514	3446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99		23			23			12	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	6%	8%	6%	5%	8%	7%	8%	2%	3%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	301	392	164	288	0	287	709	0	123	883	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	37.0	25.5	42.1	31.4	22.3		42.8	29.8		39.1	27.9	
Actuated g/C Ratio	0.41	0.28	0.47	0.35	0.25		0.48	0.33		0.44	0.31	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.32	0.54	0.51	0.46	0.65		1.02	0.64		0.36	0.82	
Control Delay	17.7	30.4	14.3	21.9	35.2		83.1	29.4		17.2	36.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.7	30.4	14.3	21.9	35.2		83.1	29.4		17.2	36.9	
LOS	B	C	B	C	D		F	C		B	D	
Approach Delay		20.7			30.4			44.9			34.5	
Approach LOS		C			C			D			C	
Queue Length 50th (ft)	43	143	108	58	134		~116	171		36	237	
Queue Length 95th (ft)	63	174	133	79	178		#240	217		66	281	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	448	792	768	356	574		282	1107		383	1091	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.28	0.38	0.51	0.46	0.50		1.02	0.64		0.32	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 89.7

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 33.6

Intersection LOS: C

Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	1543	98	69	652	228	76	202	54	300	134	110
Future Volume (vph)	227	1543	98	69	652	228	76	202	54	300	134	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991			0.961			0.969			0.932	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3401	0	1752	3264	0	1504	3250	0	1671	3037	0
Flt Permitted	0.215			0.051			0.591			0.334		
Satd. Flow (perm)	368	3401	0	94	3264	0	936	3250	0	588	3037	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		6			45			18				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	8%	3%	5%	10%	20%	7%	10%	8%	9%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	241	1745	0	73	937	0	81	272	0	319	260	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	21.0	85.0		15.0	79.0		18.0	26.0		24.0	32.0	
Total Split (%)	14.0%	56.7%		10.0%	52.7%		12.0%	17.3%		16.0%	21.3%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	99.1	84.8		89.6	78.9		31.1	17.4		43.9	26.7	
Actuated g/C Ratio	0.66	0.57		0.60	0.53		0.21	0.12		0.29	0.18	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.67	0.91		0.50	0.54		0.34	0.69		1.00	0.48	
Control Delay	20.0	37.5		31.8	24.4		43.7	68.8		97.1	58.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.0	37.5		31.8	24.4		43.7	68.8		97.1	58.9	
LOS	C	D		C	C		D	E		F	E	
Approach Delay		35.4			24.9			63.0			79.9	
Approach LOS		D			C			E			E	
Queue Length 50th (ft)	89	772		24	299		59	127		273	121	
Queue Length 95th (ft)	136	#1042		74	392		104	176		#405	171	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	389	1926		185	1738		269	448		320	540	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.62	0.91		0.39	0.54		0.30	0.61		1.00	0.48	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 69 (46%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 41.8

Intersection LOS: D

Intersection Capacity Utilization 90.2%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road



Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	32	0	0	1	21	511	2	1	650	5
Future Vol, veh/h	3	0	32	0	0	1	21	511	2	1	650	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	33	0	3	0	0	0	0	7	50	0	3	0
Mvmt Flow	4	0	42	0	0	1	27	664	3	1	844	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1569	1570	847	1590	1572	666	850	0	0	667	0	0
Stage 1	849	849	-	720	720	-	-	-	-	-	-	-
Stage 2	720	721	-	870	852	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	76	112	360	88	111	463	797	-	-	932	-	-
Stage 1	315	380	-	422	435	-	-	-	-	-	-	-
Stage 2	374	435	-	349	379	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	74	108	360	76	107	463	797	-	-	932	-	-
Mov Cap-2 Maneuver	184	231	-	76	107	-	-	-	-	-	-	-
Stage 1	304	380	-	408	420	-	-	-	-	-	-	-
Stage 2	360	420	-	308	379	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	17.5		12.8		0.4		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	797	-	-	333	-	463	932	-	-			
HCM Lane V/C Ratio	0.034	-	-	0.137	-	0.003	0.001	-	-			
HCM Control Delay (s)	9.7	-	-	17.5	0	12.8	8.9	-	-			
HCM Lane LOS	A	-	-	C	A	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.5	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	39	6	0	7	26	521	10	9	667	5
Future Vol, veh/h	5	0	39	6	0	7	26	521	10	9	667	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	0	0	0	0	7	10	11	3	20
Mvmt Flow	7	0	52	8	0	9	35	695	13	12	889	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1693	1695	893	1715	1692	702	896	0	0	708	0	0
Stage 1	917	917	-	772	772	-	-	-	-	-	-	-
Stage 2	776	778	-	943	920	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.21	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.299	-	-
Pot Cap-1 Maneuver	74	94	339	72	94	442	766	-	-	850	-	-
Stage 1	329	354	-	395	412	-	-	-	-	-	-	-
Stage 2	393	410	-	318	352	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	69	88	339	58	88	442	766	-	-	850	-	-
Mov Cap-2 Maneuver	69	88	-	58	88	-	-	-	-	-	-	-
Stage 1	314	349	-	377	393	-	-	-	-	-	-	-
Stage 2	367	391	-	265	347	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	25.3		42.6		0.5		0.1					
HCM LOS	D		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	766	-	-	235 58 442	850	-	-					
HCM Lane V/C Ratio	0.045	-	-	0.25 0.138 0.021	0.014	-	-					
HCM Control Delay (s)	9.9	-	-	25.3 76.8 13.3	9.3	-	-					
HCM Lane LOS	A	-	-	D F B	A	-	-					
HCM 95th %tile Q(veh)	0.1	-	-	1 0.4 0.1	0	-	-					

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	4	3	9	6	3	72	2	12	230	3
Future Vol, veh/h	6	5	4	3	9	6	3	72	2	12	230	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0	0	6	50	8	1	0
Mvmt Flow	8	6	5	4	12	8	4	94	3	16	299	4
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	447	438	301	443	439	96	303	0	0	97	0	0
Stage 1	333	333	-	104	104	-	-	-	-	-	-	-
Stage 2	114	105	-	339	335	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	525	515	743	528	515	966	1269	-	-	1460	-	-
Stage 1	685	647	-	907	813	-	-	-	-	-	-	-
Stage 2	896	812	-	680	646	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	506	507	743	513	507	966	1269	-	-	1460	-	-
Mov Cap-2 Maneuver	506	507	-	513	507	-	-	-	-	-	-	-
Stage 1	683	639	-	904	811	-	-	-	-	-	-	-
Stage 2	873	810	-	660	638	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.7		11.2		0.3		0.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1269	-	-	553	604	1460	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.035	0.039	0.011	-	-				
HCM Control Delay (s)	7.8	0	-	11.7	11.2	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	24	2	0	19	1	0	8	2	4	8	0
Future Vol, veh/h	2	24	2	0	19	1	0	8	2	4	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	0	8	0	0	6	0	0	0	0	0	0	0
Mvmt Flow	3	37	3	0	29	2	0	12	3	6	12	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	31	0	0	40	0	0	81	76	39	82	76	30
Stage 1	-	-	-	-	-	-	45	45	-	30	30	-
Stage 2	-	-	-	-	-	-	36	31	-	52	46	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1595	-	-	1583	-	-	912	818	1038	910	818	1050
Stage 1	-	-	-	-	-	-	974	861	-	992	874	-
Stage 2	-	-	-	-	-	-	985	873	-	966	861	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1595	-	-	1583	-	-	900	816	1038	895	816	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	900	816	-	895	816	-
Stage 1	-	-	-	-	-	-	972	859	-	990	874	-
Stage 2	-	-	-	-	-	-	971	873	-	947	859	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			9.3			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	852	1595	-	-	1583	-	-	841				
HCM Lane V/C Ratio	0.018	0.002	-	-	-	-	-	0.022				
HCM Control Delay (s)	9.3	7.3	0	-	0	-	-	9.4				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	528	0	0	677
Future Vol, veh/h	0	0	528	0	0	677
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	7	0	0	3
Mvmt Flow	0	0	556	0	0	713
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1269	556	0	0	556	0
Stage 1	556	-	-	-	-	-
Stage 2	713	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	188	534	-	-	1025	-
Stage 1	578	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	188	534	-	-	1025	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1025	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Capacity Analysis Summary Sheets
Year 2028 No-Build Weekday Afternoon Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	7	116	5	6	5	155	486	2	2	442	99
Future Volume (vph)	56	7	116	5	6	5	155	486	2	2	442	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.859			0.957				0.850			0.850
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1770	1573	0	0	1789	0	1752	1961	1615	1805	1887	1568
Flt Permitted	0.745				0.845		0.377			0.458		
Satd. Flow (perm)	1388	1573	0	0	1536	0	695	1961	1615	870	1887	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		132			6				79			113
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	3%	2%	0%	0%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	140	0	0	19	0	176	552	2	2	502	113
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	10.6	10.6			10.6		49.8	48.2	48.2	45.3	36.5	36.5
Actuated g/C Ratio	0.16	0.16			0.16		0.75	0.73	0.73	0.69	0.55	0.55

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.29	0.39			0.08		0.28	0.39	0.00	0.00	0.48	0.12
Control Delay	33.5	10.9			25.2		4.3	7.0	0.0	3.0	11.5	2.1
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.5	10.9			25.2		4.3	7.0	0.0	3.0	11.5	2.1
LOS	C	B			C		A	A	A	A	B	A
Approach Delay		18.0			25.2			6.4			9.8	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	25	3			5		18	83	0	0	122	0
Queue Length 95th (ft)	65	49			24		40	223	0	2	208	19
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	460	610			513		637	1488	1245	710	1382	1178
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.23			0.04		0.28	0.37	0.00	0.00	0.36	0.10

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 66.1

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 9.4

Intersection LOS: A

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	225	208	83	281	115	278	568	151	94	441	94
Future Volume (vph)	150	225	208	83	281	115	278	568	151	94	441	94
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.957			0.969			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1980	1568	1736	1751	0	1719	3382	0	1787	3387	0
Flt Permitted	0.155			0.591			0.227			0.150		
Satd. Flow (perm)	286	1980	1568	1080	1751	0	411	3382	0	282	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			194		21			33			25	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	3%	4%	5%	1%	5%	3%	5%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	183	274	254	101	483	0	339	877	0	115	653	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	46.5	36.2	52.7	37.5	28.6		41.2	28.3		38.0	26.6	
Actuated g/C Ratio	0.48	0.37	0.54	0.39	0.30		0.43	0.29		0.39	0.28	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.58	0.37	0.27	0.22	0.91		1.07	0.87		0.46	0.69	
Control Delay	22.3	24.8	4.3	15.9	55.2		95.2	42.4		22.8	34.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.3	24.8	4.3	15.9	55.2		95.2	42.4		22.8	34.6	
LOS	C	C	A	B	E		F	D		C	C	
Approach Delay		16.8			48.4			57.1			32.9	
Approach LOS		B			D			E			C	
Queue Length 50th (ft)	65	128	18	34	285		~152	266		42	185	
Queue Length 95th (ft)	97	176	45	57	#408		#282	311		69	221	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	342	752	943	464	541		317	1014		279	1001	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.54	0.36	0.27	0.22	0.89		1.07	0.86		0.41	0.65	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 96.7

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 41.1

Intersection LOS: D

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	1157	108	98	1145	318	125	172	94	343	212	193
Future Volume (vph)	141	1157	108	98	1145	318	125	172	94	343	212	193
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.967			0.947			0.929	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3412	0	1687	3375	0	1687	3223	0	1736	3209	0
Flt Permitted	0.065			0.127			0.379			0.256		
Satd. Flow (perm)	115	3412	0	226	3375	0	673	3223	0	468	3209	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		10			35			51				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	4%	9%	7%	3%	5%	7%	5%	8%	4%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	150	1346	0	104	1556	0	133	283	0	365	431	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.6	93.3		100.9	89.7		31.8	15.4		44.9	25.1	
Actuated g/C Ratio	0.67	0.58		0.63	0.56		0.20	0.10		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.75	0.68		0.47	0.82		0.60	0.79		1.15	0.86	
Control Delay	50.5	25.2		16.6	32.8		57.4	74.3		143.2	82.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.5	25.2		16.6	32.8		57.4	74.3		143.2	82.6	
LOS	D	C		B	C		E	E		F	F	
Approach Delay		27.7			31.8			68.9			110.4	
Approach LOS		C			C			E			F	
Queue Length 50th (ft)	78	494		36	683		109	126		~374	236	
Queue Length 95th (ft)	#163	590		60	798		172	#185		#585	#334	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	219	1993		240	1906		239	368		317	503	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.68	0.68		0.43	0.82		0.56	0.77		1.15	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.15

Intersection Signal Delay: 48.2

Intersection LOS: D

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

											
Ø1	Ø2 (R)		Ø3	Ø4		Ø5	Ø6 (R)		Ø7	Ø8	
14 s	97 s		19 s	30 s		18 s	93 s		27 s	22 s	

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	1	24	0	0	1	36	752	0	2	564	13
Future Vol, veh/h	8	1	24	0	0	1	36	752	0	2	564	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	25	0	4	0	0	0	0	3	0	0	4	0
Mvmt Flow	10	1	29	0	0	1	44	917	0	2	688	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1706	1705	696	1720	1713	917	704	0	0	917	0	0
Stage 1	700	700	-	1005	1005	-	-	-	-	-	-	-
Stage 2	1006	1005	-	715	708	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.24	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.336	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	63	92	438	71	91	332	903	-	-	752	-	-
Stage 1	395	444	-	294	322	-	-	-	-	-	-	-
Stage 2	264	322	-	425	441	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	60	87	438	63	86	332	903	-	-	752	-	-
Mov Cap-2 Maneuver	162	202	-	63	86	-	-	-	-	-	-	-
Stage 1	376	443	-	280	306	-	-	-	-	-	-	-
Stage 2	250	306	-	394	440	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	18.7		15.9		0.4		0					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	903	-	-	302	-	332	752	-	-			
HCM Lane V/C Ratio	0.049	-	-	0.133	-	0.004	0.003	-	-			
HCM Control Delay (s)	9.2	-	-	18.7	0	15.9	9.8	-	-			
HCM Lane LOS	A	-	-	C	A	C	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-	0.5	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	5.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔	↔	↔	↔		↔	↔	
Traffic Vol, veh/h	21	3	28	14	4	20	43	748	25	23	552	13
Future Vol, veh/h	21	3	28	14	4	20	43	748	25	23	552	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	33	0	0	0	5	2	3	4	0	5	8
Mvmt Flow	26	4	35	17	5	25	53	923	31	28	681	16

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1805	1805	689	1810	1798	939	697	0	0	954	0	0
Stage 1	745	745	-	1045	1045	-	-	-	-	-	-	-
Stage 2	1060	1060	-	765	753	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.83	6.2	7.1	6.5	6.25	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.297	3.3	3.5	4	3.345	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	62	66	449	62	81	316	899	-	-	729	-	-
Stage 1	409	378	-	279	308	-	-	-	-	-	-	-
Stage 2	273	265	-	399	420	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	50	60	449	51	73	316	899	-	-	729	-	-
Mov Cap-2 Maneuver	50	60	-	51	73	-	-	-	-	-	-	-
Stage 1	385	364	-	263	290	-	-	-	-	-	-	-
Stage 2	233	249	-	351	404	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB				
HCM Control Delay, s	93.9		60.9		0.5			0.4				
HCM LOS	F		F									

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	899	-	-	98 55 316	729	-	-
HCM Lane V/C Ratio	0.059	-	-	0.655 0.404 0.078	0.039	-	-
HCM Control Delay (s)	9.3	-	-	93.9 109.2 17.4	10.1	-	-
HCM Lane LOS	A	-	-	F F C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.2 1.5 0.3	0.1	-	-

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	10	3	5	14	24	11	190	4	8	121	6
Future Vol, veh/h	8	10	3	5	14	24	11	190	4	8	121	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	13	10	0	0	0	4	9	1	25	13	2	0
Mvmt Flow	11	14	4	7	20	34	15	268	6	11	170	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	524	500	174	506	501	271	178	0	0	274	0	0
Stage 1	196	196	-	301	301	-	-	-	-	-	-	-
Stage 2	328	304	-	205	200	-	-	-	-	-	-	-
Critical Hdwy	7.23	6.6	6.2	7.1	6.5	6.24	4.19	-	-	4.23	-	-
Critical Hdwy Stg 1	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.617	4.09	3.3	3.5	4	3.336	2.281	-	-	2.317	-	-
Pot Cap-1 Maneuver	447	461	875	480	475	763	1357	-	-	1228	-	-
Stage 1	781	724	-	712	669	-	-	-	-	-	-	-
Stage 2	662	649	-	802	739	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	406	450	875	458	464	763	1357	-	-	1228	-	-
Mov Cap-2 Maneuver	406	450	-	458	464	-	-	-	-	-	-	-
Stage 1	771	717	-	703	660	-	-	-	-	-	-	-
Stage 2	606	641	-	775	732	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.3		11.8		0.4		0.5					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1357	-	-	463	593	1228	-	-				
HCM Lane V/C Ratio	0.011	-	-	0.064	0.102	0.009	-	-				
HCM Control Delay (s)	7.7	0	-	13.3	11.8	8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	26	3	0	39	6	10	16	5	1	7	3
Future Vol, veh/h	2	26	3	0	39	6	10	16	5	1	7	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	54	54	54	54	54	54	54	54	54	54	54	54
Heavy Vehicles, %	0	12	0	0	0	0	10	0	0	0	14	0
Mvmt Flow	4	48	6	0	72	11	19	30	9	2	13	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	54	0	0	146	142	51	157	140	78
Stage 1	-	-	-	-	-	-	59	59	-	78	78	-
Stage 2	-	-	-	-	-	-	87	83	-	79	62	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.1	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	3.5	4.126	3.3
Pot Cap-1 Maneuver	1527	-	-	1564	-	-	805	753	1023	814	729	988
Stage 1	-	-	-	-	-	-	933	850	-	936	807	-
Stage 2	-	-	-	-	-	-	901	830	-	935	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1527	-	-	1564	-	-	788	751	1023	781	727	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	788	751	-	781	727	-
Stage 1	-	-	-	-	-	-	930	847	-	933	807	-
Stage 2	-	-	-	-	-	-	882	830	-	891	818	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			9.9			9.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	797	1527	-	-	1564	-	-	789				
HCM Lane V/C Ratio	0.072	0.002	-	-	-	-	-	0.026				
HCM Control Delay (s)	9.9	7.4	0	-	0	-	-	9.7				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	785	0	0	583
Future Vol, veh/h	0	0	785	0	0	583
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	5
Mvmt Flow	0	0	826	0	0	614
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1440	826	0	0	826	0
Stage 1	826	-	-	-	-	-
Stage 2	614	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	148	375	-	-	813	-
Stage 1	433	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	148	375	-	-	813	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	813	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Capacity Analysis Summary Sheets
Year 2028 No-Build Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	5	108	7	25	5	125	448	0	6	448	107
Future Volume (vph)	76	5	108	7	25	5	125	448	0	6	448	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.857			0.981							0.850
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1805	1569	0	0	1847	0	1805	1980	1900	1805	1961	1583
Flt Permitted	0.730				0.908		0.391			0.481		
Satd. Flow (perm)	1387	1569	0	0	1692	0	743	1980	1900	914	1961	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		120			6							119
Link Speed (mph)		30			25			30				25
Link Distance (ft)		136			160			478				380
Travel Time (s)		3.1			4.4			10.9				10.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	0%	1%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	126	0	0	42	0	139	498	0	7	498	119
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	11.4	11.4			11.4		50.0	48.4		47.2	42.5	42.5
Actuated g/C Ratio	0.17	0.17			0.17		0.74	0.72		0.70	0.63	0.63

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.36	0.35			0.14		0.21	0.35		0.01	0.40	0.11
Control Delay	34.2	10.3			26.9		4.3	7.2		3.5	10.9	2.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.2	10.3			26.9		4.3	7.2		3.5	10.9	2.2
LOS	C	B			C		A	A		A	B	A
Approach Delay		19.9			26.9			6.6			9.2	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	33	2			14		15	77		1	123	0
Queue Length 95th (ft)	83	48			44		37	215		4	221	22
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155			85		140
Base Capacity (vph)	449	589			552		664	1488		744	1423	1181
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.19	0.21			0.08		0.21	0.33		0.01	0.35	0.10

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 67.3

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 53.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	212	180	137	379	121	209	384	73	112	430	131
Future Volume (vph)	89	212	180	137	379	121	209	384	73	112	430	131
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.964			0.976			0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	2000	1482	1626	1800	0	1752	3461	0	1752	3415	0
Flt Permitted	0.165			0.580			0.261			0.448		
Satd. Flow (perm)	310	2000	1482	993	1800	0	481	3461	0	826	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		16			22			40	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	9%	11%	2%	1%	3%	1%	6%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	223	189	144	526	0	220	481	0	118	591	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	40.2	29.2	45.4	37.0	29.5		37.3	26.8		34.4	23.1	
Actuated g/C Ratio	0.46	0.33	0.51	0.42	0.33		0.42	0.30		0.39	0.26	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.33	0.34	0.22	0.31	0.86		0.63	0.45		0.29	0.64	
Control Delay	17.1	24.5	2.6	17.1	45.2		25.7	27.0		17.4	30.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	17.1	24.5	2.6	17.1	45.2		25.7	27.0		17.4	30.8	
LOS	B	C	A	B	D		C	C		B	C	
Approach Delay		15.0			39.1			26.6			28.6	
Approach LOS		B			D			C			C	
Queue Length 50th (ft)	29	96	0	47	286		78	116		40	148	
Queue Length 95th (ft)	60	162	32	88	#531		136	173		76	212	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	377	830	863	463	612		357	1134		451	1130	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.27	0.22	0.31	0.86		0.62	0.42		0.26	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 88.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 76.6%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	1036	102	83	1362	280	140	229	80	306	234	173
Future Volume (vph)	147	1036	102	83	1362	280	140	229	80	306	234	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.974			0.961			0.936	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3453	0	1719	3424	0	1752	3345	0	1752	3318	0
Flt Permitted	0.044			0.176			0.403			0.207		
Satd. Flow (perm)	77	3453	0	318	3424	0	743	3345	0	382	3318	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		11			24			24				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	8%	3%	5%	5%	2%	6%	3%	5%	0%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	1173	0	86	1693	0	144	318	0	315	419	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.3	93.3		99.1	88.4		32.5	16.0		45.5	25.5	
Actuated g/C Ratio	0.67	0.58		0.62	0.55		0.20	0.10		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

07/14/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.84	0.58		0.32	0.89		0.60	0.89		1.02	0.80	
Control Delay	74.6	22.4		12.6	38.5		56.7	92.2		105.6	76.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.6	22.4		12.6	38.5		56.7	92.2		105.6	76.8	
LOS	E	C		B	D		E	F		F	E	
Approach Delay		28.4			37.3			81.1			89.2	
Approach LOS		C			D			F			F	
Queue Length 50th (ft)	107	390		29	807		118	163		~296	227	
Queue Length 95th (ft)	#222	471		50	930		184	#253		#493	#310	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	196	2017		293	1902		255	356		309	527	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.78	0.58		0.29	0.89		0.56	0.89		1.02	0.80	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 48.1

Intersection LOS: D

Intersection Capacity Utilization 97.2%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	97 s	19 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	93 s	27 s	22 s

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	0	10	0	0	1	21	587	1	1	643	9
Future Vol, veh/h	9	0	10	0	0	1	21	587	1	1	643	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	11	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	9	0	10	0	0	1	22	605	1	1	663	9
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1320	1320	668	1325	1324	606	672	0	0	606	0	0
Stage 1	670	670	-	650	650	-	-	-	-	-	-	-
Stage 2	650	650	-	675	674	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	128	158	462	134	157	501	928	-	-	982	-	-
Stage 1	432	459	-	461	468	-	-	-	-	-	-	-
Stage 2	443	468	-	447	457	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	154	462	129	153	501	928	-	-	982	-	-
Mov Cap-2 Maneuver	252	279	-	129	153	-	-	-	-	-	-	-
Stage 1	422	459	-	450	457	-	-	-	-	-	-	-
Stage 2	432	457	-	437	457	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	16.6		12.2		0.3		0					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	928	-	-	331	-	501	982	-	-			
HCM Lane V/C Ratio	0.023	-	-	0.059	-	0.002	0.001	-	-			
HCM Control Delay (s)	9	-	-	16.6	0	12.2	8.7	-	-			
HCM Lane LOS	A	-	-	C	A	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-	0	0	-	-			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

07/14/2022

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	1	26	13	3	19	19	579	1	21	610	23
Future Vol, veh/h	11	1	26	13	3	19	19	579	1	21	610	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	5	1	0
Mvmt Flow	12	1	27	14	3	20	20	609	1	22	642	24
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1359	1348	654	1362	1360	610	666	0	0	610	0	0
Stage 1	698	698	-	650	650	-	-	-	-	-	-	-
Stage 2	661	650	-	712	710	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	127	152	470	126	150	498	933	-	-	954	-	-
Stage 1	434	445	-	461	468	-	-	-	-	-	-	-
Stage 2	455	468	-	427	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	116	145	470	114	143	498	933	-	-	954	-	-
Mov Cap-2 Maneuver	116	145	-	114	143	-	-	-	-	-	-	-
Stage 1	425	435	-	451	458	-	-	-	-	-	-	-
Stage 2	424	458	-	392	430	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	22.8		25.2		0.3		0.3					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	933	-	-	242 119 498	954	-	-					
HCM Lane V/C Ratio	0.021	-	-	0.165 0.142 0.04	0.023	-	-					
HCM Control Delay (s)	8.9	-	-	22.8 40.2 12.5	8.9	-	-					
HCM Lane LOS	A	-	-	C E B	A	-	-					
HCM 95th %tile Q(veh)	0.1	-	-	0.6 0.5 0.1	0.1	-	-					

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	4	1	3	2	19	4	140	3	8	152	11
Future Vol, veh/h	6	4	1	3	2	19	4	140	3	8	152	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	7	5	1	4	2	23	5	171	4	10	185	13

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	408	397	192	398	401	173	198	0	0	175	0	0
Stage 1	212	212	-	183	183	-	-	-	-	-	-	-
Stage 2	196	185	-	215	218	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	557	544	855	566	541	876	1387	-	-	1414	-	-
Stage 1	795	731	-	823	752	-	-	-	-	-	-	-
Stage 2	810	751	-	792	726	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	535	537	855	556	535	876	1387	-	-	1414	-	-
Mov Cap-2 Maneuver	535	537	-	556	535	-	-	-	-	-	-	-
Stage 1	792	725	-	820	749	-	-	-	-	-	-	-
Stage 2	783	748	-	779	720	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB				
HCM Control Delay, s	11.6		9.8		0.2			0.4				
HCM LOS	B		A									

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1387	-	-	555	779	1414	-	-
HCM Lane V/C Ratio	0.004	-	-	0.024	0.038	0.007	-	-
HCM Control Delay (s)	7.6	0	-	11.6	9.8	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

07/14/2022

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	14	0	1	23	2	4	4	1	1	8	1
Future Vol, veh/h	1	14	0	1	23	2	4	4	1	1	8	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	64	65	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	22	0	2	36	3	6	6	2	2	13	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	39	0	0	22	0	0	75	69	22	72	68	38
Stage 1	-	-	-	-	-	-	26	26	-	42	42	-
Stage 2	-	-	-	-	-	-	49	43	-	30	26	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1584	-	-	1607	-	-	920	825	1061	924	826	1040
Stage 1	-	-	-	-	-	-	997	878	-	978	864	-
Stage 2	-	-	-	-	-	-	969	863	-	992	878	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1584	-	-	1607	-	-	906	823	1061	916	824	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	906	823	-	916	824	-
Stage 1	-	-	-	-	-	-	996	877	-	977	863	-
Stage 2	-	-	-	-	-	-	953	862	-	982	877	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.3			9.2			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	881	1584	-	-	1607	-	-	850				
HCM Lane V/C Ratio	0.016	0.001	-	-	0.001	-	-	0.018				
HCM Control Delay (s)	9.2	7.3	0	-	7.2	0	-	9.3				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	606	0	0	648
Future Vol, veh/h	0	0	606	0	0	648
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	0	638	0	0	682

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1320	638	0
Stage 1	638	-	-
Stage 2	682	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	175	480	-
Stage 1	530	-	-
Stage 2	506	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	175	480	-
Mov Cap-2 Maneuver	175	-	-
Stage 1	530	-	-
Stage 2	506	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	956
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Capacity Analysis Summary Sheets
Year 2028 Total Projected Weekday Morning Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	98	30	180	5	3	4	101	356	6	5	387	57
Future Volume (vph)	98	30	180	5	3	4	101	356	6	5	387	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.872			0.955				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1770	1600	0	0	1778	0	1752	1852	1615	1805	1923	1538
Flt Permitted	0.750				0.842		0.413			0.537		
Satd. Flow (perm)	1397	1600	0	0	1528	0	762	1852	1615	1020	1923	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		191			4				79			79
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	7%	3%	0%	0%	0%	3%	8%	0%	0%	4%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	223	0	0	12	0	107	379	6	5	412	61
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	12.0	12.0			12.0		38.7	35.0	35.0	35.7	28.8	28.8
Actuated g/C Ratio	0.20	0.20			0.20		0.63	0.57	0.57	0.58	0.47	0.47

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.38	0.48			0.04		0.18	0.36	0.01	0.01	0.46	0.08
Control Delay	30.6	10.8			22.0		4.9	8.6	0.0	4.2	13.2	2.0
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.6	10.8			22.0		4.9	8.6	0.0	4.2	13.2	2.0
LOS	C	B			C		A	A	A	A	B	A
Approach Delay		17.1			22.0			7.7			11.7	
Approach LOS		B			C			A			B	
Queue Length 50th (ft)	34	10			2		11	56	0	1	98	0
Queue Length 95th (ft)	98	75			18		34	173	0	4	192	12
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	499	695			549		594	1455	1286	695	1508	1223
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.32			0.02		0.18	0.26	0.00	0.01	0.27	0.05

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 61.5

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 11.6

Intersection LOS: B

Intersection Capacity Utilization 51.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	226	294	123	148	74	215	487	87	107	680	81
Future Volume (vph)	102	226	294	123	148	74	215	487	87	107	680	81
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.950			0.977			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1961	1524	1671	1708	0	1671	3292	0	1770	3442	0
Flt Permitted	0.338			0.492			0.134			0.235		
Satd. Flow (perm)	630	1961	1524	866	1708	0	236	3292	0	438	3442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92		25			20			13	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	6%	8%	6%	5%	8%	7%	8%	2%	3%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	301	392	164	296	0	287	765	0	143	1015	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	37.7	26.1	42.8	31.7	22.6		42.8	29.8		39.7	28.2	
Actuated g/C Ratio	0.42	0.29	0.47	0.35	0.25		0.47	0.33		0.44	0.31	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	0.53	0.51	0.45	0.67		1.03	0.70		0.44	0.94	
Control Delay	18.1	30.1	14.6	21.7	35.9		87.2	31.6		19.1	48.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.1	30.1	14.6	21.7	35.9		87.2	31.6		19.1	48.4	
LOS	B	C	B	C	D		F	C		B	D	
Approach Delay		20.8			30.8			46.8			44.8	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	47	143	111	58	139		~128	196		43	293	
Queue Length 95th (ft)	67	174	136	79	183		#242	239		76	#355	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	440	784	767	361	567		278	1096		355	1080	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.31	0.38	0.51	0.45	0.52		1.03	0.70		0.40	0.94	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 90.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 37.9

Intersection LOS: D

Intersection Capacity Utilization 69.3%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	241	1543	98	69	652	253	76	205	54	350	139	139
Future Volume (vph)	241	1543	98	69	652	253	76	205	54	350	139	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.991			0.958			0.969			0.925	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1626	3401	0	1752	3250	0	1504	3250	0	1671	3008	0
Flt Permitted	0.204			0.051			0.571			0.331		
Satd. Flow (perm)	349	3401	0	94	3250	0	904	3250	0	582	3008	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		6			53			18				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	11%	5%	8%	3%	5%	10%	20%	7%	10%	8%	9%	13%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	256	1745	0	73	963	0	81	275	0	372	296	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	21.0	85.0		15.0	79.0		18.0	26.0		24.0	32.0	
Total Split (%)	14.0%	56.7%		10.0%	52.7%		12.0%	17.3%		16.0%	21.3%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	99.0	84.7		89.0	78.3		31.2	17.5		44.0	26.8	
Actuated g/C Ratio	0.66	0.56		0.59	0.52		0.21	0.12		0.29	0.18	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.72	0.91		0.50	0.56		0.35	0.70		1.17	0.55	
Control Delay	23.1	37.7		32.2	25.0		43.8	69.0		145.3	60.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	23.1	37.7		32.2	25.0		43.8	69.0		145.3	60.6	
LOS	C	D		C	C		D	E		F	E	
Approach Delay		35.8			25.5			63.2			107.7	
Approach LOS		D			C			E			F	
Queue Length 50th (ft)	96	774		24	313		59	128		~332	140	
Queue Length 95th (ft)	146	#1042		74	404		104	178		#522	194	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	379	1924		184	1721		265	448		319	537	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.68	0.91		0.40	0.56		0.31	0.61		1.17	0.55	

Intersection Summary

Area Type: Other

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 69 (46%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 47.4

Intersection LOS: D

Intersection Capacity Utilization 93.0%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

				
Ø1	Ø2 (R)		Ø3	Ø4
15 s	85 s		18 s	32 s
				
Ø5	Ø6 (R)		Ø7	Ø8
21 s	79 s		24 s	26 s

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	4	32	74	0	23	21	520	41	8	653	5
Future Vol, veh/h	3	4	32	74	0	23	21	520	41	8	653	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	33	0	3	0	0	0	0	7	50	0	3	0
Mvmt Flow	4	5	42	96	0	30	27	675	53	10	848	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1642	1653	851	1651	1630	702	854	0	0	728	0	0
Stage 1	871	871	-	756	756	-	-	-	-	-	-	-
Stage 2	771	782	-	895	874	-	-	-	-	-	-	-
Critical Hdwy	7.43	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.43	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4	3.327	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	67	99	358	~ 80	103	442	794	-	-	885	-	-
Stage 1	306	371	-	403	419	-	-	-	-	-	-	-
Stage 2	350	408	-	338	370	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	60	95	358	~ 67	98	442	794	-	-	885	-	-
Mov Cap-2 Maneuver	164	215	-	173	213	-	-	-	-	-	-	-
Stage 1	296	367	-	389	405	-	-	-	-	-	-	-
Stage 2	315	394	-	291	366	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	18.9		40.7		0.3		0.1					
HCM LOS	C		E									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	794	-	-	309	173	442	885	-	-			
HCM Lane V/C Ratio	0.034	-	-	0.164	0.556	0.068	0.012	-	-			
HCM Control Delay (s)	9.7	-	-	18.9	49.1	13.7	9.1	-	-			
HCM Lane LOS	A	-	-	C	E	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.6	2.9	0.2	0	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

09/13/2022

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	39	6	0	7	26	577	10	9	781	5
Future Vol, veh/h	5	0	39	6	0	7	26	577	10	9	781	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	0	0	3	0	0	0	0	7	10	11	3	20
Mvmt Flow	7	0	52	8	0	9	35	769	13	12	1041	7
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1919	1921	1045	1941	1918	776	1048	0	0	782	0	0
Stage 1	1069	1069	-	846	846	-	-	-	-	-	-	-
Stage 2	850	852	-	1095	1072	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.23	7.1	6.5	6.2	4.1	-	-	4.21	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.327	3.5	4	3.3	2.2	-	-	2.299	-	-
Pot Cap-1 Maneuver	52	68	277	50	68	401	672	-	-	797	-	-
Stage 1	270	300	-	360	381	-	-	-	-	-	-	-
Stage 2	358	379	-	261	299	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	48	64	277	39	64	401	672	-	-	797	-	-
Mov Cap-2 Maneuver	48	64	-	39	64	-	-	-	-	-	-	-
Stage 1	256	296	-	341	361	-	-	-	-	-	-	-
Stage 2	331	359	-	209	295	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	34.4		62.9		0.5		0.1					
HCM LOS	D		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	672	-	-	180	39	401	797	-	-			
HCM Lane V/C Ratio	0.052	-	-	0.326	0.205	0.023	0.015	-	-			
HCM Control Delay (s)	10.6	-	-	34.4	119.7	14.2	9.6	-	-			
HCM Lane LOS	B	-	-	D	F	B	A	-	-			
HCM 95th %tile Q(veh)	0.2	-	-	1.3	0.7	0.1	0	-	-			

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	5	4	3	9	6	3	72	2	16	230	3
Future Vol, veh/h	6	5	4	3	9	6	3	72	2	16	230	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	0	0	0	0	0	0	0	6	50	8	1	0
Mvmt Flow	8	6	5	4	12	8	4	94	3	21	299	4
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	457	448	301	453	449	96	303	0	0	97	0	0
Stage 1	343	343	-	104	104	-	-	-	-	-	-	-
Stage 2	114	105	-	349	345	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.272	-	-
Pot Cap-1 Maneuver	517	509	743	520	508	966	1269	-	-	1460	-	-
Stage 1	676	641	-	907	813	-	-	-	-	-	-	-
Stage 2	896	812	-	671	640	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	496	499	743	503	498	966	1269	-	-	1460	-	-
Mov Cap-2 Maneuver	496	499	-	503	498	-	-	-	-	-	-	-
Stage 1	674	630	-	904	811	-	-	-	-	-	-	-
Stage 2	873	810	-	648	629	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11.9		11.3			0.3			0.5			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1269	-	-	545	595	1460	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.036	0.039	0.014	-	-				
HCM Control Delay (s)	7.8	0	-	11.9	11.3	7.5	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	28	2	0	19	1	0	8	2	4	8	0
Future Vol, veh/h	2	28	2	0	19	1	0	8	2	4	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	65	65	65	65	65	65
Heavy Vehicles, %	0	8	0	0	6	0	0	0	0	0	0	0
Mvmt Flow	3	43	3	0	29	2	0	12	3	6	12	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	31	0	0	46	0	0	87	82	45	88	82	30
Stage 1	-	-	-	-	-	-	51	51	-	30	30	-
Stage 2	-	-	-	-	-	-	36	31	-	58	52	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1595	-	-	1575	-	-	904	812	1031	902	812	1050
Stage 1	-	-	-	-	-	-	967	856	-	992	874	-
Stage 2	-	-	-	-	-	-	985	873	-	959	856	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1595	-	-	1575	-	-	892	810	1031	888	810	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	892	810	-	888	810	-
Stage 1	-	-	-	-	-	-	965	854	-	990	874	-
Stage 2	-	-	-	-	-	-	971	873	-	940	854	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0			9.3			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	846	1595	-	-	1575	-	-	834				
HCM Lane V/C Ratio	0.018	0.002	-	-	-	-	-	0.022				
HCM Control Delay (s)	9.3	7.3	0	-	0	-	-	9.4				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

Intersection

Int Delay, s/veh 1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	9	567	17	3	751
Future Vol, veh/h	40	9	567	17	3	751
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	7	0	0	3
Mvmt Flow	42	9	597	18	3	791

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1403	606	0
Stage 1	606	-	-
Stage 2	797	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	156	501	-
Stage 1	548	-	-
Stage 2	447	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	156	501	-
Mov Cap-2 Maneuver	156	-	-
Stage 1	548	-	-
Stage 2	446	-	-

Approach	WB	NB	SB
HCM Control Delay, s	33.1	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	179	974
HCM Lane V/C Ratio	-	-	0.288	0.003
HCM Control Delay (s)	-	-	33.1	8.7
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	1.1	0

Capacity Analysis Summary Sheets
Year 2028 Total Projected Weekday Afternoon Peak
Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	7	119	5	6	5	158	495	2	2	449	99
Future Volume (vph)	56	7	119	5	6	5	158	495	2	2	449	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.858			0.957				0.850			0.850
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1770	1571	0	0	1789	0	1752	1961	1615	1805	1887	1568
Flt Permitted	0.745				0.844		0.372			0.453		
Satd. Flow (perm)	1388	1571	0	0	1535	0	686	1961	1615	861	1887	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		135			6				79			113
Link Speed (mph)		30			25			30			25	
Link Distance (ft)		136			160			478			380	
Travel Time (s)		3.1			4.4			10.9			10.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	4%	0%	0%	0%	3%	2%	0%	0%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	64	143	0	0	19	0	180	563	2	2	510	113
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	10.6	10.6			10.6		50.1	48.5	48.5	45.6	36.7	36.7
Actuated g/C Ratio	0.16	0.16			0.16		0.75	0.73	0.73	0.69	0.55	0.55

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.29	0.39			0.08		0.29	0.39	0.00	0.00	0.49	0.12
Control Delay	33.6	11.0			25.2		4.4	7.1	0.0	3.0	11.6	2.1
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.6	11.0			25.2		4.4	7.1	0.0	3.0	11.6	2.1
LOS	C	B			C		A	A	A	A	B	A
Approach Delay		18.0			25.2			6.4			9.8	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	26	3			5		18	86	0	0	125	0
Queue Length 95th (ft)	65	50			24		41	230	0	2	213	19
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155		155	85		140
Base Capacity (vph)	459	610			511		631	1489	1245	706	1376	1174
Starvation Cap Reductn	0	0			0		0	0	0	0	0	0
Spillback Cap Reductn	0	0			0		0	0	0	0	0	0
Storage Cap Reductn	0	0			0		0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.23			0.04		0.29	0.38	0.00	0.00	0.37	0.10

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 66.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 52.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	225	208	83	281	122	278	610	151	99	473	99
Future Volume (vph)	157	225	208	83	281	122	278	610	151	99	473	99
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.955			0.970			0.974	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	1980	1568	1736	1748	0	1719	3387	0	1787	3387	0
Flt Permitted	0.143			0.591			0.199			0.148		
Satd. Flow (perm)	264	1980	1568	1080	1748	0	360	3387	0	278	3387	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182		22			30			25	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	1%	3%	4%	5%	1%	5%	3%	5%	1%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	191	274	254	101	492	0	339	928	0	121	698	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	47.1	36.7	53.2	37.8	28.9		41.4	28.5		38.4	26.9	
Actuated g/C Ratio	0.48	0.38	0.55	0.39	0.30		0.42	0.29		0.39	0.28	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.61	0.37	0.27	0.22	0.92		1.13	0.92		0.49	0.73	
Control Delay	24.6	24.8	4.8	15.9	57.7		117.1	48.2		23.6	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	24.6	24.8	4.8	15.9	57.7		117.1	48.2		23.6	36.3	
LOS	C	C	A	B	E		F	D		C	D	
Approach Delay		17.7			50.6			66.6			34.4	
Approach LOS		B			D			E			C	
Queue Length 50th (ft)	68	128	22	34	294		~176	292		45	204	
Queue Length 95th (ft)	101	176	50	57	#420		#304	#360		73	238	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	333	753	938	463	536		299	1009		276	991	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.57	0.36	0.27	0.22	0.92		1.13	0.92		0.44	0.70	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 97.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.13

Intersection Signal Delay: 45.7

Intersection LOS: D

Intersection Capacity Utilization 79.2%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	1157	108	98	1145	343	125	175	94	362	216	204
Future Volume (vph)	155	1157	108	98	1145	343	125	175	94	362	216	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.965			0.948			0.927	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3412	0	1687	3367	0	1687	3227	0	1736	3202	0
Flt Permitted	0.058			0.127			0.348			0.252		
Satd. Flow (perm)	103	3412	0	226	3367	0	618	3227	0	460	3202	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		10			38			49				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	7%	4%	9%	7%	3%	5%	7%	5%	8%	4%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	1346	0	104	1583	0	133	286	0	385	447	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.8	93.3		100.1	88.9		31.8	15.5		45.0	25.1	
Actuated g/C Ratio	0.67	0.58		0.63	0.56		0.20	0.10		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.83	0.68		0.47	0.84		0.62	0.81		1.22	0.89	
Control Delay	65.0	25.2		16.7	34.4		58.6	75.8		166.1	86.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.0	25.2		16.7	34.4		58.6	75.8		166.1	86.1	
LOS	E	C		B	C		E	E		F	F	
Approach Delay		29.6			33.4			70.3			123.1	
Approach LOS		C			C			E			F	
Queue Length 50th (ft)	103	494		36	712		109	130		~419	246	
Queue Length 95th (ft)	#222	590		60	824		172	#194		#638	#354	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	212	1992		239	1887		232	366		316	502	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.78	0.68		0.44	0.84		0.57	0.78		1.22	0.89	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.22

Intersection Signal Delay: 52.3

Intersection LOS: D

Intersection Capacity Utilization 95.8%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	97 s	19 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	93 s	27 s	22 s

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	5	24	28	0	9	36	756	39	10	566	13
Future Vol, veh/h	8	5	24	28	0	9	36	756	39	10	566	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	25	0	4	0	0	0	0	3	0	0	4	0
Mvmt Flow	10	6	29	34	0	11	44	922	48	12	690	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1762	1780	698	1774	1764	946	706	0	0	970	0	0
Stage 1	722	722	-	1034	1034	-	-	-	-	-	-	-
Stage 2	1040	1058	-	740	730	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.24	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.336	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	58	83	437	65	85	320	902	-	-	719	-	-
Stage 1	384	434	-	283	312	-	-	-	-	-	-	-
Stage 2	252	304	-	412	431	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	53	78	437	56	79	320	902	-	-	719	-	-
Mov Cap-2 Maneuver	147	187	-	160	188	-	-	-	-	-	-	-
Stage 1	365	427	-	269	297	-	-	-	-	-	-	-
Stage 2	231	289	-	373	424	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	20.8		29.4		0.4		0.2					
HCM LOS	C		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	902	-	-	272 160 320	719	-	-					
HCM Lane V/C Ratio	0.049	-	-	0.166 0.213 0.034	0.017	-	-					
HCM Control Delay (s)	9.2	-	-	20.8 33.5 16.6	10.1	-	-					
HCM Lane LOS	A	-	-	C D C	B	-	-					
HCM 95th %tile Q(veh)	0.2	-	-	0.6 0.8 0.1	0.1	-	-					

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

09/13/2022

Intersection												
Int Delay, s/veh	7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	21	3	28	14	4	20	43	804	25	23	594	13
Future Vol, veh/h	21	3	28	14	4	20	43	804	25	23	594	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	0	33	0	0	0	5	2	3	4	0	5	8
Mvmt Flow	26	4	35	17	5	25	53	993	31	28	733	16
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1927	1927	741	1932	1920	1009	749	0	0	1024	0	0
Stage 1	797	797	-	1115	1115	-	-	-	-	-	-	-
Stage 2	1130	1130	-	817	805	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.83	6.2	7.1	6.5	6.25	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.83	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.297	3.3	3.5	4	3.345	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	51	55	420	50	68	288	860	-	-	686	-	-
Stage 1	383	357	-	255	286	-	-	-	-	-	-	-
Stage 2	250	245	-	373	398	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	40	50	420	40	61	288	860	-	-	686	-	-
Mov Cap-2 Maneuver	40	50	-	40	61	-	-	-	-	-	-	-
Stage 1	359	342	-	239	268	-	-	-	-	-	-	-
Stage 2	211	230	-	325	382	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	140.6		84.2		0.5		0.4					
HCM LOS	F		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	860	-	-	80	43	288	686	-	-	-	-	-
HCM Lane V/C Ratio	0.062	-	-	0.802	0.517	0.086	0.041	-	-	-	-	-
HCM Control Delay (s)	9.5	-	-	140.6	156.9	18.7	10.5	-	-	-	-	-
HCM Lane LOS	A	-	-	F	F	C	B	-	-	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4	1.9	0.3	0.1	-	-	-	-	-

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	10	3	5	14	24	11	190	4	12	121	6
Future Vol, veh/h	8	10	3	5	14	24	11	190	4	12	121	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	13	10	0	0	0	4	9	1	25	13	2	0
Mvmt Flow	11	14	4	7	20	34	15	268	6	17	170	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	536	512	174	518	513	271	178	0	0	274	0	0
Stage 1	208	208	-	301	301	-	-	-	-	-	-	-
Stage 2	328	304	-	217	212	-	-	-	-	-	-	-
Critical Hdwy	7.23	6.6	6.2	7.1	6.5	6.24	4.19	-	-	4.23	-	-
Critical Hdwy Stg 1	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.23	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.617	4.09	3.3	3.5	4	3.336	2.281	-	-	2.317	-	-
Pot Cap-1 Maneuver	439	454	875	471	468	763	1357	-	-	1228	-	-
Stage 1	770	715	-	712	669	-	-	-	-	-	-	-
Stage 2	662	649	-	790	731	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	397	441	875	447	455	763	1357	-	-	1228	-	-
Mov Cap-2 Maneuver	397	441	-	447	455	-	-	-	-	-	-	-
Stage 1	760	704	-	703	660	-	-	-	-	-	-	-
Stage 2	606	641	-	759	720	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.5		11.9		0.4		0.7					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1357	-	-	454	586	1228	-	-				
HCM Lane V/C Ratio	0.011	-	-	0.065	0.103	0.014	-	-				
HCM Control Delay (s)	7.7	0	-	13.5	11.9	8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	30	3	0	39	6	10	16	5	1	7	3
Future Vol, veh/h	2	30	3	0	39	6	10	16	5	1	7	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	54	54	54	54	54	54	54	54	54	54	54	54
Heavy Vehicles, %	0	12	0	0	0	0	10	0	0	0	14	0
Mvmt Flow	4	56	6	0	72	11	19	30	9	2	13	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	83	0	0	62	0	0	154	150	59	165	148	78
Stage 1	-	-	-	-	-	-	67	67	-	78	78	-
Stage 2	-	-	-	-	-	-	87	83	-	87	70	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.2	6.5	6.2	7.1	6.64	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.5	-	6.1	5.64	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.59	4	3.3	3.5	4.126	3.3
Pot Cap-1 Maneuver	1527	-	-	1554	-	-	795	745	1012	804	722	988
Stage 1	-	-	-	-	-	-	924	843	-	936	807	-
Stage 2	-	-	-	-	-	-	901	830	-	926	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1527	-	-	1554	-	-	778	743	1012	770	720	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	778	743	-	770	720	-
Stage 1	-	-	-	-	-	-	921	840	-	933	807	-
Stage 2	-	-	-	-	-	-	882	830	-	883	812	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			9.9			9.7		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	788	1527	-	-	1554	-	-	783				
HCM Lane V/C Ratio	0.073	0.002	-	-	-	-	-	0.026				
HCM Control Delay (s)	9.9	7.4	0	-	0	-	-	9.7				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	4	824	17	2	611
Future Vol, veh/h	14	4	824	17	2	611
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	3	0	0	5
Mvmt Flow	15	4	867	18	2	643
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1523	876	0	0	885	0
Stage 1	876	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	131	351	-	-	773	-
Stage 1	411	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	351	-	-	773	-
Mov Cap-2 Maneuver	131	-	-	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	32	0		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	152	773	-	
HCM Lane V/C Ratio	-	-	0.125	0.003	-	
HCM Control Delay (s)	-	-	32	9.7	-	
HCM Lane LOS	-	-	D	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

Capacity Analysis Summary Sheets
Year 2028 Total Projected Weekday Evening Peak Hour

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	5	115	7	25	5	129	462	0	6	461	107
Future Volume (vph)	76	5	115	7	25	5	129	462	0	6	461	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	40		0	0		0	155		155	85		140
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (ft)	70			25			55			90		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.857			0.981							0.850
Flt Protected	0.950				0.991		0.950			0.950		
Satd. Flow (prot)	1805	1568	0	0	1847	0	1805	1980	1900	1805	1961	1583
Flt Permitted	0.730				0.905		0.382			0.474		
Satd. Flow (perm)	1387	1568	0	0	1687	0	726	1980	1900	901	1961	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128			6							119
Link Speed (mph)		30			25			30				25
Link Distance (ft)		136			160			478				380
Travel Time (s)		3.1			4.4			10.9				10.4
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	0%	1%	0%	0%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	134	0	0	42	0	143	513	0	7	512	119
Turn Type	Perm	NA		Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	14.0	14.0		14.0	14.0		6.5	22.0	22.0	6.5	21.0	21.0
Total Split (s)	26.0	26.0		26.0	26.0		10.0	54.0	54.0	10.0	54.0	54.0
Total Split (%)	28.9%	28.9%		28.9%	28.9%		11.1%	60.0%	60.0%	11.1%	60.0%	60.0%
Yellow Time (s)	4.5	4.5		4.5	4.5		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.5	1.5		1.5	1.5		0.0	1.5	1.5	0.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0		3.5	6.0	6.0	3.5	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None		None	Min	Min	None	Min	Min
Act Effect Green (s)	11.5	11.5			11.5		50.0	48.5		47.2	42.6	42.6
Actuated g/C Ratio	0.17	0.17			0.17		0.74	0.72		0.70	0.63	0.63

Lanes, Volumes, Timings

1: Shermer Road & Walters Avenue/Metra Parking Lot Access

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.35	0.36			0.14		0.22	0.36		0.01	0.41	0.11
Control Delay	34.3	10.2			27.0		4.4	7.3		3.5	11.0	2.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.3	10.2			27.0		4.4	7.3		3.5	11.0	2.2
LOS	C	B			C		A	A		A	B	A
Approach Delay		19.5			27.0			6.7			9.3	
Approach LOS		B			C			A			A	
Queue Length 50th (ft)	34	2			14		15	80		1	129	0
Queue Length 95th (ft)	83	49			44		38	223		4	229	22
Internal Link Dist (ft)		56			80			398			300	
Turn Bay Length (ft)	40						155			85		140
Base Capacity (vph)	456	601			558		655	1485		738	1415	1176
Starvation Cap Reductn	0	0			0		0	0		0	0	0
Spillback Cap Reductn	0	0			0		0	0		0	0	0
Storage Cap Reductn	0	0			0		0	0		0	0	0
Reduced v/c Ratio	0.18	0.22			0.08		0.22	0.35		0.01	0.36	0.10

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 67.2

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 54.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Shermer Road & Walters Avenue/Metra Parking Lot Access

 Ø1	 Ø2	 Ø4
10 s	54 s	26 s
 Ø5	 Ø6	 Ø8
10 s	54 s	26 s

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	212	180	137	379	134	209	465	73	121	481	140
Future Volume (vph)	102	212	180	137	379	134	209	465	73	121	481	140
Ideal Flow (vphpl)	1900	2000	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	145		195	120		0	205		0	100		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	180			180			160			80		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850		0.961			0.980			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	2000	1482	1626	1795	0	1752	3479	0	1752	3419	0
Flt Permitted	0.137			0.591			0.236			0.336		
Satd. Flow (perm)	258	2000	1482	1012	1795	0	435	3479	0	620	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			182		18			17			37	
Link Speed (mph)		35			35			40			35	
Link Distance (ft)		674			553			3964			470	
Travel Time (s)		13.1			10.8			67.6			9.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	9%	11%	2%	1%	3%	1%	6%	3%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	107	223	189	144	540	0	220	566	0	127	653	0
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases	2		2	6			8			4		
Detector Phase	5	2	3	1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0	3.0	3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0	6.5	6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	17.0	42.0	14.0	10.0	35.0		14.0	34.0		14.0	34.0	
Total Split (%)	17.0%	42.0%	14.0%	10.0%	35.0%		14.0%	34.0%		14.0%	34.0%	
Yellow Time (s)	3.5	4.5	3.5	3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0	3.5	3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag	Lead	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Act Effect Green (s)	41.0	29.8	45.9	37.0	29.5		38.4	25.8		36.3	24.8	
Actuated g/C Ratio	0.45	0.33	0.51	0.41	0.33		0.42	0.29		0.40	0.27	

Lanes, Volumes, Timings

2: Shermer Road & Techny Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.39	0.34	0.22	0.31	0.90		0.66	0.56		0.35	0.68	
Control Delay	18.5	25.0	2.9	17.6	51.7		27.9	29.9		18.6	32.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.5	25.0	2.9	17.6	51.7		27.9	29.9		18.6	32.2	
LOS	B	C	A	B	D		C	C		B	C	
Approach Delay		15.6			44.5			29.3			29.9	
Approach LOS		B			D			C			C	
Queue Length 50th (ft)	36	101	2	50	316		80	145		43	172	
Queue Length 95th (ft)	67	162	35	88	#556		#145	211		83	242	
Internal Link Dist (ft)		594			473			3884			390	
Turn Bay Length (ft)	145		195	120			205			100		
Base Capacity (vph)	353	809	850	458	597		342	1114		393	1101	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.30	0.28	0.22	0.31	0.90		0.64	0.51		0.32	0.59	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 90.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 30.7

Intersection LOS: C

Intersection Capacity Utilization 79.8%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Shermer Road & Techny Road

 Ø1	 Ø2	 Ø3	 Ø4
10 s	42 s	14 s	34 s
 Ø5	 Ø6	 Ø7	 Ø8
17 s	35 s	14 s	34 s

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	174	1036	102	83	1362	327	140	236	80	336	238	190
Future Volume (vph)	174	1036	102	83	1362	327	140	236	80	336	238	190
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	155		0	70		0	100		0	175		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	175			105			100			240		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.987			0.971			0.962			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3453	0	1719	3411	0	1752	3348	0	1752	3306	0
Flt Permitted	0.044			0.178			0.359			0.205		
Satd. Flow (perm)	77	3453	0	322	3411	0	662	3348	0	378	3306	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		11			29			23				
Link Speed (mph)		40			40			35			40	
Link Distance (ft)		774			525			595			3964	
Travel Time (s)		13.2			8.9			11.6			67.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	8%	3%	5%	5%	2%	6%	3%	5%	0%	3%	1%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	1173	0	86	1741	0	144	325	0	346	441	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		3	8		7	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		3.0	15.0		3.0	8.0		3.0	8.0	
Minimum Split (s)	6.5	21.0		6.5	21.0		6.5	14.0		6.5	14.0	
Total Split (s)	18.0	97.0		14.0	93.0		19.0	22.0		27.0	30.0	
Total Split (%)	11.3%	60.6%		8.8%	58.1%		11.9%	13.8%		16.9%	18.8%	
Yellow Time (s)	3.5	4.5		3.5	4.5		3.5	4.5		3.5	4.5	
All-Red Time (s)	0.0	1.5		0.0	1.5		0.0	1.5		0.0	1.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.5	6.0		3.5	6.0		3.5	6.0		3.5	6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Min		None	C-Min		None	None		None	None	
Act Effect Green (s)	107.5	93.3		98.0	87.3		32.5	16.0		45.5	25.5	
Actuated g/C Ratio	0.67	0.58		0.61	0.55		0.20	0.10		0.28	0.16	

Lanes, Volumes, Timings

3: Shermer Road & Willow Road

09/13/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.93	0.58		0.32	0.93		0.63	0.92		1.12	0.84	
Control Delay	92.1	22.4		12.7	43.0		58.2	95.9		133.1	80.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	92.1	22.4		12.7	43.0		58.2	95.9		133.1	80.2	
LOS	F	C		B	D		E	F		F	F	
Approach Delay		31.7			41.6			84.3			103.5	
Approach LOS		C			D			F			F	
Queue Length 50th (ft)	139	390		29	855		118	168		~357	242	
Queue Length 95th (ft)	#292	471		50	984		184	#264		#569	#338	
Internal Link Dist (ft)		694			445			515			3884	
Turn Bay Length (ft)	155			70			100			175		
Base Capacity (vph)	196	2017		293	1873		246	355		309	525	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.91	0.58		0.29	0.93		0.59	0.92		1.12	0.84	

Intersection Summary

Area Type: Other

Cycle Length: 160

Actuated Cycle Length: 160

Offset: 157 (98%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 54.1

Intersection LOS: D

Intersection Capacity Utilization 102.1%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Shermer Road & Willow Road

 Ø1	 Ø2 (R)	 Ø3	 Ø4
14 s	97 s	19 s	30 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
18 s	93 s	27 s	22 s

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	7	10	45	0	14	21	592	76	14	650	9
Future Vol, veh/h	9	7	10	45	0	14	21	592	76	14	650	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	75	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	11	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	9	7	10	46	0	14	22	610	78	14	670	9
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	1403	1435	675	1404	1400	649	679	0	0	688	0	0
Stage 1	703	703	-	693	693	-	-	-	-	-	-	-
Stage 2	700	732	-	711	707	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	112	135	457	118	142	473	923	-	-	916	-	-
Stage 1	414	443	-	437	448	-	-	-	-	-	-	-
Stage 2	416	430	-	427	441	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	130	457	110	136	473	923	-	-	916	-	-
Mov Cap-2 Maneuver	227	251	-	234	256	-	-	-	-	-	-	-
Stage 1	404	436	-	427	437	-	-	-	-	-	-	-
Stage 2	394	420	-	404	434	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	18.6		21.5			0.3			0.2			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	923	-	-	291 234 473	916	-	-					
HCM Lane V/C Ratio	0.023	-	-	0.092 0.198 0.031	0.016	-	-					
HCM Control Delay (s)	9	-	-	18.6 24.2 12.9	9	-	-					
HCM Lane LOS	A	-	-	C C B	A	-	-					
HCM 95th %tile Q(veh)	0.1	-	-	0.3 0.7 0.1	0	-	-					

HCM 6th TWSC
5: Shermer Road & Farnsworth Lane

09/13/2022

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	1	26	13	3	19	19	686	1	21	679	23
Future Vol, veh/h	11	1	26	13	3	19	19	686	1	21	679	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	100	50	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	5	1	0
Mvmt Flow	12	1	27	14	3	20	20	722	1	22	715	24
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1545	1534	727	1548	1546	723	739	0	0	723	0	0
Stage 1	771	771	-	763	763	-	-	-	-	-	-	-
Stage 2	774	763	-	785	783	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.245	-	-
Pot Cap-1 Maneuver	94	118	427	94	116	430	876	-	-	866	-	-
Stage 1	396	413	-	400	416	-	-	-	-	-	-	-
Stage 2	394	416	-	389	407	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	85	112	427	84	111	430	876	-	-	866	-	-
Mov Cap-2 Maneuver	85	112	-	84	111	-	-	-	-	-	-	-
Stage 1	387	403	-	391	406	-	-	-	-	-	-	-
Stage 2	364	406	-	354	397	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	28.8		32.8		0.2		0.3					
HCM LOS	D		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	876	-	-	191	88	430	866	-	-			
HCM Lane V/C Ratio	0.023	-	-	0.209	0.191	0.047	0.026	-	-			
HCM Control Delay (s)	9.2	-	-	28.8	55.3	13.8	9.3	-	-			
HCM Lane LOS	A	-	-	D	F	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.7	0.1	0.1	-	-			

HCM 6th TWSC
6: Western Avenue & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	4	1	3	2	19	4	140	3	15	152	11
Future Vol, veh/h	6	4	1	3	2	19	4	140	3	15	152	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	7	5	1	4	2	23	5	171	4	18	185	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	424	413	192	414	417	173	198	0	0	175	0	0
Stage 1	228	228	-	183	183	-	-	-	-	-	-	-
Stage 2	196	185	-	231	234	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	544	532	855	552	530	876	1387	-	-	1414	-	-
Stage 1	779	719	-	823	752	-	-	-	-	-	-	-
Stage 2	810	751	-	776	715	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	521	522	855	540	520	876	1387	-	-	1414	-	-
Mov Cap-2 Maneuver	521	522	-	540	520	-	-	-	-	-	-	-
Stage 1	776	709	-	820	749	-	-	-	-	-	-	-
Stage 2	783	748	-	759	705	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	11.8		9.8		0.2		0.6					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1387	-	-	541	772	1414	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.025	0.038	0.013	-	-				
HCM Control Delay (s)	7.6	0	-	11.8	9.8	7.6	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				

HCM 6th TWSC
7: Penfold Place & Woodlawn Road

09/13/2022

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	21	0	1	23	2	4	4	1	1	8	1
Future Vol, veh/h	1	21	0	1	23	2	4	4	1	1	8	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	64	65	64	64	64	64	64	64	64	64	64
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	33	0	2	36	3	6	6	2	2	13	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	39	0	0	33	0	0	86	80	33	83	79	38
Stage 1	-	-	-	-	-	-	37	37	-	42	42	-
Stage 2	-	-	-	-	-	-	49	43	-	41	37	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1584	-	-	1592	-	-	905	814	1046	909	815	1040
Stage 1	-	-	-	-	-	-	984	868	-	978	864	-
Stage 2	-	-	-	-	-	-	969	863	-	979	868	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1584	-	-	1592	-	-	891	812	1046	901	813	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	891	812	-	901	813	-
Stage 1	-	-	-	-	-	-	983	867	-	977	863	-
Stage 2	-	-	-	-	-	-	953	862	-	970	867	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.3			9.2			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	868	1584	-	-	1592	-	-	840				
HCM Lane V/C Ratio	0.016	0.001	-	-	0.001	-	-	0.019				
HCM Control Delay (s)	9.2	7.3	0	-	7.3	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	5	681	32	7	693
Future Vol, veh/h	24	5	681	32	7	693
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	-	-	-	65	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	25	5	717	34	7	729
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1477	734	0	0	751	0
Stage 1	734	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	140	423	-	-	868	-
Stage 1	478	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	139	423	-	-	868	-
Mov Cap-2 Maneuver	139	-	-	-	-	-
Stage 1	478	-	-	-	-	-
Stage 2	470	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	33.4	0		0.1		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 157		868	-	
HCM Lane V/C Ratio	-	- 0.194		0.008	-	
HCM Control Delay (s)	-	- 33.4		9.2	-	
HCM Lane LOS	-	- D		A	-	
HCM 95th %tile Q(veh)	-	- 0.7		0	-	