WALLED LAKE CONSOLIDATED SCHOOLS
TRAFFIC IMPACT STUDY
CITY OF WIXOM
OAKLAND COUNTY, MICHIGAN

Prepared for:
Walled Lake Consolidated Schools
March 2, 2026



Prepared by

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A. Executive Summary

1. Report Overview

Spalding DeDecker has been contracted to provide traffic engineering services for the proposed new elementary school building located off W Maple Road in the City of Wixom, Michigan. This study evaluates the potential changes in traffic patterns and operations resulting from the proposed school; however, no changes in student enrollment are expected. Key objectives from this traffic impact study include analyzing the existing and proposed traffic conditions during peak hours, assessing impacts to traffic flow, and recommending mitigation measures if necessary.

B. Introduction

1. Background and Objectives

The proposed new elementary school for Walled Lake Consolidated Schools is a new development project intended to serve the community by providing a modern building to replace the existing Wixom Elementary School facility that will no longer be used. The new location on W Maple Road is expected to redistribute traffic within the area during morning and afternoon school peak hours.

The proposed development of this site is expected to be completed in 2027. The changes that will be made include the construction of a new school building with two new access points off Maple Road. Future use of the remaining school building has not been determined at the time of this study and was assumed to be unused for trip generation and trip distribution purposes. The proposed school driveways on the south side of Maple Road were assumed to be aligned with Hedigham Boulevard and Castlewood Court on the north side.

This traffic study aims to evaluate the current traffic operations at key intersections, estimate changes to traffic patterns caused by the new school location, assess the need for potential roadway or operational improvements, and develop recommendations to ensure safe and efficient traffic operations for the anticipated 2027 build-out year and the 20-year horizon in 2047.

The purpose of this report is to describe the methodologies, analysis, conclusions, and recommendations of the Traffic Impact Study. The project location is shown in the figure below. The study focused on intersections in the surrounding area of the existing Wixom Elementary School building and the proposed school location.



Figure 1: Study Area.

The existing facilities located to the west of N Wixom Rd have entrance points to driveways located on N Wixom Rd and Theodore. There are 4 intersections included in the study area. Traffic signals are located at the intersection of W Maple Rd and N Wixom Rd.

The proposed new building will be located south of W Maple Rd. The proposed driveway access points are strategically designed to optimize traffic flow and accommodate the needs of various users. A bus driveway is planned south of the intersection at Hedigham Blvd and W Maple Rd. Additionally, a two-way driveway approach is proposed on the eastern side of the site, allowing entry for both eastbound and westbound traffic coming from W Maple Rd. This two-lane driveway will loop around the site's parking lot in a counterclockwise direction. The west parking lot will provide 78 spaces, while the east parking lot will offer 34 spaces. These configurations are intended to ensure safe and efficient traffic circulation for parent-student pick-ups and drop-offs while minimizing potential conflicts between different modes of transportation.

C. Study Methodology

1. Data Collection

Data collection was performed by our vendor, Quality Counts, LLC. Two-hour turning movement counts were collected at the following locations during the morning and afternoon peak hours on Wednesday, January 15, 2025.

a. Millstream Drive and W Maple Road
b. Hedigham Boulevard and W Maple Road
c. Castlewood Court and W Maple Road
d. W Maple Road and N Wixom Road
e. N Wixom Road and Theodore
f. N Wixom Road and the Wixom Elementary School north driveway
g. N Wixom Road and the Wixom Elementary School south driveway

The school bell times are 8:55am for arrival and 4:00pm for dismissal. Traffic counts were conducted from 8:00am to 10:00am for the morning peak hour and 3:00pm to 5:00pm for the afternoon peak hour. The peak hours that occurred during the data collection time occurred from 8:00am to 9:00am and 4:00pm to 5:00pm. To accurately capture the afternoon dismissal traffic directly related to school operations, the afternoon peak hour of 3:15pm to 4:15pm was analyzed rather than the road network peak hour.



Figure 2: Turning Movement Count Locations

The intersections selected for data collection and study were determined to be affected by the new location of the Wixom Elementary School. See *Appendix A* for Traffic Count Data.

2. Trip Distribution

Trip distribution for the Elementary School was determined based on existing peak-hour traffic patterns, access points, and turning movements along adjacent roadways. The following assumptions were applied.

- Existing traffic arriving to the school from the south are anticipated to make the northbound left turn through the intersection of Maple Road and Wixom Road to access the new school site. Traffic arriving to the school from the north is anticipated to be proportionally split between the westbound through and southbound right turns through this intersection. Additional proportional split in arriving traffic is attributed from eastbound traffic on Maple Road.
- Arrival Traffic: Expected to enter westbound and eastbound W Maple Road from the residential intersections at Millstream Dr, Hedigham Dr, and Castlewood Ct, and at the signalized intersection at W Maple Rd and N Wixom Rd.
- Departure Traffic: Expected to exit via the proposed parking lot/pick-up and drop-off loop, the proposed bus access at the intersection of W Maple Rd and Hedigham Dr, and eastbound and westbound W Maple Road, and at the signalized intersection at W Maple Rd and N Wixom Rd.
- School-related traffic entering the network from westbound Maple Rd ranges from five to eight vehicles between the morning and afternoon peak hours. School-related traffic exiting the network through eastbound Maple Rd range from six to 11. The Elementary School catchment area ends at the east approach of Wixom Rd and Maple Rd. The vehicles associated with the school that enter and depart from this direction can be accounted for as staff that may live outside the catchment area, School of Choice participants, and origins or destinations that may differ from a student's residency.
- School trip generation volumes were counted directly from the traffic data that was collected at the three existing driveways. Entering vehicles were accounted for with all northbound left turns and southbound right turns at these driveways. Existing vehicles were accounted for with all eastbound movements out of the driveways. For the driveway off Theodore, the 12 residential properties were accounted for with the ITE Land Use Code 210 (Single-Family Detached Housing) and subtracted from the total entering and exiting traffic to determine the school specific volumes. The residential properties accounted for four entering and ten exiting trips during the morning peak hour and eight entering and six exiting trips during the afternoon peak hour.
- 12 school buses were used in the analysis. All school buses were modeled using the proposed west school driveway with the remaining trip generation volumes assumed to be parent/staff vehicles using the proposed east school driveway.

AM		PM		To/From	Road
In	Out	In	Out		
52%	35%	40%	50%	North	Wixom Rd
36%	51%	52%	42%	South	Wixom Rd
5%	11%	5%	5%	East	Maple Rd
7%	3%	4%	4%	West	Maple Rd
100%	**100%**	**100%**	**100%**	**Totals**	

Table 1: Trip Distribution for School-Related Traffic

Land Use	AM Peak Trip Generation			PM Peak Trip Generation		
	Total	In	Out	Total	In	Out
Existing Elementary School	286	171	115	255	110	145

Table 2: Trip Generation Data

3. Background Traffic Growth

Background traffic is considered as the existing volume of traffic unrelated to the site. As populations in an area grow, the background traffic is expected to grow over time with that increase in population. To determine a baseline traffic volume to analyze future operations, a growth factor is applied to the existing traffic volume in determining future traffic volumes to evaluate if any operational decreases are incidental to existing traffic or directly attributable to traffic generated by the site. A background growth of traffic of 0.5% was assumed for this study.

4. Analysis Scenarios

The peak times analyzed refer to the peak times for school traffic rather than the traditional street traffic peak times. The following scenarios were evaluated for the purposes of this study.

a. 2025 Existing Conditions
    i. AM Peak Hour 2025 Volumes
    ii. PM Peak Hour 2025 Volumes
b. 2027 Build Conditions
    i. AM Peak Hour 2027 Volumes with Background Growth Factor Applied and Adjusted Site Traffic
    ii. PM Peak Hour 2027 Volumes with Background Growth Factor Applied and Adjusted Site Traffic
c. 2027 No-build Conditions
    i. AM Peak Hour 2027 Volumes with Background Growth Factor Applied
    ii. PM Peak Hour 2027 Volumes with Background Growth Factor Applied
d. 2047 No-build Conditions
    i. AM Peak Hour 2047 Volumes with Background Growth Factor Applied
    ii. PM Peak Hour 2047 Volumes with Background Growth Factor Applied
e. 2047 Build Conditions
    i. AM Peak Hour 2047 Volumes with Background Growth Factor Applied and Adjusted Site Traffic
    ii. PM Peak Hour 2047 Volumes with Background Growth Factor Applied and Adjusted Site Traffic
f. 2047 No-build Conditions with improvements
    i. AM Peak Hour 2047 Volumes with Background Growth Factor Applied with improvements
    ii. PM Peak Hour 2047 Volumes with Background Growth Factor Applied with improvements
g. 2047 Build Conditions with improvements

i. AM Peak Hour 2047 Volumes with Background Growth Factor Applied and Adjusted Site Traffic with improvements
ii. PM Peak Hour 2047 Volumes with Background Growth Factor Applied and Adjusted Site Traffic with improvements

The intersections and driveways in this study were analyzed utilizing Synchro Version 12.1 software in accordance with the methodologies published in the most recent edition of the Highway Capacity Manual[1]. Levels of service were determined for the base year 2025, the anticipated build year of 2027, and the 2047 20-year horizon year.

D. Existing Conditions

1. Roadway Geometry

a. W Maple Road is an undivided roadway with one travel lane in each direction and no center turn lane. Classified as a major collector, it serves eastbound and westbound traffic. The road widens at private residential roadways to provide right-turn lanes for westbound traffic, ensuring smooth traffic flow and minimizing congestion for through traffic. At the signalized intersection at N Wixom Road, W Maple Road expands to include a dedicated left-turn lane in each direction. There is one thru lane in each direction. The roadway is approximately 27 feet wide and has a posted speed limit of 30 mph.
b. N Wixom Road is an undivided roadway with varying configurations north and south of its intersection with W Maple Road. South of the signalized intersection, the road includes one travel lane in each direction and a center turn lane. The pavement width is 38 feet, and the posted speed limit is 25 mph. This section widens further to support northbound right-turn lanes, improving traffic operations at key access points. North of the intersection, N Wixom Road transitions to an undivided roadway with one travel lane in each direction and no center turn lane. The roadway narrows to a width of 28 feet, and the posted speed limit increases to 45 mph. The entire corridor is under county jurisdiction. At the signalized intersection with W Maple Road, N Wixom Road features dedicated left-turn lanes for both northbound and southbound traffic, along with one through lane in each direction to maintain traffic flow.
c. Residential roadways connecting to W Maple Road:
    1. Millstream Drive is a private residential roadway with one unmarked travel lane in each direction. The roadway intersects W Maple Road to the east of the railroad crossing. It is 25 feet wide, has a posted speed limit of 25 mph, and serves as a primary access point for adjacent residences.
    2. Heidigham Boulevard features a boulevard-style entrance and is classified as a private residential roadway. The pavement width is 22 feet, and the posted speed limit is 25 mph.
    3. Castlewood Court is a private residential driveway. The roadway is 26 feet wide and has a posted speed limit of 25 mph.

[1] Highway Capacity Manual 6th Edition, Transportation Research Board, 2016.

d. The intersection with N Wixom Road is controlled by stop signs, and west of this intersection, Theodore provides access to the north parking lot and drop-off area of Wixom Elementary School. The roadway terminates in a dead end to the west and is unmarked, with parking permitted on both sides. The road has a width of 26 feet and a posted speed limit of 25 mph.

2. Jurisdiction

a. N Wixom Road is the only road in the study area that is under the jurisdiction of Oakland County. The rest of the roads in the study area are owned and maintained by the City of Wixom.

E. Operational Assessment

1. Existing Levels of Service

A Level of Service (LOS) is a qualitative measure that describes the operational conditions within a traffic stream and at intersections and the perception of these conditions by the drivers. There are six Levels of Service set forth in the Highway Capacity Manual[2], ranging from A (highest LOS) through F (lowest LOS). For signalized and unsignalized intersections, Levels of Service are based on control delay per vehicle in seconds and assigned an associated letter value. For a signalized intersection, LOS and control delay are calculated for all movements; while an unsignalized intersection will only calculate LOS and delay for the movements that are non-free-flow conditions (stop or yield control). The following distribution is used to assign Levels of Service, with descriptions. Synchro reports detailing the LOS for each intersection are included in *Appendix B*. Delays at an intersection are considered acceptable for a LOS A through LOS D. LOS E and LOS F are both considered to be failing.

Level of Service	***Expected Delay at Intersection***	***Delay per Vehicle (sec)***	
		Signalized Intersection	**Unsignalized Intersection**
A	Very Low Delay	≤ 10	≤ 10
B	Short Traffic Delays	> 10 ≤ 20	> 10 ≤ 15
C	No. of Vehicles Stopping is Significant	> 20 ≤ 35	> 15 ≤ 25
D	Influence of Congestion Noticeable	> 35 ≤ 55	> 25 ≤ 35
E	Limit of Acceptable Delay	> 55 ≤ 80	> 35 ≤ 50
F	Over-Saturated	> 80	> 50

Table 3: Levels of Service and Control Delay

Level of Service was calculated for the current conditions as well as the 2027 Build, 2047 No Build, and 2047 Build scenarios. The vehicle delays calculated from current traffic conditions are used as baseline to compare the proposed build scenario. The results show that there are failing LOS for the eastbound and westbound approaches to the intersection of Wixom Road and Theodore during the morning and afternoon peak times. The southbound left turn at Wixom Road and Maple Road also degrades to a failing LOS during the afternoon peak hour. The failing movements continue to degrade through the 2047 horizon year with the

[2] Highway Capacity Manual 6th Edition, Transportation Research Board, 2016

northbound thru and right turn movements also degrading to a failing LOS during the afternoon peak hour. The failing movements on Theodore are the result of the large amount of traffic on Wixom Road that does not provide sufficient gaps for vehicles to pull out.

2025 AM Levels of Service - Existing													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.5		A 9.5	A 1.0
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.7		A 9.7	A 2.4
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				A 8.7		A 8.7	A 0.7
Wixom Rd and Maple Rd	C 32.7	D 36.1	D 36.1	D 43.3	C 31.7	C 31.7	C 32.6	B 12.6	B 12.6	B 15.7	C 20.7	C 20.7	C 22.1
Wixom Rd and Theodore	F 74.0	F 74.0	F 74.0	F 67.3	F 67.3	F 67.3	B 10.8	A 0.0	A 0.0	A 8.1	A 0.0	A 0.0	A 7.4
Wixom Rd and North School Dwy	A 0.0		A 0.0				B 10.6	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	D 25.5		D 25.5				B 10.6	A 0.0			A 0.0	A 0.0	A 2.2

Table 4: Existing AM Levels of Service

2025 PM Levels of Service - Existing													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.3		A 9.3	A 0.8
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.6		A 9.6	A 1.2
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				A 9.9		A 9.9	A 0.4
Wixom Rd and Maple Rd	D 35.4	C 33.5	C 33.5	D 36.8	C 33.3	C 33.3	C 20.2	D 37.5	D 37.5	E 60.0	B 14.1	B 14.1	C 30.5
Wixom Rd and Theodore	F 165.8	F 165.8	F 165.8	F 73.6	F 73.6	F 73.6	A 8.7	A 0.2	A 0.2	B 10.9	A 0.1	A 0.1	A 8.9
Wixom Rd and North School Dwy	C 21.7		C 21.7				A 8.8	A 0.1			A 0.0	A 0.0	A 0.1
Wixom Rd and South School Dwy	D 28.2		D 28.2				A 8.8	A 0.3			A 0.0	A 0.0	A 2.5

Table 5: Existing PM Levels of Service

2027 AM Levels of Service - No-Build													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.5		A 9.5	A 1.1
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.8		A 9.8	A 2.4
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				A 8.7		A 8.7	A 0.7
Wixom Rd and Maple Rd	C 32.8	D 36.3	D 36.3	D 43.8	C 31.7	C 31.7	C 33.7	B 13.1	B 13.1	B 16.7	C 21.2	C 21.2	C 22.5
Wixom Rd and Theodore	F 90.3	F 90.3	F 90.3	F 80.3	F 80.3	F 80.3	B 10.9	A 0.0	A 0.0	A 8.2	A 0.0	A 0.0	A 9.2
Wixom Rd and North School Dwy	A 0.0		A 0.0				B 10.7	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	D 26.0		D 26.0				B 10.6	A 0.0			A 0.0	A 0.0	A 2.3

Table 6: 2027 No-Build AM Levels of Service

2027 PM Levels of Service - No-Build													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.3		A 9.3	A 0.9
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.6		A 9.6	A 1.3
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				A 10.0		A 10.0	A 0.5
Wixom Rd and Maple Rd	D 35.6	C 33.5	C 33.5	D 37.0	C 33.4	C 33.4	C 20.6	D 40.4	D 40.2	E 65.4	B 14.3	B 14.3	C 32.2
Wixom Rd and Theodore	F 213.9	F 213.9	F 213.9	F 85.6	F 85.6	F 85.6	A 8.8	A 0.2	A 0.2	B 11.0	A 0.1	A 0.1	B 11.9
Wixom Rd and North School Dwy	C 22.0		C 22.0				A 8.7	A 0.1			A 0.0	A 0.0	A 0.1
Wixom Rd and South School Dwy	D 29.5		D 29.5				A 8.8	A 0.3			A 0.0	A 0.0	A 2.6

Table 7: 2027 No-Build PM Levels of Service

2047 AM Levels of Service - No-Build													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.5		A 9.5	A 1.1
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.9		A 9.9	A 2.4
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				A 8.7		A 8.7	A 0.7
Wixom Rd and Maple Rd	C 33.1	D 36.9	D 36.9	D 45.8	C 31.8	C 31.8	D 41.9	B 13.8	B 13.8	B 18.0	C 25.1	C 25.1	C 25.0
Wixom Rd and Theodore	F 188.1	F 188.1	F 188.1	F 170.6	F 170.6	F 170.6	B 11.5	A 0.0	A 0.0	A 8.3	A 0.0	A 0.0	C 19.0
Wixom Rd and North School Dwy	A 0.0		A 0.0				B 11.3	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	D 33.5		D 33.5				B 11.2	A 0.0			A 0.0	A 0.0	A 2.9

Table 8: 2047 No-Build AM Levels of Service

2047 PM Levels of Service - No-Build													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 7.4	A 0.3			A 0.0	A 0.0				A 9.4		A 9.4	A 0.9
Maple Rd and Hedigham Blvd	A 0.0	A 0.0			A 0.0	A 0.0				A 9.7		A 9.7	A 1.4
Maple Rd and Castlewood Ct	A 0.0	A 0.0			A 0.0	A 0.0				B 10.1		B 10.1	A 0.5
Wixom Rd and Maple Rd	D 36.1	C 33.9	C 33.9	D 37.9	C 33.7	C 33.7	C 23.0	E 67.1	E 67.1	F 91.7	B 15.2	B 15.2	D 47.6
Wixom Rd and Theodore	F 460.1	F 460.1	F 460.1	F 149.0	F 149.0	F 149.0	A 9.0	A 0.0	A 0.0	B 11.7	A 0.0	A 0.0	C 24.8
Wixom Rd and North School Dwy	C 24.5		C 24.5				A 8.9	A 0.1			A 0.0	A 0.0	A 0.1
Wixom Rd and South School Dwy	E 41.3		E 41.3				A 9.0	A 0.3			A 0.0	A 0.0	A 3.6

Table 9: 2047 No-Build PM Levels of Service

Level of service and control delay are not the only parameters by which traffic operations can be evaluated. SimTraffic traffic simulation software was utilized to review traffic queuing and operational characteristics as well. SimTraffic is a modeling simulation software that is part of the Synchro suite of software. The software provides a variety of evaluation variables; for the purposes of this study, the 95th percentile queue length and delay per vehicle were analyzed. Queue length is a useful parameter to evaluate in this study because of the proximity of the intersections to each other. Queues that form at intersections can impact operations upstream. The northbound approach to the intersection was found to have queue lengths exceeding 1,000 feet during the afternoon peak hour, likely causing driveways and Theodore to become blocked by vehicles on Wixom Road.

2025 AM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					37		37
Maple Rd and Hedigham Blvd	0				0					46		46
Maple Rd and Castlewood Ct	0				0					27		27
Wixom Rd and Maple Rd	37	132		96	43		57	177		107	482	
Wixom Rd and Theodore	74			59			47	0	9	18	8	
Wixom Rd and North School Dwy	13		13				0	0			0	
Wixom Rd and South School Dwy	82		82				51				14	

Table 10: Existing AM 95th Percentile Queue Lengths

2025 PM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					30		30
Maple Rd and Hedigham Blvd	0				0					45		45
Maple Rd and Castlewood Ct	0				0					31		31
Wixom Rd and Maple Rd	50	94		85	104		88	1098		86	259	
Wixom Rd and Theodore	130			39			47	122	18	20	0	
Wixom Rd and North School Dwy	9		9				17	70			0	
Wixom Rd and South School Dwy	166		166				53				3	

Table 11: Existing PM 95th Percentile Queue Lengths

2027 AM 95th Percentile Queue Length (ft) - No-Build												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					47		47
Maple Rd and Hedigham Blvd	0				0					45		45
Maple Rd and Castlewood Ct	0				0					34		34
Wixom Rd and Maple Rd	49	131		103	57		67	189		102	444	
Wixom Rd and Theodore	85			61			44	0	0	8	4	
Wixom Rd and North School Dwy	21		21				0	0			0	
Wixom Rd and South School Dwy	68		68				46	0			3	

Table 12: 2027 No-Build AM 95th Percentile Queue Lengths

2027 PM 95th Percentile Queue Length (ft) No-Build												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					35		35
Maple Rd and Hedigham Blvd	0				0					42		42
Maple Rd and Castlewood Ct	0				0					25		25
Wixom Rd and Maple Rd	52	72		92	115		89	945		105	276	
Wixom Rd and Theodore	85			40			34	58	12	20	0	
Wixom Rd and North School Dwy	18		18				20	22			0	
Wixom Rd and South School Dwy	132		132				36	4			13	

Table 13: 2027 No-Build PM 95th Percentile Queue Lengths

2047 AM 95th Percentile Queue Length (ft) - No-Build												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					53		53
Maple Rd and Hedigham Blvd	0				0					47		47
Maple Rd and Castlewood Ct	0				0					33		33
Wixom Rd and Maple Rd	50	156		111	49		73	257		116	573	
Wixom Rd and Theodore	115			113			44	0	9	12	8	
Wixom Rd and North School Dwy	12		12				0	0			0	
Wixom Rd and South School Dwy	134		134				64				6	

Table 14: 2047 No-Build AM 95th Percentile Queue Lengths

2047 PM 95th Percentile Queue Length (ft) No-Build												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					33		33
Maple Rd and Hedigham Blvd	0				0					48		48
Maple Rd and Castlewood Ct	0				0					35		35
Wixom Rd and Maple Rd	64	113		95	135		105	1446		98	315	
Wixom Rd and Theodore	383			133			91	353	59	18	3	
Wixom Rd and North School Dwy	19		19				29	227			0	
Wixom Rd and South School Dwy	269		269				273				5	

Table 15: 2047 No-Build PM 95th Percentile Queue Lengths

2. Proposed Levels of Service

The Levels of Service and Queue Lengths for the adjacent intersections as well as at the proposed driveway locations were determined. This build-out scenario models the two driveways along Maple Road with the three existing school access points being unused. Redistributing traffic from the new school location has a positive impact on vehicles existing and entering the school. The proposed school driveways will operate at significantly improved LOS compared to the existing conditions. The same movements that are currently operating at failing LOS continue to do so under the 2027 build-out conditions with the exception of the southbound left turn at Wixom Road and Maple Road which improves from a LOS E in the PM No-build conditions to a LOS D in the Build-out scenario. The northbound left turn through

the intersection of Wixom Road and Maple Road degrades to a failing LOS during the afternoon peak hour during the 2047 horizon year morning peak hour as a result of the redistributed traffic from the new school location. The southbound left turn through this intersection improves from a LOS F (91.7 seconds) to a LOS E (76.2 seconds) during the afternoon peak hour.

2027 AM Levels of Service - Build-out													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.5		A 9.5	A 1.1
Maple Rd and Hedigham/ W Dwy	A 0.0	A 0.0	A 0.0	A 7.6	A 0.0	A 0.0	B 10.1	B 10.1	B 10.1	B 10.4	B 10.4	B 10.4	A 3.3
Maple Rd and Castlewood/ E Dwy	A 0.0	A 0.0	A 0.0	A 8.3	A 0.0	A 0.0	B 10.7	B 10.7	B 10.7	A 8.9	A 8.9	A 8.9	A 5.5
Wixom Rd and Maple Rd	D 35.3	D 40.4	D 40.4	D 49.8	C 32.0	C 23.0	D 45.3	B 12.3	B 12.3	B 15.0	C 21.9	C 21.9	C 25.9
Wixom Rd and Theodore	D 34.6	D 34.6	D 34.6	F 55.6	F 55.6	F 55.6	B 10.3	A 0.0	A 0.0	A 8.3	A 0.0	A 0.0	A 3.3
Wixom Rd and North School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0

Table 16: 2027 AM Build-out Levels of Service

2027 PM Levels of Service - Build-out													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.3		A 0.0	A 0.9
Maple Rd and Hedigham/ W Dwy	A 7.5	A 0.5	A 0.5	A 7.4	A 0.7	A 0.7	A 9.7	A 9.7	A 9.7	B 10.2	B 10.2	B 10.2	A 2.5
Maple Rd and Castlewood/ E Dwy	A 0.0	A 0.0	A 0.0	A 7.7	A 3.3	A 3.3	B 10.3	B 10.3	B 10.3	C 18.9	B 10.9	B 10.9	A 5.4
Wixom Rd and Maple Rd	D 40.9	D 37.2	D 37.2	D 42.1	C 33.6	C 33.6	C 23.3	C 29.5	C 29.5	D 47.8	B 14.4	B 14.4	C 27.3
Wixom Rd and Theodore	F 55.6	F 55.6	F 55.6	F 76.9	F 76.9	F 76.9	A 8.7	A 0.0	A 0.0	B 11.1	A 0.1	A 0.1	A 1.9
Wixom Rd and North School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0

Table 17: 2027 PM Build-out Levels of Service

2047 AM Levels of Service - Build-out													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.5		A 9.5	A 1.1
Maple Rd and Hedigham/ W Dwy	A 0.0	A 0.0	A 0.0	A 7.6	A 1.2	A 1.2	B 10.2	B 10.2	B 10.2	B 10.6	B 10.6	B 10.6	A 3.3
Maple Rd and Castlewood/ E Dwy	A 0.0	A 0.0	A 0.0	A 8.4	A 5.3	A 5.3	B 10.8	B 10.8	B 10.8	A 9.0	A 9.0	A 9.0	A 5.3
Wixom Rd and Maple Rd	D 35.5	D 41.5	D 41.5	D 53.0	C 32.1	C 32.1	E 64.0	B 12.8	B 12.8	B 16.1	C 26.3	C 26.3	C 29.2
Wixom Rd and Theodore	E 48.6	E 48.6	E 48.6	F 101.1	F 101.1	F 101.1	B 10.9	A 0.1	A 0.1	A 8.4	A 0.1	A 0.1	A 5.7
Wixom Rd and North School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0

Table 18: 2047 AM Build-out Levels of Service

2047 PM Levels of Service - Build-out													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
Maple Rd and Millstream Dr	A 0.0	A 0.0			A 0.0	A 0.0				A 9.3		A 9.3	A 0.8
Maple Rd and Hedigham/ W Dwy	A 0.0	A 0.0	A 0.0	A 7.4	A 0.7	A 0.7	A 9.7	A 9.7	A 9.7	B 10.3	B 10.3	B 10.3	A 2.3
Maple Rd and Castlewood/ E Dwy	A 0.0	A 0.0	A 0.0	A 7.7	A 3.2	A 3.2	B 10.4	B 10.4	B 10.4	C 19.7	C 19.7	C 19.7	A 5.2
Wixom Rd and Maple Rd	D 41.7	D 37.7	D 37.7	D 43.2	C 33.9	C 33.9	C 26.4	D 44.9	D 44.9	E 76.2	B 15.3	B 15.3	D 35.5
Wixom Rd and Theodore	F 94.4	F 94.4	F 94.4	F 136.7	F 136.7	F 136.7	A 8.9	A 0.1	A 0.1	B 11.7	A 0.1	A 0.1	A 3.3
Wixom Rd and North School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0
Wixom Rd and South School Dwy	A 0.0		A 0.0				A 0.0	A 0.0			A 0.0	A 0.0	A 0.0

Table 19: 2047 PM Build-out Levels of Service

Queue Lengths were generally shown to increase at the intersection of Wixom Road and Maple Road as a result of the redistributed school traffic. However, queue lengths for the proposed school driveways off Maple Road were found to decrease compared to the existing school. Analysis shows that the proposed school driveway locations results in reduced on site queueing and improved delays for vehicles exiting the site.

2027 AM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					49		49
Maple Rd and Hedigham/ W Dwy	0			10			60			46		
Maple Rd and Castlewood/ E Dwy	3			62			58			32		
Wixom Rd and Maple Rd	109	206		98	70		112	326		142	505	
Wixom Rd and Theodore	36			46			16	0	3	15	0	
Wixom Rd and North School Dwy	0		0				0	0			0	
Wixom Rd and South School Dwy	0		0				0				0	

Table 20: Proposed 2027 AM Build-Out 95th Percentile Queue Lengths

2027 PM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					44		44
Maple Rd and Hedigham/ W Dwy	8			12			61			44		
Maple Rd and Castlewood/ E Dwy	0			37			62			28		
Wixom Rd and Maple Rd	133	165		81	105		111	954		84	273	
Wixom Rd and Theodore	38			54			25	64	17	22	0	
Wixom Rd and North School Dwy	0		0				0	0			0	
Wixom Rd and South School Dwy	0		0				0				0	

Table 21: Proposed 2027 PM Build-Out 95th Percentile Queue Lengths

2047 AM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					53		53
Maple Rd and Hedigham/ W Dwy	0			12			64			49		
Maple Rd and Castlewood/ E Dwy	3			75			59			35		
Wixom Rd and Maple Rd	129	225		113	78		120	1192		141	626	
Wixom Rd and Theodore	59			78			40	178	26	19	4	
Wixom Rd and North School Dwy	0		0				0	0			0	
Wixom Rd and South School Dwy	0		0				0				0	

Table 22: Proposed 2047 AM Build-Out 95th Percentile Queue Lengths

2047 PM 95th Percentile Queue Length (ft)												
Intersection	Eastbound			Westbound			Northbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Maple Rd and Millstream Dr	0				0					36		36
Maple Rd and Hedigham/ W Dwy	0			4			69			40		
Maple Rd and Castlewood/ E Dwy	0			41			56			31		
Wixom Rd and Maple Rd	137	145		86	123		114	1489		99	304	
Wixom Rd and Theodore	158			136			30	375	55	55	18	
Wixom Rd and North School Dwy	0		0				0	0			0	
Wixom Rd and South School Dwy	0		0				0				0	

Table 23: Proposed 2047 PM Build-Out 95th Percentile Queue Lengths

3. Alternative Analysis

Traffic mitigation improvements were investigated to improve traffic operations in the worst-case scenario. The two alternative analysis scenarios that were analyzed were the 2047 horizon year assuming no changes to the school location and the 2047 horizon year with the new school trip distribution incorporated. The purpose of the two scenarios is to address congestion problems that are related and unrelated to the new school location separately.

For the no-build scenario a second northbound lane on Wixom Road was modeled from the Foundations for Learning Preschool & Daycare driveway through the intersection of Wixom Road and Maple Road to address the failing movements that are currently present. This

improvement matches the cross section of Wixom Road at the intersection with W Pontiac Trail, which tapers to a single lane approximately 250 feet north of the intersection. This represents a long-term mitigation that would improve vehicle delays to acceptable levels for both the morning and afternoon peak hours. Current traffic counts show that more than 1,000 vehicles travel northbound through the corridor during the afternoon peak hour. This volume is likely to increase with the typical background growth of traffic.

Intersection upgrades at Wixom Road and Maple Road were analyzed for the 2047 horizon year with the proposed development. The intersection improvements analyzed include permitted-permissive left turn phasing for the northbound and southbound left turns, as well as a proposed 100-foot right turn lane for northbound traffic. The two improvements were analyzed separately from the 2047 no-build scenario improvements. The northbound left turn movement was able to be improved to acceptable levels for the morning peak hour while preserving acceptable delays for all other turning movements. For the afternoon peak hour, all movements were able to be improved to acceptable levels with the exception of the northbound through movement. It was observed that five to ten northbound vehicles require two signal cycles to clear the intersection, leading to the high delays. Providing more green time for northbound traffic would reduce green time for westbound and eastbound traffic and lead to a falling LOS for those movements. The failing northbound movements are present during the build and no-build 2047 scenarios.

2047 AM Levels of Service Wixom Rd and Maple Rd													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
No-build, No improvements	C 33.1	D 36.9	D 36.9	D 45.8	C 31.8	C 31.8	D 41.9	B 13.8	B 13.8	B 18.0	C 25.1	C 25.1	C 25.0
No-build, with Addt'l Lane	C 33.1	D 36.9	D 36.9	D 45.8	C 31.8	C 31.8	D 41.9	B 11.1	B 11.1	B 13.0	C 25.1	C 25.1	C 24.2
Build, No improvements	D 35.5	D 41.5	D 41.5	D 53.0	C 32.1	C 32.1	E 64.0	B 12.8	B 12.8	B 16.1	C 26.3	C 26.3	C 29.2
Build, with Signal Timing	D 38.7	D 43.2	D 43.2	E 55.5	D 35.4	D 35.4	C 26.4	B 13.0	B 10.8	A 9.9	C 32.9	C 32.9	C 30.7

Table 24: 2047 AM Levels of Service at Wixom Rd and Maple Rd

2047 PM Levels of Service Wixom Rd and Maple Rd													
Intersection	Eastbound			Westbound			Northbound			Southbound			All
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
No-build, No improvements	D 36.1	C 33.9	C 33.9	D 37.9	C 33.7	C 33.7	C 23.0	E 67.1	E 67.1	F 91.7	B 15.2	B 15.2	D 47.6
No-build, with Addt'l Lane	C 32.7	D 36.4	D 36.4	D 45.2	C 31.5	C 31.5	D 39.4	B 10.5	B 10.5	B 12.3	C 23.5	C 23.5	C 23.0
Build, No improvements	D 41.7	D 37.7	D 37.7	D 43.2	C 33.9	C 33.9	C 26.4	D 44.9	D 44.9	E 76.2	B 15.3	B 15.3	D 35.5
Build, with Signal Timing	D 53.3	D 48.0	D 48.0	E 56.1	D 43.6	D 43.6	A 9.1	C 22.4	A 7.7	B 17.2	B 13.2	B 13.2	C 24.0

Table 25: 2047 PM Levels of Service at Wixom Rd and Maple Rd

4. Turn Lane Treatment Analysis

SD analyzed the proposed Wixom Elementary School driveways to determine whether traffic volumes meet criteria to recommend turning lane treatments. These analyses were based on the MDOT Geometric Design Guidance and its criteria set in Sections 1.1.4 and 1.1.5, Traffic Guidelines for Right-Turn Lanes and Tapers and Traffic Volume Guidelines for Left-Turn Lanes and Passing Flares, respectively. A summary of recommendations regarding turn treatments for the East and West School Driveways is provided in a table at the end of this section.

Right Turn Treatment Analysis

SD utilized the MDOT graphs for 2-lane highways since Maple Rd currently has a 2-lane cross-section. For the West School Driveway, right turn volumes are generally low – with most coming from WB Maple Rd traffic turning right to NB Hedingham Dr. In both the AM and PM 2047 Build Scenarios, only a right turn radius is recommended for both EB and WB Maple Rd. SD did not analyze 2027 scenarios since volumes would only be lower and thus, the radius recommendation would remain. It should be noted that at the West Driveway an existing EB passing flare and WB right turn lane existing for Hedingham Dr. The construction of the new school should accommodate these existing geometric features. Should construction disturb Maple Rd, the passing flare and right turn lane should be restored to their existing conditions.

A similar result was determined for the East School Driveway with low turn volumes in the 2047 Build scenario for EB and WB Maple Rd. Therefore, only right turn radii are recommended for EB and WB Maple Rd. It should be noted that at the East Driveway there is an existing WB right turn lane for Castlewood Ct. The construction of the new school should accommodate this existing geometric feature. Should construction disturb Maple Rd, the right turn lane should be restored to its existing conditions.

SD did not analyze 2027 scenarios since volumes would only be lower than 2047 and thus, the recommendations would remain. See Appendix E for graphs used in this analysis.

Left Turn Treatment Analysis

SD utilized the MDOT graphs for 2-lane highways with 35 mph speed limits since Maple Rd currently has a 2-lane cross-section. MDOT has not published a graph for speed limits lower than 35 mph, so SD determined that this graph would be most appropriate. The analysis discussed below is based on 2047 Build scenario volumes.

At the West School Driveway, the volumes of advancing and opposing traffic are generally low. Coupled with a maximum left turn percentage of 16%, left-turn treatments are not recommended for either EB or WB Maple Rd. SD also reviewed MDOT's passing flare chart and has determined that since there are so few EB left turns, a passing flare is not recommended.

For the East School Driveway, similar patterns are held as above for EB Maple Rd. Although advancing and opposing volumes are slightly higher, there are very few left turns from EB Maple Rd to NB Castlewood Ct. As such, a left turn treatment is not recommended. For WB Maple Rd left turn percentages are higher, since this is the predominant movement for drop-

off and pick-up with 60% of traffic turning left during the AM Peak period. Based on the graph, volumes were found to be at the threshold to recommend a left turn treatment.

Since WB Maple Rd is very close to the left turn treatment threshold, SD determined it valid to conduct further investigation into the need for a passing flare. SEMCOG's traffic count database indicates that WB Maple Rd experienced approximately 2,500 vehicles per day in 2021. Grown with a rate consistent with the rest of the report, this is approximately 2,850 vehicles per day in 2047. The peak hour for left turns in 2047 is in the AM, which experiences 125 left turns. Corresponding with the graph, these volumes do result in the recommendation of a passing flare. Though the graphical analysis shows that a left turn treatment is warranted, the operational analysis resulted in LOS A for the left turns at this driveway. A left turn treatment would likely result in very little operational improvement at this location. **SD recommends to maintain the cross-section of Maple Rd.**

SD did not analyze 2027 scenarios since volumes would only be lower than 2047 and thus, the recommendations would remain. See Appendix E for graphs used in this analysis.

Driveway	Direction	Turn	Recommendation
West Driveway	EB Maple Rd	Left	**No Treatment**
		Right	**Radius Only**
	WB Maple Rd	Left	**No Treatment**
		Right	**Retain Ex turn lane**
East Driveway	EB Maple Rd	Left	**No Treatment**
		Right	**Radius Only**
	WB Maple Rd	Left	**No Treatment**
		Right	**Radius Only**

Table 26: Turn Treatment Summary

5. Left Turn Phasing Analysis

SD noted that the most substantial delays in the study network were observed at the signalized intersection of Maple Rd at Wixom Rd. As part of modeling the proposed improvements, SD considered whether left turn phasing would assist with improving operations at Maple Rd / Wixom Rd. SD utilized the MDOT Left Turn Phasing spreadsheet to complete this analysis.

The results of utilizing the MDOT Left Turn Phasing spreadsheet can be seen summarized in the table below. See Appendix E for graphs used in this analysis.

Scenario	Direction	Recommendation
2027 Build	NB / SB	**Install Permissive-Protected Left Turn Phasing**
	EB / WB	No Left Turn Phasing
2047 No Build	NB / SB	No Left Turn Phasing
	EB / WB	No Left Turn Phasing
2047 Build	NB / SB	**Install Permissive-Protected Left Turn Phasing**
	EB / WB	No Left Turn Phasing

Table 27: Left Turn Phasing Analysis Summary

SD began the analysis by evaluating the 2047 Build Scenario, since if it was not warranted when traffic volumes were the highest it would thus not be warranted in lower volume scenarios. It was determined that based on left turning volumes and opposing traffic, permissive-protected phasing could be justified for NB / SB Wixom Rd. To determine if this conclusion is due to the reassigned school traffic, SD analyzed the 2047 No Build scenario volumes. Ultimately, the analysis of the 2047 No Build scenario indicated that left turn phasing would not be recommended. Additionally, SD desired to determine if permissive-protected phasing would only be justified 20 years into the future, or closer to the present day, so the 2027 Build scenario was also analyzed. The results of the 2027 Build analysis similarly indicate that permissive-protected left turn phasing could be justified.

It is worth noting that the results of the analysis above are based solely on AM and PM Peak hour counts, as SD did not collect 24-hr counts at the Maple Rd / Wixom Rd intersection. A more robust left turn analysis could be conducted if 24-hr counts are collected. SD yields to the City to determine whether this further analysis is required.

SD also notes that any installation of new left turn phasing would be pending the approval of the Road Commission for Oakland County, the agency with jurisdiction over Wixom Rd and the traffic signal itself. SD understands that the City's reviewing consultant, Hubbell, Roth & Clark, Inc. (HRC), is currently engaged in designing several modernized traffic signals on the Wixom Rd corridor. This presents a unique opportunity for the school to provide the City and RCOC with justification to improve operations at the intersection.

Direction	Movement	2027 Build		2047 Build		2047 Build w/ Improvements	
		AM	PM	AM	PM	AM	PM
EB	LT	35.3	40.9	35.5	41.7	38.7	53.3
	TH	0	0	0	0	0	0
	RT	40.4	37.2	41.5	37.7	43.2	48.0
	Total	**39.2**	**38.7**	**40.1**	**39.3**	**42.2**	**50.1**
WB	LT	49.8	42.1	53.0	43.2	55.5	56.1
	TH	0	0	0	0	0	0
	RT	32.0	33.6	32.1	33.9	35.4	43.6
	Total	**43.7**	**36.6**	**46.1**	**37.3**	**48.9**	**48.1**
NB	LT	45.3	23.3	64.0	26.4	26.4	9.1
	TH	0	0	0	0	13.0	22.4
	RT	12.3	29.5	12.8	44.9	10.8	7.7
	Total	**20.1**	**28.7**	**24.0**	**42.8**	**15.6**	**19.9**
SB	LT	15.0	47.8	16.1	76.2	9.9	17.2
	TH	0	0	0	0	0	0
	RT	21.9	14.4	26.3	15.3	32.9	13.2
	Total	**21.7**	**16.2**	**25.9**	**18.5**	**32.1**	**13.4**
Total	**Total**	**25.8**	**27.3**	**29.2**	**35.5**	**30.7**	**24.0**

Table 28: LOS Delay Comparison

The results of adding left turn phasing to NB / SB Wixom Rd can be seen in the summary delay table above which compares delay between scenarios. Most critically, as time progresses in the Build scenario, the delay associated with NB / SB Wixom Rd increases. Various movements in the 2047 Build scenario reach delays which correspond to Level of Service E and F – which indicate breakdown of traffic flow.

SD added leading protected-permissive left turn phasing to NB / SB Wixom Rd in the 2047 Build with Improvements scenario. This improvement coincided with other signal timing upgrades and optimizations such as flashing yellow arrow signals, vehicular detection to allow None recall, and adjustments to splits. In this scenario, both in the AM and PM Peaks, movements with LOS E and F are generally eliminated, which benefits the intersection and Wixom Rd corridor at-large.

The split adjustments were conducted by holding the 120 second cycle length stead and using Synchro's "Optimize Splits" function. SD feels this is an accurate representation of how the intersection will operate after modernization by HRC, the City, and RCOC. The modernized signal will likely run on RCOC's Sydney Coordinated Adaptive Traffic System (SCATS) program. SCATS works by using real-time traffic volumes to continuously adjust signal timings to best serve the network. This creates a highly coordinated system which can minimize delays throughout the network in real-time.

SD recommends that HRC discuss with RCOC the opportunity to install permissive-protected phasing at the modernized signal for NB / SB Wixom Rd at Maple Rd. This installation should be installed per the latest MDOT and RCOC standards, with flashing yellow arrow signal heads and leading protected-permissive phasing. Ideally, this phasing would be installed in conjunction with modernized vehicular and pedestrian detection at the intersection. This would

allow for protected phases to run on None recall and be skipped absent the presence of turning vehicles.

6. Signal Warrant Analysis

SD performed a signal warrant analysis for the intersection of Maple Rd at Castlewood Ct / East School Driveway. The study reviewers asked for a warrant analysis at Hedingham Dr / West School Driveway, however, volumes are projected to be much lower in that location than the East Driveway. SD believes that because of lower volumes, should a signal not be warranted at the East Driveway it would similarly not be warranted at the West Driveway.

The Michigan Manual on Uniform Traffic Control Devices (MMUTCD) describes nine (9) warrants which may be utilized as part of an engineering study to warrant the installation of a traffic signal. The MMUTCD also specifically mentions that in the event a warrant is met, the installation is neither required nor recommended, only that thresholds have been met where a signal may be beneficial. The warrants are listed in the table below along with descriptions of their analysis. The MDOT Signal Warrant Spreadsheet was utilized for the analysis.

Warrant	Is Warrant Met?
Warrant 1: 8-Hr Vehicular Volume Condition A	Insufficient Data, but **unlikely to be met***
Warrant 1: 8-Hr Vehicular Volume Condition B	Insufficient Data, but **unlikely to be met***
Warrant 1: 8-Hr Vehicular Volume Condition A&B	Insufficient Data, but **unlikely to be met***
Warrant 2: 4-Hr Vehicular Volumes	Insufficient Data, but **unlikely to be met***
Warrant 3: Peak Hour Vehicular Volume	**Not Warranted**
Warrant 4: Pedestrian Volume	N/A; No Crossing at East Driveway
Warrant 5: School Crossing	N/A; No School Crossing at East Driveway
Warrant 6: Coordinated Signal System	N/A
Warrant 7: Crash Experience	N/A; 0 crashes last 5 years at Castlewood Ct
Warrant 8: Roadway Network	N/A
Warrant 9: Intersection near a Grade Crossing	N/A

***Note: See justification in subsequent discussion**

Table 29: Signal Warrant Summary

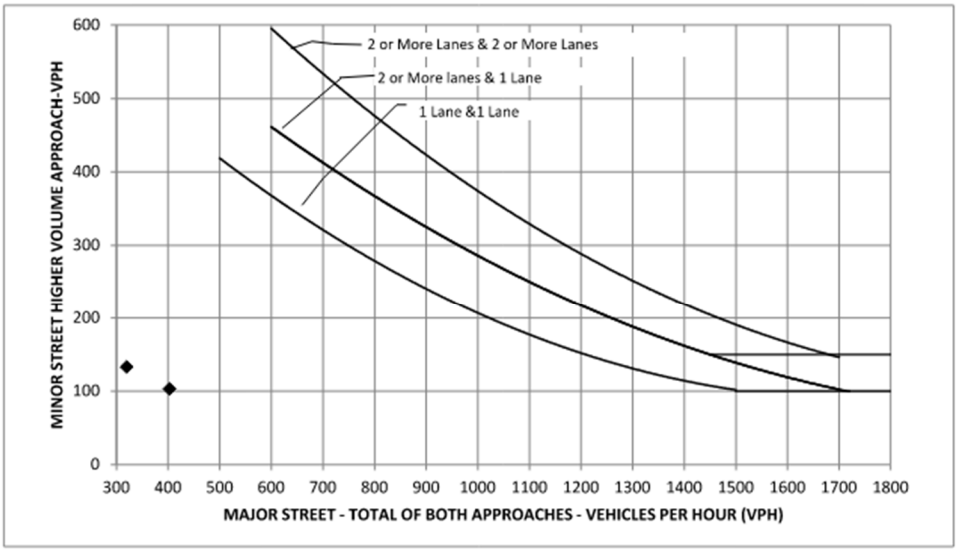
SD utilized Warrant 3 (Peak Hour) to justify whether a signal is warranted for the East School Driveway. Warrant 3 is intended for unusual cases per the MMUTCD, like office complexes, industrial plants, or schools where significant traffic is experienced in a concentrated period of the day. It is feasible to use Warrant 3 as a preliminary justification since 4- or 8-hour volumes are not available since the intersection does not yet exist.

Based on the chart for Warrant 3, volumes on Maple Rd and the minor approaches in the 2047 AM Peak are not large enough to meet thresholds. As such, a signal is not warranted based on Warrant 3. SD feels that this preliminary justification is sufficient to say that Warrants 1 and 2 are similarly unlikely to be met. Since volumes are not large enough during the peak hour (highest daily volume hour), the other 23 hours of the day will experience even less volume. SD also notes that since 2047 Build volumes to not meet signal warrant thresholds, the smaller volumes in 2027 Build will similarly fail to meet the thresholds.

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 3 B(100%): Peak-Hour Vehicular Volume

Spot Number:	0		
Intersection:	Maple Rd @ Castlewood Ct / E School Dwy		
Date	12/16/2025	by	SDA-JDH

1	: No. of Lanes on Major St.
2	: No. of Lanes on Minor St.
30	: Speed limit or 85th Percentile? (MPH)
NO	: Is the intersection within an Isolated community?
0	: What is the of the population isolated community?



How Many Hours Are Met	0
Is Warrant 3 B (100%) Met?	NO

Figure 3: MUTCD Warrant 3 B Worksheet

Traffic would need to grow significantly on Maple Rd and the minor approaches to satisfy conditions of Warrants 1, 2, or 3. SD notes that road agencies like Michigan Department of Transportation (MDOT) and Road Commission for Oakland County (RCOC) typically do not permit signals to be installed unless the location meets thresholds in Warrant 1. While neither MDOT or RCOC own Maple Rd, RCOC would maintain the signal for the City of Wixom. This notion, coupled with the lack of meeting warrants, leads SD to recommend the East School Driveway be installed and Castlewood Ct remain as STOP-controlled approaches, respectively. This recommendation holds true for the Hedingham Dr / West School Driveway approaches to Maple Rd as well.

F. Conclusions and Recommendations

1. Report Overview

Most traffic conditions around the Wixom Elementary School area operate at acceptable Levels of Service during the morning and afternoon peak hours. Some of turning movements do operate at unacceptable levels. A proposed lane addition for northbound traffic was modeled to show a potential improvement to address the current failing LOS that would work for the long-term. Wixom Road serves as a primary connection point from I-96 to the south to

many residential neighborhoods to the north as well as several parks. Traffic volumes on Wixom Road are likely to increase with time. Adding the additional northbound lane would improve the intersection capacity at Wixom Road and Maple Road. The large amount of traffic volumes on Wixom Road are indicative of systemic concerns that are beyond the scope of this traffic study. The closest adjacent north and south roads are Beck Road a mile to the east and Old Plank Road two miles to the west.

The construction and relocation of the Wixom Elementary School will change traffic patterns in the area but is not expected to increase the amount of school-related traffic. One impact of relocating the elementary school to Maple Road is the increased traffic for northbound left turns from Wixom Road to Maple Road that will degrade to a failing LOS for the morning peak hour for the 20-year horizon year analysis. To mitigate long term congestion from the relocation of the school, permitted-protected left turn phasing was analyzed for northbound and southbound left turns. Delays for left turns were able to be reduced to acceptable levels with only the additional signal timing. A northbound right turn lane was also modeled for the 2047 build scenario to better improve the existing northbound congestion for thru and right turns. The turn lane would be less costly and less impactful than the full northbound lane that was modeled for the no-build 2047 scenario. The additional lane analysis shows improvements for the No-build and Build scenarios showing that the school relocation is not the cause of the school relocation. The school relocation analysis also shows that delays for the southbound left turn decrease due to the redistributed school volumes. **Walled Lake Consolidated Schools will not include this improvement as part of the school relocation project.**

The proposed school access points on Maple Road were shown to operate acceptably for all scenarios. Vehicle movements to and from the school are able to do so with minimal delays. The neighborhood roads that connect to Maple Road continue to operate at acceptable levels for the build-out scenarios.

The excessive delays currently present at Wixom Road and Theodore are the result of the large traffic volumes on Wixom Road. Limited gaps in traffic on Wixom Road cause a large amount of waiting for vehicles on Theodore, while traffic volumes turning off Theodore onto Wixom Road are relatively small. Eastbound traffic on Theodore will decrease with the school relocation. No other improvements are recommended.

SPALDING DEDECKER



Kyle Bassett, P.E., PTOE
Traffic Engineer

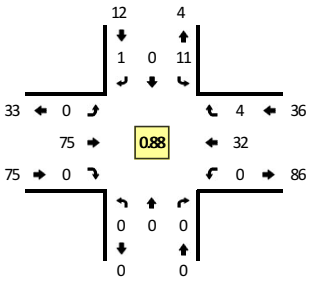
APPENDIX A

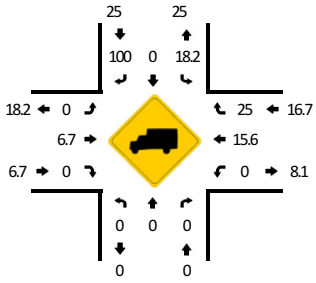
TRAFFIC COUNT DATA

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

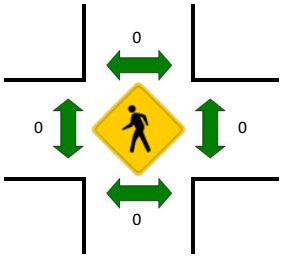
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CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 15 2025

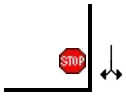
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Peak 15-Min: 8:00 AM -- 8:15 AM

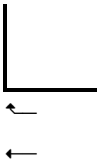


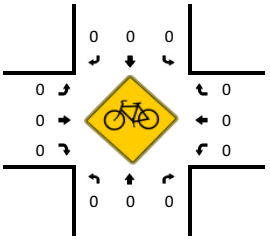


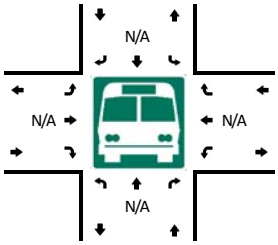
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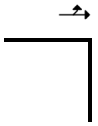




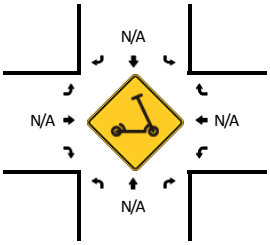












15-Min Count Period Beginning At	Millstream Dr (Northbound)				Millstream Dr (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	0	0	0	0	4	0	0	0	0	22	0	0	0	8	1	0	35	
8:15 AM	0	0	0	0	2	0	0	0	0	10	0	0	0	7	1	0	20	
8:30 AM	0	0	0	0	2	0	1	0	0	22	0	0	0	8	0	0	33	
8:45 AM	0	0	0	0	3	0	0	0	0	21	0	0	0	9	2	0	35	123
9:00 AM	0	0	0	0	1	0	0	0	0	10	0	0	0	9	2	0	22	110
9:15 AM	0	0	0	0	3	0	0	0	0	10	0	0	0	8	1	0	22	112
9:30 AM	0	0	0	0	0	0	0	0	0	10	0	0	0	1	0	0	11	90
9:45 AM	0	0	0	0	1	0	0	0	1	12	0	0	0	9	0	0	23	78

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	16	0	0	0	0	88	0	0	0	32	4	0	140
Heavy Trucks	0	0	0		4	0	0		0	4	0		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

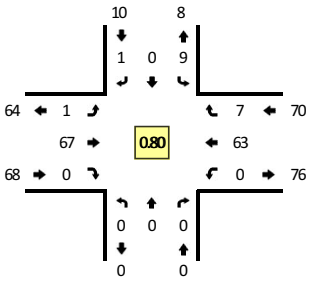
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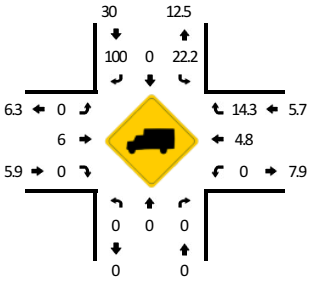
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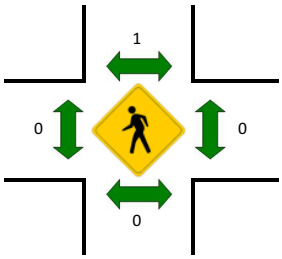
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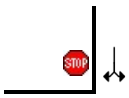
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CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 15 2025

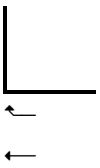
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Peak 15-Min: 4:45 PM -- 5:00 PM

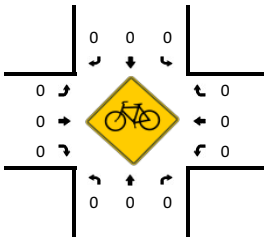


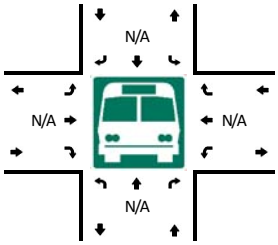


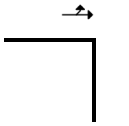




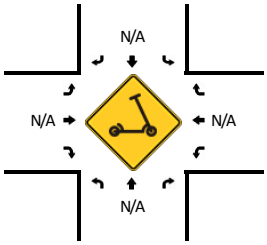












15-Min Count Period Beginning At	Millstream Dr (Northbound)				Millstream Dr (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	1	0	0	0	0	12	0	0	0	11	2	0	26	
3:15 PM	0	0	0	0	2	0	0	0	0	9	0	0	0	11	2	0	24	
3:30 PM	0	0	0	0	2	0	1	1	0	11	0	0	0	16	1	0	32	
3:45 PM	0	0	0	0	0	0	0	0	0	9	0	0	0	13	3	0	25	107
4:00 PM	0	0	0	0	2	0	0	0	0	8	0	0	0	19	3	0	32	113
4:15 PM	0	0	0	0	4	0	1	0	1	17	0	0	0	20	2	0	45	134
4:30 PM	0	0	0	0	2	0	0	0	0	14	0	0	0	9	0	0	25	127
4:45 PM	0	0	0	0	1	0	0	0	0	28	0	0	0	15	2	0	46	148

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	0	0	0	112	0	0	0	60	8	0	184
Heavy Trucks	0	0	0		4	0	0		0	8	0		0	8	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

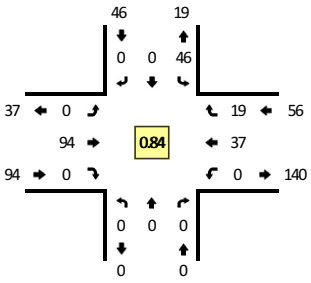
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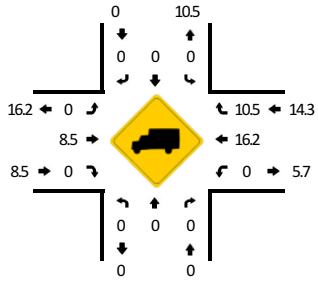
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: Hedigham Blvd -- W Maple Rd
CITY/STATE: Wixom, MI

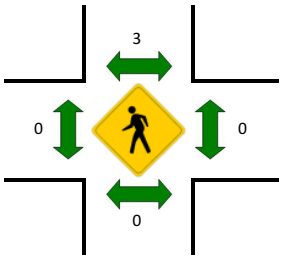
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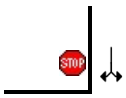
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Peak 15-Min: 8:45 AM -- 9:00 AM

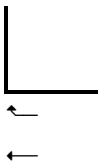


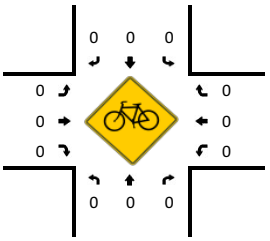


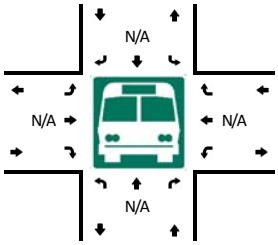
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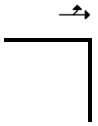




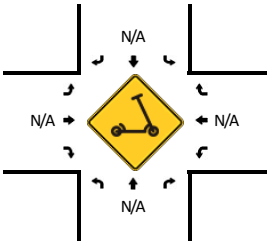












15-Min Count Period Beginning At	Hedigham Blvd (Northbound)				Hedigham Blvd (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	0	0	0	0	10	0	0	0	0	28	0	0	0	9	4	0	51	
8:15 AM	0	0	0	0	8	0	0	0	0	15	0	0	0	9	4	0	36	
8:30 AM	0	0	0	0	13	0	0	0	0	26	0	0	0	9	3	0	51	
8:45 AM	0	0	0	0	15	0	0	0	0	25	0	0	0	10	8	0	58	196
9:00 AM	0	0	0	0	7	0	0	0	0	14	0	0	0	14	2	0	37	182
9:15 AM	0	0	0	0	8	0	0	0	0	10	0	0	0	10	3	0	31	177
9:30 AM	0	0	0	0	2	0	0	0	0	13	0	0	0	2	2	0	19	145
9:45 AM	0	0	0	0	3	0	0	0	0	13	0	0	0	8	0	0	24	111

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	60	0	0	0	0	100	0	0	0	40	32	0	232
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	8	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/17/2025 8:46 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

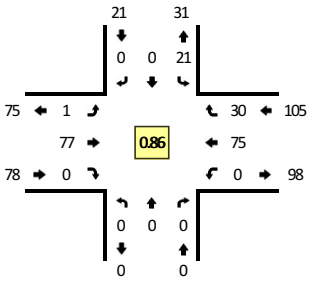
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

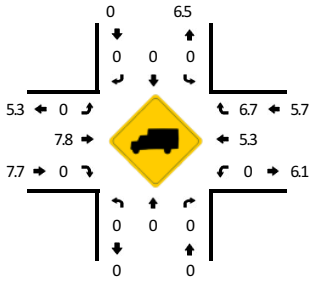
LOCATION: Hedigham Blvd -- W Maple Rd
CITY/STATE: Wixom, MI

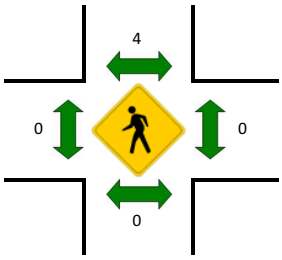
QC JOB #: 16879004
DATE: Wed, Jan 15 2025

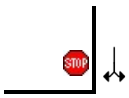
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

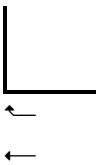


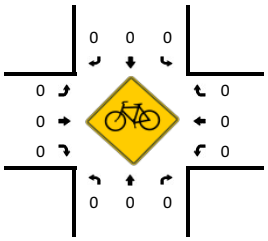


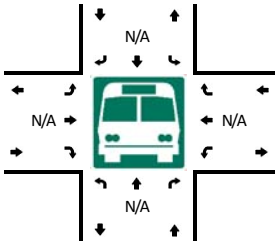


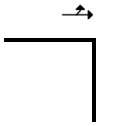




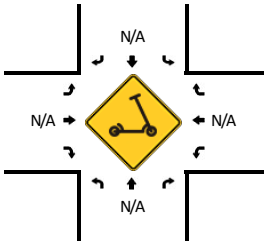












15-Min Count Period Beginning At	Hedigham Blvd (Northbound)				Hedigham Blvd (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	2	0	0	0	0	13	0	0	0	15	7	0	37	
3:15 PM	0	0	0	0	4	0	0	0	0	14	0	0	0	14	12	0	44	
3:30 PM	0	0	0	0	4	0	0	0	0	15	0	0	0	19	6	0	44	
3:45 PM	0	0	0	0	6	0	1	0	0	10	0	0	0	19	5	0	41	166
4:00 PM	0	0	0	0	3	0	0	0	0	9	0	0	0	25	7	0	44	173
4:15 PM	0	0	0	0	8	0	0	0	1	21	0	0	0	22	6	0	58	187
4:30 PM	0	0	0	0	5	0	0	0	0	17	0	0	0	11	10	0	43	186
4:45 PM	0	0	0	0	5	0	0	0	0	30	0	0	0	17	7	0	59	204

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	20	0	0	0	0	120	0	0	0	68	28	0	236
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	8	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

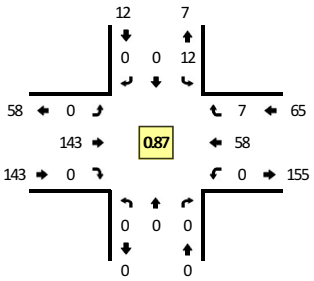
Report generated on 1/17/2025 8:46 AM

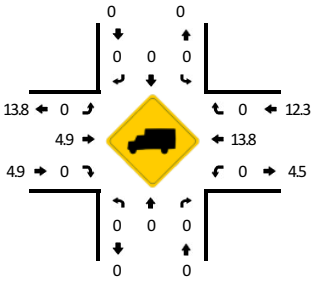
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

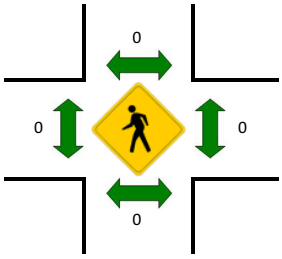
LOCATION: Castlewood Ct -- W Maple Rd | **QC JOB #:** 16879005
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 15 2025

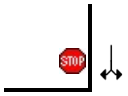
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

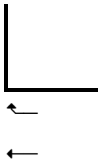


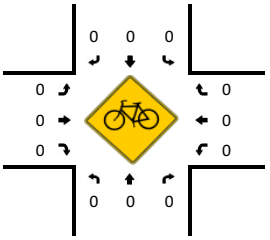


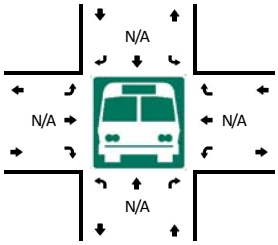
TRUE DATA TO IMPROVE MOBILITY

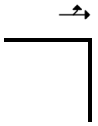




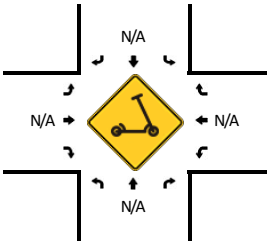












15-Min Count Period Beginning At	Castlewood Ct (Northbound)				Castlewood Ct (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	0	0	0	0	5	0	0	0	0	38	0	0	0	15	0	0	58	
8:15 AM	0	0	0	0	3	0	0	0	0	24	0	0	0	13	4	0	44	
8:30 AM	0	0	0	0	1	0	0	0	0	40	0	0	0	13	1	0	55	
8:45 AM	0	0	0	0	3	0	0	0	0	41	0	0	0	17	2	0	63	220
9:00 AM	0	0	0	0	3	0	0	0	0	20	0	0	0	14	1	0	38	200
9:15 AM	0	0	0	0	1	0	0	0	0	20	0	0	0	13	1	0	35	191
9:30 AM	0	0	0	0	4	0	0	0	0	15	0	0	0	4	1	0	24	160
9:45 AM	0	0	0	0	1	0	0	0	1	15	0	0	0	9	1	0	27	124

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	0	0	0	164	0	0	0	68	8	0	252
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	8	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

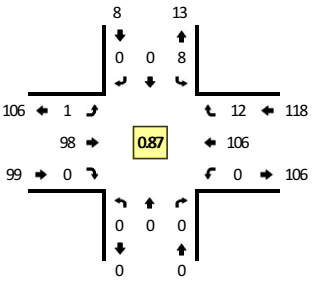
Comments:

Report generated on 1/17/2025 8:46 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

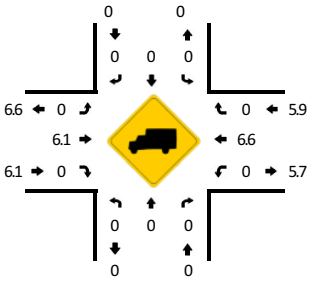
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

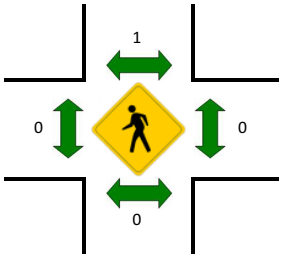
LOCATION: Castlewood Ct -- W Maple Rd | **QC JOB #:** 16879006
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 15 2025

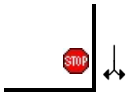
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

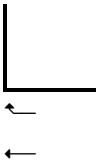


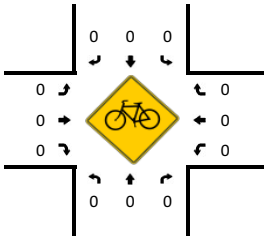


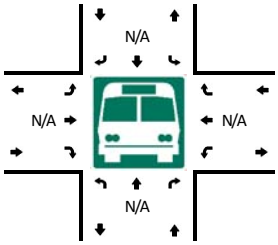


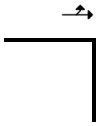




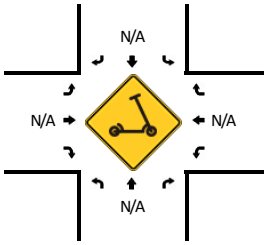












15-Min Count Period Beginning At	Castlewood Ct (Northbound)				Castlewood Ct (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	1	0	0	0	0	14	0	0	0	23	3	0	41	
3:15 PM	0	0	0	0	1	0	0	0	0	19	0	0	0	26	2	0	48	
3:30 PM	0	0	0	0	3	0	0	0	0	19	0	0	0	24	2	0	48	
3:45 PM	0	0	0	0	2	0	0	0	0	17	0	0	0	24	2	0	45	182
4:00 PM	0	0	0	0	0	0	0	0	0	13	0	0	0	32	4	0	49	190
4:15 PM	0	0	0	0	1	0	0	0	0	29	0	0	0	28	2	0	60	202
4:30 PM	0	0	0	0	4	0	0	0	0	22	0	0	0	21	4	0	51	205
4:45 PM	0	0	0	0	3	0	0	0	1	34	0	0	0	25	2	0	65	225

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	0	0	4	136	0	0	0	100	8	0	260
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	12	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/17/2025 8:46 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

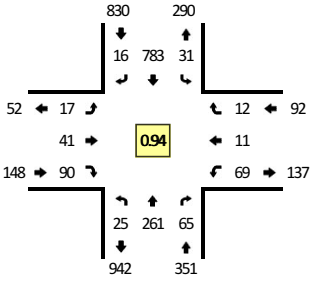
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: N Wixom Rd -- W Maple Rd
CITY/STATE: Wixom, MI

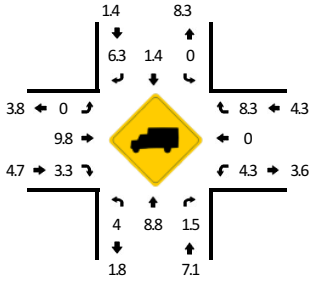
QC JOB #: 16879007
DATE: Wed, Jan 8 2025

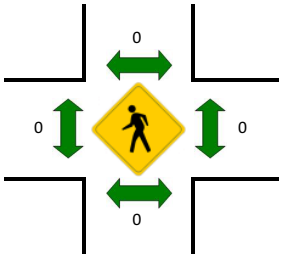
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

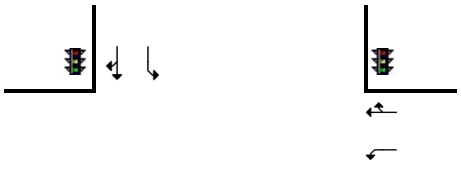


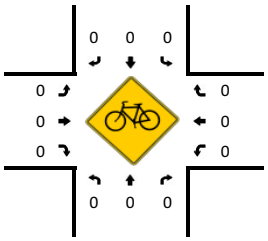


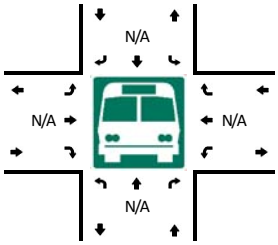
TRUE DATA TO IMPROVE MOBILITY



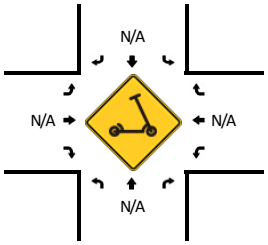












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	8	69	21	0	8	195	6	0	4	17	23	0	17	5	4	0	377	
8:15 AM	4	55	17	0	9	207	3	0	2	11	20	0	24	2	5	0	359	
8:30 AM	3	51	12	0	10	187	4	0	8	5	18	0	14	3	1	0	316	
8:45 AM	10	86	15	0	4	194	3	0	3	8	29	0	14	1	2	0	369	1421
9:00 AM	10	65	10	0	12	113	3	0	2	8	18	0	23	4	5	0	273	1317
9:15 AM	10	82	11	0	7	161	5	0	3	10	9	0	7	3	2	0	310	1268
9:30 AM	6	60	6	0	6	129	1	0	7	6	17	0	12	4	9	0	263	1215
9:45 AM	7	62	10	0	6	113	1	0	2	1	9	0	5	3	5	0	224	1070

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	276	84	0	32	780	24	0	16	68	92	0	68	20	16	0	1508
Heavy Trucks	0	12	0		0	20	0		0	12	0		4	0	0		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/13/2025 8:40 AM

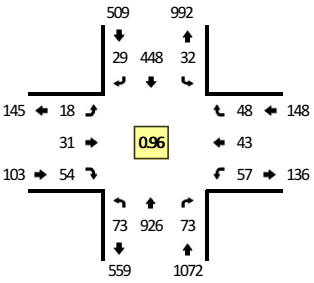
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

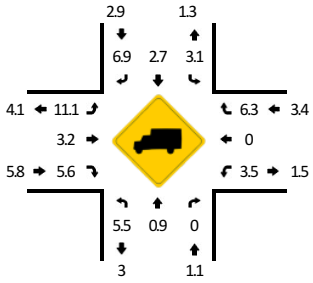
LOCATION: N Wixom Rd -- W Maple Rd
CITY/STATE: Wixom, MI

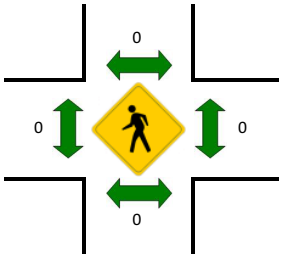
QC JOB #: 16879008
DATE: Wed, Jan 8 2025

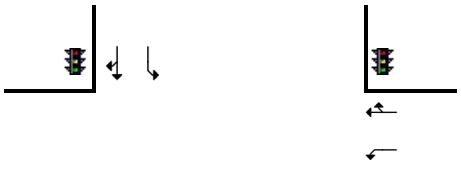
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

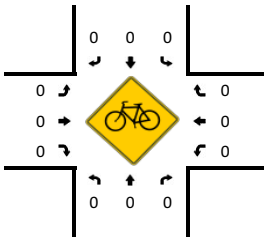


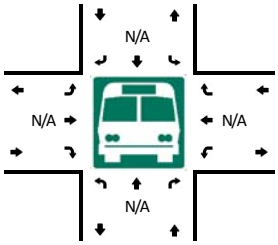




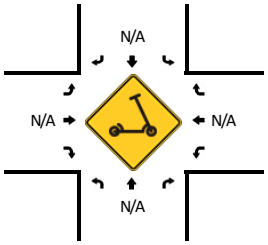












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				W Maple Rd (Eastbound)				W Maple Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	12	214	22	0	9	114	5	0	4	5	13	0	25	10	5	0	438	
3:15 PM	11	190	22	0	12	122	5	0	4	5	6	0	14	9	11	0	411	
3:30 PM	15	219	19	0	3	115	5	0	8	4	9	0	18	6	11	0	432	
3:45 PM	14	195	12	0	6	123	7	0	4	7	14	0	12	12	12	0	418	1699
4:00 PM	24	246	17	0	6	113	6	0	5	10	13	0	10	11	10	0	471	1732
4:15 PM	22	232	26	0	13	107	10	0	1	6	11	0	15	14	18	0	475	1796
4:30 PM	11	220	14	0	7	109	5	0	6	5	12	0	16	8	10	0	423	1787
4:45 PM	16	228	16	0	6	119	8	0	6	10	18	0	16	10	10	0	463	1832

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	88	928	104	0	52	428	40	0	4	24	44	0	60	56	72	0	1900
Heavy Trucks	0	20	0		0	0	8		4	0	4		0	0	8		44
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

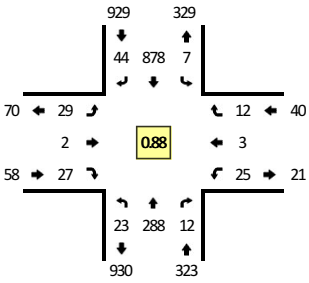
Report generated on 1/13/2025 8:40 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

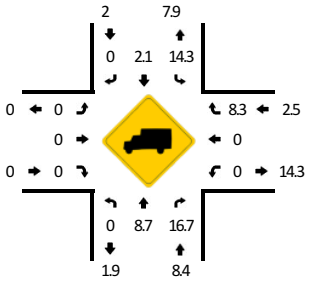
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

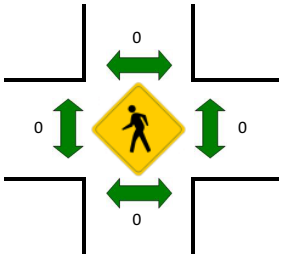
LOCATION: N Wixom Rd -- Theodore | **QC JOB #:** 16879009
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 8 2025

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

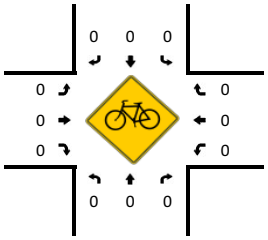


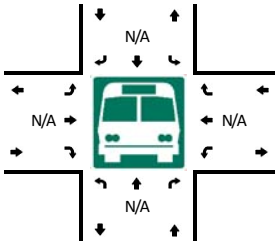




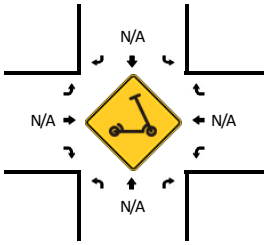












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Theodore (Eastbound)				Theodore (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	2	71	2	0	3	214	3	0	0	0	1	0	9	0	9	0	314	
8:15 AM	8	64	1	0	2	243	12	0	7	1	9	0	4	2	1	0	354	
8:30 AM	5	59	3	0	2	206	8	0	4	0	2	0	6	0	2	0	297	
8:45 AM	8	94	6	0	0	215	21	0	18	1	15	0	6	1	0	0	385	1350
9:00 AM	1	80	4	0	2	153	1	0	3	0	3	0	9	0	0	0	256	1292
9:15 AM	1	98	1	0	1	177	0	0	1	0	0	0	0	0	1	0	280	1218
9:30 AM	0	70	2	0	0	161	2	0	0	0	2	0	3	0	0	0	240	1161
9:45 AM	1	80	7	0	1	125	0	0	0	0	1	0	4	0	0	0	219	995

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	376	24	0	0	860	84	0	72	4	60	0	24	4	0	0	1540
Heavy Trucks	0	40	0		0	16	0		0	0	0		0	0	0		56
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/13/2025 8:40 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

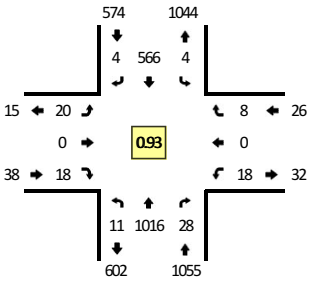
Type of peak hour being reported: Intersection Peak

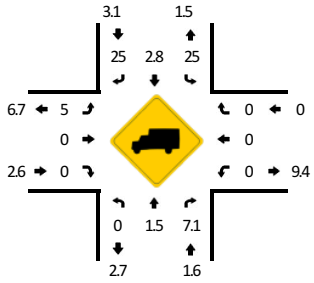
Method for determining peak hour: Total Entering Volume

LOCATION: N Wixom Rd -- Theodore
CITY/STATE: Wixom, MI

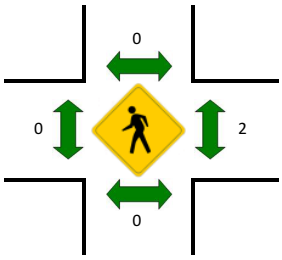
QC JOB #: 16879010
DATE: Wed, Jan 8 2025

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

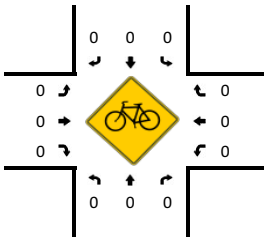


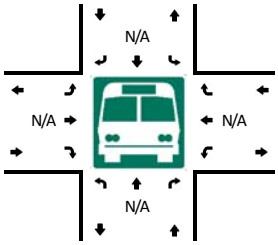


TRUE DATA TO IMPROVE MOBILITY

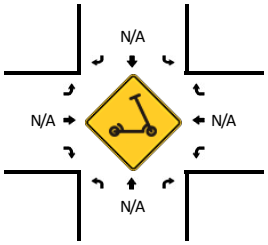












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Theodore (Eastbound)				Theodore (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	4	225	4	0	1	142	5	0	1	0	7	0	2	0	3	0	394	
3:15 PM	4	217	2	0	0	134	6	0	2	1	2	0	1	1	0	0	370	
3:30 PM	4	257	3	0	1	139	6	0	4	0	0	0	3	0	0	0	417	
3:45 PM	6	218	5	0	2	135	7	0	12	1	2	0	0	0	1	0	389	1570
4:00 PM	8	270	10	0	1	125	3	0	15	0	13	0	6	0	3	0	454	1630
4:15 PM	0	241	3	0	3	142	1	0	2	0	2	0	4	0	2	0	400	1660
4:30 PM	2	250	9	0	0	138	0	0	3	0	1	0	1	0	1	0	405	1648
4:45 PM	1	255	6	0	0	161	0	0	0	0	2	0	7	0	2	0	434	1693

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	1080	40	0	4	500	12	0	60	0	52	0	24	0	12	0	1816
Heavy Trucks	0	20	4		0	36	0		0	0	0		0	0	0		60
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

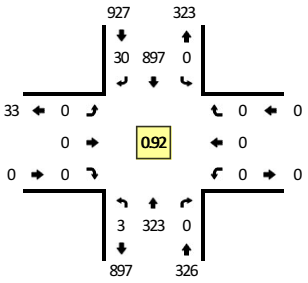
Report generated on 1/13/2025 8:40 AM

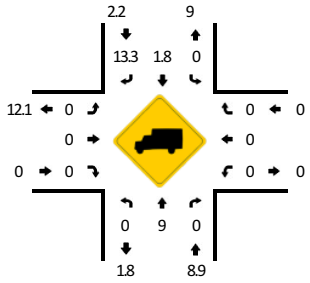
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

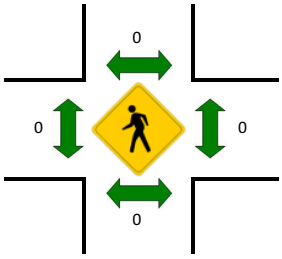
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

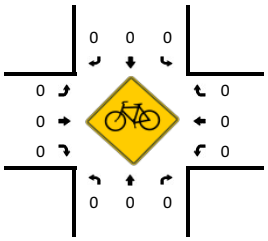
LOCATION: N Wixom Rd -- Wixom ES North Dwy | **QC JOB #:** 16879011
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 8 2025

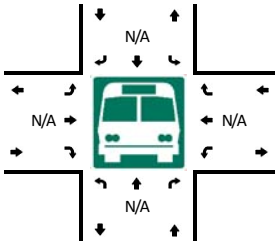
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

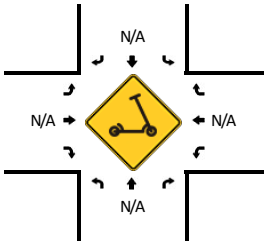












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Wixom ES North Dwy (Eastbound)				Wixom ES North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	3	75	0	0	0	216	7	0	0	0	0	0	0	0	0	0	301	
8:15 AM	0	73	0	0	0	244	14	0	0	0	0	0	0	0	0	0	331	
8:30 AM	0	68	0	0	0	205	6	0	0	0	0	0	0	0	0	0	279	
8:45 AM	0	107	0	0	0	232	3	0	0	0	0	0	0	0	0	0	342	1253
9:00 AM	4	86	0	1	0	166	3	0	0	0	0	0	0	0	0	0	260	1212
9:15 AM	0	98	0	0	0	176	1	0	0	0	0	0	0	0	0	0	275	1156
9:30 AM	2	75	0	0	0	166	0	0	0	0	0	0	0	0	0	0	243	1120
9:45 AM	2	87	0	0	0	129	0	0	0	0	0	0	0	0	0	0	218	996

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	428	0	0	0	928	12	0	0	0	0	0	0	0	0	0	1368
Heavy Trucks	0	48	0		0	4	12		0	0	0		0	0	0		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/13/2025 8:40 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

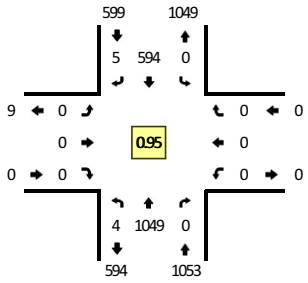
Type of peak hour being reported: Intersection Peak

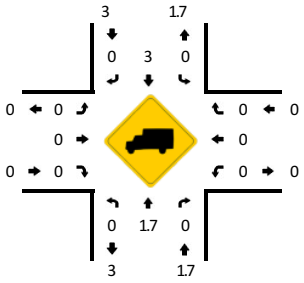
Method for determining peak hour: Total Entering Volume

LOCATION: N Wixom Rd -- Wixom ES North Dwy
CITY/STATE: Wixom, MI

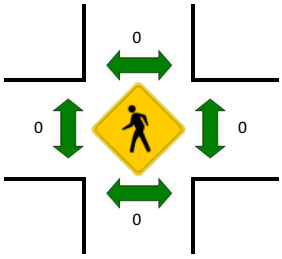
QC JOB #: 16879012
DATE: Wed, Jan 8 2025

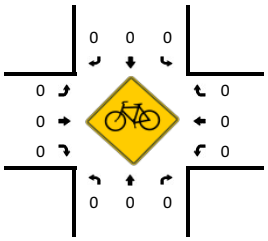
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

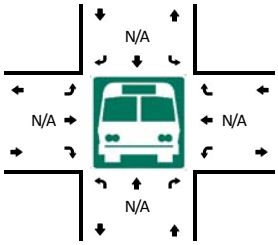


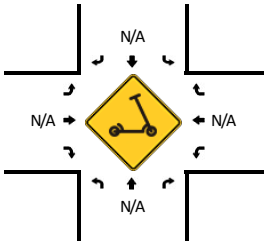


TRUE DATA TO IMPROVE MOBILITY









15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Wixom ES North Dwy (Eastbound)				Wixom ES North Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	2	234	0	0	0	146	6	0	0	0	0	0	0	0	0	0	388	
3:15 PM	5	225	0	0	0	128	5	0	1	0	0	0	0	0	0	0	364	
3:30 PM	1	259	0	0	0	145	2	0	0	0	0	0	0	0	0	0	407	
3:45 PM	0	237	0	0	0	133	4	0	0	0	0	0	0	0	0	0	374	1533
4:00 PM	0	284	0	0	0	143	0	0	0	0	0	0	0	0	0	0	427	1572
4:15 PM	1	241	0	0	0	148	0	0	0	0	0	0	0	0	0	0	390	1598
4:30 PM	1	263	0	0	0	138	0	0	0	0	0	0	0	0	0	0	402	1593
4:45 PM	2	261	0	0	0	165	5	0	0	0	0	0	0	0	0	0	433	1652

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	8	1044	0	0	0	660	20	0	0	0	0	0	0	0	0	0	1732
Heavy Trucks	0	8	0		0	16	0		0	0	0		0	0	0		24
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

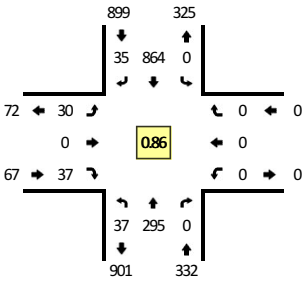
Report generated on 1/13/2025 8:40 AM

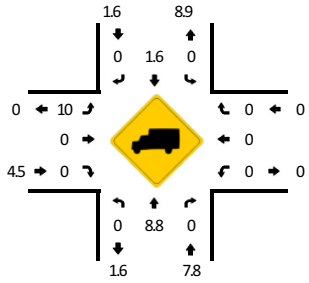
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

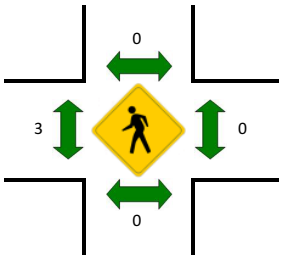
LOCATION: N Wixom Rd -- Wixom ES South Dwy | **QC JOB #:** 16879013
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 8 2025

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

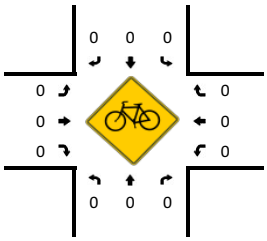


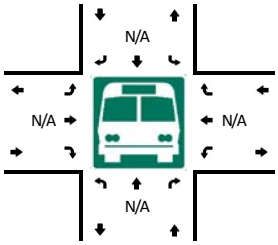


TRUE DATA TO IMPROVE MOBILITY

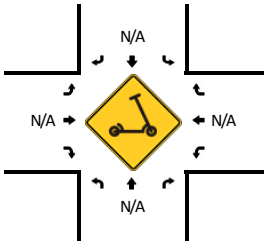












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Wixom ES South Dwy (Eastbound)				Wixom ES South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
8:00 AM	3	76	0	0	0	211	7	0	2	0	2	0	0	0	0	0	301	
8:15 AM	2	65	0	0	0	237	5	0	8	0	10	0	0	0	0	0	327	
8:30 AM	12	63	0	0	0	199	8	0	6	0	4	0	0	0	0	0	292	
8:45 AM	20	91	0	0	0	217	15	0	14	0	21	0	0	0	0	0	378	1298
9:00 AM	5	80	0	0	0	160	9	0	13	0	19	0	0	0	0	0	286	1283
9:15 AM	0	93	0	0	0	176	0	0	4	0	1	0	0	0	0	0	274	1230
9:30 AM	0	80	0	0	0	162	2	0	0	0	3	0	0	0	0	0	247	1185
9:45 AM	1	87	0	0	0	130	0	0	1	0	1	0	0	0	0	0	220	1027

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	80	364	0	0	0	868	60	0	56	0	84	0	0	0	0	0	1512
Heavy Trucks	0	36	0		0	4	0		12	0	0		0	0	0		52
Buses																	
Pedestrians		0				0				12				0			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

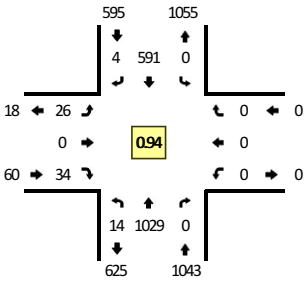
Comments:

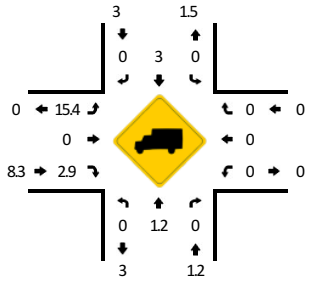
Report generated on 1/13/2025 8:40 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

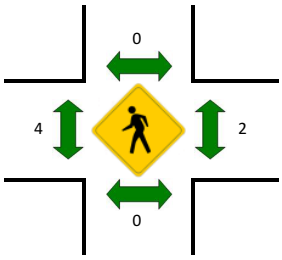
LOCATION: N Wixom Rd -- Wixom ES South Dwy | **QC JOB #:** 16879014
CITY/STATE: Wixom, MI | **DATE:** Wed, Jan 8 2025

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

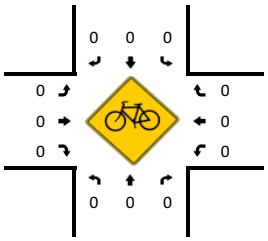


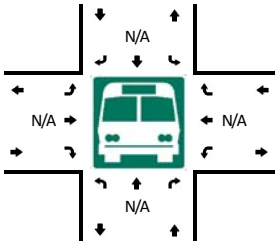


TRUE DATA TO IMPROVE MOBILITY

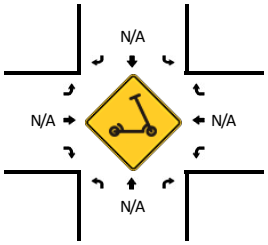












15-Min Count Period Beginning At	N Wixom Rd (Northbound)				N Wixom Rd (Southbound)				Wixom ES South Dwy (Eastbound)				Wixom ES South Dwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	3	235	0	0	0	143	1	0	1	0	3	0	0	0	0	0	386	
3:15 PM	0	224	0	0	0	123	5	0	11	0	6	0	0	0	0	0	369	
3:30 PM	16	248	0	0	0	142	5	0	8	0	8	0	0	0	0	0	427	
3:45 PM	10	225	0	0	0	121	11	0	14	0	14	0	0	0	0	0	395	1577
4:00 PM	7	264	0	0	0	142	2	0	19	0	18	0	0	0	0	0	452	1643
4:15 PM	3	238	0	0	0	147	0	0	3	0	7	0	0	0	0	0	398	1672
4:30 PM	2	265	0	0	0	138	1	0	2	0	6	0	0	0	0	0	414	1659
4:45 PM	2	262	0	0	0	164	1	0	2	0	3	0	0	0	0	0	434	1698

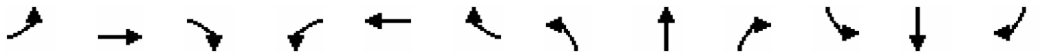
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	1056	0	0	0	568	8	0	76	0	72	0	0	0	0	0	1808
Heavy Trucks	0	8	0		0	36	0		16	0	4		0	0	0		64
Buses																	
Pedestrians		0				0				16				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/13/2025 8:40 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX B

SYNCHRO REPORTS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	41	90	69	11	12	25	250	52	31	783	16
Future Volume (veh/h)	17	41	90	69	11	12	25	250	52	31	783	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	20	49	107	93	15	16	32	316	66	33	824	17
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	1	1	1
Cap, veh/h	423	145	316	311	231	246	245	879	184	565	1123	23
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1346	510	1115	1211	815	869	628	1441	301	1009	1840	38
Grp Volume(v), veh/h	20	0	156	93	0	31	32	0	382	33	0	841
Grp Sat Flow(s),veh/h/ln	1346	0	1625	1211	0	1684	628	0	1742	1009	0	1878
Q Serve(g_s), s	1.3	0.0	9.1	7.9	0.0	1.6	4.5	0.0	13.1	2.0	0.0	37.9
Cycle Q Clear(g_c), s	2.9	0.0	9.1	17.0	0.0	1.6	42.5	0.0	13.1	15.2	0.0	37.9
Prop In Lane	1.00		0.69	1.00		0.52	1.00		0.17	1.00		0.02
Lane Grp Cap(c), veh/h	423	0	460	311	0	477	245	0	1063	565	0	1146
V/C Ratio(X)	0.05	0.00	0.34	0.30	0.00	0.06	0.13	0.00	0.36	0.06	0.00	0.73
Avail Cap(c_a), veh/h	423	0	460	311	0	477	245	0	1063	565	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	34.1	40.8	0.0	31.4	31.5	0.0	11.7	15.5	0.0	16.5
Incr Delay (d2), s/veh	0.2	0.0	2.0	2.4	0.0	0.3	1.1	0.0	0.9	0.2	0.0	4.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	3.9	2.6	0.0	0.7	0.8	0.0	5.2	0.5	0.0	16.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.7	0.0	36.1	43.3	0.0	31.7	32.6	0.0	12.6	15.7	0.0	20.7
LnGrp LOS	C		D	D		C	C		B	B		C
Approach Vol, veh/h		176			124			414			874	
Approach Delay, s/veh		35.7			40.4			14.2			20.5	
Approach LOS		D			D			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		44.5		11.1		39.9		19.0				
Green Ext Time (p_c), s		2.9		0.9		7.8		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			22.1									
HCM 7th LOS			C									

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	75	32	4	11	1
Future Vol, veh/h	0	75	32	4	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	88	39	5	15	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	44	0	-	0	130	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	88	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1533	-	-	-	813	968
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	880	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1533	-	-	-	813	968
Mov Cap-2 Maneuver	-	-	-	-	813	-
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	880	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.46
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1533	-	-	-	824
HCM Lane V/C Ratio	-	-	-	-	0.019
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	94	37	19	46	0
Future Vol, veh/h	0	94	37	19	46	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	78	78	77	77
Heavy Vehicles, %	9	9	14	14	0	0
Mvmt Flow	0	112	47	24	60	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	72	0	-	0	172	60
Stage 1	-	-	-	-	60	-
Stage 2	-	-	-	-	112	-
Critical Hdwy	4.19	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.281	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1485	-	-	-	823	1012
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1485	-	-	-	823	1012
Mov Cap-2 Maneuver	-	-	-	-	823	-
Stage 1	-	-	-	-	968	-
Stage 2	-	-	-	-	918	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.71
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	823
HCM Lane V/C Ratio	-	-	-	-	0.073
HCM Control Delay (s/veh)	0	-	-	-	9.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	143	58	7	0	12
Future Vol, veh/h	0	143	58	7	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	86	86	60	60
Heavy Vehicles, %	5	5	12	12	0	0
Mvmt Flow	0	164	67	8	0	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	76	0	-	0	236	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	164	-
Critical Hdwy	4.15	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.245	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1505	-	-	-	757	996
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1505	-	-	-	757	996
Mov Cap-2 Maneuver	-	-	-	-	757	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.69
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1505	-	-	-	996
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s/veh)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	7.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	2	27	25	3	12	23	288	12	7	878	44
Future Vol, veh/h	29	2	27	25	3	12	23	288	12	7	878	44
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	48	3	45	42	5	20	31	384	16	8	976	49

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1463	1477	1000	1438	1485	384	1024	0	0	400	0	0
Stage 1	1016	1016	-	445	445	-	-	-	-	-	-	-
Stage 2	448	461	-	993	1040	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	108	127	298	110	124	661	655	-	-	1159	-	-
Stage 1	290	318	-	590	573	-	-	-	-	-	-	-
Stage 2	594	568	-	294	306	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	95	121	298	86	117	661	655	-	-	1159	-	-
Mov Cap-2 Maneuver	95	121	-	86	117	-	-	-	-	-	-	-
Stage 1	288	316	-	562	546	-	-	-	-	-	-	-
Stage 2	544	542	-	246	304	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	74	67.3	0.77	0.06
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	655	-	-	140	120	1159	-	-
HCM Lane V/C Ratio	0.047	-	-	0.689	0.556	0.007	-	-
HCM Control Delay (s/veh)	10.8	-	-	74	67.3	8.1	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.9	2.7	0	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	37	37	295	864	35
Future Vol, veh/h	30	37	37	295	864	35
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	75	75	93	93
Heavy Vehicles, %	4	4	8	8	2	2
Mvmt Flow	50	62	49	393	929	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1440	948	967	0	-	0
Stage 1	948	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.18	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.272	-	-	-
Pot Cap-1 Maneuver	145	314	689	-	-	-
Stage 1	374	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	134	314	689	-	-	-
Mov Cap-2 Maneuver	257	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	610	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	25.5	1.18	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	689	-	285	-	-
HCM Lane V/C Ratio	0.072	-	0.391	-	-
HCM Control Delay (s/veh)	10.6	-	25.5	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	1.8	-	-

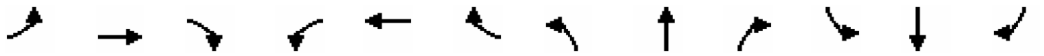
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	3	323	897	30
Future Vol, veh/h	0	0	3	323	897	30
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	76	76	90	90
Heavy Vehicles, %	0	0	9	9	2	2
Mvmt Flow	0	0	4	425	997	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1446	1013	1030	0	-	0
Stage 1	1013	-	-	-	-	-
Stage 2	433	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	146	292	648	-	-	-
Stage 1	354	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	146	292	648	-	-	-
Mov Cap-2 Maneuver	267	-	-	-	-	-
Stage 1	352	-	-	-	-	-
Stage 2	658	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	648	-	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s/veh)	10.6	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	26	42	54	38	44	64	850	70	27	473	23
Future Volume (veh/h)	21	26	42	54	38	44	64	850	70	27	473	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	27	33	53	57	40	47	74	988	81	29	503	24
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	1	1	1	2	2	2
Cap, veh/h	367	176	282	374	219	257	462	1049	86	104	1080	52
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1258	620	996	1291	771	906	883	1719	141	528	1771	84
Grp Volume(v), veh/h	27	0	86	57	0	87	74	0	1069	29	0	527
Grp Sat Flow(s),veh/h/ln	1258	0	1617	1291	0	1678	883	0	1860	528	0	1855
Q Serve(g_s), s	2.0	0.0	4.8	4.2	0.0	4.7	6.0	0.0	63.3	6.4	0.0	18.6
Cycle Q Clear(g_c), s	6.7	0.0	4.8	9.0	0.0	4.7	24.5	0.0	63.3	69.7	0.0	18.6
Prop In Lane	1.00		0.62	1.00		0.54	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	367	0	458	374	0	475	462	0	1134	104	0	1132
V/C Ratio(X)	0.07	0.00	0.19	0.15	0.00	0.18	0.16	0.00	0.94	0.28	0.00	0.47
Avail Cap(c_a), veh/h	367	0	458	374	0	475	462	0	1134	104	0	1132
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.0	0.0	32.5	36.0	0.0	32.5	19.4	0.0	21.5	53.4	0.0	12.7
Incr Delay (d2), s/veh	0.4	0.0	0.9	0.9	0.0	0.8	0.7	0.0	16.0	6.6	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	2.0	1.4	0.0	2.0	1.3	0.0	30.5	1.0	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.4	0.0	33.5	36.8	0.0	33.3	20.2	0.0	37.5	60.0	0.0	14.1
LnGrp LOS	D		C	D		C	C		D	E		B
Approach Vol, veh/h		113			144			1143			556	
Approach Delay, s/veh		33.9			34.7			36.4			16.5	
Approach LOS		C			C			D			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		65.3		8.7		71.7		11.0				
Green Ext Time (p_c), s		5.1		0.5		0.6		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	30.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	37	59	9	6	1
Future Vol, veh/h	0	37	59	9	6	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	0	44	77	12	10	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	88	0	-	0	127	82
Stage 1	-	-	-	-	82	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1489	-	-	-	840	945
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1489	-	-	-	840	945
Mov Cap-2 Maneuver	-	-	-	-	840	-
Stage 1	-	-	-	-	911	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.27
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1489	-	-	-	854
HCM Lane V/C Ratio	-	-	-	-	0.014
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	48	77	30	17	1
Future Vol, veh/h	0	48	77	30	17	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	84	84	64	64
Heavy Vehicles, %	6	6	5	5	6	6
Mvmt Flow	0	60	92	36	27	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	127	0	-	0	170	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1434	-	-	-	812	933
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1434	-	-	-	812	933
Mov Cap-2 Maneuver	-	-	-	-	812	-
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.56
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1434	-	-	-	817
HCM Lane V/C Ratio	-	-	-	-	0.034
HCM Control Delay (s/veh)	0	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	68	106	10	6	0
Future Vol, veh/h	0	68	106	10	6	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	81	81	60	60
Heavy Vehicles, %	4	4	5	5	17	17
Mvmt Flow	0	76	131	12	10	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	143	0	-	0	213	137
Stage 1	-	-	-	-	137	-
Stage 2	-	-	-	-	76	-
Critical Hdwy	4.14	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.236	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1427	-	-	-	742	873
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	910	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1427	-	-	-	742	873
Mov Cap-2 Maneuver	-	-	-	-	742	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.92
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1427	-	-	-	742
HCM Lane V/C Ratio	-	-	-	-	0.013
HCM Control Delay (s/veh)	0	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	2	17	10	1	4	22	962	20	4	533	22
Future Vol, veh/h	33	2	17	10	1	4	22	962	20	4	533	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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	1	1	1	4	4	4
Mvmt Flow	55	3	28	17	2	7	25	1106	23	4	561	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1738	1760	573	1727	1749	1106	584	0	0	1129	0	0
Stage 1	581	581	-	1156	1156	-	-	-	-	-	-	-
Stage 2	1157	1179	-	571	593	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.11	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.209	-	-	2.236	-	-
Pot Cap-1 Maneuver	69	85	523	68	83	250	995	-	-	612	-	-
Stage 1	503	503	-	234	265	-	-	-	-	-	-	-
Stage 2	241	266	-	497	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	64	83	523	59	81	250	995	-	-	612	-	-
Mov Cap-2 Maneuver	64	83	-	59	81	-	-	-	-	-	-	-
Stage 1	500	499	-	228	258	-	-	-	-	-	-	-
Stage 2	227	260	-	464	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/veh	65.81	73.63	0.19	0.08
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	995	-	-	91	76	612	-	-
HCM Lane V/C Ratio	0.025	-	-	0.956	0.328	0.007	-	-
HCM Control Delay (s/veh)	8.7	-	-	165.8	73.6	10.9	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.5	1.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	52	46	33	961	528	23
Future Vol, veh/h	52	46	33	961	528	23
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	92	92	94	94
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	79	70	36	1045	562	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1690	574	586	0	-	0
Stage 1	574	-	-	-	-	-
Stage 2	1116	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	101	513	994	-	-	-
Stage 1	558	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	513	994	-	-	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	309	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	28.24	0.29	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	994	-	300	-	-
HCM Lane V/C Ratio	0.036	-	0.495	-	-
HCM Control Delay (s/veh)	8.8	-	28.2	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.6	-	-

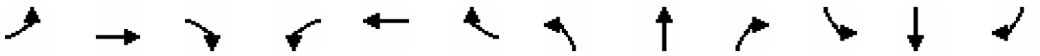
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	6	1005	549	11
Future Vol, veh/h	1	0	6	1005	549	11
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	89	89	90	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	2	0	7	1129	610	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1758	616	622	0	-	0
Stage 1	616	-	-	-	-	-
Stage 2	1143	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	94	494	959	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	94	494	959	-	-	-
Mov Cap-2 Maneuver	217	-	-	-	-	-
Stage 1	539	-	-	-	-	-
Stage 2	307	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	21.71	0.05	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	959	-	217	-	-
HCM Lane V/C Ratio	0.007	-	0.008	-	-
HCM Control Delay (s/veh)	8.8	-	21.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	42	92	71	12	13	26	265	66	32	795	17
Future Volume (veh/h)	18	42	92	71	12	13	26	265	66	32	795	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	21	50	110	96	16	18	33	335	84	34	837	18
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	1	1	1
Cap, veh/h	420	144	317	307	224	252	236	846	212	534	1122	24
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1342	508	1117	1207	791	890	620	1386	348	975	1839	40
Grp Volume(v), veh/h	21	0	160	96	0	34	33	0	419	34	0	855
Grp Sat Flow(s),veh/h/ln	1342	0	1625	1207	0	1681	620	0	1734	975	0	1878
Q Serve(g_s), s	1.4	0.0	9.4	8.2	0.0	1.8	4.8	0.0	14.9	2.2	0.0	39.1
Cycle Q Clear(g_c), s	3.2	0.0	9.4	17.6	0.0	1.8	43.9	0.0	14.9	17.1	0.0	39.1
Prop In Lane	1.00		0.69	1.00		0.53	1.00		0.20	1.00		0.02
Lane Grp Cap(c), veh/h	420	0	460	307	0	476	236	0	1058	534	0	1146
V/C Ratio(X)	0.05	0.00	0.35	0.31	0.00	0.07	0.14	0.00	0.40	0.06	0.00	0.75
Avail Cap(c_a), veh/h	420	0	460	307	0	476	236	0	1058	534	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.6	0.0	34.2	41.2	0.0	31.5	32.5	0.0	12.0	16.4	0.0	16.8
Incr Delay (d2), s/veh	0.2	0.0	2.1	2.6	0.0	0.3	1.2	0.0	1.1	0.2	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	4.0	2.7	0.0	0.8	0.8	0.0	5.9	0.5	0.0	17.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.8	0.0	36.3	43.8	0.0	31.7	33.7	0.0	13.1	16.7	0.0	21.2
LnGrp LOS	C		D	D		C	C		B	B		C
Approach Vol, veh/h		181			130			452			889	
Approach Delay, s/veh		35.9			40.7			14.6			21.0	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	80.0	40.0	80.0	40.0
Change Period (Y+Rc), s	6.8	6.0	6.8	6.0
Max Green Setting (Gmax), s	73.2	34.0	73.2	34.0
Max Q Clear Time (g_c+I1), s	45.9	11.4	41.1	19.6
Green Ext Time (p_c), s	3.2	1.0	8.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	22.5
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	77	33	5	12	2
Future Vol, veh/h	0	77	33	5	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	91	40	6	16	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	46	0	-	0	134	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1530	-	-	-	808	965
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1530	-	-	-	808	965
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.45
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1530	-	-	-	827
HCM Lane V/C Ratio	-	-	-	-	0.023
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	96	38	20	47	0
Future Vol, veh/h	0	96	38	20	47	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	78	78	77	77
Heavy Vehicles, %	9	9	14	14	0	0
Mvmt Flow	0	114	49	26	61	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	74	0	-	0	176	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	114	-
Critical Hdwy	4.19	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.281	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1482	-	-	-	819	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1482	-	-	-	819	1009
Mov Cap-2 Maneuver	-	-	-	-	819	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.75
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1482	-	-	-	819
HCM Lane V/C Ratio	-	-	-	-	0.075
HCM Control Delay (s/veh)	0	-	-	-	9.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	146	59	8	0	13
Future Vol, veh/h	0	146	59	8	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	86	86	60	60
Heavy Vehicles, %	5	5	12	12	0	0
Mvmt Flow	0	168	69	9	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	78	0	-	0	241	73
Stage 1	-	-	-	-	73	-
Stage 2	-	-	-	-	168	-
Critical Hdwy	4.15	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.245	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1502	-	-	-	752	994
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	867	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1502	-	-	-	752	994
Mov Cap-2 Maneuver	-	-	-	-	752	-
Stage 1	-	-	-	-	955	-
Stage 2	-	-	-	-	867	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1502	-	-	-	994
HCM Lane V/C Ratio	-	-	-	-	0.022
HCM Control Delay (s/veh)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	3	28	26	4	13	24	293	13	8	892	45
Future Vol, veh/h	30	3	28	26	4	13	24	293	13	8	892	45
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	50	5	47	43	7	22	32	391	17	9	991	50

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1492	1506	1016	1466	1514	391	1041	0	0	408	0	0
Stage 1	1034	1034	-	455	455	-	-	-	-	-	-	-
Stage 2	458	472	-	1011	1059	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	103	122	291	105	119	656	645	-	-	1151	-	-
Stage 1	283	312	-	583	567	-	-	-	-	-	-	-
Stage 2	587	562	-	287	300	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	88	115	291	80	112	656	645	-	-	1151	-	-
Mov Cap-2 Maneuver	88	115	-	80	112	-	-	-	-	-	-	-
Stage 1	281	310	-	554	539	-	-	-	-	-	-	-
Stage 2	532	534	-	236	298	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	90.29	80.32	0.79	0.07
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	645	-	-	132	113	1151	-	-
HCM Lane V/C Ratio	0.05	-	-	0.769	0.633	0.008	-	-
HCM Control Delay (s/veh)	10.9	-	-	90.3	80.3	8.2	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4.6	3.2	0	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	38	38	300	878	6
Future Vol, veh/h	31	38	38	300	878	6
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	75	75	93	93
Heavy Vehicles, %	4	4	8	8	2	2
Mvmt Flow	52	63	51	400	944	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1449	947	951	0	-	0
Stage 1	947	-	-	-	-	-
Stage 2	501	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.18	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.272	-	-	-
Pot Cap-1 Maneuver	143	314	699	-	-	-
Stage 1	374	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	133	314	699	-	-	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	25.97	1.19	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	699	-	285	-	-
HCM Lane V/C Ratio	0.073	-	0.404	-	-
HCM Control Delay (s/veh)	10.6	-	26	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	1.9	-	-

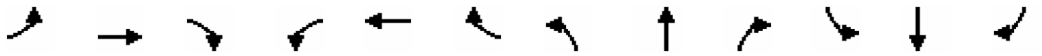
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	4	328	911	31
Future Vol, veh/h	0	0	4	328	911	31
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	76	76	90	90
Heavy Vehicles, %	0	0	9	9	2	2
Mvmt Flow	0	0	5	432	1012	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1472	1029	1047	0	-	0
Stage 1	1029	-	-	-	-	-
Stage 2	442	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	141	286	639	-	-	-
Stage 1	348	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	286	639	-	-	-
Mov Cap-2 Maneuver	261	-	-	-	-	-
Stage 1	345	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0.13	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	639	-	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-	-
HCM Control Delay (s/veh)	10.7	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	27	43	55	39	45	65	863	72	28	481	24
Future Volume (veh/h)	22	27	43	55	39	45	65	863	72	28	481	24
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	28	34	54	59	41	48	76	1003	84	30	512	26
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	1	1	1	2	2	2
Cap, veh/h	365	177	281	372	219	256	454	1047	88	92	1076	55
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1256	625	993	1288	773	905	874	1716	144	519	1765	90
Grp Volume(v), veh/h	28	0	88	59	0	89	76	0	1087	30	0	538
Grp Sat Flow(s),veh/h/ln	1256	0	1618	1288	0	1678	874	0	1859	519	0	1854
Q Serve(g_s), s	2.1	0.0	4.9	4.4	0.0	4.8	6.3	0.0	65.9	6.9	0.0	19.1
Cycle Q Clear(g_c), s	6.9	0.0	4.9	9.3	0.0	4.8	25.4	0.0	65.9	72.8	0.0	19.1
Prop In Lane	1.00		0.61	1.00		0.54	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	365	0	458	372	0	475	454	0	1134	92	0	1131
V/C Ratio(X)	0.08	0.00	0.19	0.16	0.00	0.19	0.17	0.00	0.96	0.33	0.00	0.48
Avail Cap(c_a), veh/h	365	0	458	372	0	475	454	0	1134	92	0	1131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.1	0.0	32.6	36.1	0.0	32.5	19.8	0.0	22.0	56.1	0.0	12.9
Incr Delay (d2), s/veh	0.4	0.0	0.9	0.9	0.0	0.9	0.8	0.0	18.4	9.3	0.0	1.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	2.1	1.5	0.0	2.1	1.4	0.0	32.3	1.1	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.6	0.0	33.5	37.0	0.0	33.4	20.6	0.0	40.4	65.4	0.0	14.3
LnGrp LOS	D		C	D		C	C		D	E		B
Approach Vol, veh/h		116			148			1163			568	
Approach Delay, s/veh		34.0			34.9			39.1			17.0	
Approach LOS		C			C			D			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	80.0	40.0	80.0	40.0
Change Period (Y+Rc), s	6.8	6.0	6.8	6.0
Max Green Setting (Gmax), s	73.2	34.0	73.2	34.0
Max Q Clear Time (g_c+I1), s	67.9	8.9	74.8	11.3
Green Ext Time (p_c), s	3.7	0.5	0.0	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	32.2
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	38	60	10	7	2
Future Vol, veh/h	0	38	60	10	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	0	45	78	13	12	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	91	0	-	0	130	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1485	-	-	-	837	942
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1485	-	-	-	837	942
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.27
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	858
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	49	79	31	18	2
Future Vol, veh/h	0	49	79	31	18	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	84	84	64	64
Heavy Vehicles, %	6	6	5	5	6	6
Mvmt Flow	0	61	94	37	28	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	131	0	-	0	174	113
Stage 1	-	-	-	-	113	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1430	-	-	-	807	930
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	951	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1430	-	-	-	807	930
Mov Cap-2 Maneuver	-	-	-	-	807	-
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	951	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.58
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1430	-	-	-	818
HCM Lane V/C Ratio	-	-	-	-	0.038
HCM Control Delay (s/veh)	0	-	-	-	9.6
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	70	108	11	7	0
Future Vol, veh/h	0	70	108	11	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	81	81	60	60
Heavy Vehicles, %	4	4	5	5	17	17
Mvmt Flow	0	79	133	14	12	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	147	0	-	0	219	140
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	4.14	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.236	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1423	-	-	-	737	870
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1423	-	-	-	737	870
Mov Cap-2 Maneuver	-	-	-	-	737	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	908	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.96
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1423	-	-	-	737
HCM Lane V/C Ratio	-	-	-	-	0.016
HCM Control Delay (s/veh)	0	-	-	-	10
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	3	18	11	2	5	23	977	21	5	542	23
Future Vol, veh/h	34	3	18	11	2	5	23	977	21	5	542	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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	1	1	1	4	4	4
Mvmt Flow	57	5	30	18	3	8	26	1123	24	5	571	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1771	1793	583	1759	1781	1123	595	0	0	1147	0	0
Stage 1	593	593	-	1176	1176	-	-	-	-	-	-	-
Stage 2	1178	1200	-	584	605	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.11	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.209	-	-	2.236	-	-
Pot Cap-1 Maneuver	66	82	516	64	80	244	986	-	-	602	-	-
Stage 1	495	497	-	228	259	-	-	-	-	-	-	-
Stage 2	235	261	-	489	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	59	79	516	55	77	244	986	-	-	602	-	-
Mov Cap-2 Maneuver	59	79	-	55	77	-	-	-	-	-	-	-
Stage 1	491	492	-	222	253	-	-	-	-	-	-	-
Stage 2	218	254	-	452	475	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/veh	213.92	85.61	0.2	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	986	-	-	84	73	602	-	-
HCM Lane V/C Ratio	0.027	-	-	1.089	0.413	0.009	-	-
HCM Control Delay (s/veh)	8.8	-	-	213.9	85.6	11	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	6.3	1.6	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	47	34	976	536	24
Future Vol, veh/h	53	47	34	976	536	24
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	92	92	94	94
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	80	71	37	1061	570	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1718	583	596	0	-	0
Stage 1	583	-	-	-	-	-
Stage 2	1135	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	97	507	986	-	-	-
Stage 1	552	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	93	507	986	-	-	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	303	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	29.5	3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	986	-	294	-	-
HCM Lane V/C Ratio	0.037	-	0.515	-	-
HCM Control Delay (s/veh)	8.8	-	29.5	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.8	-	-

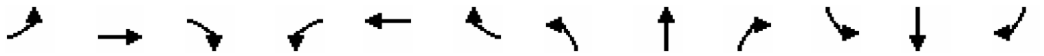
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	7	1021	558	12
Future Vol, veh/h	2	0	7	1021	558	12
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	89	89	95	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	3	0	8	1147	587	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1757	594	600	0	-	0
Stage 1	594	-	-	-	-	-
Stage 2	1163	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	94	509	977	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	300	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	94	509	977	-	-	-
Mov Cap-2 Maneuver	215	-	-	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	300	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	21.98	0.06	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	977	-	215	-	-
HCM Lane V/C Ratio	0.008	-	0.015	-	-
HCM Control Delay (s/veh)	8.7	-	22	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Future Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	24	55	120	105	18	19	37	371	92	37	925	19
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	1	1	1
Cap, veh/h	418	145	316	294	232	245	183	848	210	498	1123	23
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1338	511	1114	1190	820	865	570	1390	345	937	1841	38
Grp Volume(v), veh/h	24	0	175	105	0	37	37	0	463	37	0	944
Grp Sat Flow(s),veh/h/ln	1338	0	1625	1190	0	1685	570	0	1734	937	0	1878
Q Serve(g_s), s	1.6	0.0	10.4	9.3	0.0	1.9	6.5	0.0	17.0	2.6	0.0	47.3
Cycle Q Clear(g_c), s	3.5	0.0	10.4	19.7	0.0	1.9	53.8	0.0	17.0	19.7	0.0	47.3
Prop In Lane	1.00		0.69	1.00		0.51	1.00		0.20	1.00		0.02
Lane Grp Cap(c), veh/h	418	0	460	294	0	477	183	0	1058	498	0	1146
V/C Ratio(X)	0.06	0.00	0.38	0.36	0.00	0.08	0.20	0.00	0.44	0.07	0.00	0.82
Avail Cap(c_a), veh/h	418	0	460	294	0	477	183	0	1058	498	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.8	0.0	34.5	42.4	0.0	31.5	39.4	0.0	12.4	17.7	0.0	18.3
Incr Delay (d2), s/veh	0.3	0.0	2.4	3.4	0.0	0.3	2.5	0.0	1.3	0.3	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.4	3.0	0.0	0.8	1.0	0.0	6.8	0.6	0.0	21.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.1	0.0	36.9	45.8	0.0	31.8	41.9	0.0	13.8	18.0	0.0	25.1
LnGrp LOS	C		D	D		C	D		B	B		C
Approach Vol, veh/h		199			142			500			981	
Approach Delay, s/veh		36.4			42.2			15.8			24.8	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	80.0	40.0	80.0	40.0
Change Period (Y+Rc), s	6.8	6.0	6.8	6.0
Max Green Setting (Gmax), s	73.2	34.0	73.2	34.0
Max Q Clear Time (g_c+I1), s	55.8	12.4	49.3	21.7
Green Ext Time (p_c), s	3.2	1.1	8.6	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	25.0
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	85	36	5	13	2
Future Vol, veh/h	0	85	36	5	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	100	44	6	17	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	50	0	-	0	147	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1525	-	-	-	794	961
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1525	-	-	-	794	961
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.54
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1525	-	-	-	813
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	106	42	22	52	0
Future Vol, veh/h	0	106	42	22	52	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	78	78	77	77
Heavy Vehicles, %	9	9	14	14	0	0
Mvmt Flow	0	126	54	28	68	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	82	0	-	0	194	68
Stage 1	-	-	-	-	68	-
Stage 2	-	-	-	-	126	-
Critical Hdwy	4.19	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.281	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1472	-	-	-	799	1001
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	904	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	799	1001
Mov Cap-2 Maneuver	-	-	-	-	799	-
Stage 1	-	-	-	-	960	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.92
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	-	799
HCM Lane V/C Ratio	-	-	-	-	0.084
HCM Control Delay (s/veh)	0	-	-	-	9.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	161	66	8	0	14
Future Vol, veh/h	0	161	66	8	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	87	87	86	86	60	60
Heavy Vehicles, %	5	5	12	12	0	0
Mvmt Flow	0	185	77	9	0	23

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	266	81
Stage 1	-	-	-	-	81	-
Stage 2	-	-	-	-	185	-
Critical Hdwy	4.15	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.245	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1491	-	-	-	727	984
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1491	-	-	-	727	984
Mov Cap-2 Maneuver	-	-	-	-	727	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	851	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	8.75
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1491	-	-	-	984
HCM Lane V/C Ratio	-	-	-	-	0.024
HCM Control Delay (s/veh)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	19

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	3	31	29	4	14	26	324	14	8	985	50
Future Vol, veh/h	33	3	31	29	4	14	26	324	14	8	985	50
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	55	5	52	48	7	23	35	432	19	9	1094	56

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1645	1660	1122	1616	1669	432	1150	0	0	451	0	0
Stage 1	1140	1140	-	501	501	-	-	-	-	-	-	-
Stage 2	505	520	-	1115	1168	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	80	98	253	83	96	621	586	-	-	1110	-	-
Stage 1	247	278	-	550	541	-	-	-	-	-	-	-
Stage 2	553	535	-	251	266	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	67	92	253	58	89	621	586	-	-	1110	-	-
Mov Cap-2 Maneuver	67	92	-	58	89	-	-	-	-	-	-	-
Stage 1	245	276	-	518	509	-	-	-	-	-	-	-
Stage 2	495	504	-	195	264	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/veh	88.07	170.63	0.82	0.06
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	586	-	-	104	83	1110	-	-
HCM Lane V/C Ratio	0.059	-	-	1.077	0.94	0.008	-	-
HCM Control Delay (s/veh)	11.5	-	-	188.1	170.6	8.3	-	-
HCM Lane LOS	B	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	7	5.1	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	42	42	337	970	6
Future Vol, veh/h	34	42	42	337	970	6
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	75	75	93	93
Heavy Vehicles, %	4	4	8	8	2	2
Mvmt Flow	57	70	56	449	1043	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1608	1046	1049	0	-	0
Stage 1	1046	-	-	-	-	-
Stage 2	561	-	-	-	-	-
Critical Hdwy	6.44	6.24	4.18	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	2.272	-	-	-
Pot Cap-1 Maneuver	114	275	641	-	-	-
Stage 1	335	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	104	275	641	-	-	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	33.5	1.24	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	641	-	249	-	-
HCM Lane V/C Ratio	0.087	-	0.508	-	-
HCM Control Delay (s/veh)	11.2	-	33.5	-	-
HCM Lane LOS	B	-	D	-	-
HCM 95th %tile Q(veh)	0.3	-	2.6	-	-

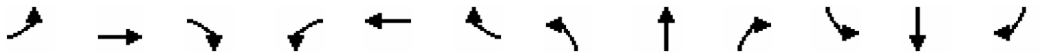
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	4	363	1007	34
Future Vol, veh/h	0	0	4	363	1007	34
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	76	76	90	90
Heavy Vehicles, %	0	0	9	9	2	2
Mvmt Flow	0	0	5	478	1119	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1626	1138	1157	0	-	0
Stage 1	1138	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.19	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.281	-	-	-
Pot Cap-1 Maneuver	114	248	579	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	113	248	579	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	306	-	-	-	-	-
Stage 2	621	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	0	0.12	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	579	-	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	-
HCM Control Delay (s/veh)	11.3	-	0	-	-
HCM Lane LOS	B	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	30	48	61	43	50	72	954	79	31	531	26
Future Volume (veh/h)	24	30	48	61	43	50	72	954	79	31	531	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	30	38	61	65	46	53	84	1109	92	33	565	28
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	7	7	7	4	4	4	1	1	1	2	2	2
Cap, veh/h	357	176	282	362	221	255	414	1047	87	60	1078	53
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1245	621	996	1276	780	899	831	1717	142	466	1767	88
Grp Volume(v), veh/h	30	0	99	65	0	99	84	0	1201	33	0	593
Grp Sat Flow(s),veh/h/ln	1245	0	1617	1276	0	1679	831	0	1860	466	0	1855
Q Serve(g_s), s	2.3	0.0	5.6	4.9	0.0	5.4	7.7	0.0	73.2	0.0	0.0	22.0
Cycle Q Clear(g_c), s	7.6	0.0	5.6	10.5	0.0	5.4	29.7	0.0	73.2	73.2	0.0	22.0
Prop In Lane	1.00		0.62	1.00		0.54	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	357	0	458	362	0	476	414	0	1134	60	0	1131
V/C Ratio(X)	0.08	0.00	0.22	0.18	0.00	0.21	0.20	0.00	1.06	0.55	0.00	0.52
Avail Cap(c_a), veh/h	357	0	458	362	0	476	414	0	1134	60	0	1131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.7	0.0	32.8	36.8	0.0	32.7	21.9	0.0	23.4	60.0	0.0	13.4
Incr Delay (d2), s/veh	0.5	0.0	1.1	1.1	0.0	1.0	1.1	0.0	43.7	31.7	0.0	1.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	2.4	1.7	0.0	2.3	1.6	0.0	43.2	1.5	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.1	0.0	33.9	37.9	0.0	33.7	23.0	0.0	67.1	91.7	0.0	15.2
LnGrp LOS	D		C	D		C	C		F	F		B
Approach Vol, veh/h		129			164			1285			626	
Approach Delay, s/veh		34.4			35.4			64.3			19.2	
Approach LOS		C			D			E			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	80.0	40.0	80.0	40.0
Change Period (Y+Rc), s	6.8	6.0	6.8	6.0
Max Green Setting (Gmax), s	73.2	34.0	73.2	34.0
Max Q Clear Time (g_c+I1), s	75.2	9.6	75.2	12.5
Green Ext Time (p_c), s	0.0	0.6	0.0	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	47.6
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	42	67	11	7	2
Future Vol, veh/h	2	42	67	11	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	2	50	87	14	12	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	101	0	-	0	149	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	55	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1472	-	-	-	816	931
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	814	931
Mov Cap-2 Maneuver	-	-	-	-	814	-
Stage 1	-	-	-	-	899	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.34	0	9.38
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	82	-	-	-	838
HCM Lane V/C Ratio	0.002	-	-	-	0.018
HCM Control Delay (s/veh)	7.4	0	-	-	9.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	54	87	34	20	2
Future Vol, veh/h	0	54	87	34	20	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	84	84	64	64
Heavy Vehicles, %	6	6	5	5	6	6
Mvmt Flow	0	68	104	40	31	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	144	0	-	0	191	124
Stage 1	-	-	-	-	124	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1414	-	-	-	789	916
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	945	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1414	-	-	-	789	916
Mov Cap-2 Maneuver	-	-	-	-	789	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	945	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.71
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1414	-	-	-	799
HCM Lane V/C Ratio	-	-	-	-	0.043
HCM Control Delay (s/veh)	0	-	-	-	9.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	77	119	12	7	0
Future Vol, veh/h	0	77	119	12	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	81	81	60	60
Heavy Vehicles, %	4	4	5	5	17	17
Mvmt Flow	0	87	147	15	12	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	162	0	-	0	241	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	87	-
Critical Hdwy	4.14	-	-	-	6.57	6.37
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	2.236	-	-	-	3.653	3.453
Pot Cap-1 Maneuver	1405	-	-	-	716	854
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	900	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1405	-	-	-	716	854
Mov Cap-2 Maneuver	-	-	-	-	716	-
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	900	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	10.11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1405	-	-	-	716
HCM Lane V/C Ratio	-	-	-	-	0.016
HCM Control Delay (s/veh)	0	-	-	-	10.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	24.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	3	20	12	2	5	25	1079	23	5	598	25
Future Vol, veh/h	38	3	20	12	2	5	25	1079	23	5	598	25
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	1	1	1	4	4	4
Mvmt Flow	63	5	33	20	3	8	29	1240	26	5	629	26

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1953	1977	643	1940	1964	1240	656	0	0	1267	0	0
Stage 1	653	653	-	1298	1298	-	-	-	-	-	-	-
Stage 2	1299	1324	-	643	666	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.11	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.209	-	-	2.236	-	-
Pot Cap-1 Maneuver	~ 49	63	477	48	61	208	936	-	-	542	-	-
Stage 1	459	467	-	194	227	-	-	-	-	-	-	-
Stage 2	200	227	-	454	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 43	60	477	39	59	208	936	-	-	542	-	-
Mov Cap-2 Maneuver	~ 43	60	-	39	59	-	-	-	-	-	-	-
Stage 1	455	462	-	188	220	-	-	-	-	-	-	-
Stage 2	184	220	-	414	445	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $/+	460.11	149.01	0.2	0.09
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	936	-	-	62	52	542	-	-
HCM Lane V/C Ratio	0.031	-	-	1.642	0.607	0.01	-	-
HCM Control Delay (s/veh)	9	-	-	$ 460.1	149	11.7	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	9.1	2.4	0	-	-

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

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	59	52	38	1078	593	26
Future Vol, veh/h	59	52	38	1078	593	26
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	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	66	66	92	92	94	94
Heavy Vehicles, %	5	5	1	1	3	3
Mvmt Flow	89	79	41	1172	631	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1899	645	659	0	-	0
Stage 1	645	-	-	-	-	-
Stage 2	1254	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.11	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.209	-	-	-
Pot Cap-1 Maneuver	~ 75	467	934	-	-	-
Stage 1	517	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 71	467	934	-	-	-
Mov Cap-2 Maneuver	186	-	-	-	-	-
Stage 1	494	-	-	-	-	-
Stage 2	265	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	41.3	1 0.31	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	934	-	259	-	-
HCM Lane V/C Ratio	0.044	-	0.648	-	-
HCM Control Delay (s/veh)	9	-	41.3	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	4.1	-	-

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

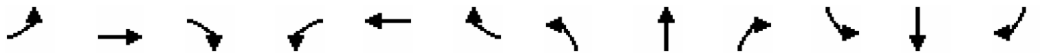
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	0	7	1128	616	13
Future Vol, veh/h	2	0	7	1128	616	13
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	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	60	60	89	89	95	95
Heavy Vehicles, %	0	0	2	2	4	4
Mvmt Flow	3	0	8	1267	648	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1938	655	662	0	-	0
Stage 1	655	-	-	-	-	-
Stage 2	1283	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.12	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.218	-	-	-
Pot Cap-1 Maneuver	73	469	926	-	-	-
Stage 1	520	-	-	-	-	-
Stage 2	263	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	72	469	926	-	-	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	516	-	-	-	-	-
Stage 2	263	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	24.54	0.06	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	926	-	188	-	-
HCM Lane V/C Ratio	0.008	-	0.018	-	-
HCM Control Delay (s/veh)	8.9	-	24.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	55	139	63	20	13	85	223	55	32	706	106
Future Volume (veh/h)	58	55	139	63	20	13	85	223	55	32	706	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	69	65	165	85	27	18	108	282	70	34	743	112
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	9	9	9	4	4	4	7	7	7	1	1	1
Cap, veh/h	399	125	318	241	292	195	229	847	210	590	976	147
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1286	442	1122	1132	1030	687	620	1389	345	1037	1600	241
Grp Volume(v), veh/h	69	0	230	85	0	45	108	0	352	34	0	855
Grp Sat Flow(s),veh/h/ln	1286	0	1565	1132	0	1717	620	0	1734	1037	0	1842
Q Serve(g_s), s	5.0	0.0	14.8	8.2	0.0	2.3	18.4	0.0	11.9	2.0	0.0	40.6
Cycle Q Clear(g_c), s	7.3	0.0	14.8	23.0	0.0	2.3	59.0	0.0	11.9	13.9	0.0	40.6
Prop In Lane	1.00		0.72	1.00		0.40	1.00		0.20	1.00		0.13
Lane Grp Cap(c), veh/h	399	0	443	241	0	487	229	0	1058	590	0	1123
V/C Ratio(X)	0.17	0.00	0.52	0.35	0.00	0.09	0.47	0.00	0.33	0.06	0.00	0.76
Avail Cap(c_a), veh/h	399	0	443	241	0	487	229	0	1058	590	0	1123
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	36.1	45.8	0.0	31.6	38.5	0.0	11.5	14.9	0.0	17.0
Incr Delay (d2), s/veh	0.9	0.0	4.3	4.0	0.0	0.4	6.8	0.0	0.8	0.2	0.0	4.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	6.2	2.6	0.0	1.0	3.2	0.0	4.7	0.5	0.0	17.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.3	0.0	40.4	49.8	0.0	32.0	45.3	0.0	12.3	15.0	0.0	21.9
LnGrp LOS	D		D	D		C	D		B	B		C
Approach Vol, veh/h		299			130			460			889	
Approach Delay, s/veh		39.2			43.7			20.1			21.7	
Approach LOS		D			D			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		61.0		16.8		42.6		25.0				
Green Ext Time (p_c), s		2.5		1.5		8.0		0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			25.8									
HCM 7th LOS			C									

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	77	33	5	12	2
Future Vol, veh/h	0	77	33	5	12	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	91	40	6	16	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	46	0	-	0	134	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	91	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1530	-	-	-	808	965
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	878	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1530	-	-	-	808	965
Mov Cap-2 Maneuver	-	-	-	-	808	-
Stage 1	-	-	-	-	923	-
Stage 2	-	-	-	-	878	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.45
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1530	-	-	-	827
HCM Lane V/C Ratio	-	-	-	-	0.023
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	96	0	12	38	20	0	0	12	47	0	0
Future Vol, veh/h	0	96	0	12	38	20	0	0	12	47	0	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	84	84	84	78	78	78	60	60	60	77	77	77
Heavy Vehicles, %	9	9	9	14	14	14	100	100	100	0	0	0
Mvmt Flow	0	114	0	15	49	26	0	0	20	61	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	114	0	0	194	219	114	207	207	62
Stage 1	-	-	-	-	-	-	114	114	-	92	92	-
Stage 2	-	-	-	-	-	-	79	105	-	114	114	-
Critical Hdwy	4.19	-	-	4.24	-	-	8.1	7.5	7.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Follow-up Hdwy	2.281	-	-	2.326	-	-	4.4	4.9	4.2	3.5	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1403	-	-	594	538	728	755	694	1009
Stage 1	-	-	-	-	-	-	700	645	-	920	822	-
Stage 2	-	-	-	-	-	-	734	652	-	895	805	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1403	-	-	587	532	728	726	686	1009
Mov Cap-2 Maneuver	-	-	-	-	-	-	587	532	-	726	686	-
Stage 1	-	-	-	-	-	-	700	645	-	909	813	-
Stage 2	-	-	-	-	-	-	726	645	-	871	805	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	1.3	10.08	10.41
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	728	1482	-	-	289	-	-	726
HCM Lane V/C Ratio	0.027	-	-	-	0.011	-	-	0.084
HCM Control Delay (s/veh)	10.1	0	-	-	7.6	0	-	10.4
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	146	12	147	68	8	3	0	103	0	0	13
Future Vol, veh/h	0	146	12	147	68	8	3	0	103	0	0	13
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	87	87	87	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	5	5	5	12	12	12	2	2	2	0	0	0
Mvmt Flow	0	168	14	245	113	13	5	0	172	0	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	127	0	0	182	0	0	778	791	175	778	792	120
Stage 1	-	-	-	-	-	-	175	175	-	610	610	-
Stage 2	-	-	-	-	-	-	603	617	-	168	182	-
Critical Hdwy	4.15	-	-	4.22	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.308	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1441	-	-	1336	-	-	314	322	869	316	324	937
Stage 1	-	-	-	-	-	-	827	754	-	485	488	-
Stage 2	-	-	-	-	-	-	486	481	-	839	753	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1441	-	-	1336	-	-	246	258	869	204	260	937
Mov Cap-2 Maneuver	-	-	-	-	-	-	246	258	-	204	260	-
Stage 1	-	-	-	-	-	-	827	754	-	389	392	-
Stage 2	-	-	-	-	-	-	381	386	-	673	753	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	5.47	10.68	8.93
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	810	1441	-	-	1162	-	-	937
HCM Lane V/C Ratio	0.218	-	-	-	0.183	-	-	0.023
HCM Control Delay (s/veh)	10.7	0	-	-	8.3	0	-	8.9
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.7	-	-	0.1

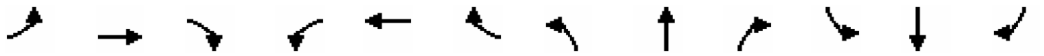
Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	3	6	26	4	13	2	325	13	8	883	4
Future Vol, veh/h	6	3	6	26	4	13	2	325	13	8	883	4
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	10	5	10	43	7	22	3	433	17	9	981	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1443	1457	983	1440	1442	433	986	0	0	451	0	0
Stage 1	1001	1001	-	439	439	-	-	-	-	-	-	-
Stage 2	442	456	-	1001	1003	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	111	131	304	110	132	620	678	-	-	1110	-	-
Stage 1	295	323	-	595	577	-	-	-	-	-	-	-
Stage 2	598	572	-	291	319	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	101	129	304	101	130	620	678	-	-	1110	-	-
Mov Cap-2 Maneuver	101	129	-	101	130	-	-	-	-	-	-	-
Stage 1	293	321	-	593	574	-	-	-	-	-	-	-
Stage 2	568	569	-	275	316	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	34.62	55.55	0.06	0.07
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	678	-	-	146	139	1110	-	-
HCM Lane V/C Ratio	0.004	-	-	0.171	0.515	0.008	-	-
HCM Control Delay (s/veh)	10.3	-	-	34.6	55.6	8.3	-	-
HCM Lane LOS	B	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	2.5	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	34	100	50	44	45	116	791	66	28	437	68
Future Volume (veh/h)	94	34	100	50	44	45	116	791	66	28	437	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	119	43	127	53	47	48	135	920	77	30	465	72
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	10	10	10	4	4	4	1	1	1	2	2	2
Cap, veh/h	353	111	327	293	237	242	452	1047	88	150	965	149
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1218	391	1154	1196	835	853	875	1716	144	565	1581	245
Grp Volume(v), veh/h	119	0	170	53	0	95	135	0	997	30	0	537
Grp Sat Flow(s),veh/h/ln	1218	0	1544	1196	0	1687	875	0	1859	565	0	1826
Q Serve(g_s), s	9.9	0.0	10.6	4.5	0.0	5.1	12.1	0.0	54.1	5.7	0.0	19.5
Cycle Q Clear(g_c), s	15.0	0.0	10.6	15.1	0.0	5.1	31.6	0.0	54.1	59.8	0.0	19.5
Prop In Lane	1.00		0.75	1.00		0.51	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	353	0	438	293	0	478	452	0	1134	150	0	1114
V/C Ratio(X)	0.34	0.00	0.39	0.18	0.00	0.20	0.30	0.00	0.88	0.20	0.00	0.48
Avail Cap(c_a), veh/h	353	0	438	293	0	478	452	0	1134	150	0	1114
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.3	0.0	34.6	40.7	0.0	32.7	21.7	0.0	19.7	44.8	0.0	12.9
Incr Delay (d2), s/veh	2.6	0.0	2.6	1.4	0.0	0.9	1.7	0.0	9.8	3.0	0.0	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	4.3	1.4	0.0	2.2	2.7	0.0	24.9	0.9	0.0	8.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	40.9	0.0	37.2	42.1	0.0	33.6	23.3	0.0	29.5	47.8	0.0	14.4
LnGrp LOS	D		D	D		C	C		C	D		B
Approach Vol, veh/h		289			148			1132			567	
Approach Delay, s/veh		38.7			36.6			28.7			16.2	
Approach LOS		D			D			C			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		56.1		17.0		61.8		17.1				
Green Ext Time (p_c), s		8.4		1.3		3.0		0.6				

Intersection Summary	
HCM 7th Control Delay, s/veh	27.3
HCM 7th LOS	C

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	38	60	10	7	2
Future Vol, veh/h	0	38	60	10	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	0	45	78	13	12	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	91	0	-	0	130	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1485	-	-	-	837	942
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	947	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1485	-	-	-	837	942
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	947	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.27
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1485	-	-	-	858
HCM Lane V/C Ratio	-	-	-	-	0.017
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	49	4	12	79	31	0	0	12	18	0	2
Future Vol, veh/h	4	49	4	12	79	31	0	0	12	18	0	2
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	80	80	80	84	84	84	60	60	60	64	64	64
Heavy Vehicles, %	6	6	6	5	5	5	100	100	100	6	6	6
Mvmt Flow	5	61	5	14	94	37	0	0	20	28	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	131	0	0	66	0	0	196	233	64	212	217	113
Stage 1	-	-	-	-	-	-	74	74	-	141	141	-
Stage 2	-	-	-	-	-	-	123	160	-	71	76	-
Critical Hdwy	4.16	-	-	4.15	-	-	8.1	7.5	7.2	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.245	-	-	4.4	4.9	4.2	3.554	4.054	3.354
Pot Cap-1 Maneuver	1430	-	-	1517	-	-	592	527	783	736	674	930
Stage 1	-	-	-	-	-	-	740	676	-	852	772	-
Stage 2	-	-	-	-	-	-	692	613	-	929	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1430	-	-	1517	-	-	581	520	783	707	664	930
Mov Cap-2 Maneuver	-	-	-	-	-	-	581	520	-	707	664	-
Stage 1	-	-	-	-	-	-	737	673	-	844	765	-
Stage 2	-	-	-	-	-	-	682	607	-	902	821	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.53	0.73	9.72	10.19
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	783	124	-	-	168	-	-	725
HCM Lane V/C Ratio	0.026	0.003	-	-	0.009	-	-	0.043
HCM Control Delay (s/veh)	9.7	7.5	0	-	7.4	0	-	10.2
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	78	4	94	114	11	6	0	127	7	0	0
Future Vol, veh/h	0	78	4	94	114	11	6	0	127	7	0	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	89	89	89	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	4	4	4	5	5	5	0	0	0	17	17	17
Mvmt Flow	0	88	4	157	190	18	10	0	212	12	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	92	0	0	593	612	90	600	605	199
Stage 1	-	-	-	-	-	-	90	90	-	513	513	-
Stage 2	-	-	-	-	-	-	503	522	-	88	92	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.1	6.5	6.2	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.5	4	3.3	3.653	4.153	3.453
Pot Cap-1 Maneuver	1351	-	-	1484	-	-	420	411	973	392	393	805
Stage 1	-	-	-	-	-	-	922	824	-	518	512	-
Stage 2	-	-	-	-	-	-	554	534	-	884	790	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1351	-	-	1484	-	-	370	362	973	270	346	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	370	362	-	270	346	-
Stage 1	-	-	-	-	-	-	922	824	-	456	451	-
Stage 2	-	-	-	-	-	-	488	470	-	692	790	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.31	10.25	18.95
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	907	1351	-	-	759	-	-	270
HCM Lane V/C Ratio	0.244	-	-	-	0.106	-	-	0.043
HCM Control Delay (s/veh)	10.3	0	-	-	7.7	0	-	18.9
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1	0	-	-	0.4	-	-	0.1

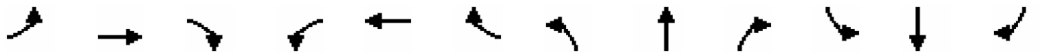
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	3	3	11	2	5	5	982	21	5	568	5
Future Vol, veh/h	5	3	3	11	2	5	5	982	21	5	568	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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	0	1	1	4	4	4
Mvmt Flow	8	5	5	18	3	8	6	1129	24	5	598	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1753	1775	601	1751	1754	1129	603	0	0	1153	0	0
Stage 1	611	611	-	1140	1140	-	-	-	-	-	-	-
Stage 2	1142	1164	-	611	614	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	68	84	504	65	83	243	984	-	-	599	-	-
Stage 1	484	487	-	239	270	-	-	-	-	-	-	-
Stage 2	246	271	-	473	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	62	82	504	60	82	243	984	-	-	599	-	-
Mov Cap-2 Maneuver	62	82	-	60	82	-	-	-	-	-	-	-
Stage 1	480	483	-	237	268	-	-	-	-	-	-	-
Stage 2	233	269	-	459	471	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	55.57	76.91	0.04	0.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	984	-	-	89	78	599	-	-
HCM Lane V/C Ratio	0.006	-	-	0.206	0.383	0.009	-	-
HCM Control Delay (s/veh)	8.7	-	-	55.6	76.9	11.1	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	1.5	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	59	148	70	21	14	88	251	62	35	790	107
Future Volume (veh/h)	60	59	148	70	21	14	88	251	62	35	790	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	71	70	176	95	28	19	111	318	78	37	832	113
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	9	9	9	4	4	4	7	7	7	1	1	1
Cap, veh/h	398	126	317	227	290	197	174	850	208	553	991	135
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1283	445	1120	1116	1022	694	570	1393	342	996	1625	221
Grp Volume(v), veh/h	71	0	246	95	0	47	111	0	396	37	0	945
Grp Sat Flow(s),veh/h/ln	1283	0	1565	1116	0	1716	570	0	1735	996	0	1845
Q Serve(g_s), s	5.2	0.0	16.0	9.5	0.0	2.4	23.2	0.0	13.8	2.3	0.0	49.1
Cycle Q Clear(g_c), s	7.6	0.0	16.0	25.5	0.0	2.4	72.3	0.0	13.8	16.2	0.0	49.1
Prop In Lane	1.00		0.72	1.00		0.40	1.00		0.20	1.00		0.12
Lane Grp Cap(c), veh/h	398	0	443	227	0	486	174	0	1058	553	0	1126
V/C Ratio(X)	0.18	0.00	0.55	0.42	0.00	0.10	0.64	0.00	0.37	0.07	0.00	0.84
Avail Cap(c_a), veh/h	398	0	443	227	0	486	174	0	1058	553	0	1126
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	36.6	47.4	0.0	31.7	47.6	0.0	11.8	15.9	0.0	18.7
Incr Delay (d2), s/veh	1.0	0.0	4.9	5.6	0.0	0.4	16.4	0.0	1.0	0.2	0.0	7.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	6.7	3.0	0.0	1.1	4.1	0.0	5.5	0.6	0.0	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	35.5	0.0	41.5	53.0	0.0	32.1	64.0	0.0	12.8	16.1	0.0	26.3
LnGrp LOS	D		D	D		C	E		B	B		C
Approach Vol, veh/h		317			142			507			982	
Approach Delay, s/veh		40.1			46.1			24.0			25.9	
Approach LOS		D			D			C			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		74.3		18.0		51.1		27.5				
Green Ext Time (p_c), s		0.0		1.6		8.4		0.3				

Intersection Summary												
HCM 7th Control Delay, s/veh			29.2									
HCM 7th LOS			C									

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	85	36	5	13	2
Future Vol, veh/h	0	85	36	5	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	100	44	6	17	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	50	0	-	0	147	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1525	-	-	-	794	961
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1525	-	-	-	794	961
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.54
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1525	-	-	-	813
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	106	0	12	42	22	0	0	12	52	0	0
Future Vol, veh/h	0	106	0	12	42	22	0	0	12	52	0	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	84	84	84	78	78	78	60	60	60	77	77	77
Heavy Vehicles, %	9	9	9	14	14	14	100	100	100	0	0	0
Mvmt Flow	0	126	0	15	54	28	0	0	20	68	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	126	0	0	211	239	126	225	225	68
Stage 1	-	-	-	-	-	-	126	126	-	99	99	-
Stage 2	-	-	-	-	-	-	85	113	-	126	126	-
Critical Hdwy	4.19	-	-	4.24	-	-	8.1	7.5	7.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Follow-up Hdwy	2.281	-	-	2.326	-	-	4.4	4.9	4.2	3.5	4	3.3
Pot Cap-1 Maneuver	1472	-	-	1389	-	-	578	523	716	735	678	1001
Stage 1	-	-	-	-	-	-	688	637	-	913	817	-
Stage 2	-	-	-	-	-	-	729	646	-	883	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1472	-	-	1389	-	-	571	517	716	706	670	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	571	517	-	706	670	-
Stage 1	-	-	-	-	-	-	688	637	-	902	808	-
Stage 2	-	-	-	-	-	-	720	639	-	858	795	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	1.2	10.17	10.64
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	716	1472	-	-	266	-	-	706
HCM Lane V/C Ratio	0.028	-	-	-	0.011	-	-	0.096
HCM Control Delay (s/veh)	10.2	0	-	-	7.6	0	-	10.6
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	161	12	147	75	8	3	0	100	0	0	14
Future Vol, veh/h	0	161	12	147	75	8	3	0	100	0	0	14
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	87	87	87	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	5	5	5	12	12	12	2	2	2	0	0	0
Mvmt Flow	0	185	14	245	125	13	5	0	167	0	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	199	0	0	807	820	192	807	821	132
Stage 1	-	-	-	-	-	-	192	192	-	622	622	-
Stage 2	-	-	-	-	-	-	615	628	-	185	199	-
Critical Hdwy	4.15	-	-	4.22	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.308	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1427	-	-	1316	-	-	300	310	850	302	312	923
Stage 1	-	-	-	-	-	-	810	742	-	478	482	-
Stage 2	-	-	-	-	-	-	479	476	-	821	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1427	-	-	1316	-	-	233	247	850	194	249	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	247	-	194	249	-
Stage 1	-	-	-	-	-	-	810	742	-	381	385	-
Stage 2	-	-	-	-	-	-	372	380	-	660	740	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	5.34	10.83	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	789	1427	-	-	1129	-	-	923
HCM Lane V/C Ratio	0.218	-	-	-	0.186	-	-	0.025
HCM Control Delay (s/veh)	10.8	0	-	-	8.4	0	-	9
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.7	-	-	0.1

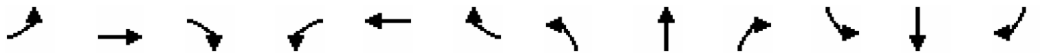
Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	3	9	29	4	14	4	356	14	8	976	9
Future Vol, veh/h	9	3	9	29	4	14	4	356	14	8	976	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	-	-	-	-	-	-	100	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	15	5	15	48	7	23	5	475	19	9	1084	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1596	1611	1089	1590	1598	475	1094	0	0	493	0	0
Stage 1	1107	1107	-	485	485	-	-	-	-	-	-	-
Stage 2	489	504	-	1105	1112	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	87	105	264	86	106	588	616	-	-	1070	-	-
Stage 1	257	288	-	561	550	-	-	-	-	-	-	-
Stage 2	565	544	-	255	283	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	104	264	76	104	588	616	-	-	1070	-	-
Mov Cap-2 Maneuver	77	104	-	76	104	-	-	-	-	-	-	-
Stage 1	255	286	-	556	545	-	-	-	-	-	-	-
Stage 2	531	540	-	234	281	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	48.56	101.15	0.12	0.07
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	616	-	-	117	106	1070	-	-
HCM Lane V/C Ratio	0.009	-	-	0.3	0.737	0.008	-	-
HCM Control Delay (s/veh)	10.9	-	-	48.6	101.1	8.4	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.2	3.9	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	36	105	56	48	50	123	882	73	31	487	70
Future Volume (veh/h)	96	36	105	56	48	50	123	882	73	31	487	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	122	46	133	60	51	53	143	1026	85	33	518	74
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	10	10	10	4	4	4	1	1	1	2	2	2
Cap, veh/h	345	113	325	285	234	243	412	1048	87	76	976	139
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1208	397	1148	1186	827	859	831	1717	142	507	1601	229
Grp Volume(v), veh/h	122	0	179	60	0	104	143	0	1111	33	0	592
Grp Sat Flow(s),veh/h/ln	1208	0	1545	1186	0	1686	831	0	1860	507	0	1829
Q Serve(g_s), s	10.3	0.0	11.3	5.2	0.0	5.7	14.4	0.0	69.5	3.7	0.0	22.4
Cycle Q Clear(g_c), s	15.9	0.0	11.3	16.5	0.0	5.7	36.8	0.0	69.5	73.2	0.0	22.4
Prop In Lane	1.00		0.74	1.00		0.51	1.00		0.08	1.00		0.13
Lane Grp Cap(c), veh/h	345	0	438	285	0	478	412	0	1134	76	0	1116
V/C Ratio(X)	0.35	0.00	0.41	0.21	0.00	0.22	0.35	0.00	0.98	0.44	0.00	0.53
Avail Cap(c_a), veh/h	345	0	438	285	0	478	412	0	1134	76	0	1116
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.9	0.0	34.9	41.5	0.0	32.8	24.1	0.0	22.7	59.1	0.0	13.5
Incr Delay (d2), s/veh	2.8	0.0	2.8	1.7	0.0	1.0	2.3	0.0	22.2	17.1	0.0	1.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	4.6	1.7	0.0	2.5	3.1	0.0	35.0	1.4	0.0	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	41.7	0.0	37.7	43.2	0.0	33.9	26.4	0.0	44.9	76.2	0.0	15.3
LnGrp LOS	D		D	D		C	C		D	E		B
Approach Vol, veh/h		301			164			1254			625	
Approach Delay, s/veh		39.3			37.3			42.8			18.5	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	80.0	40.0	80.0	40.0
Change Period (Y+Rc), s	6.8	6.0	6.8	6.0
Max Green Setting (Gmax), s	73.2	34.0	73.2	34.0
Max Q Clear Time (g_c+I1), s	71.5	17.9	75.2	18.5
Green Ext Time (p_c), s	1.4	1.4	0.0	0.6

Intersection Summary	
HCM 7th Control Delay, s/veh	35.5
HCM 7th LOS	D

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	42	67	11	7	2
Future Vol, veh/h	0	42	67	11	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	0	50	87	14	12	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	101	0	-	0	144	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1472	-	-	-	821	931
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	821	931
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.35
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	-	843
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

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	0	54	0	12	87	34	0	0	12	20	0	2
Future Vol, veh/h	0	54	0	12	87	34	0	0	12	20	0	2
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	80	80	80	84	84	84	60	60	60	64	64	64
Heavy Vehicles, %	6	6	6	5	5	5	100	100	100	6	6	6
Mvmt Flow	0	68	0	14	104	40	0	0	20	31	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	144	0	0	68	0	0	200	240	68	220	220	124
Stage 1	-	-	-	-	-	-	68	68	-	152	152	-
Stage 2	-	-	-	-	-	-	132	173	-	68	68	-
Critical Hdwy	4.16	-	-	4.15	-	-	8.1	7.5	7.2	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.245	-	-	4.4	4.9	4.2	3.554	4.054	3.354
Pot Cap-1 Maneuver	1414	-	-	1515	-	-	588	522	779	728	672	916
Stage 1	-	-	-	-	-	-	746	681	-	841	764	-
Stage 2	-	-	-	-	-	-	683	604	-	933	831	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1414	-	-	1515	-	-	580	517	779	702	665	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	580	517	-	702	665	-
Stage 1	-	-	-	-	-	-	746	681	-	832	756	-
Stage 2	-	-	-	-	-	-	673	597	-	909	831	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.67	9.74	10.27
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	1414	-	-	154	-	-	717
HCM Lane V/C Ratio	0.026	-	-	-	0.009	-	-	0.048
HCM Control Delay (s/veh)	9.7	0	-	-	7.4	0	-	10.3
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

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	0	85	4	94	125	12	6	0	127	7	0	0
Future Vol, veh/h	0	85	4	94	125	12	6	0	127	7	0	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	89	89	89	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	4	4	4	5	5	5	0	0	0	17	17	17
Mvmt Flow	0	96	4	157	208	20	10	0	212	12	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	228	0	0	100	0	0	619	639	98	627	632	218
Stage 1	-	-	-	-	-	-	98	98	-	532	532	-
Stage 2	-	-	-	-	-	-	522	542	-	96	100	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.1	6.5	6.2	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.5	4	3.3	3.653	4.153	3.453
Pot Cap-1 Maneuver	1328	-	-	1474	-	-	404	396	964	375	379	785
Stage 1	-	-	-	-	-	-	914	818	-	505	502	-
Stage 2	-	-	-	-	-	-	542	524	-	876	784	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1328	-	-	1474	-	-	354	348	964	257	333	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	348	-	257	333	-
Stage 1	-	-	-	-	-	-	914	818	-	443	441	-
Stage 2	-	-	-	-	-	-	476	460	-	683	784	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.15	10.35	19.66
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	894	1328	-	-	720	-	-	257
HCM Lane V/C Ratio	0.248	-	-	-	0.106	-	-	0.045
HCM Control Delay (s/veh)	10.3	0	-	-	7.7	0	-	19.7
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1	0	-	-	0.4	-	-	0.1

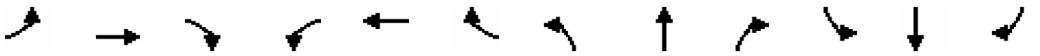
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	3	5	12	2	3	7	1084	23	5	624	7
Future Vol, veh/h	9	3	5	12	2	3	7	1084	23	5	624	7
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	1	1	1	4	4	4
Mvmt Flow	15	5	8	20	3	5	8	1246	26	5	657	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1935	1960	661	1932	1937	1246	664	0	0	1272	0	0
Stage 1	671	671	-	1262	1262	-	-	-	-	-	-	-
Stage 2	1264	1289	-	670	675	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.11	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.209	-	-	2.236	-	-
Pot Cap-1 Maneuver	50	64	466	48	64	207	930	-	-	539	-	-
Stage 1	449	458	-	203	236	-	-	-	-	-	-	-
Stage 2	210	236	-	438	446	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	46	63	466	43	62	207	930	-	-	539	-	-
Mov Cap-2 Maneuver	46	63	-	43	62	-	-	-	-	-	-	-
Stage 1	445	454	-	202	234	-	-	-	-	-	-	-
Stage 2	200	234	-	422	441	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	94.44	136.74	0.06	0.09
HCM LOS	F	F		

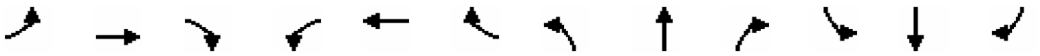
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	930	-	-	67	52	539	-	-
HCM Lane V/C Ratio	0.009	-	-	0.426	0.543	0.01	-	-
HCM Control Delay (s/veh)	8.9	-	-	94.4	136.7	11.7	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.7	2.1	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Future Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	24	55	120	105	18	19	37	371	92	37	925	19
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	1	1	1
Cap, veh/h	418	145	316	294	232	245	183	1657	406	573	1123	23
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	1338	511	1114	1190	820	865	570	2717	666	937	1841	38
Grp Volume(v), veh/h	24	0	175	105	0	37	37	231	232	37	0	944
Grp Sat Flow(s),veh/h/ln	1338	0	1625	1190	0	1685	570	1706	1676	937	0	1878
Q Serve(g_s), s	1.6	0.0	10.4	9.3	0.0	1.9	6.5	7.3	7.5	2.2	0.0	47.3
Cycle Q Clear(g_c), s	3.5	0.0	10.4	19.7	0.0	1.9	53.8	7.3	7.5	9.7	0.0	47.3
Prop In Lane	1.00		0.69	1.00		0.51	1.00		0.40	1.00		0.02
Lane Grp Cap(c), veh/h	418	0	460	294	0	477	183	1041	1023	573	0	1146
V/C Ratio(X)	0.06	0.00	0.38	0.36	0.00	0.08	0.20	0.22	0.23	0.06	0.00	0.82
Avail Cap(c_a), veh/h	418	0	460	294	0	477	183	1041	1023	573	0	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.8	0.0	34.5	42.4	0.0	31.5	39.4	10.6	10.6	12.8	0.0	18.3
Incr Delay (d2), s/veh	0.3	0.0	2.4	3.4	0.0	0.3	2.5	0.5	0.5	0.2	0.0	6.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.4	3.0	0.0	0.8	1.0	2.9	2.9	0.5	0.0	21.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.1	0.0	36.9	45.8	0.0	31.8	41.9	11.1	11.1	13.0	0.0	25.1
LnGrp LOS	C		D	D		C	D	B	B	B		C
Approach Vol, veh/h		199			142			500			981	
Approach Delay, s/veh		36.4			42.2			13.4			24.7	
Approach LOS		D			D			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		6.8		6.0		6.8		6.0				
Max Green Setting (Gmax), s		73.2		34.0		73.2		34.0				
Max Q Clear Time (g_c+I1), s		55.8		12.4		49.3		21.7				
Green Ext Time (p_c), s		3.0		1.1		8.6		0.4				

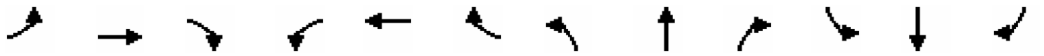
Intersection Summary												
HCM 7th Control Delay, s/veh			24.2									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Future Volume (veh/h)	20	46	101	78	13	14	29	293	73	35	879	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1826	1826	1826	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	24	55	120	105	18	19	37	371	92	37	925	19
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	5	5	5	4	4	4	7	7	7	1	1	1
Cap, veh/h	423	147	320	300	236	249	196	1687	413	585	1143	23
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.62	0.62	0.62	0.62	0.62	0.62
Sat Flow, veh/h	1338	511	1114	1190	820	865	570	2717	666	937	1841	38
Grp Volume(v), veh/h	24	0	175	105	0	37	37	231	232	37	0	944
Grp Sat Flow(s),veh/h/ln	1338	0	1625	1190	0	1685	570	1706	1676	937	0	1878
Q Serve(g_s), s	1.6	0.0	10.3	9.3	0.0	1.9	6.3	7.1	7.3	2.2	0.0	46.0
Cycle Q Clear(g_c), s	3.5	0.0	10.3	19.6	0.0	1.9	52.3	7.1	7.3	9.5	0.0	46.0
Prop In Lane	1.00		0.69	1.00		0.51	1.00		0.40	1.00		0.02
Lane Grp Cap(c), veh/h	423	0	467	300	0	484	196	1059	1041	585	0	1166
V/C Ratio(X)	0.06	0.00	0.37	0.35	0.00	0.08	0.19	0.22	0.22	0.06	0.00	0.81
Avail Cap(c_a), veh/h	423	0	467	300	0	484	196	1059	1041	585	0	1166
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.4	0.0	34.1	42.0	0.0	31.1	37.3	10.0	10.0	12.1	0.0	17.3
Incr Delay (d2), s/veh	0.3	0.0	2.3	3.2	0.0	0.3	2.1	0.5	0.5	0.2	0.0	6.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.4	3.0	0.0	0.8	1.0	2.7	2.8	0.5	0.0	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.7	0.0	36.4	45.2	0.0	31.5	39.4	10.5	10.5	12.3	0.0	23.5
LnGrp LOS	C		D	D		C	D	B	B	B		C
Approach Vol, veh/h		199			142			500			981	
Approach Delay, s/veh		36.0			41.6			12.6			23.0	
Approach LOS		D			D			B			C	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.0		40.0		80.0		40.0				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		74.5		34.5		74.5		34.5				
Max Q Clear Time (g_c+I1), s		54.3		12.3		48.0		21.6				
Green Ext Time (p_c), s		3.2		1.1		8.9		0.4				

Intersection Summary												
HCM 7th Control Delay, s/veh			23.0									
HCM 7th LOS			C									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	59	148	70	21	14	88	251	62	35	790	107
Future Volume (veh/h)	60	59	148	70	21	14	88	251	62	35	790	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1841	1841	1841	1796	1796	1796	1885	1885	1885
Adj Flow Rate, veh/h	71	70	176	95	28	19	111	318	78	37	832	113
Peak Hour Factor	0.84	0.84	0.84	0.74	0.74	0.74	0.79	0.79	0.79	0.95	0.95	0.95
Percent Heavy Veh, %	9	9	9	4	4	4	7	7	7	1	1	1
Cap, veh/h	345	108	272	174	249	169	208	1059	898	613	938	127
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.04	0.59	0.59	0.03	0.58	0.58
Sat Flow, veh/h	1283	445	1120	1116	1022	694	1711	1796	1522	1795	1625	221
Grp Volume(v), veh/h	71	0	246	95	0	47	111	318	78	37	0	945
Grp Sat Flow(s),veh/h/ln	1283	0	1565	1116	0	1716	1711	1796	1522	1795	0	1845
Q Serve(g_s), s	5.5	0.0	16.9	10.0	0.0	2.6	3.2	10.6	2.7	1.0	0.0	53.3
Cycle Q Clear(g_c), s	8.0	0.0	16.9	27.0	0.0	2.6	3.2	10.6	2.7	1.0	0.0	53.3
Prop In Lane	1.00		0.72	1.00		0.40	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	345	0	381	174	0	417	208	1059	898	613	0	1065
V/C Ratio(X)	0.21	0.00	0.65	0.55	0.00	0.11	0.53	0.30	0.09	0.06	0.00	0.89
Avail Cap(c_a), veh/h	402	0	450	223	0	493	214	1059	898	642	0	1065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.4	0.0	40.8	52.9	0.0	35.3	24.0	12.3	10.6	9.8	0.0	22.0
Incr Delay (d2), s/veh	0.3	0.0	2.5	2.7	0.0	0.1	2.4	0.7	0.2	0.0	0.0	10.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	6.8	2.9	0.0	1.1	1.8	4.5	1.0	0.4	0.0	25.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.7	0.0	43.2	55.5	0.0	35.4	26.4	13.0	10.8	9.9	0.0	32.9
LnGrp LOS	D		D	E		D	C	B	B	A		C
Approach Vol, veh/h		317			142			507			982	
Approach Delay, s/veh		42.2			48.9			15.6			32.1	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	76.3		34.7	10.6	74.8		34.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	5.5	63.5		34.5	5.5	63.5		34.5				
Max Q Clear Time (g_c+I1), s	3.0	12.6		18.9	5.2	55.3		29.0				
Green Ext Time (p_c), s	0.0	0.4		1.5	0.0	1.2		0.2				

Intersection Summary												
HCM 7th Control Delay, s/veh			30.7									
HCM 7th LOS			C									

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	85	36	5	13	2
Future Vol, veh/h	0	85	36	5	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	82	82	75	75
Heavy Vehicles, %	7	7	17	17	25	25
Mvmt Flow	0	100	44	6	17	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	50	0	-	0	147	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	100	-
Critical Hdwy	4.17	-	-	-	6.65	6.45
Critical Hdwy Stg 1	-	-	-	-	5.65	-
Critical Hdwy Stg 2	-	-	-	-	5.65	-
Follow-up Hdwy	2.263	-	-	-	3.725	3.525
Pot Cap-1 Maneuver	1525	-	-	-	794	961
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1525	-	-	-	794	961
Mov Cap-2 Maneuver	-	-	-	-	794	-
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.54
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1525	-	-	-	813
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Control Delay (s/veh)	0	-	-	-	9.5
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	106	0	12	42	22	0	0	12	52	0	0
Future Vol, veh/h	0	106	0	12	42	22	0	0	12	52	0	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	84	84	84	78	78	78	60	60	60	77	77	77
Heavy Vehicles, %	9	9	9	14	14	14	100	100	100	0	0	0
Mvmt Flow	0	126	0	15	54	28	0	0	20	68	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	126	0	0	211	239	126	225	225	68
Stage 1	-	-	-	-	-	-	126	126	-	99	99	-
Stage 2	-	-	-	-	-	-	85	113	-	126	126	-
Critical Hdwy	4.19	-	-	4.24	-	-	8.1	7.5	7.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.1	5.5	-
Follow-up Hdwy	2.281	-	-	2.326	-	-	4.4	4.9	4.2	3.5	4	3.3
Pot Cap-1 Maneuver	1472	-	-	1389	-	-	578	523	716	735	678	1001
Stage 1	-	-	-	-	-	-	688	637	-	913	817	-
Stage 2	-	-	-	-	-	-	729	646	-	883	795	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1472	-	-	1389	-	-	571	517	716	706	670	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	571	517	-	706	670	-
Stage 1	-	-	-	-	-	-	688	637	-	902	808	-
Stage 2	-	-	-	-	-	-	720	639	-	858	795	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	1.2	10.17	10.64
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	716	1472	-	-	266	-	-	706
HCM Lane V/C Ratio	0.028	-	-	-	0.011	-	-	0.096
HCM Control Delay (s/veh)	10.2	0	-	-	7.6	0	-	10.6
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	161	12	147	75	8	3	0	100	0	0	14
Future Vol, veh/h	0	161	12	147	75	8	3	0	100	0	0	14
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	87	87	87	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	5	5	5	12	12	12	2	2	2	0	0	0
Mvmt Flow	0	185	14	245	125	13	5	0	167	0	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	138	0	0	199	0	0	807	820	192	807	821	132
Stage 1	-	-	-	-	-	-	192	192	-	622	622	-
Stage 2	-	-	-	-	-	-	615	628	-	185	199	-
Critical Hdwy	4.15	-	-	4.22	-	-	7.12	6.52	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.5	-
Follow-up Hdwy	2.245	-	-	2.308	-	-	3.518	4.018	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1427	-	-	1316	-	-	300	310	850	302	312	923
Stage 1	-	-	-	-	-	-	810	742	-	478	482	-
Stage 2	-	-	-	-	-	-	479	476	-	821	740	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1427	-	-	1316	-	-	233	247	850	194	249	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	247	-	194	249	-
Stage 1	-	-	-	-	-	-	810	742	-	381	385	-
Stage 2	-	-	-	-	-	-	372	380	-	660	740	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	5.34	10.83	9
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	789	1427	-	-	1129	-	-	923
HCM Lane V/C Ratio	0.218	-	-	-	0.186	-	-	0.025
HCM Control Delay (s/veh)	10.8	0	-	-	8.4	0	-	9
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.8	0	-	-	0.7	-	-	0.1

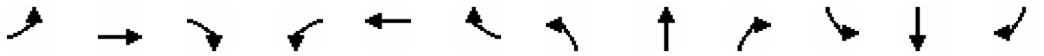
Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	3	9	29	4	14	4	356	14	8	976	9
Future Vol, veh/h	9	3	9	29	4	14	4	356	14	8	976	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	-	-	-	-	-	-	100	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	75	75	75	90	90	90
Heavy Vehicles, %	0	0	0	3	3	3	8	8	8	2	2	2
Mvmt Flow	15	5	15	48	7	23	5	475	19	9	1084	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1596	1611	1089	1590	1598	475	1094	0	0	493	0	0
Stage 1	1107	1107	-	485	485	-	-	-	-	-	-	-
Stage 2	489	504	-	1105	1112	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.13	6.53	6.23	4.18	-	-	4.12	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.527	4.027	3.327	2.272	-	-	2.218	-	-
Pot Cap-1 Maneuver	87	105	264	86	106	588	616	-	-	1070	-	-
Stage 1	257	288	-	561	550	-	-	-	-	-	-	-
Stage 2	565	544	-	255	283	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	104	264	76	104	588	616	-	-	1070	-	-
Mov Cap-2 Maneuver	77	104	-	76	104	-	-	-	-	-	-	-
Stage 1	255	286	-	556	545	-	-	-	-	-	-	-
Stage 2	531	540	-	234	281	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	48.56	101.15	0.12	0.07
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	616	-	-	117	106	1070	-	-
HCM Lane V/C Ratio	0.009	-	-	0.3	0.737	0.008	-	-
HCM Control Delay (s/veh)	10.9	-	-	48.6	101.1	8.4	-	-
HCM Lane LOS	B	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.2	3.9	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	36	105	56	48	50	123	882	73	31	487	70
Future Volume (veh/h)	96	36	105	56	48	50	123	882	73	31	487	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1752	1752	1752	1841	1841	1841	1885	1885	1885	1870	1870	1870
Adj Flow Rate, veh/h	122	46	133	60	51	53	143	1026	85	33	518	74
Peak Hour Factor	0.79	0.79	0.79	0.94	0.94	0.94	0.86	0.86	0.86	0.94	0.94	0.94
Percent Heavy Veh, %	10	10	10	4	4	4	1	1	1	2	2	2
Cap, veh/h	213	72	208	147	150	155	525	1233	1045	232	1021	146
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.04	0.65	0.65	0.03	0.64	0.64
Sat Flow, veh/h	1208	397	1148	1186	827	859	1795	1885	1598	1781	1601	229
Grp Volume(v), veh/h	122	0	179	60	0	104	143	1026	85	33	0	592
Grp Sat Flow(s),veh/h/ln	1208	0	1545	1186	0	1686	1795	1885	1598	1781	0	1829
Q Serve(g_s), s	11.8	0.0	12.9	5.9	0.0	6.5	3.3	49.6	2.3	0.8	0.0	20.8
Cycle Q Clear(g_c), s	18.2	0.0	12.9	18.8	0.0	6.5	3.3	49.6	2.3	0.8	0.0	20.8
Prop In Lane	1.00		0.74	1.00		0.51	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	213	0	279	147	0	305	525	1233	1045	232	0	1167
V/C Ratio(X)	0.57	0.00	0.64	0.41	0.00	0.34	0.27	0.83	0.08	0.14	0.00	0.51
Avail Cap(c_a), veh/h	403	0	521	333	0	569	528	1233	1045	264	0	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.9	0.0	45.5	54.2	0.0	42.9	8.8	15.8	7.6	17.0	0.0	11.6
Incr Delay (d2), s/veh	2.4	0.0	2.4	1.8	0.0	0.7	0.3	6.7	0.2	0.3	0.0	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	5.1	1.8	0.0	2.8	1.2	21.8	0.8	0.4	0.0	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	53.3	0.0	48.0	56.1	0.0	43.6	9.1	22.4	7.7	17.2	0.0	13.2
LnGrp LOS	D		D	E		D	A	C	A	B		B
Approach Vol, veh/h		301			164			1254			625	
Approach Delay, s/veh		50.1			48.1			19.9			13.4	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	84.0		27.2	10.8	82.0		27.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	5.5	57.5		40.5	5.5	57.5		40.5				
Max Q Clear Time (g_c+I1), s	2.8	51.6		20.2	5.3	22.8		20.8				
Green Ext Time (p_c), s	0.0	1.0		1.5	0.0	0.7		0.7				

Intersection Summary												
HCM 7th Control Delay, s/veh			24.0									
HCM 7th LOS			C									

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	42	67	11	7	2
Future Vol, veh/h	0	42	67	11	7	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	77	77	60	60
Heavy Vehicles, %	5	5	9	9	14	14
Mvmt Flow	0	50	87	14	12	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	101	0	-	0	144	94
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	50	-
Critical Hdwy	4.15	-	-	-	6.54	6.34
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	2.245	-	-	-	3.626	3.426
Pot Cap-1 Maneuver	1472	-	-	-	821	931
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1472	-	-	-	821	931
Mov Cap-2 Maneuver	-	-	-	-	821	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	9.35
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	-	-	843
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Control Delay (s/veh)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

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	0	54	0	12	87	34	0	0	12	20	0	2
Future Vol, veh/h	0	54	0	12	87	34	0	0	12	20	0	2
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	80	80	80	84	84	84	60	60	60	64	64	64
Heavy Vehicles, %	6	6	6	5	5	5	100	100	100	6	6	6
Mvmt Flow	0	68	0	14	104	40	0	0	20	31	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	144	0	0	68	0	0	200	240	68	220	220	124
Stage 1	-	-	-	-	-	-	68	68	-	152	152	-
Stage 2	-	-	-	-	-	-	132	173	-	68	68	-
Critical Hdwy	4.16	-	-	4.15	-	-	8.1	7.5	7.2	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	6.5	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.245	-	-	4.4	4.9	4.2	3.554	4.054	3.354
Pot Cap-1 Maneuver	1414	-	-	1515	-	-	588	522	779	728	672	916
Stage 1	-	-	-	-	-	-	746	681	-	841	764	-
Stage 2	-	-	-	-	-	-	683	604	-	933	831	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1414	-	-	1515	-	-	580	517	779	702	665	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	580	517	-	702	665	-
Stage 1	-	-	-	-	-	-	746	681	-	832	756	-
Stage 2	-	-	-	-	-	-	673	597	-	909	831	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.67	9.74	10.27
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	779	1414	-	-	154	-	-	717
HCM Lane V/C Ratio	0.026	-	-	-	0.009	-	-	0.048
HCM Control Delay (s/veh)	9.7	0	-	-	7.4	0	-	10.3
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

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	0	85	4	94	125	12	6	0	127	7	0	0
Future Vol, veh/h	0	85	4	94	125	12	6	0	127	7	0	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	100	89	89	60	60	60	60	60	60	60	60	60
Heavy Vehicles, %	4	4	4	5	5	5	0	0	0	17	17	17
Mvmt Flow	0	96	4	157	208	20	10	0	212	12	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	228	0	0	100	0	0	619	639	98	627	632	218
Stage 1	-	-	-	-	-	-	98	98	-	532	532	-
Stage 2	-	-	-	-	-	-	522	542	-	96	100	-
Critical Hdwy	4.14	-	-	4.15	-	-	7.1	6.5	6.2	7.27	6.67	6.37
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.27	5.67	-
Follow-up Hdwy	2.236	-	-	2.245	-	-	3.5	4	3.3	3.653	4.153	3.453
Pot Cap-1 Maneuver	1328	-	-	1474	-	-	404	396	964	375	379	785
Stage 1	-	-	-	-	-	-	914	818	-	505	502	-
Stage 2	-	-	-	-	-	-	542	524	-	876	784	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1328	-	-	1474	-	-	354	348	964	257	333	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	348	-	257	333	-
Stage 1	-	-	-	-	-	-	914	818	-	443	441	-
Stage 2	-	-	-	-	-	-	476	460	-	683	784	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	3.15	10.35	19.66
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	894	1328	-	-	720	-	-	257
HCM Lane V/C Ratio	0.248	-	-	-	0.106	-	-	0.045
HCM Control Delay (s/veh)	10.3	0	-	-	7.7	0	-	19.7
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1	0	-	-	0.4	-	-	0.1

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	3	5	12	2	3	7	1084	23	5	624	7
Future Vol, veh/h	9	3	5	12	2	3	7	1084	23	5	624	7
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	-	60	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	60	60	60	87	87	87	95	95	95
Heavy Vehicles, %	0	0	0	7	7	7	1	1	1	4	4	4
Mvmt Flow	15	5	8	20	3	5	8	1246	26	5	657	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1935	1960	661	1932	1937	1246	664	0	0	1272	0	0
Stage 1	671	671	-	1262	1262	-	-	-	-	-	-	-
Stage 2	1264	1289	-	670	675	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	4.11	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	2.209	-	-	2.236	-	-
Pot Cap-1 Maneuver	50	64	466	48	64	207	930	-	-	539	-	-
Stage 1	449	458	-	203	236	-	-	-	-	-	-	-
Stage 2	210	236	-	438	446	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	46	63	466	43	62	207	930	-	-	539	-	-
Mov Cap-2 Maneuver	46	63	-	43	62	-	-	-	-	-	-	-
Stage 1	445	454	-	202	234	-	-	-	-	-	-	-
Stage 2	200	234	-	422	441	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	94.44	136.74	0.06	0.09
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	930	-	-	67	52	539	-	-
HCM Lane V/C Ratio	0.009	-	-	0.426	0.543	0.01	-	-
HCM Control Delay (s/veh)	8.9	-	-	94.4	136.7	11.7	-	-
HCM Lane LOS	A	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.7	2.1	0	-	-

APPENDIX C

SIMTRAFFIC 11 SOFTWARE OUTPUT

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1619	1619	1646	1571	1624	1615
Vehs Exited	1613	1619	1652	1574	1610	1613
Starting Vehs	35	42	43	42	33	34
Ending Vehs	41	42	37	39	47	41
Travel Distance (mi)	848	839	857	830	843	843
Travel Time (hr)	41.0	41.4	41.6	40.2	40.6	41.0
Total Delay (hr)	11.4	12.1	11.8	11.2	11.4	11.6
Total Stops	967	1026	1000	917	1000	984
Fuel Used (gal)	30.0	30.0	30.5	29.5	29.8	30.0

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	374	368	381	358	374	369
Vehs Exited	373	376	387	357	374	373
Starting Vehs	35	42	43	42	33	34
Ending Vehs	36	34	37	43	33	33
Travel Distance (mi)	196	199	204	195	195	198
Travel Time (hr)	9.1	9.6	9.8	9.3	9.5	9.5
Total Delay (hr)	2.3	2.7	2.7	2.5	2.7	2.6
Total Stops	192	225	226	199	233	215
Fuel Used (gal)	6.8	7.1	7.2	6.9	6.9	7.0

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	504	495	503	469	463	485
Vehs Exited	498	480	498	462	450	479
Starting Vehs	36	34	37	43	33	33
Ending Vehs	42	49	42	50	46	43
Travel Distance (mi)	257	243	249	239	232	244
Travel Time (hr)	13.1	12.4	13.2	12.1	11.2	12.4
Total Delay (hr)	4.1	3.9	4.5	3.8	3.1	3.9
Total Stops	329	333	364	299	287	321
Fuel Used (gal)	9.3	8.8	9.1	8.6	8.2	8.8

Interval #3 Information Recording

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	741	756	762	744	787	757
Vehs Exited	742	763	767	755	786	765
Starting Vehs	42	49	42	50	46	43
Ending Vehs	41	42	37	39	47	41
Travel Distance (mi)	395	397	404	396	416	402
Travel Time (hr)	18.8	19.3	18.5	18.7	20.0	19.1
Total Delay (hr)	5.0	5.4	4.6	4.9	5.6	5.1
Total Stops	446	468	410	419	480	445
Fuel Used (gal)	14.0	14.2	14.1	14.0	14.8	14.2

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	54	170	109	53	76	210	184	573
Average Queue (ft)	10	69	48	15	21	98	29	310
95th Queue (ft)	37	132	96	43	57	177	107	482
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)		2	0		1	11		20
Queuing Penalty (veh)		0	0		2	3		6

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	56
Average Queue (ft)	9
95th Queue (ft)	37
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	44
Average Queue (ft)	22
95th Queue (ft)	46
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	7
95th Queue (ft)	27
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Theodore & Wixom Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	R	L	TR
Maximum Queue (ft)	103	82	54	12	25	12
Average Queue (ft)	37	24	17	0	3	1
95th Queue (ft)	74	59	47	9	18	8
Link Distance (ft)	289	284				1183
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			100	60	100	
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 16: School South Dwy

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	114	64	23
Average Queue (ft)	39	19	1
95th Queue (ft)	82	51	14
Link Distance (ft)	205		173
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 18: School N Dwy

Movement	NB
Directions Served	L
Maximum Queue (ft)	30
Average Queue (ft)	2
95th Queue (ft)	13
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	50
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Network Summary

Network wide Queuing Penalty: 12

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1908	1970	1953	1916	2053	1961
Vehs Exited	1913	1971	1965	1889	2051	1958
Starting Vehs	47	55	49	29	43	42
Ending Vehs	42	54	37	56	45	43
Travel Distance (mi)	989	1003	1017	986	1062	1012
Travel Time (hr)	57.2	54.4	54.0	51.3	76.5	58.7
Total Delay (hr)	22.8	19.7	18.8	17.0	39.6	23.6
Total Stops	1533	1443	1401	1295	2092	1554
Fuel Used (gal)	36.4	36.8	36.8	35.4	43.5	37.8

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	445	476	472	454	453	455
Vehs Exited	451	489	462	435	438	453
Starting Vehs	47	55	49	29	43	42
Ending Vehs	41	42	59	48	58	46
Travel Distance (mi)	233	250	245	234	235	240
Travel Time (hr)	10.8	12.2	11.4	11.5	11.9	11.6
Total Delay (hr)	2.7	3.6	3.0	3.4	3.7	3.3
Total Stops	250	295	229	271	292	263
Fuel Used (gal)	8.0	9.0	8.6	8.2	8.4	8.4

Interval #2 Information

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	547	565	574	521	618	565
Vehs Exited	506	529	559	497	567	533
Starting Vehs	41	42	59	48	58	46
Ending Vehs	82	78	74	72	109	77
Travel Distance (mi)	267	272	294	259	303	279
Travel Time (hr)	14.2	16.7	18.8	14.7	24.8	17.9
Total Delay (hr)	5.0	7.3	8.6	5.7	14.3	8.2
Total Stops	354	514	601	418	702	518
Fuel Used (gal)	9.5	10.4	11.3	9.6	13.0	10.7

Interval #3 Information Recording

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	916	929	907	941	982	935
Vehs Exited	956	953	944	957	1046	971
Starting Vehs	82	78	74	72	109	77
Ending Vehs	42	54	37	56	45	43
Travel Distance (mi)	490	481	477	493	525	493
Travel Time (hr)	32.1	25.5	23.8	25.1	39.8	29.3
Total Delay (hr)	15.1	8.8	7.3	8.0	21.6	12.1
Total Stops	929	634	571	606	1098	769
Fuel Used (gal)	18.9	17.4	16.9	17.6	22.1	18.6

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	70	149	122	130	99	1136	125	280
Average Queue (ft)	16	39	38	48	36	564	32	172
95th Queue (ft)	50	94	85	104	88	1098	86	259
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						5		
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)		0	0	0	0	34		7
Queuing Penalty (veh)		0	0	0	5	22		2

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	49
Average Queue (ft)	6
95th Queue (ft)	30
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	59
Average Queue (ft)	16
95th Queue (ft)	45
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	49
Average Queue (ft)	7
95th Queue (ft)	31
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Theodore & Wixom Rd

Movement	EB	WB	NB	NB	NB	SB
Directions Served	LTR	LTR	L	T	R	L
Maximum Queue (ft)	174	52	54	123	17	25
Average Queue (ft)	50	13	11	17	1	4
95th Queue (ft)	130	39	47	122	18	20
Link Distance (ft)	289	284		260		
Upstream Blk Time (%)				1		
Queuing Penalty (veh)				5		
Storage Bay Dist (ft)			100		60	100
Storage Blk Time (%)				3	0	
Queuing Penalty (veh)				1	0	

Intersection: 16: School South Dwy

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	182	48	53	4
Average Queue (ft)	69	12	5	0
95th Queue (ft)	166	39	53	3
Link Distance (ft)	205		252	173
Upstream Blk Time (%)	8		0	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		100		
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 18: School North Dwy

Movement	EB	NB	NB
Directions Served	LR	L	T
Maximum Queue (ft)	12	24	37
Average Queue (ft)	1	3	9
95th Queue (ft)	9	17	70
Link Distance (ft)	180		173
Upstream Blk Time (%)			0
Queuing Penalty (veh)			3
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	2
Queuing Penalty (veh)		0	0

Network Summary

Network wide Queuing Penalty: 43

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1626	1750	1607	1674	1667	1664
Vehs Exited	1621	1764	1610	1677	1683	1670
Starting Vehs	41	55	47	44	52	44
Ending Vehs	46	41	44	41	36	37
Travel Distance (mi)	844	922	833	880	872	870
Travel Time (hr)	39.9	45.7	39.8	42.6	43.5	42.3
Total Delay (hr)	10.4	13.5	10.7	11.9	13.0	11.9
Total Stops	957	1099	977	1041	1045	1025
Fuel Used (gal)	29.6	32.8	29.4	31.0	31.4	30.9

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	373	438	365	356	367	377
Vehs Exited	371	447	375	362	374	384
Starting Vehs	41	55	47	44	52	44
Ending Vehs	43	46	37	38	45	39
Travel Distance (mi)	188	236	196	189	199	202
Travel Time (hr)	8.9	12.1	9.3	8.8	9.7	9.8
Total Delay (hr)	2.3	3.9	2.5	2.2	2.7	2.7
Total Stops	212	284	209	210	205	225
Fuel Used (gal)	6.6	8.5	6.8	6.6	7.0	7.1

Interval #2 Information

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	470	501	468	498	513	487
Vehs Exited	476	494	460	482	497	483
Starting Vehs	43	46	37	38	45	39
Ending Vehs	37	53	45	54	61	51
Travel Distance (mi)	236	255	236	252	255	247
Travel Time (hr)	11.2	12.7	11.8	12.9	13.1	12.4
Total Delay (hr)	2.9	3.8	3.5	4.1	4.2	3.7
Total Stops	292	332	332	351	362	331
Fuel Used (gal)	8.4	9.2	8.6	9.1	9.3	8.9

Interval #3 Information Recording

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	783	811	774	820	787	795
Vehs Exited	774	823	775	833	812	803
Starting Vehs	37	53	45	54	61	51
Ending Vehs	46	41	44	41	36	37
Travel Distance (mi)	420	431	401	439	418	422
Travel Time (hr)	19.8	20.9	18.7	20.9	20.7	20.2
Total Delay (hr)	5.2	5.9	4.8	5.6	6.1	5.5
Total Stops	453	483	436	480	478	464
Fuel Used (gal)	14.6	15.1	14.0	15.4	15.2	14.8

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	79	162	128	83	89	224	158	498
Average Queue (ft)	13	71	49	16	25	110	27	304
95th Queue (ft)	49	131	103	57	67	189	102	444
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)		2	1		2	13		21
Queuing Penalty (veh)		0	0		7	3		7

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	72
Average Queue (ft)	13
95th Queue (ft)	47
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	44
Average Queue (ft)	26
95th Queue (ft)	45
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	35
Average Queue (ft)	10
95th Queue (ft)	34
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	TR
Maximum Queue (ft)	113	92	50	12	13
Average Queue (ft)	40	24	15	1	0
95th Queue (ft)	85	61	44	8	4
Link Distance (ft)	289	284			1183
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100	100	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 16: Wixom Rd & School South Dwy

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	81	58	4
Average Queue (ft)	34	17	0
95th Queue (ft)	68	46	3
Link Distance (ft)	205		173
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		100	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 18: Wixom Rd & School N Dwy

Movement	NB
Directions Served	L
Maximum Queue (ft)	30
Average Queue (ft)	4
95th Queue (ft)	21
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	50
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Network Summary

Network wide Queuing Penalty: 17

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	2011	1980	1956	2012	1980	1987
Vehs Exited	2037	1968	1967	2027	1976	1996
Starting Vehs	74	32	60	64	35	50
Ending Vehs	48	44	49	49	39	41
Travel Distance (mi)	1042	1032	1018	1045	1030	1033
Travel Time (hr)	66.6	51.7	52.1	57.2	57.0	56.9
Total Delay (hr)	30.5	16.0	16.7	21.0	21.3	21.1
Total Stops	1881	1228	1266	1471	1486	1468
Fuel Used (gal)	40.5	36.9	36.4	38.6	37.9	38.1

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	500	502	469	463	472	480
Vehs Exited	522	496	495	469	447	485
Starting Vehs	74	32	60	64	35	50
Ending Vehs	52	38	34	58	60	47
Travel Distance (mi)	270	265	253	247	240	255
Travel Time (hr)	18.2	13.4	12.6	12.9	12.1	13.8
Total Delay (hr)	8.9	4.3	3.8	4.4	3.7	5.0
Total Stops	555	313	285	296	282	346
Fuel Used (gal)	10.8	9.5	9.1	9.1	8.5	9.4

Interval #2 Information

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	572	511	552	575	575	556
Vehs Exited	555	493	532	562	558	541
Starting Vehs	52	38	34	58	60	47
Ending Vehs	69	56	54	71	77	62
Travel Distance (mi)	282	259	275	293	289	280
Travel Time (hr)	19.3	12.9	15.3	16.4	17.1	16.2
Total Delay (hr)	9.5	3.9	5.7	6.3	7.1	6.5
Total Stops	553	341	418	456	484	450
Fuel Used (gal)	11.3	9.2	10.1	10.8	10.8	10.5

Interval #3 Information Recording

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	939	967	935	974	933	947
Vehs Exited	960	979	940	996	971	972
Starting Vehs	69	56	54	71	77	62
Ending Vehs	48	44	49	49	39	41
Travel Distance (mi)	490	507	490	506	501	499
Travel Time (hr)	29.2	25.4	24.2	27.9	27.8	26.9
Total Delay (hr)	12.2	7.8	7.3	10.3	10.5	9.6
Total Stops	773	574	563	719	720	666
Fuel Used (gal)	18.4	18.2	17.2	18.7	18.5	18.2

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	85	86	115	162	100	961	158	296
Average Queue (ft)	16	34	40	54	36	559	36	180
95th Queue (ft)	52	72	92	115	89	945	105	276
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						2		
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	0		0	1	1	35	1	7
Queuing Penalty (veh)	0		0	0	6	23	5	2

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	48
Average Queue (ft)	9
95th Queue (ft)	35
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	59
Average Queue (ft)	13
95th Queue (ft)	42
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	38
Average Queue (ft)	5
95th Queue (ft)	25
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	NB	SB
Directions Served	LTR	LTR	L	T	R	L
Maximum Queue (ft)	104	55	54	60	24	30
Average Queue (ft)	37	12	8	6	1	4
95th Queue (ft)	85	40	34	58	12	20
Link Distance (ft)	289	284		260		
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)			100		60	100
Storage Blk Time (%)				1	0	
Queuing Penalty (veh)				0	0	

Intersection: 16: Wixom Rd & School South Dwy

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	153	36	6	22
Average Queue (ft)	64	12	0	1
95th Queue (ft)	132	36	4	13
Link Distance (ft)	205		252	173
Upstream Blk Time (%)	2			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)		100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Wixom Rd & School North Dwy

Movement	EB	NB	NB
Directions Served	LR	L	T
Maximum Queue (ft)	30	30	39
Average Queue (ft)	3	4	1
95th Queue (ft)	18	20	22
Link Distance (ft)	180		173
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	0
Queuing Penalty (veh)		0	0

Network Summary

Network wide Queuing Penalty: 39

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1880	1846	1844	1869	1846	1856
Vehs Exited	1869	1846	1857	1858	1823	1849
Starting Vehs	49	42	53	50	36	44
Ending Vehs	60	42	40	61	59	48
Travel Distance (mi)	987	955	969	977	957	969
Travel Time (hr)	50.6	48.9	48.9	51.0	55.5	51.0
Total Delay (hr)	16.2	15.7	15.3	17.0	21.9	17.2
Total Stops	1236	1221	1204	1246	1263	1231
Fuel Used (gal)	35.7	35.0	34.8	35.4	36.2	35.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	409	445	455	470	408	436
Vehs Exited	418	435	455	466	392	433
Starting Vehs	49	42	53	50	36	44
Ending Vehs	40	52	53	54	52	48
Travel Distance (mi)	221	231	243	251	206	230
Travel Time (hr)	10.9	11.1	12.0	13.9	10.3	11.6
Total Delay (hr)	3.2	3.1	3.7	5.2	3.1	3.6
Total Stops	286	267	280	337	252	288
Fuel Used (gal)	7.9	8.2	8.6	9.3	7.2	8.3

Interval #2 Information Peak

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	578	541	546	504	575	549
Vehs Exited	563	544	530	499	559	540
Starting Vehs	40	52	53	54	52	48
Ending Vehs	55	49	69	59	68	57
Travel Distance (mi)	285	279	273	256	289	276
Travel Time (hr)	15.7	15.2	14.7	13.0	21.2	16.0
Total Delay (hr)	5.7	5.5	5.1	4.1	11.0	6.3
Total Stops	393	397	397	340	471	400
Fuel Used (gal)	10.6	10.5	10.1	9.2	12.0	10.5

Interval #3 Information Post

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	893	860	843	895	863	869
Vehs Exited	888	867	872	893	872	880
Starting Vehs	55	49	69	59	68	57
Ending Vehs	60	42	40	61	59	48
Travel Distance (mi)	480	446	453	470	463	462
Travel Time (hr)	24.0	22.6	22.2	24.1	24.0	23.4
Total Delay (hr)	7.3	7.1	6.5	7.7	7.8	7.3
Total Stops	557	557	527	569	540	548
Fuel Used (gal)	17.2	16.3	16.1	16.9	17.0	16.7

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	71	187	132	58	94	314	185	655
Average Queue (ft)	16	84	56	17	29	148	33	371
95th Queue (ft)	50	156	111	49	73	257	116	573
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)								0
Queuing Penalty (veh)								0
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)		4	0		3	17		25
Queuing Penalty (veh)		1	0		11	5		9

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	67
Average Queue (ft)	17
95th Queue (ft)	53
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	48
Average Queue (ft)	25
95th Queue (ft)	47
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	35
Average Queue (ft)	10
95th Queue (ft)	33
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Theodore & Wixom Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	R	L	TR
Maximum Queue (ft)	160	164	50	12	30	13
Average Queue (ft)	48	42	15	0	1	1
95th Queue (ft)	115	133	44	9	12	8
Link Distance (ft)	289	284				1183
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (ft)			100	60	100	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 16: School South Dwy

Movement	EB	NB	SB
Directions Served	LR	L	TR
Maximum Queue (ft)	150	82	4
Average Queue (ft)	53	27	0
95th Queue (ft)	134	64	6
Link Distance (ft)	205		173
Upstream Blk Time (%)	3		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)		100	
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 18: School N Dwy

Movement	NB
Directions Served	L
Maximum Queue (ft)	24
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	50
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Network Summary

Network wide Queuing Penalty: 25

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	2150	2242	2200	2201	2225	2201
Vehs Exited	2128	2200	2214	2180	2159	2179
Starting Vehs	84	49	73	76	48	63
Ending Vehs	106	91	59	97	114	89
Travel Distance (mi)	1122	1157	1144	1143	1156	1144
Travel Time (hr)	149.6	105.6	105.4	111.6	108.1	116.1
Total Delay (hr)	110.7	65.5	65.8	71.9	68.2	76.4
Total Stops	3609	2842	2930	3120	2996	3099
Fuel Used (gal)	61.4	52.4	52.0	52.9	52.8	54.3

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	530	524	534	507	525	522
Vehs Exited	529	522	528	505	514	521
Starting Vehs	84	49	73	76	48	63
Ending Vehs	85	51	79	78	59	68
Travel Distance (mi)	278	279	279	268	278	276
Travel Time (hr)	21.7	14.9	20.3	17.9	14.6	17.9
Total Delay (hr)	12.2	5.2	10.6	8.6	4.9	8.3
Total Stops	714	376	630	523	364	521
Fuel Used (gal)	11.5	10.2	11.4	10.5	10.1	10.7

Interval #2 Information Peak

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	582	638	599	605	635	610
Vehs Exited	543	565	543	563	578	560
Starting Vehs	85	51	79	78	59	68
Ending Vehs	124	124	135	120	116	119
Travel Distance (mi)	292	306	292	294	306	298
Travel Time (hr)	36.2	26.0	28.4	24.9	23.3	27.8
Total Delay (hr)	26.0	15.4	18.3	14.7	12.6	17.4
Total Stops	1053	800	993	797	727	873
Fuel Used (gal)	15.4	13.3	13.6	12.6	12.6	13.5

Interval #3 Information Post

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1038	1080	1067	1089	1065	1064
Vehs Exited	1056	1113	1143	1112	1067	1097
Starting Vehs	124	124	135	120	116	119
Ending Vehs	106	91	59	97	114	89
Travel Distance (mi)	552	572	574	581	571	570
Travel Time (hr)	91.6	64.7	56.7	68.8	70.2	70.4
Total Delay (hr)	72.6	44.9	36.8	48.7	50.6	50.7
Total Stops	1842	1666	1307	1800	1905	1703
Fuel Used (gal)	34.5	29.0	27.0	29.8	30.1	30.1

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	122	164	131	175	100	1193	109	369
Average Queue (ft)	18	49	45	66	48	1058	41	199
95th Queue (ft)	64	113	95	135	105	1446	98	315
Link Distance (ft)		762		1004		1183		835
Upstream Blk Time (%)						5		
Queuing Penalty (veh)						57		
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	0	1	0	1	2	38		10
Queuing Penalty (veh)	0	0	0	1	21	27		3

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	39
Average Queue (ft)	9
95th Queue (ft)	33
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Maple Rd & Hedigham Blvd

Movement	SB
Directions Served	LR
Maximum Queue (ft)	62
Average Queue (ft)	17
95th Queue (ft)	48
Link Distance (ft)	553
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Maple Rd & Castlewood Ct

Movement	SB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	9
95th Queue (ft)	35
Link Distance (ft)	559
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	304	132	125	269	85	30	4
Average Queue (ft)	209	49	23	155	12	3	0
95th Queue (ft)	383	133	91	353	59	18	3
Link Distance (ft)	289	284		260			1183
Upstream Blk Time (%)	56			4			
Queuing Penalty (veh)	0			43			
Storage Bay Dist (ft)			100		60	100	
Storage Blk Time (%)				27	0		
Queuing Penalty (veh)				13	0		

Intersection: 16: Wixom Rd & School South Dwy

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	235	124	274	13
Average Queue (ft)	149	23	86	0
95th Queue (ft)	269	73	273	5
Link Distance (ft)	205		252	173
Upstream Blk Time (%)	44		7	
Queuing Penalty (veh)	0		0	
Storage Bay Dist (ft)		100		
Storage Blk Time (%)			10	
Queuing Penalty (veh)			4	

Intersection: 18: Wixom Rd & School North Dwy

Movement	EB	NB	NB
Directions Served	LR	L	T
Maximum Queue (ft)	28	65	190
Average Queue (ft)	4	5	86
95th Queue (ft)	19	29	227
Link Distance (ft)	180		173
Upstream Blk Time (%)			3
Queuing Penalty (veh)			38
Storage Bay Dist (ft)		50	
Storage Blk Time (%)		0	17
Queuing Penalty (veh)		0	1

Network Summary

Network wide Queuing Penalty: 208

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1665	1694	1742	1679	1660	1688
Vehs Exited	1659	1683	1717	1686	1678	1683
Starting Vehs	38	32	37	41	52	37
Ending Vehs	44	43	62	34	34	40
Travel Distance (mi)	750	771	793	768	765	769
Travel Time (hr)	39.6	40.7	43.7	39.9	41.7	41.1
Total Delay (hr)	12.9	13.4	15.7	12.7	14.6	13.9
Total Stops	1207	1191	1278	1108	1183	1195
Fuel Used (gal)	27.9	28.6	29.8	28.2	28.8	28.7

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	392	433	403	397	381	401
Vehs Exited	381	425	402	404	397	401
Starting Vehs	38	32	37	41	52	37
Ending Vehs	49	40	38	34	36	36
Travel Distance (mi)	176	208	191	187	179	188
Travel Time (hr)	9.4	11.7	9.9	9.5	9.8	10.0
Total Delay (hr)	3.1	4.4	3.2	2.9	3.4	3.4
Total Stops	254	346	272	258	272	279
Fuel Used (gal)	6.6	7.8	7.0	6.9	6.8	7.0

Interval #2 Information Peak

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	530	491	529	484	498	507
Vehs Exited	534	486	502	482	477	498
Starting Vehs	49	40	38	34	36	36
Ending Vehs	45	45	65	36	57	47
Travel Distance (mi)	236	213	225	209	218	220
Travel Time (hr)	12.3	11.2	13.1	11.3	11.8	12.0
Total Delay (hr)	3.9	3.7	5.1	3.8	4.0	4.1
Total Stops	417	336	399	327	353	366
Fuel Used (gal)	8.8	8.0	8.6	7.8	8.2	8.3

Interval #3 Information Post

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	743	770	810	798	781	780
Vehs Exited	744	772	813	800	804	788
Starting Vehs	45	45	65	36	57	47
Ending Vehs	44	43	62	34	34	40
Travel Distance (mi)	337	351	377	372	367	361
Travel Time (hr)	17.9	17.8	20.7	19.2	20.1	19.1
Total Delay (hr)	6.0	5.3	7.4	6.1	7.2	6.4
Total Stops	536	509	607	523	558	546
Fuel Used (gal)	12.6	12.8	14.2	13.6	13.8	13.4

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	139	258	128	107	100	482	184	602
Average Queue (ft)	41	104	44	23	70	145	40	325
95th Queue (ft)	109	206	98	70	112	326	142	505
Link Distance (ft)		771		1004		1183		836
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	0	8	1		30	11		22
Queuing Penalty (veh)	0	4	0		84	10		7

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	62
Average Queue (ft)	15
95th Queue (ft)	49
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: School West Dwy/Hedigham Blvd & Maple Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	75	36
Average Queue (ft)	1	17	22
95th Queue (ft)	10	60	46
Link Distance (ft)	666	368	438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: School East Dwy/Castlewood Ct & Maple Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	4	79	70	31
Average Queue (ft)	0	22	34	9
95th Queue (ft)	3	62	58	32
Link Distance (ft)	666	771	375	409
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	SB
Directions Served	LTR	LTR	L	R	L
Maximum Queue (ft)	40	54	30	4	24
Average Queue (ft)	11	21	2	0	2
95th Queue (ft)	36	46	16	3	15
Link Distance (ft)	289	284			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			100	60	100
Storage Blk Time (%)					
Queuing Penalty (veh)					

Network Summary

Network wide Queuing Penalty: 106

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	2042	1999	2043	2035	1996	2023
Vehs Exited	2036	1996	2046	2028	1995	2020
Starting Vehs	35	43	52	37	46	41
Ending Vehs	41	46	49	44	47	42
Travel Distance (mi)	926	910	929	924	909	919
Travel Time (hr)	52.1	48.5	52.3	54.4	48.3	51.1
Total Delay (hr)	19.5	16.7	19.5	21.9	16.5	18.8
Total Stops	1651	1447	1605	1750	1470	1584
Fuel Used (gal)	35.1	33.5	34.6	35.3	33.4	34.4

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	459	484	470	474	426	462
Vehs Exited	451	494	489	463	424	465
Starting Vehs	35	43	52	37	46	41
Ending Vehs	43	33	33	48	48	39
Travel Distance (mi)	213	222	219	214	197	213
Travel Time (hr)	10.6	11.0	11.4	10.1	9.3	10.5
Total Delay (hr)	3.2	3.3	3.6	2.7	2.4	3.0
Total Stops	290	307	301	271	247	284
Fuel Used (gal)	7.8	8.1	8.0	7.6	7.0	7.7

Interval #2 Information Peak

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	621	602	610	591	609	605
Vehs Exited	594	570	566	560	594	576
Starting Vehs	43	33	33	48	48	39
Ending Vehs	70	65	77	79	63	67
Travel Distance (mi)	266	258	257	250	267	260
Travel Time (hr)	17.4	15.2	15.6	18.5	15.7	16.5
Total Delay (hr)	8.0	6.1	6.4	9.6	6.3	7.3
Total Stops	635	499	558	709	538	587
Fuel Used (gal)	10.7	9.8	9.7	10.3	10.1	10.1

Interval #3 Information Post

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	962	913	963	970	961	955
Vehs Exited	991	932	991	1005	977	980
Starting Vehs	70	65	77	79	63	67
Ending Vehs	41	46	49	44	47	42
Travel Distance (mi)	448	429	453	460	444	447
Travel Time (hr)	24.1	22.3	25.4	25.8	23.3	24.2
Total Delay (hr)	8.3	7.3	9.5	9.7	7.8	8.5
Total Stops	726	641	746	770	685	716
Fuel Used (gal)	16.6	15.6	16.9	17.4	16.4	16.6

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	140	226	109	141	100	1101	140	337
Average Queue (ft)	65	72	32	52	60	506	29	172
95th Queue (ft)	133	165	81	105	111	954	84	273
Link Distance (ft)		769		1004		1183		836
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						1		
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	2	2	0	0	5	33		7
Queuing Penalty (veh)	4	2	0	0	43	39		2

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	54
Average Queue (ft)	13
95th Queue (ft)	44
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: School West Dwy/Hedigham Blvd & Maple Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	12	29	67	50
Average Queue (ft)	1	1	18	17
95th Queue (ft)	8	12	61	44
Link Distance (ft)	1364	660	464	528
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: School East Dwy/Castlewood Ct & Maple Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	48	75	47
Average Queue (ft)	10	37	5
95th Queue (ft)	37	62	28
Link Distance (ft)	769	433	504
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	NB	SB
Directions Served	LTR	LTR	L	T	R	L
Maximum Queue (ft)	44	83	49	79	17	31
Average Queue (ft)	13	17	4	7	1	4
95th Queue (ft)	38	54	25	64	17	22
Link Distance (ft)	289	284		248		
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)			100		60	100
Storage Blk Time (%)				1		
Queuing Penalty (veh)				0		

Network Summary

Network wide Queuing Penalty: 92

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	6:50	6:50	6:50	6:50	6:50	6:50
End Time	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	1863	1832	1835	1880	1842	1849
Vehs Exited	1865	1847	1839	1866	1850	1855
Starting Vehs	49	51	39	38	49	38
Ending Vehs	47	36	35	52	41	39
Travel Distance (mi)	844	843	853	870	851	852
Travel Time (hr)	69.7	53.1	79.2	63.5	59.2	64.9
Total Delay (hr)	39.7	23.3	49.0	32.7	29.1	34.7
Total Stops	1703	1531	1719	1615	1620	1637
Fuel Used (gal)	37.3	33.7	39.7	36.2	35.3	36.4

Interval #0 Information Seeding

Start Time	6:50
End Time	7:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	7:00
End Time	7:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	434	453	431	437	391	427
Vehs Exited	440	453	414	434	404	430
Starting Vehs	49	51	39	38	49	38
Ending Vehs	43	51	56	41	36	44
Travel Distance (mi)	199	209	200	208	188	201
Travel Time (hr)	14.2	15.8	12.7	10.8	10.5	12.8
Total Delay (hr)	7.1	8.4	5.6	3.4	3.9	5.7
Total Stops	375	439	331	301	276	343
Fuel Used (gal)	8.2	9.0	7.9	7.7	7.1	8.0

Interval #2 Information Peak

Start Time	7:15
End Time	7:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	613	562	532	572	590	573
Vehs Exited	522	552	483	520	547	523
Starting Vehs	43	51	56	41	36	44
Ending Vehs	134	61	105	93	79	90
Travel Distance (mi)	236	247	218	240	254	239
Travel Time (hr)	23.0	15.9	22.0	19.6	16.6	19.4
Total Delay (hr)	14.5	7.1	14.2	11.0	7.6	10.9
Total Stops	595	516	505	504	565	536
Fuel Used (gal)	11.3	10.0	10.6	10.3	10.4	10.5

Interval #3 Information Post

Start Time	7:30
End Time	8:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	816	817	872	871	861	846
Vehs Exited	903	842	942	912	899	900
Starting Vehs	134	61	105	93	79	90
Ending Vehs	47	36	35	52	41	39
Travel Distance (mi)	409	387	434	421	409	412
Travel Time (hr)	32.5	21.4	44.5	33.1	32.0	32.7
Total Delay (hr)	18.1	7.7	29.2	18.3	17.6	18.2
Total Stops	733	576	883	810	779	755
Fuel Used (gal)	17.8	14.7	21.2	18.2	17.8	17.9

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	149	287	131	128	100	1086	185	745
Average Queue (ft)	51	118	54	25	88	563	42	396
95th Queue (ft)	129	225	113	78	120	1192	141	626
Link Distance (ft)		771		1004		1183		836
Upstream Blk Time (%)						7		1
Queuing Penalty (veh)						28		0
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	0	10	1	0	65	21		26
Queuing Penalty (veh)	1	6	0	0	207	18		9

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	74
Average Queue (ft)	17
95th Queue (ft)	53
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: School West Dwy/Hedigham Blvd & Maple Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	28	72	57
Average Queue (ft)	1	20	27
95th Queue (ft)	12	64	49
Link Distance (ft)	666	368	438
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: School East Dwy/Castlewood Ct & Maple Rd

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	4	103	66	31
Average Queue (ft)	0	26	35	11
95th Queue (ft)	3	75	59	35
Link Distance (ft)	666	771	375	409
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	R	L	TR
Maximum Queue (ft)	70	103	68	168	43	30	6
Average Queue (ft)	21	29	5	35	3	3	0
95th Queue (ft)	59	78	40	178	26	19	4
Link Distance (ft)	289	284		248			1183
Upstream Blk Time (%)				8			
Queuing Penalty (veh)				0			
Storage Bay Dist (ft)			100		60	100	
Storage Blk Time (%)				12	0		
Queuing Penalty (veh)				2	0		

Network Summary

Network wide Queuing Penalty: 272

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	3:50	3:50	3:50	3:50	3:50	3:50
End Time	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	4	4	4	4	4	4
# of Recorded Intervals	3	3	3	3	3	3
Vehs Entered	2230	2249	2230	2177	2164	2213
Vehs Exited	2182	2228	2210	2153	2136	2184
Starting Vehs	38	63	64	38	60	51
Ending Vehs	86	84	84	62	88	80
Travel Distance (mi)	1007	1016	1002	999	976	1000
Travel Time (hr)	98.8	82.2	98.8	80.2	90.5	90.1
Total Delay (hr)	63.4	46.6	63.7	45.3	56.4	55.1
Total Stops	2713	2665	2736	2419	2580	2625
Fuel Used (gal)	48.4	44.3	48.1	43.7	45.6	46.0

Interval #0 Information Seeding

Start Time	3:50
End Time	4:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Pre

Start Time	4:00
End Time	4:15
Total Time (min)	15

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	532	527	518	507	454	506
Vehs Exited	512	514	527	500	474	505
Starting Vehs	38	63	64	38	60	51
Ending Vehs	58	76	55	45	40	52
Travel Distance (mi)	240	242	237	236	220	235
Travel Time (hr)	13.4	15.3	14.3	11.3	12.3	13.3
Total Delay (hr)	5.0	6.8	6.0	3.1	4.6	5.1
Total Stops	384	500	446	307	354	396
Fuel Used (gal)	9.0	9.4	9.3	8.4	8.2	8.9

Interval #2 Information Post

Start Time	4:15
End Time	4:30
Total Time (min)	15

Volumes adjusted by PHF, Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	634	610	647	630	629	631
Vehs Exited	594	606	603	584	580	593
Starting Vehs	58	76	55	45	40	52
Ending Vehs	98	80	99	91	89	91
Travel Distance (mi)	270	268	271	269	264	268
Travel Time (hr)	22.4	18.6	26.4	20.5	21.9	22.0
Total Delay (hr)	12.9	9.1	16.8	11.1	12.6	12.5
Total Stops	803	681	781	621	749	731
Fuel Used (gal)	12.0	11.0	12.9	11.4	11.7	11.8

Interval #3 Information Peak

Start Time	4:30
End Time	5:00
Total Time (min)	30

Volumes adjusted by Growth Factors, Anti PHF.

Run Number	1	2	3	4	5	Avg
Vehs Entered	1064	1112	1065	1040	1081	1072
Vehs Exited	1076	1108	1080	1069	1082	1083
Starting Vehs	98	80	99	91	89	91
Ending Vehs	86	84	84	62	88	80
Travel Distance (mi)	497	505	495	494	492	497
Travel Time (hr)	63.0	48.3	58.0	48.4	56.3	54.8
Total Delay (hr)	45.6	30.7	40.8	31.0	39.2	37.5
Total Stops	1526	1484	1509	1491	1477	1497
Fuel Used (gal)	27.4	23.9	26.0	23.8	25.6	25.3

Intersection: 3: Wixom Rd & Maple Rd

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	145	207	114	151	100	1194	148	337
Average Queue (ft)	70	72	37	60	63	984	39	202
95th Queue (ft)	137	145	86	123	114	1489	99	304
Link Distance (ft)		769		1004		1183		836
Upstream Blk Time (%)						5		
Queuing Penalty (veh)						58		
Storage Bay Dist (ft)	125		130		75		160	
Storage Blk Time (%)	3	2	0	1	8	37		11
Queuing Penalty (veh)	4	2	0	0	75	46		3

Intersection: 6: Maple Rd & Millstream Dr

Movement	SB
Directions Served	LR
Maximum Queue (ft)	57
Average Queue (ft)	9
95th Queue (ft)	36
Link Distance (ft)	671
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: School West Dwy/Hedigham Blvd & Maple Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	6	94	40
Average Queue (ft)	0	21	14
95th Queue (ft)	4	69	40
Link Distance (ft)	660	464	528
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: School East Dwy/Castlewood Ct & Maple Rd

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	60	66	50
Average Queue (ft)	10	37	7
95th Queue (ft)	41	56	31
Link Distance (ft)	769	433	504
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Wixom Rd & Theodore

Movement	EB	WB	NB	NB	NB	SB
Directions Served	LTR	LTR	L	T	R	L
Maximum Queue (ft)	146	112	68	287	84	31
Average Queue (ft)	54	40	3	165	10	3
95th Queue (ft)	158	136	30	375	55	18
Link Distance (ft)	289	284		248		
Upstream Blk Time (%)				32		
Queuing Penalty (veh)				0		
Storage Bay Dist (ft)			100		60	100
Storage Blk Time (%)				30	0	
Queuing Penalty (veh)				9	0	

Network Summary

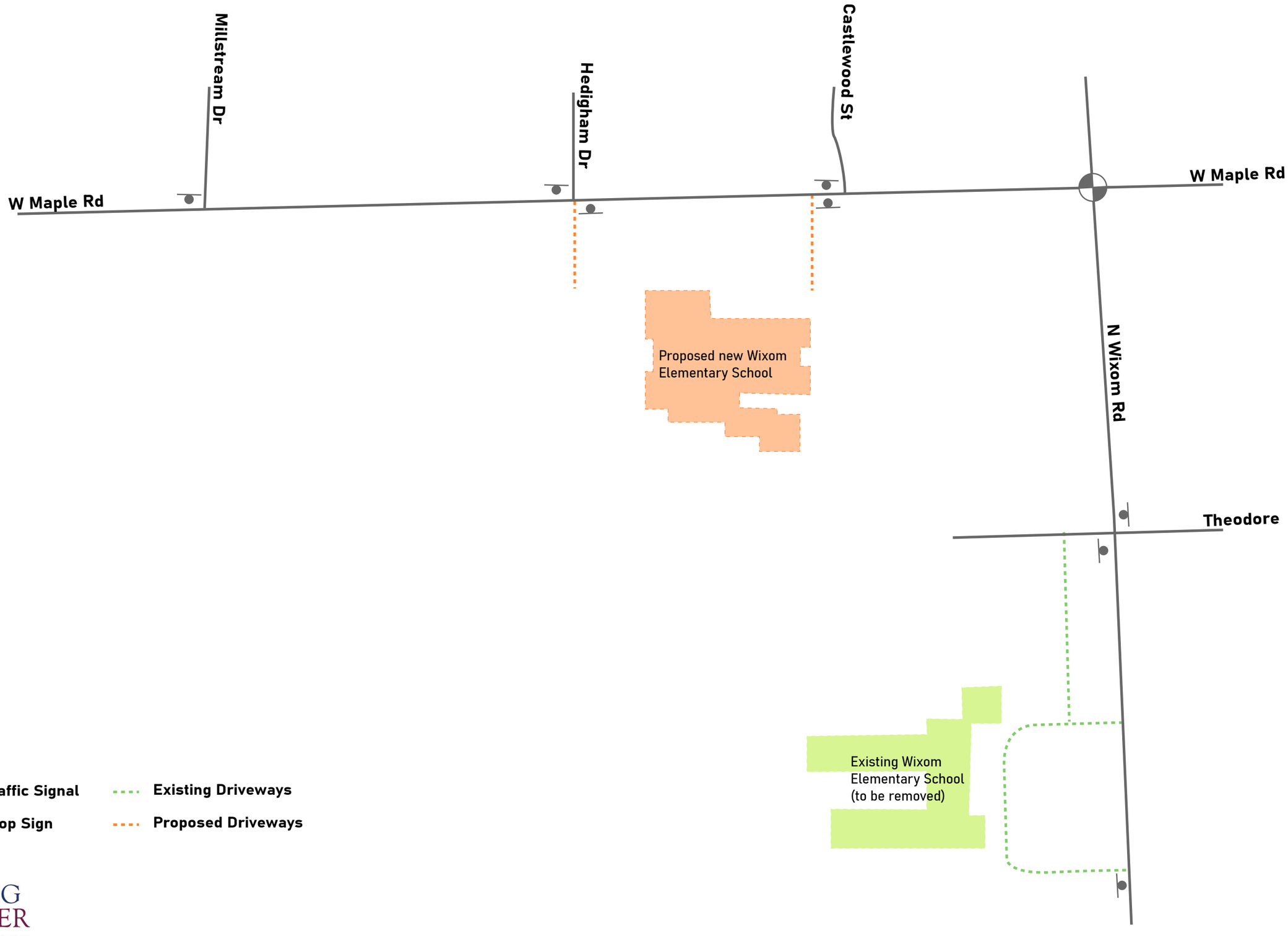
Network wide Queuing Penalty: 198

APPENDIX D

VOLUME DIAGRAMS

NETWORK MAP

FIGURE C-1



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

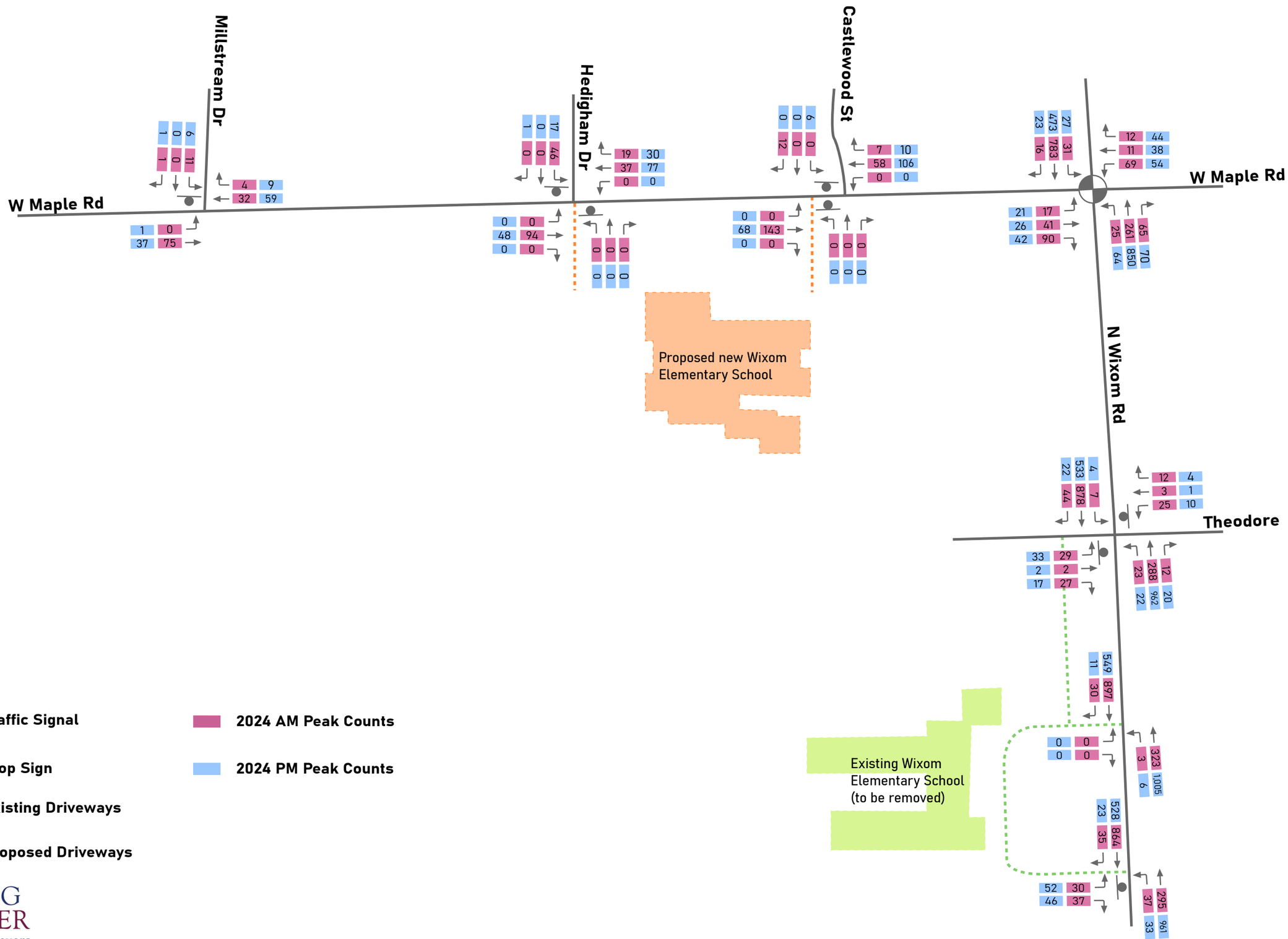
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

EXISTING AM AND PM P2024

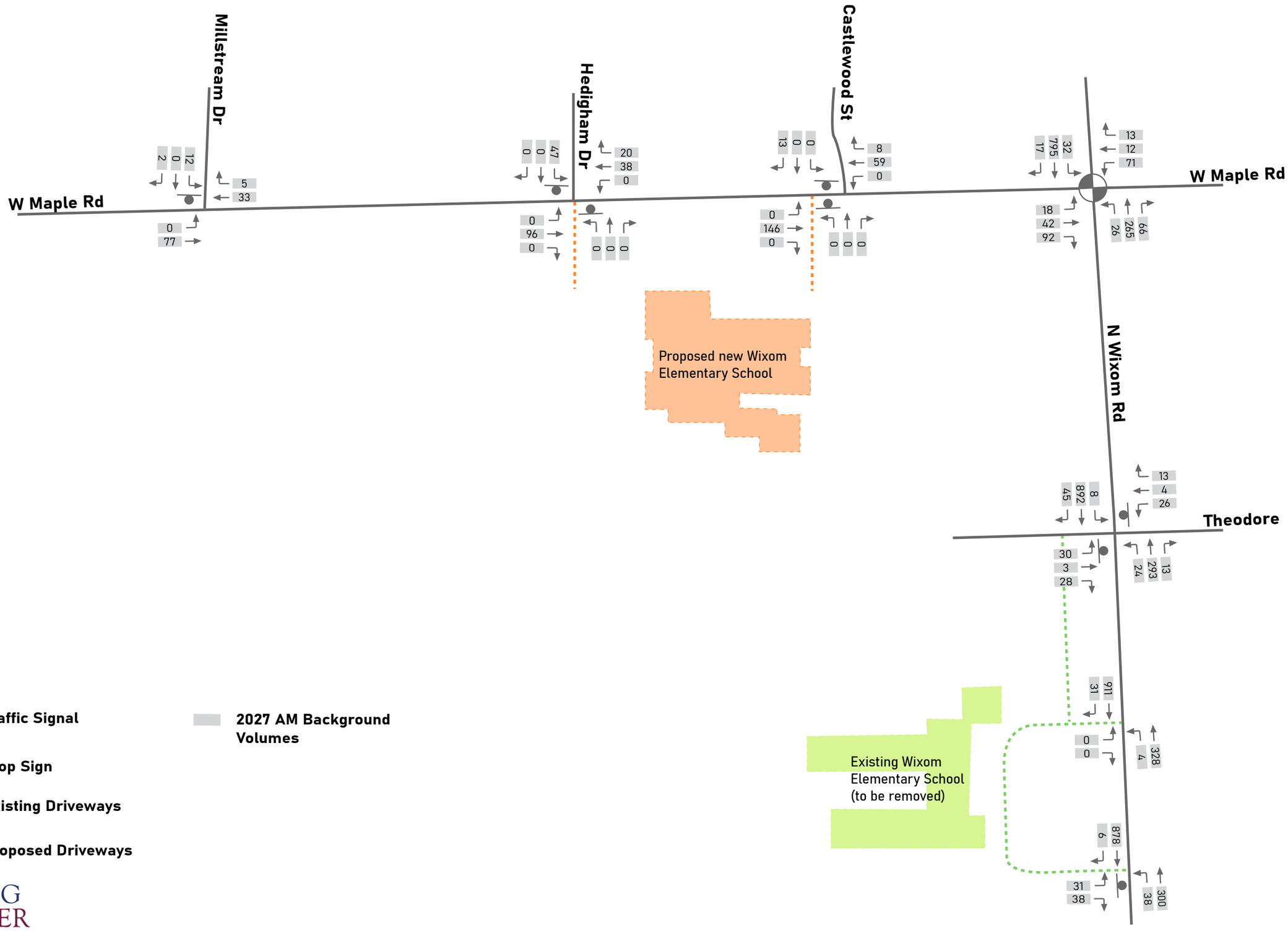
FIGURE C-2



SPALDING DEDECKER
Engineers | Planners | Surveyors
Landscape Architects

NO BUILD AM BACKGROUND 2027

FIGURE C-3



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2027 AM Background Volumes

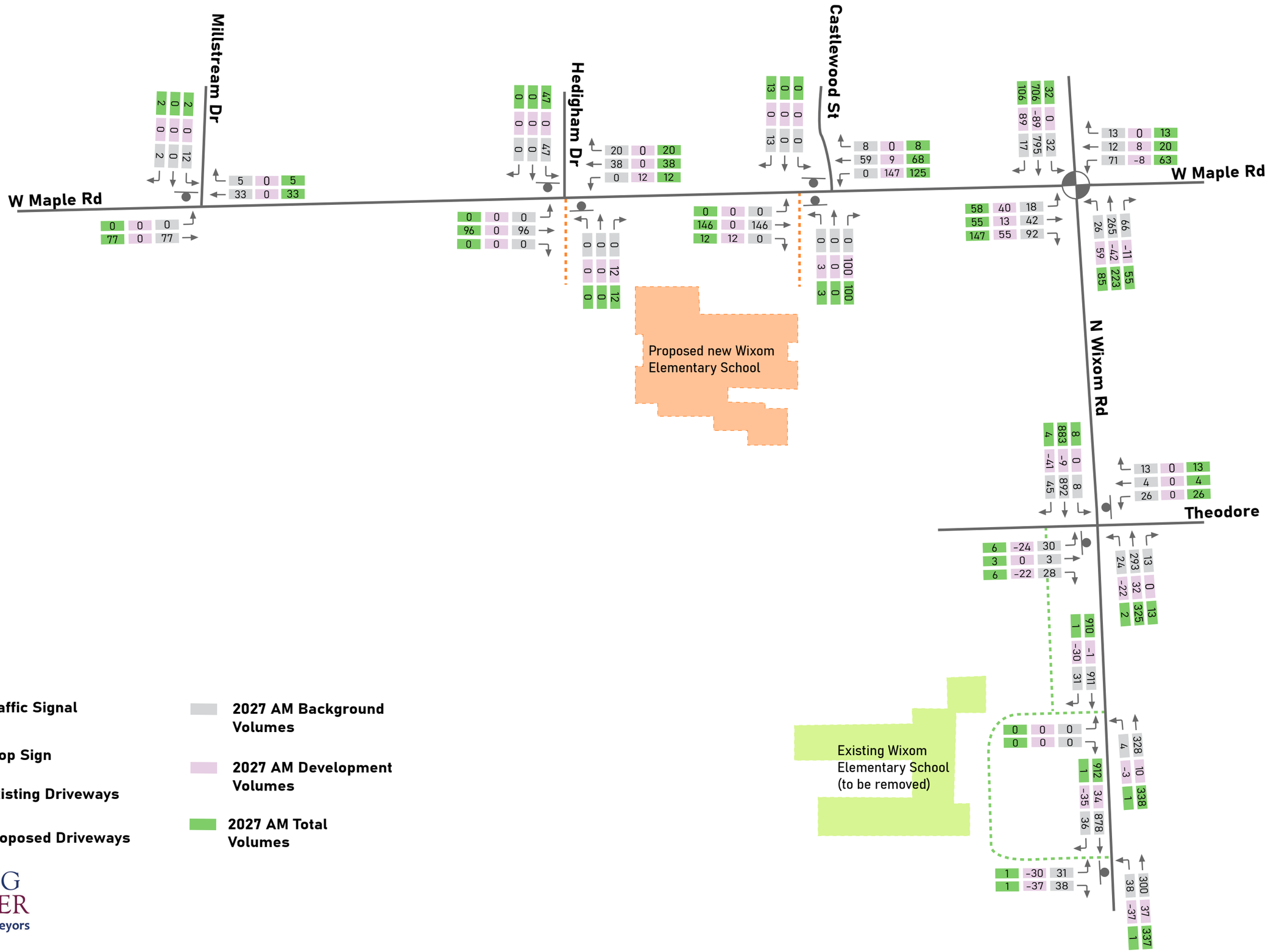
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

BUILD AM PEAK 2027

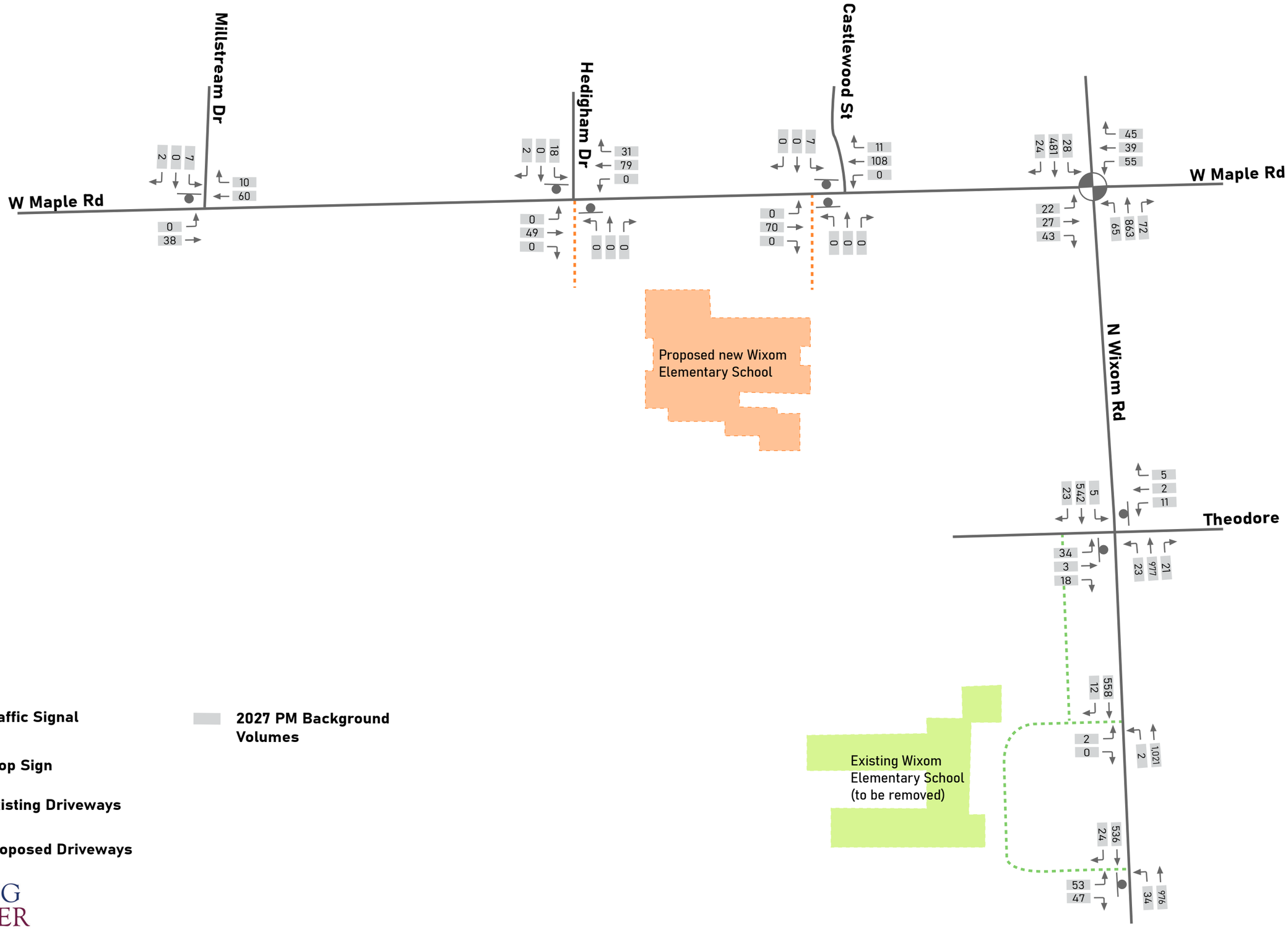
FIGURE C-4



SPALDING DEDECKER
Engineers | Planners | Surveyors
Landscape Architects

NO BUILD PM BACKGROUND 2027

FIGURE C-5



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2027 PM Background Volumes

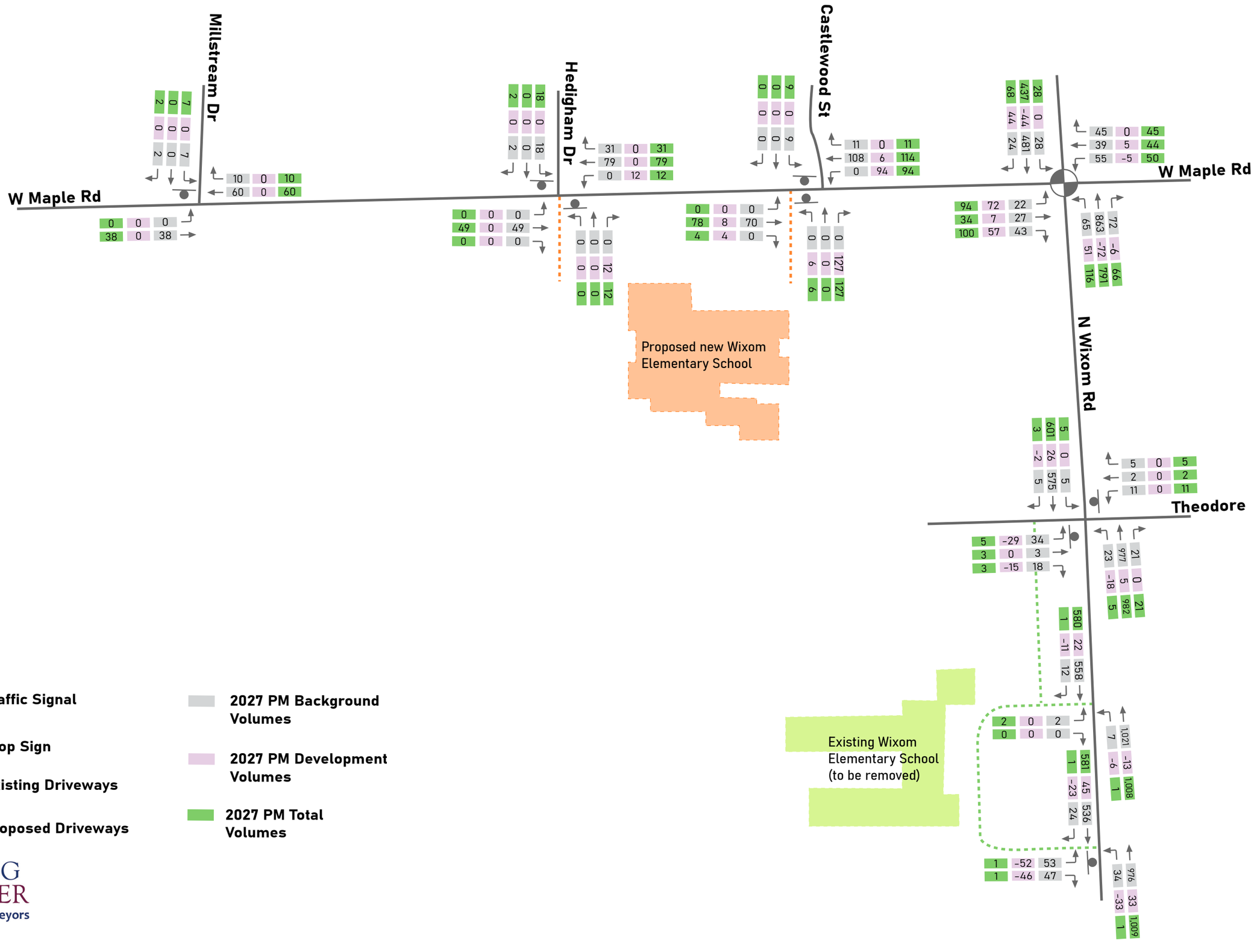
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

BUILD PM PEAK 2027

FIGURE C-6



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2027 PM Background Volumes

2027 PM Development Volumes

2027 PM Total Volumes

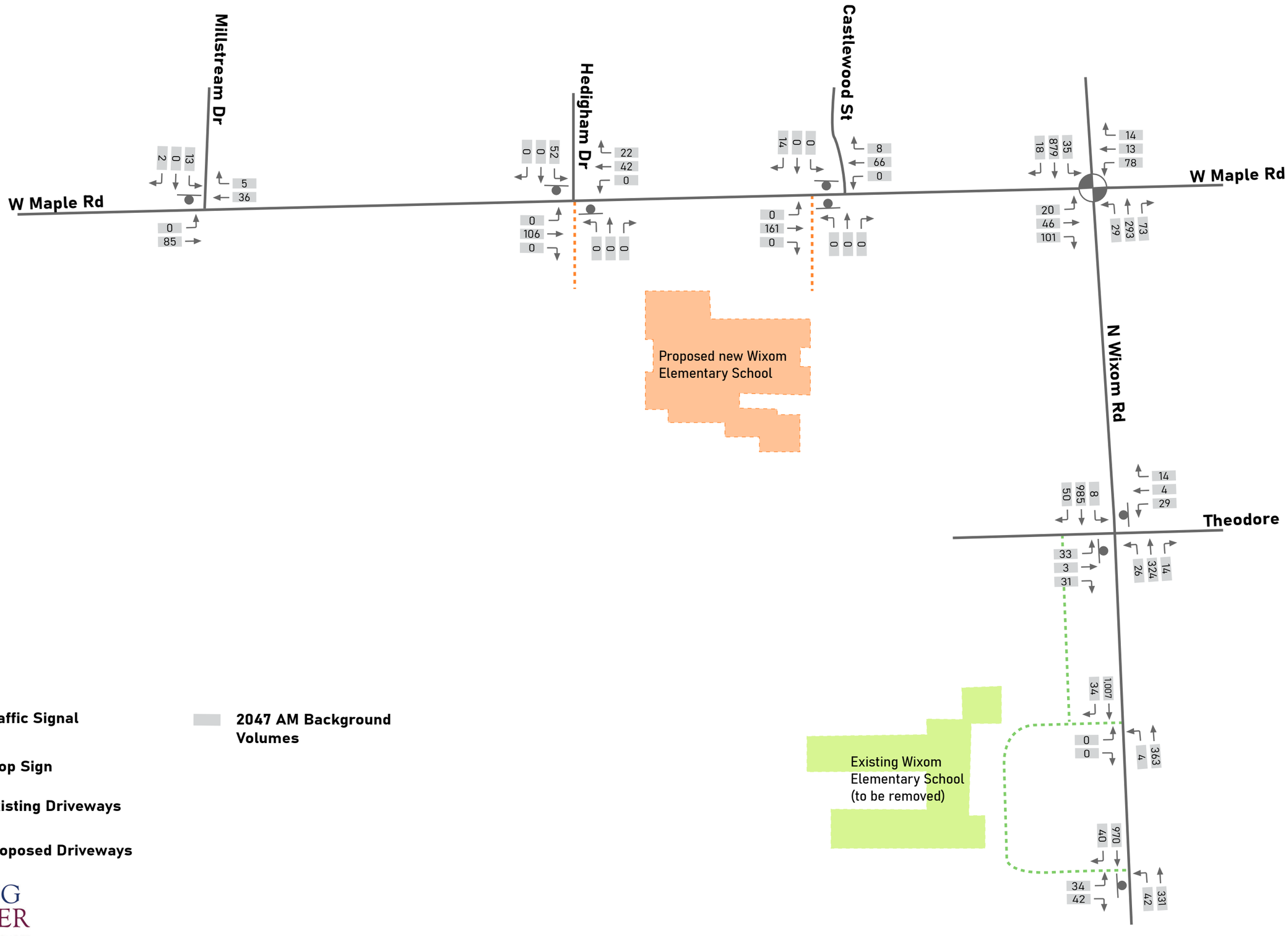
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

NO BUILD AM BACKGROUND 2047

FIGURE C-7



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2047 AM Background Volumes

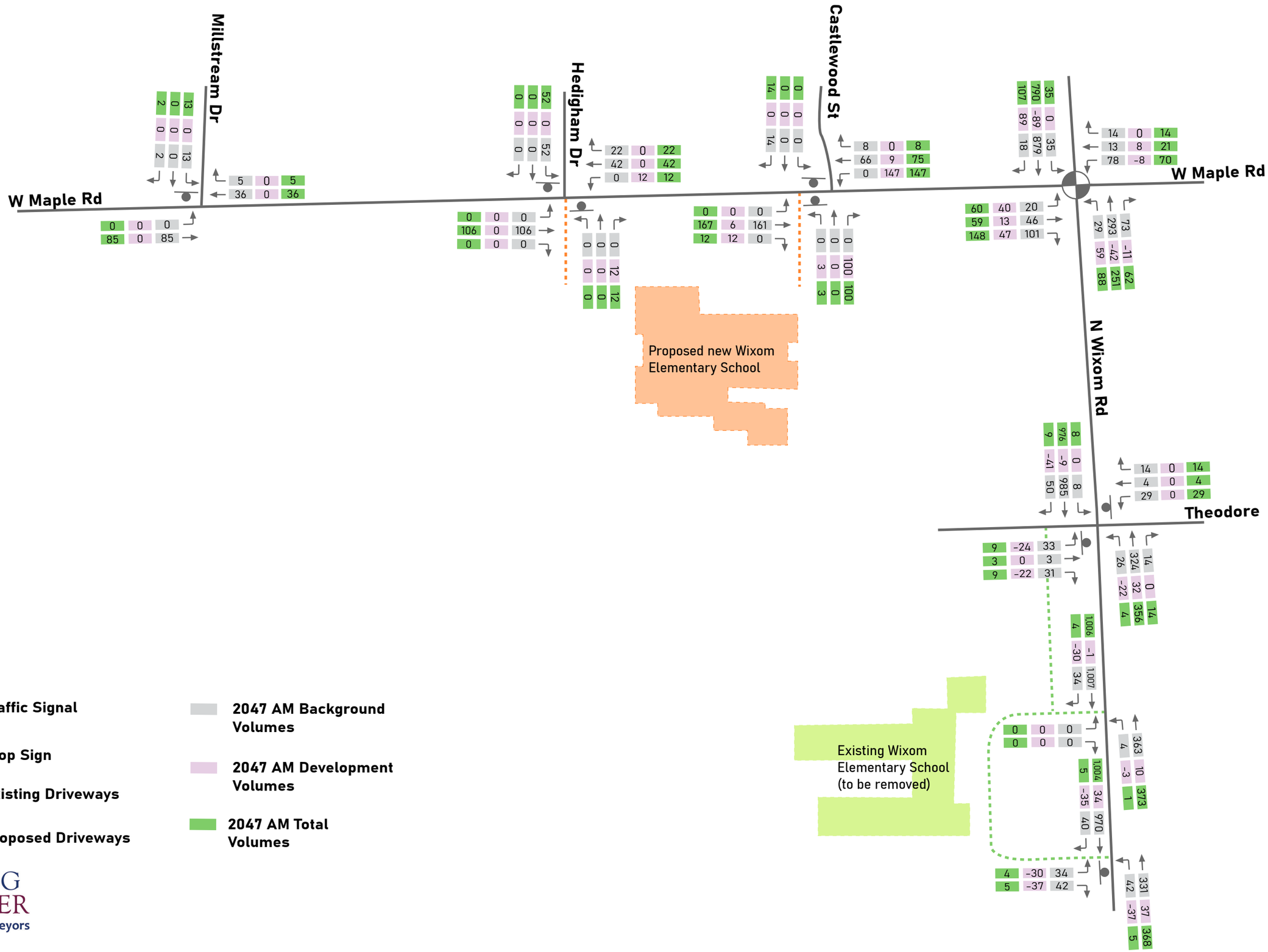
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

BUILD AM PEAK 2047

FIGURE C-8



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2047 AM Background Volumes

2047 AM Development Volumes

2047 AM Total Volumes

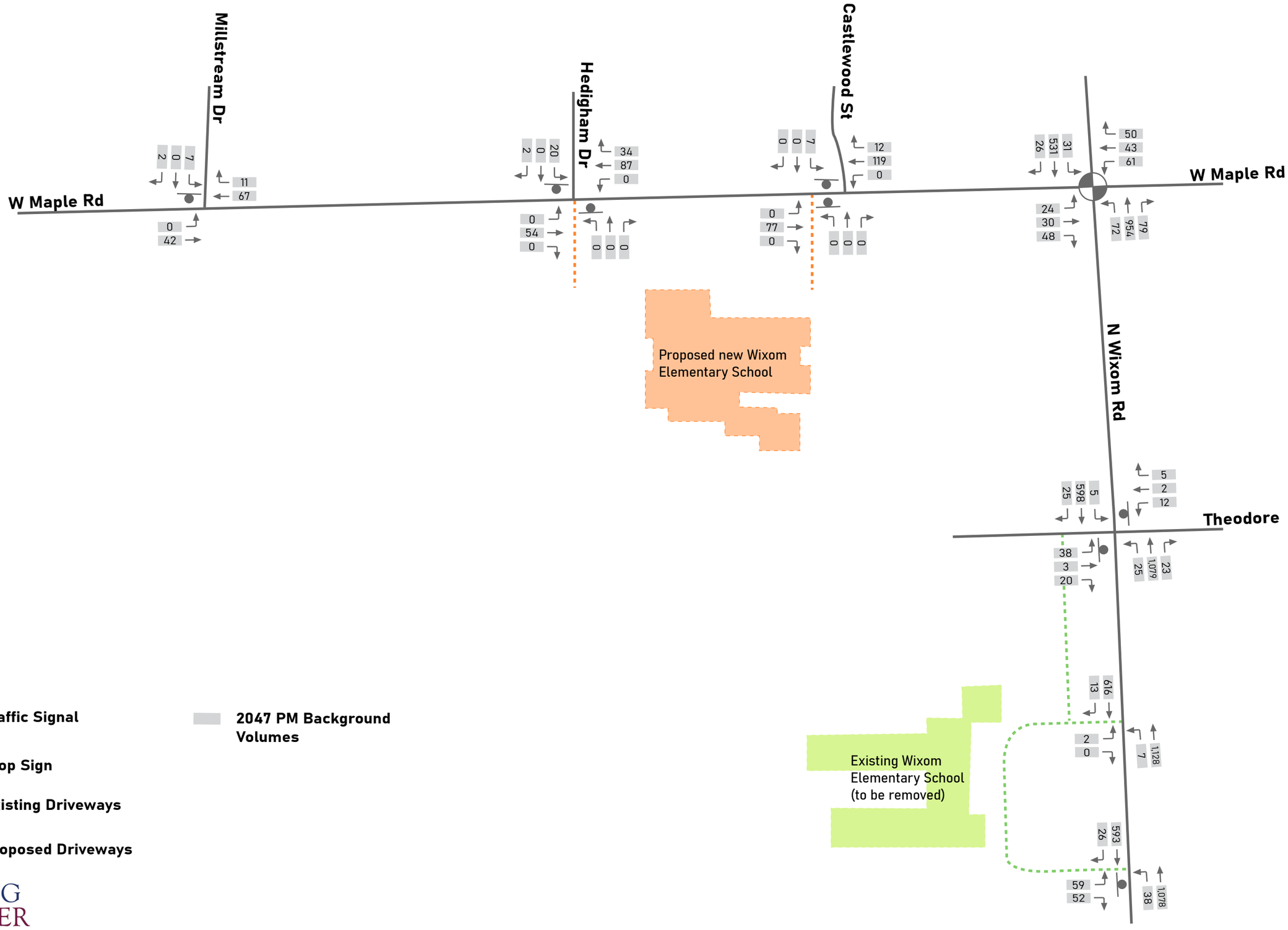
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

NO BUILD PM BACKGROUND 2047

FIGURE C-9



Traffic Signal

Stop Sign

Existing Driveways

Proposed Driveways

2047 PM Background Volumes

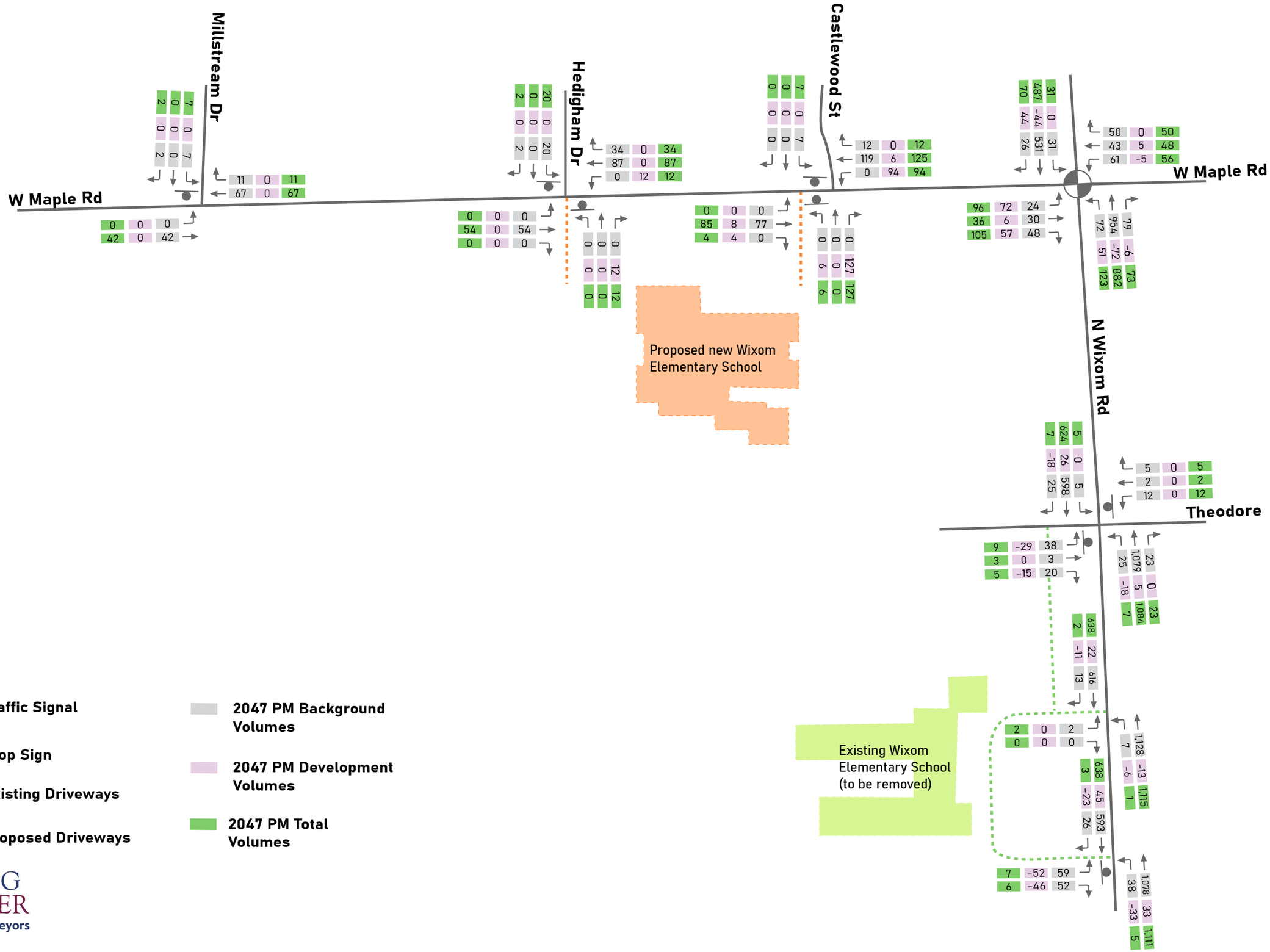
SPALDING DEDECKER

Engineers | Planners | Surveyors

Landscape Architects

BUILD PM PEAK 2047

FIGURE C-10



SPALDING DEDECKER
Engineers | Planners | Surveyors
Landscape Architects

APPENDIX E

TURN LANE ANALYSIS

1.1.4 Traffic Volume Guidelines for Right-Turn Lanes and Tapers

The addition of right-turn lanes or tapers at intersections should be considered to enhance the traffic movements and improve traffic operations and safety. Exclusive right-turn lanes should be considered. The following traffic volume guidelines have been established and are outlined below.

Guidelines for Right-Turn Lanes and Tapers

The use of right-turn lanes or tapers should be considered in the following conditions:

1. At any intersection where a capacity analysis determines a right-turn lane or taper is necessary to meet a desired level of service.

2. At any intersection where the crash experience, existing traffic operations or engineering judgment indicates that a right-turn lane or taper will significantly improve operations.

3. At any unsignalized intersection which satisfies the criteria in the following two charts.

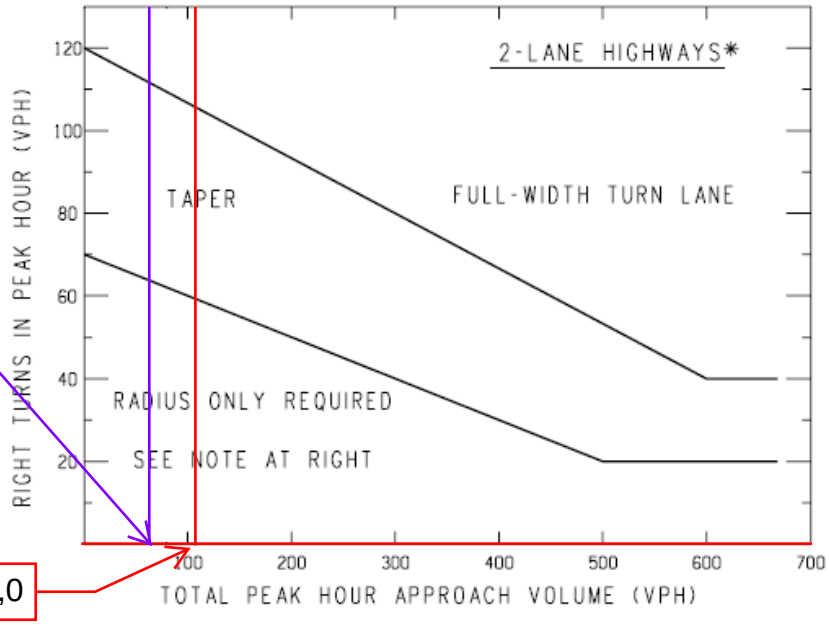
The following two charts on the next page (from the NCHRP Report #279, Intersection Channelization Design Guide) show the relationship between peak hour approach volumes and peak hour right-turns. When the intersection peak hour approach volume and peak hour right-turns fall below the lower trend line, radius improvements may be required. If the intersection falls between the two trend lines, taper improvements are recommended. If the intersection falls above the upper trend line, a full-width right-turn lane is recommended.

For additional information and geometric design guidance regarding right-turn lanes and tapers, please refer to MDOT Geometric Design Guide GEO-650.

EB MAPLE
RADIUS ONLY

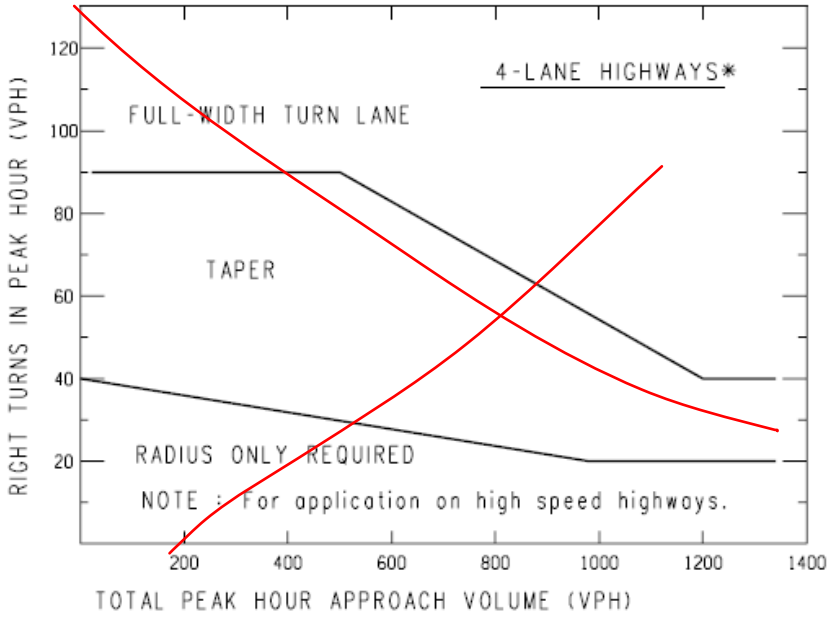
PM PEAK 54,0

AM PEAK 106,0



NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour
Right turns = Peak hour
Right turns – 20



*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume form the total approach volume to get an adjusted total approach volume.

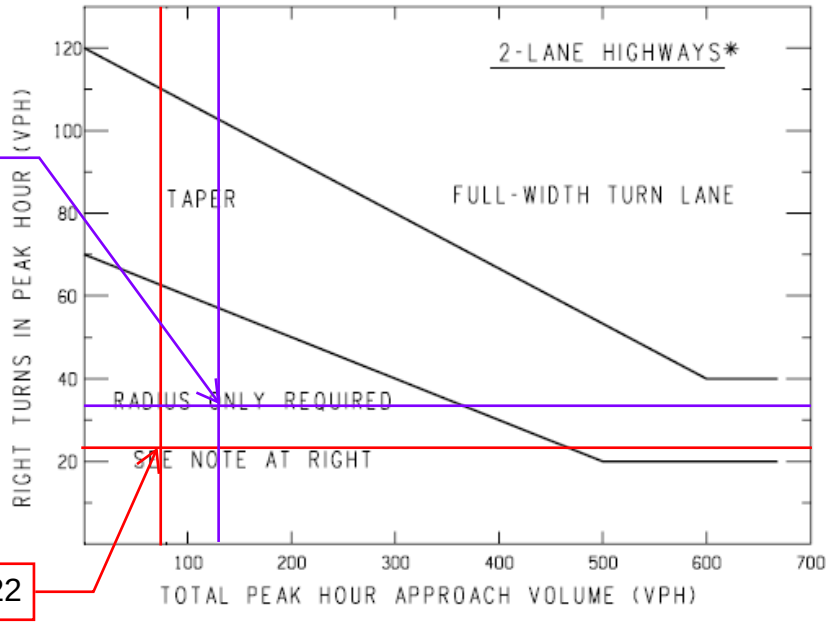
Sample Problem: The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hous is 100 vph. Determine if a right turn lane is recommended.

Solution: Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus, a right-turn lane may be recommended.

WB MAPLE
RADIUS ONLY

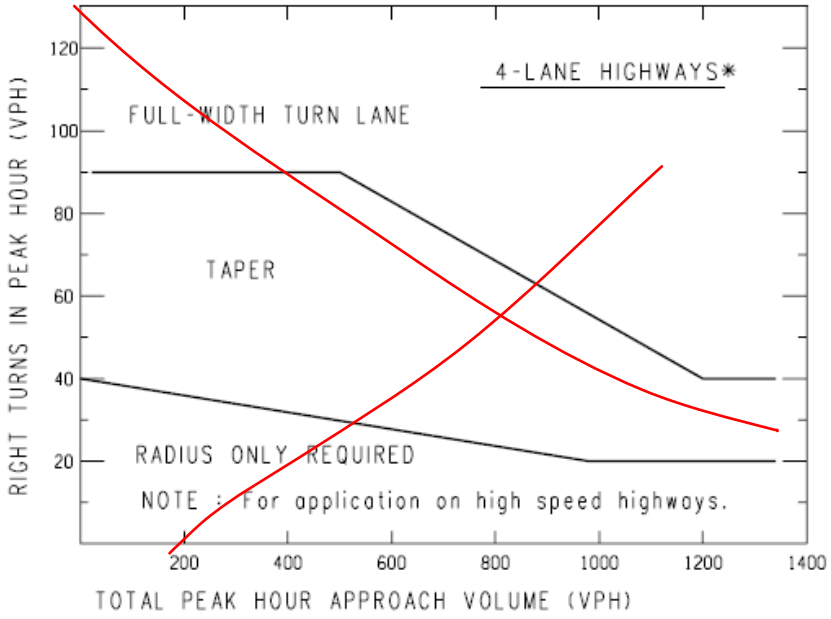
PM PEAK
133,34

AM PEAK 76,22



NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour Right turns = Peak hour Right turns – 20



*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume form the total approach volume to get an adjusted total approach volume.

Sample Problem: The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hous is 100 vph. Determine if a right turn lane is recommended.

Solution: Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus, a right-turn lane may be recommended.

1.1.5 Traffic Volume Guidelines for Left-Turn Lanes and Passing Flares at Unsignalized Intersections

The addition of left-turn lanes or passing flares should be considered in order to enhance the traffic operations and safety at intersections. MDOT has established guidelines for the consideration of these intersection treatments, as provided in the following charts.

The first three charts display the relationship between advancing and opposing volumes with respect to left-turns on two-lane, two-way highways. For each of the three charts, if the intersection of advancing and opposing volumes falls to the right of the curve representing the percentage of left-turns in the advancing volume, a left-turn lane is recommended. If the intersection falls to the left of the curve, a left-turn lane is not recommended. If a left-turn lane is not recommended, consider the installation of a passing flare. For additional information and geometric design guidance regarding left-turn lanes and passing flares, please refer to MDOT Geometric Design Guide GEO-650.

The fourth chart displays the relationship between the left-turning volumes and opposing volumes on four-lane, undivided highways. A left-turn lane is generally not warranted if the intersection of left-turning volumes and opposing volumes falls within the shaded area.

These charts are taken from NCHRP Report 279, Intersection Design Guide.

Guidelines for Left-Turn Lanes on Two-Lane, Two-Way Highways and Four-Lane, Undivided Highways

The accommodation of left turns is often the critical factor in proper intersection design. Left-turn lanes and passing flares can significantly improve safety and the level of service at an intersection. Exclusive left-turn lanes should be considered under the following conditions:

1. At any unsignalized intersection on a two-lane urban or rural highway which satisfies the criteria in the first three charts.

2. At any unsignalized intersections on a four-lane urban or rural highway which satisfies the criteria in the fourth chart.

3. At any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates that a left-turn lane will significantly improve operations.

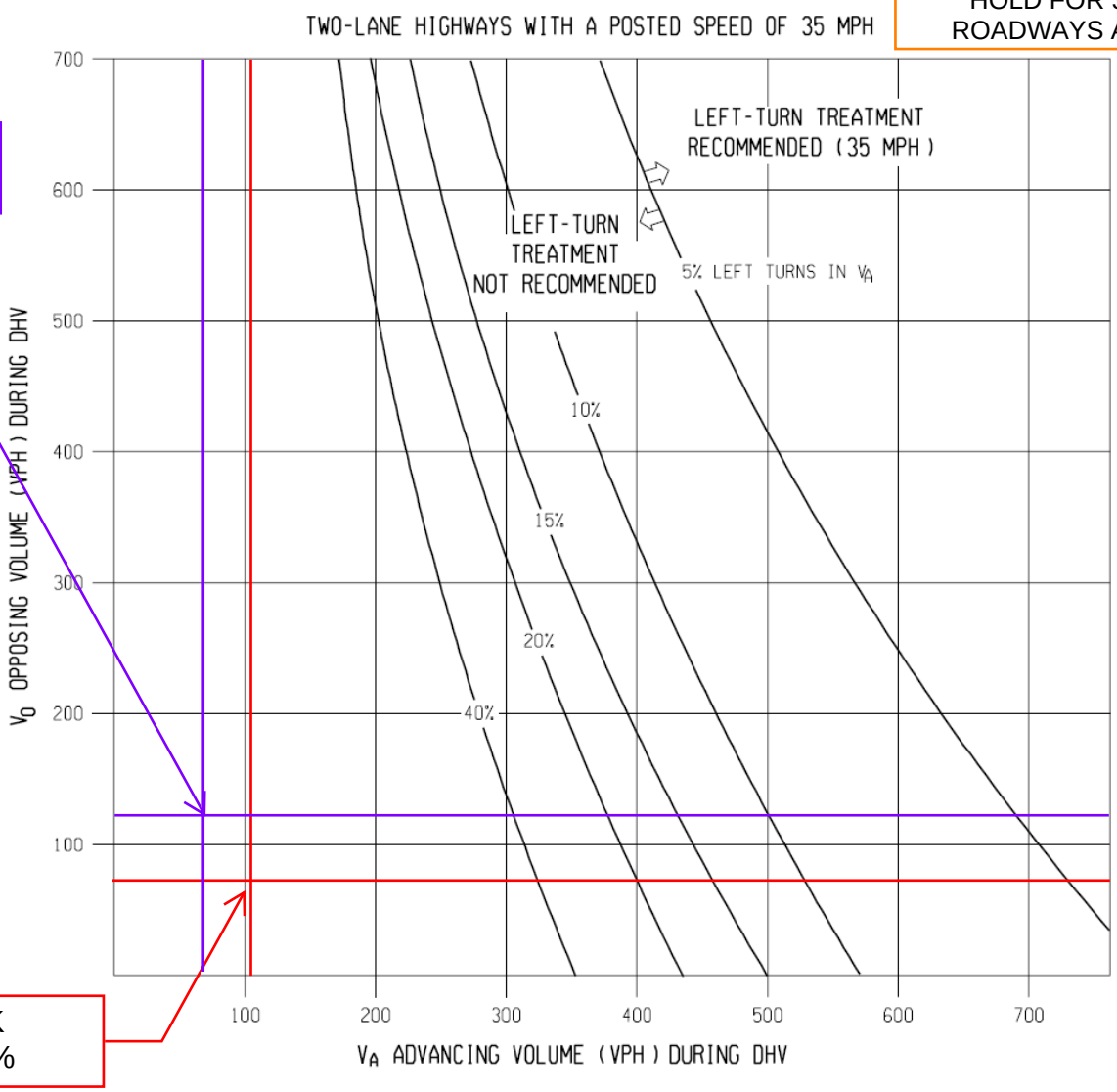
If a left-turn lane is not recommended, a passing flare should be considered. Passing flares are discussed in Section 1.2.3 and Section 2.2.2 of this document.

NOTE: THIS GRAPH IS APPLICABLE TO ROADWAYS WITH 35 MPH SPEED LIMITS (CLOSEST APPLICABLE). RESULT IS ANTICIPATED TO HOLD FOR 30 MPH ROADWAYS AS WELL

EB MAPLE
LT TREATMENT NOT RECOMMENDED

PM PEAK
54,133,0%

AM PEAK
106,76,0%



Instructions:

1. The family of curves represent the percentage of left turns in advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

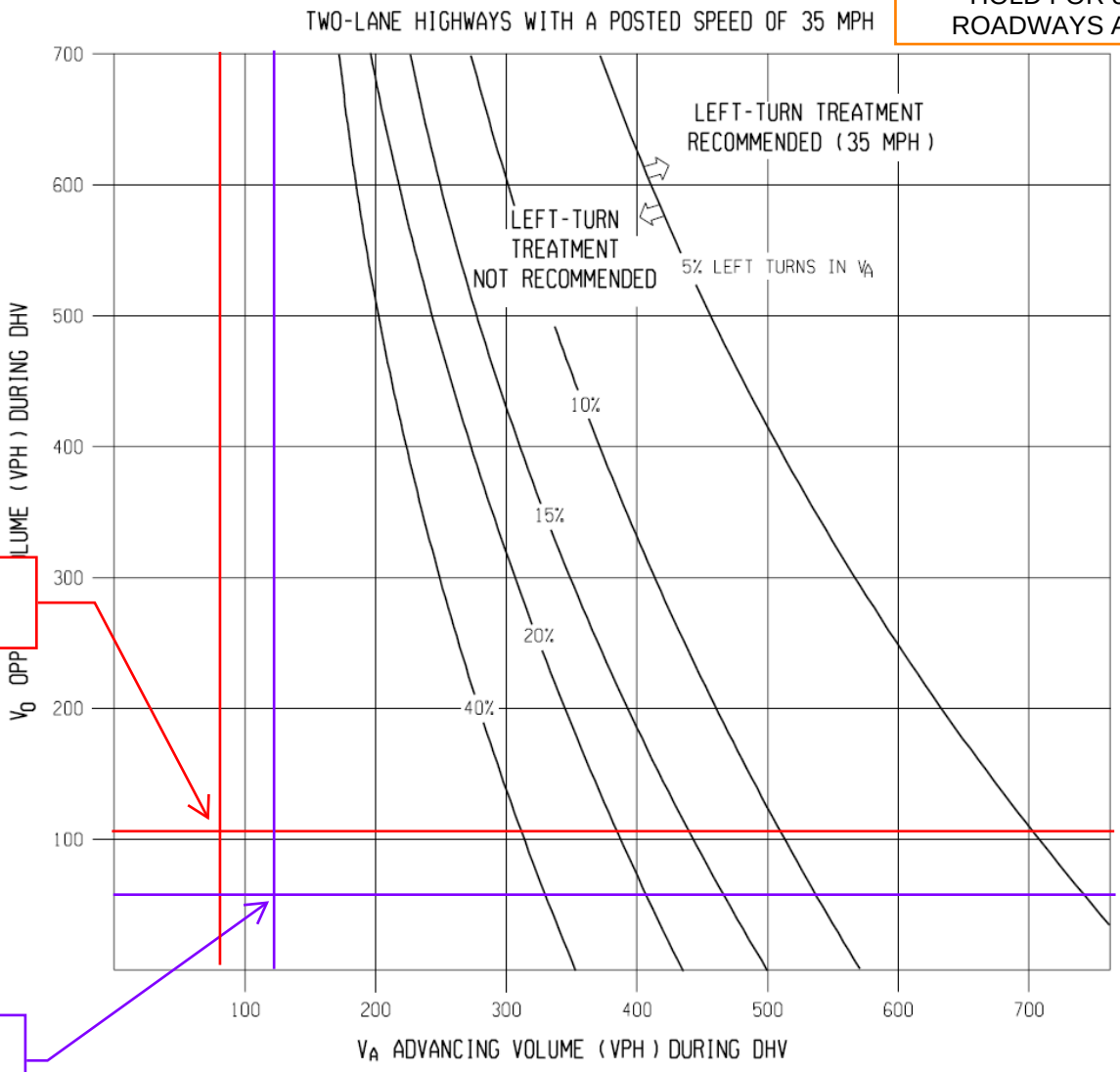
Example: Speed = 35mph
Advancing volume during DHV = 400 vph
Opposing volume during DHV = 400 vph
Percentage of left-turns in advancing volume = 7%

Problem: Determine if left-turn lane is recommended

Solution: Figure indicates that the intersection of 400 vph and 400 vph is located to the left of the 7% curve (estimated); thus a left-turn lane is not recommended based on volumes.

NOTE: THIS GRAPH IS APPLICABLE TO ROADWAYS WITH 35 MPH SPEED LIMITS (CLOSEST APPLICABLE). RESULT IS ANTICIPATED TO HOLD FOR 30 MPH ROADWAYS AS WELL

WB MAPLE
LT TREATMENT NOT RECOMMENDED



AM PEAK
76,106,16%

PM PEAK
133,54,9%

Instructions:

1. The family of curves represent the percentage of left turns in advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
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3. At any unsignalized intersection which satisfies the criteria in the following two charts.

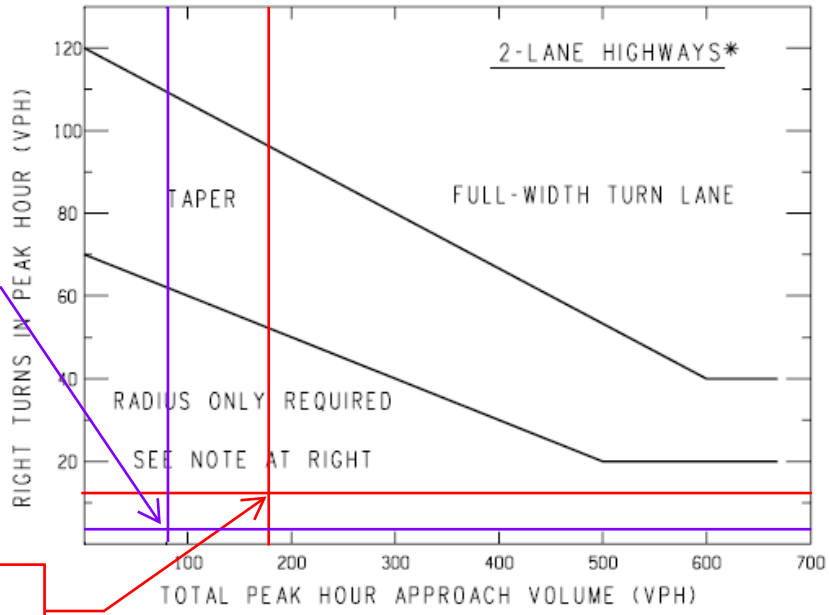
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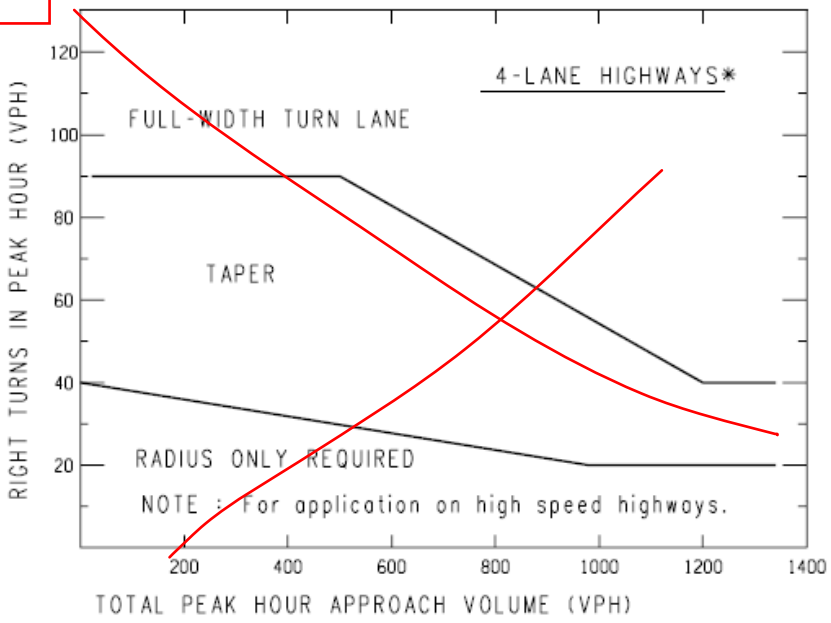
For additional information and geometric design guidance regarding right-turn lanes and tapers, please refer to MDOT Geometric Design Guide GEO-650.

EB MAPLE
RADIUS ONLY

PM PEAK
89,4

AM PEAK
173,12





NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour
Right turns = Peak hour
Right turns – 20

*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume form the total approach volume to get an adjusted total approach volume.

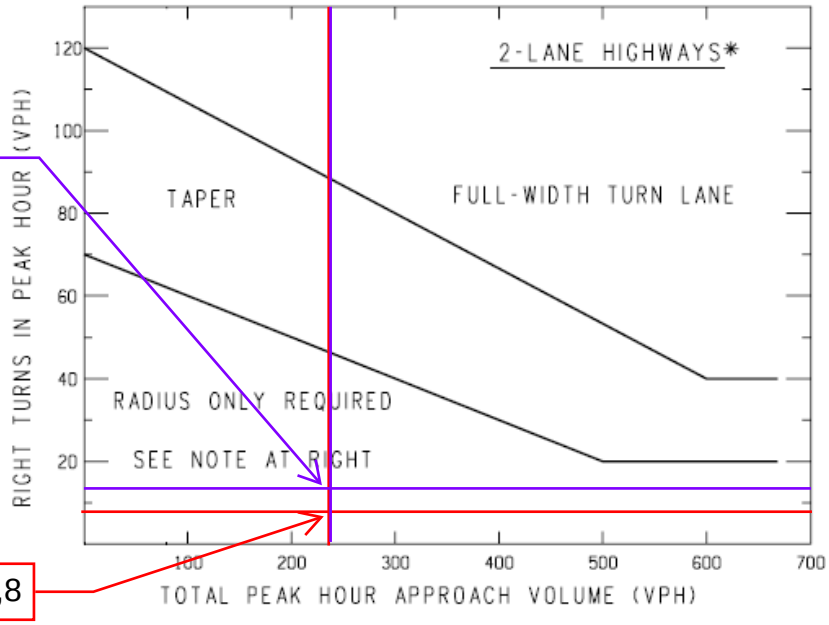
Sample Problem: The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hous is 100 vph. Determine if a right turn lane is recommended.

Solution: Figure indicates that the intersection of 300 vph and 100 vph is located above the upper trend line; thus, a right-turn lane may be recommended.

WB MAPLE
RADIUS ONLY

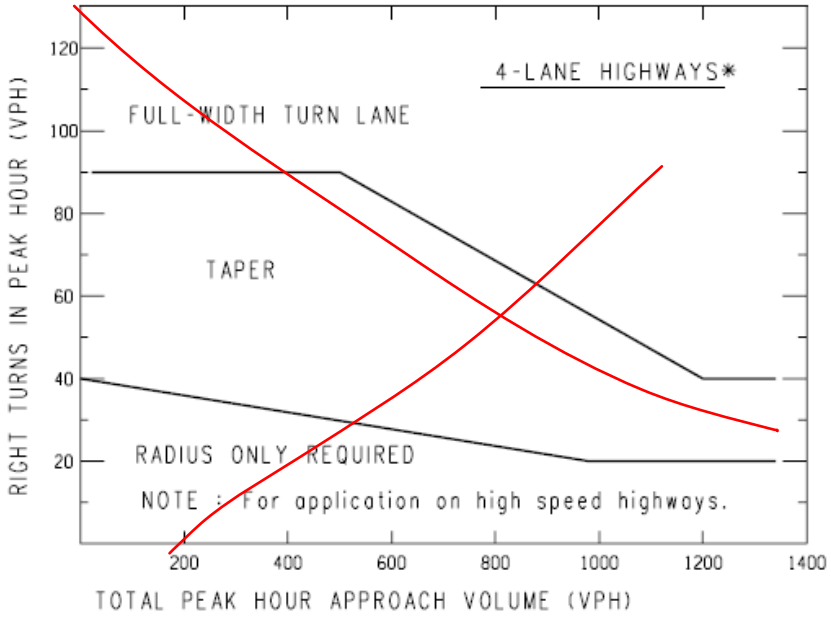
PM PEAK
231,12

AM PEAK 230,8



NOTE: For posted speeds at or under 45 mph, peak hour right turns greater than 40 vph, and total peak hour approach less than 300 vph, adjust right turn volumes.

Adjust peak hour
Right turns = Peak hour
Right turns – 20



*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume form the total approach volume to get an adjusted total approach volume.

Sample Problem: The Design Speed is 55 mph. The Peak Hour Approach Volume is 300 vph. The Number of Right Turns in the Peak Hous is 100 vph. Determine if a right turn lane is recommended.

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The fourth chart displays the relationship between the left-turning volumes and opposing volumes on four-lane, undivided highways. A left-turn lane is generally not warranted if the intersection of left-turning volumes and opposing volumes falls within the shaded area.

These charts are taken from NCHRP Report 279, Intersection Design Guide.

Guidelines for Left-Turn Lanes on Two-Lane, Two-Way Highways and Four-Lane, Undivided Highways

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3. At any intersection where the crash experience, traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates that a left-turn lane will significantly improve operations.

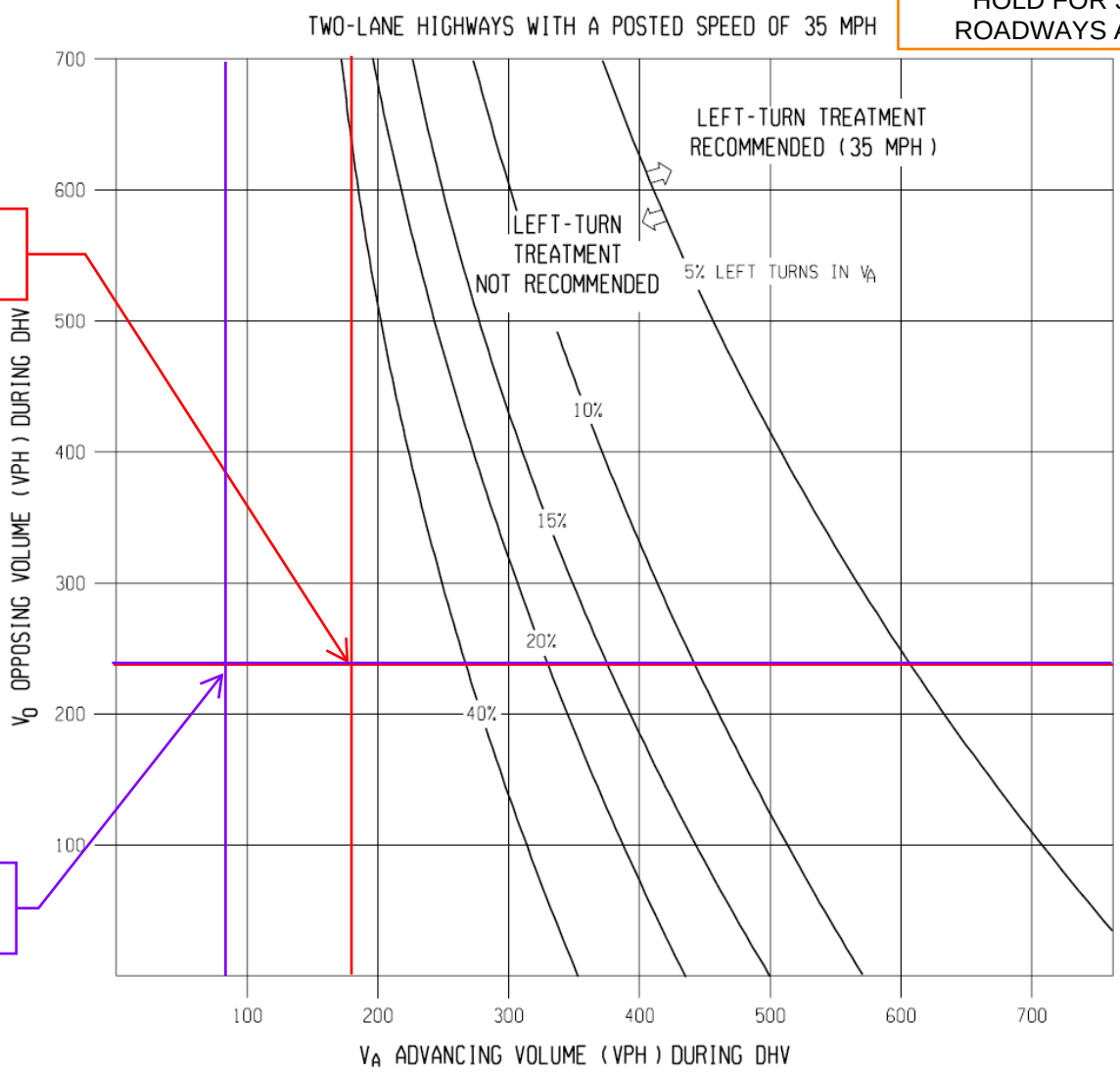
If a left-turn lane is not recommended, a passing flare should be considered. Passing flares are discussed in Section 1.2.3 and Section 2.2.2 of this document.

NOTE: THIS GRAPH IS APPLICABLE TO ROADWAYS WITH 35 MPH SPEED LIMITS (CLOSEST APPLICABLE). RESULT IS ANTICIPATED TO HOLD FOR 30 MPH ROADWAYS AS WELL

EB MAPLE
LT TREATMENT NOT RECOMMENDED

AM PEAK
173,230,0%

PM PEAK
89,231,0%



Instructions:

1. The family of curves represent the percentage of left turns in advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

Example: Speed = 35mph
Advancing volume during DHV = 400 vph
Opposing volume during DHV = 400 vph
Percentage of left-turns in advancing volume = 7%

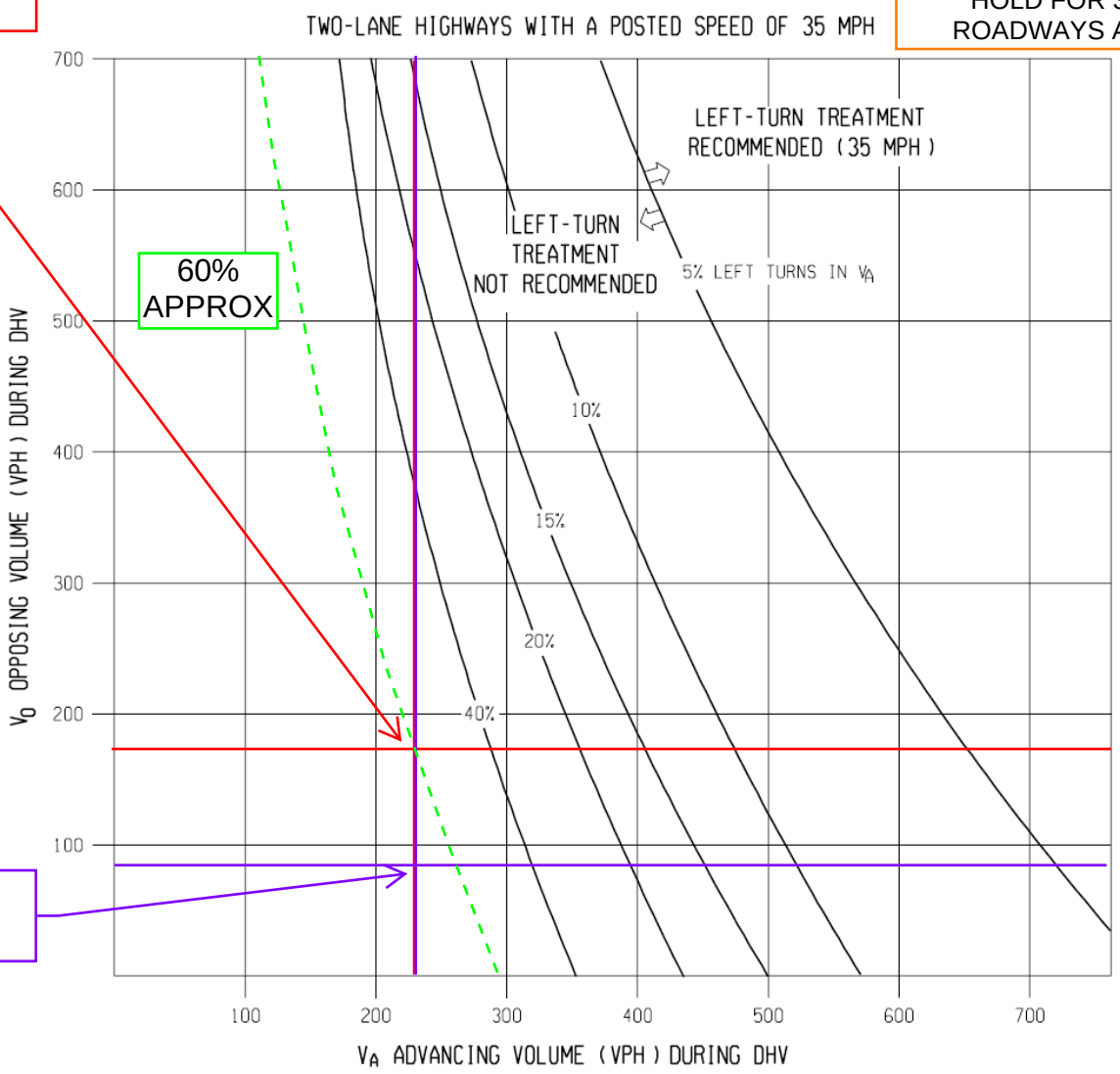
Problem: Determine if left-turn lane is recommended

Solution: Figure indicates that the intersection of 400 vph and 400 vph is located to the left of the 7% curve (estimated); thus a left-turn lane is not recommended based on volumes.

NOTE: THIS GRAPH IS APPLICABLE TO ROADWAYS WITH 35 MPH SPEED LIMITS (CLOSEST APPLICABLE). RESULT IS ANTICIPATED TO HOLD FOR 30 MPH ROADWAYS AS WELL

WB MAPLE
LT TREATMENT RECOMMENDED

AM PEAK
230,173,64%



PM PEAK
231,89,41%

Instructions:

1. The family of curves represent the percentage of left turns in advancing volume (V_A). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read V_A and V_O into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is recommended. If the point is to the left of the line, then a left-turn is not recommended based on traffic volumes.

Example: Speed = 35mph
Advancing volume during DHV = 400 vph
Opposing volume during DHV = 400 vph
Percentage of left-turns in advancing volume = 7%

Problem: Determine if left-turn lane is recommended

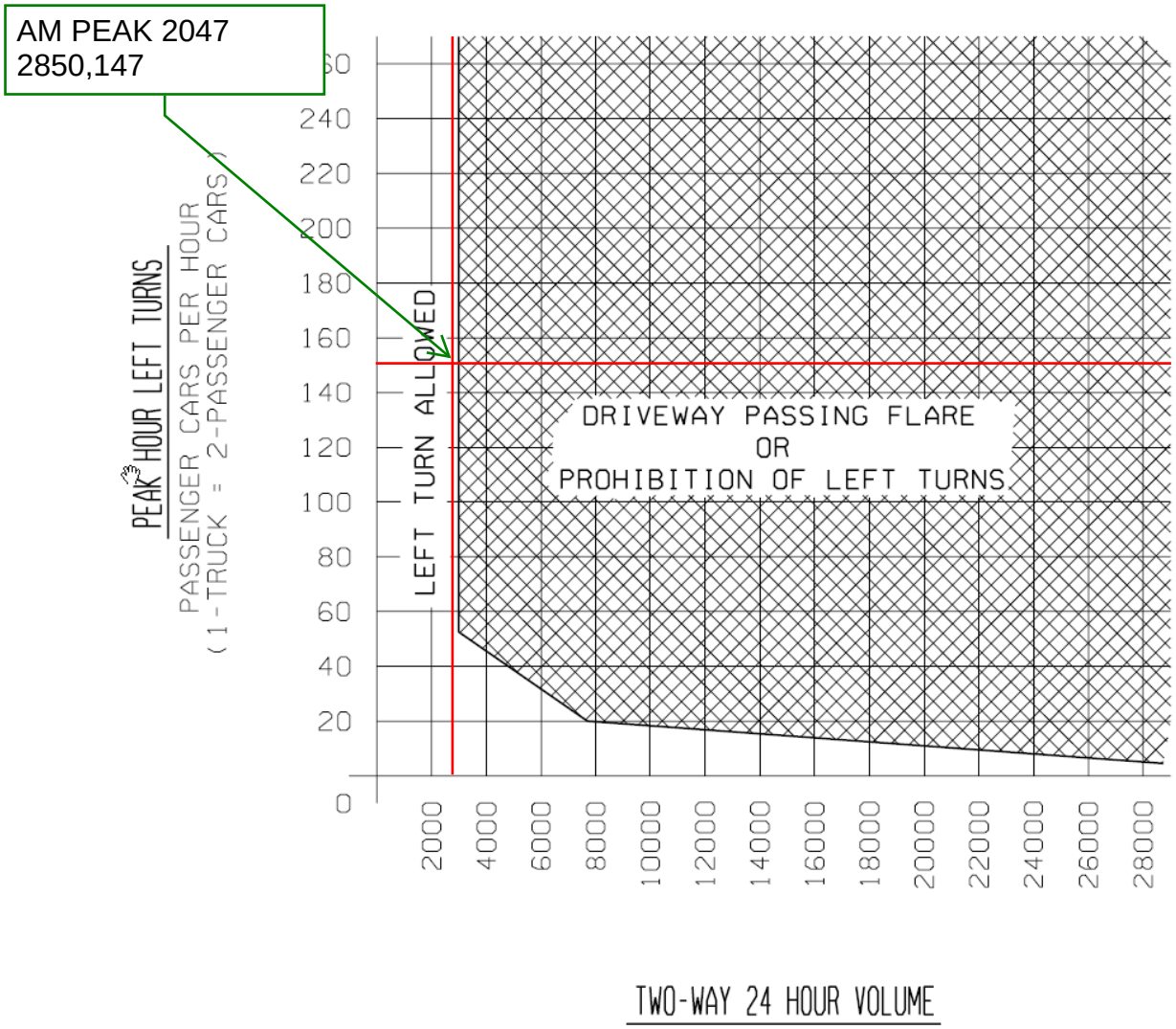
Solution: Figure indicates that the intersection of 400 vph and 400 vph is located to the left of the 7% curve (estimated); thus a left-turn lane is not recommended based on volumes.

WB MAPLE RD AT
EAST SCHOOL DWY
PASSING FLARE NOT RECOMMENDED

1.2.3 Traffic Volume Guidelines for Driveway Passing Flares

Driveways serving large developments along state trunkline highways frequently generate large numbers of left-turns. On two-lane, two-way roadways, this situation can aggravate the efficiency of traffic operations and often make shoulder maintenance difficult. In such situations, prohibition of left-turns at driveways to large developments or construction of driveway passing flares should be considered.

In an attempt to alleviate the types of problems outlined above, the following chart is provided showing the relationship between peak hour left-turns and 24-hour volumes. When peak hour left-turns and 24-hour volumes fall within the area above and to the right of the trend line, left-turns should be prohibited or a driveway passing flare be installed. If a driveway passing flare is constructed, the entire cost should be borne by the developer. For additional information and geometric design guidance regarding driveway passing flares, please refer to Geometric Design Guide GEO-650.



NOTE: This chart is based on Total Development and is for Two-Way Roadways.

APPENDIX F

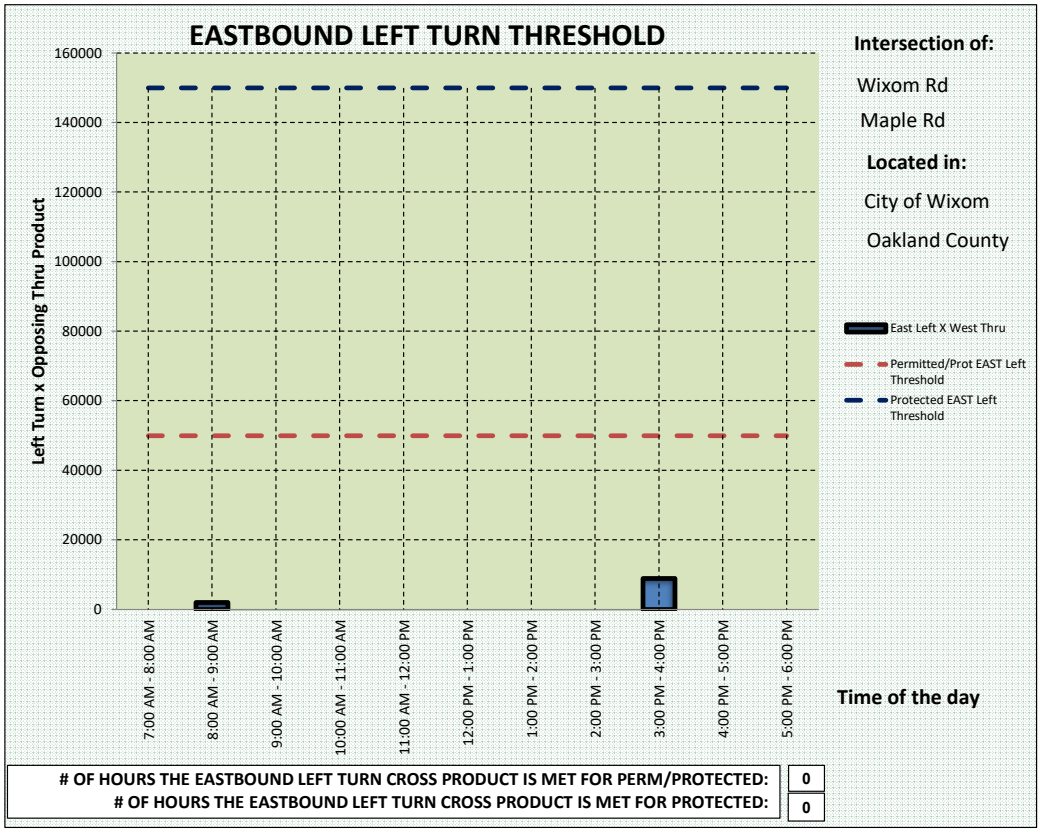
SIGNAL ANALYSIS

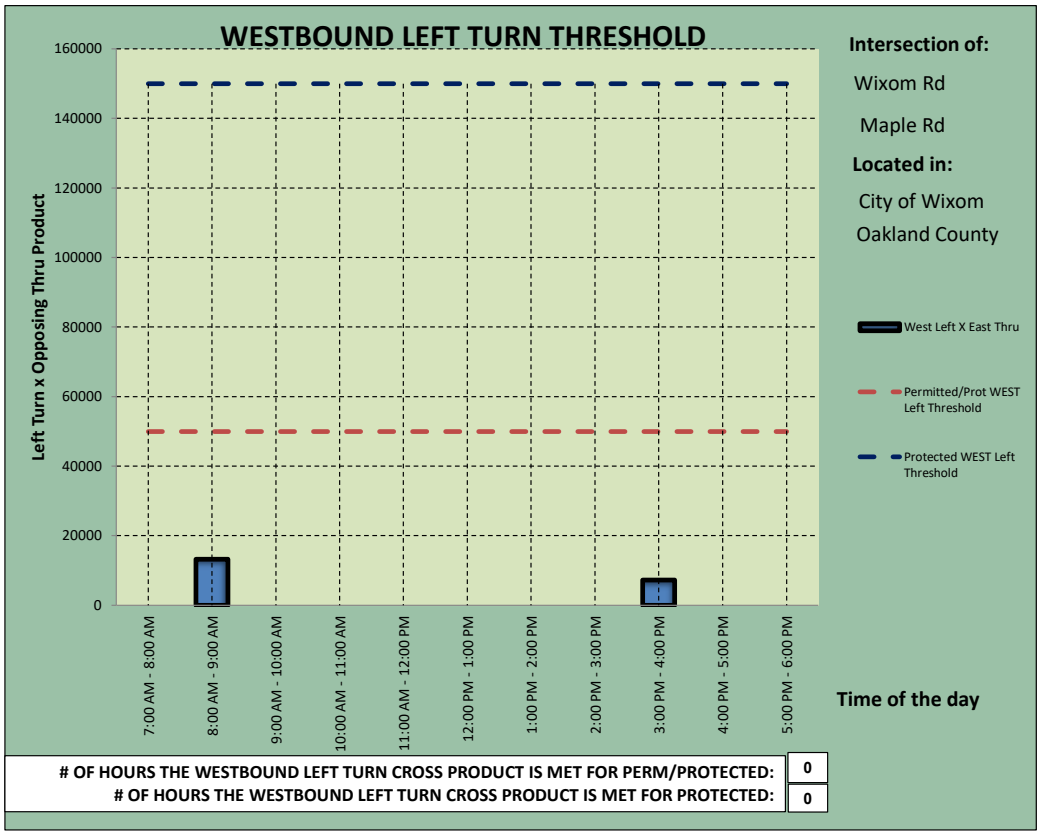
EASTBOUND AND WESTBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
EASTBOUND LEFT TURN GEOMETRY			
No. of Opposing WESTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing WESTbound Right Turn Only Lanes	0	N/A	
What is the Opposing WESTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of EASTbound Left Turning Lanes	1	NO	N / A
What is the EASTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
WESTBOUND LEFT TURN GEOMETRY			
No. of Opposing EASTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing EASTbound Right Turn Only Lanes	0	N/A	
What is the Opposing EASTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of WESTbound Left Turning Lanes	1	NO	N / A
What is the WESTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
TRAFFIC CHARACTERISTICS			
EASTbound Left Turn Vol (vph)	98	YES	
WESTbound Left Turn Vol (vph)	65	NO	
Cross Product of LEFT TURN EAST (See Chart Below)	8918	NO	NO
Cross Product of LEFT TURN WEST (See Chart Below)	13195	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?		NO	
"One Left Turn Movement" refers to		Westbound	
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
EASTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	40.9	NO	
EASTbound TOTAL Left Turn DELAY? Veh-Hr	1.11		
WESTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	49.8	NO	
WESTbound TOTAL Left Turn DELAY? Veh-Hr	0.90		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


EASTBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
East Left X West Thru
Permitted/Prot EAST Left Threshold
Protected EAST Left Threshold
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED: 0
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED: 0

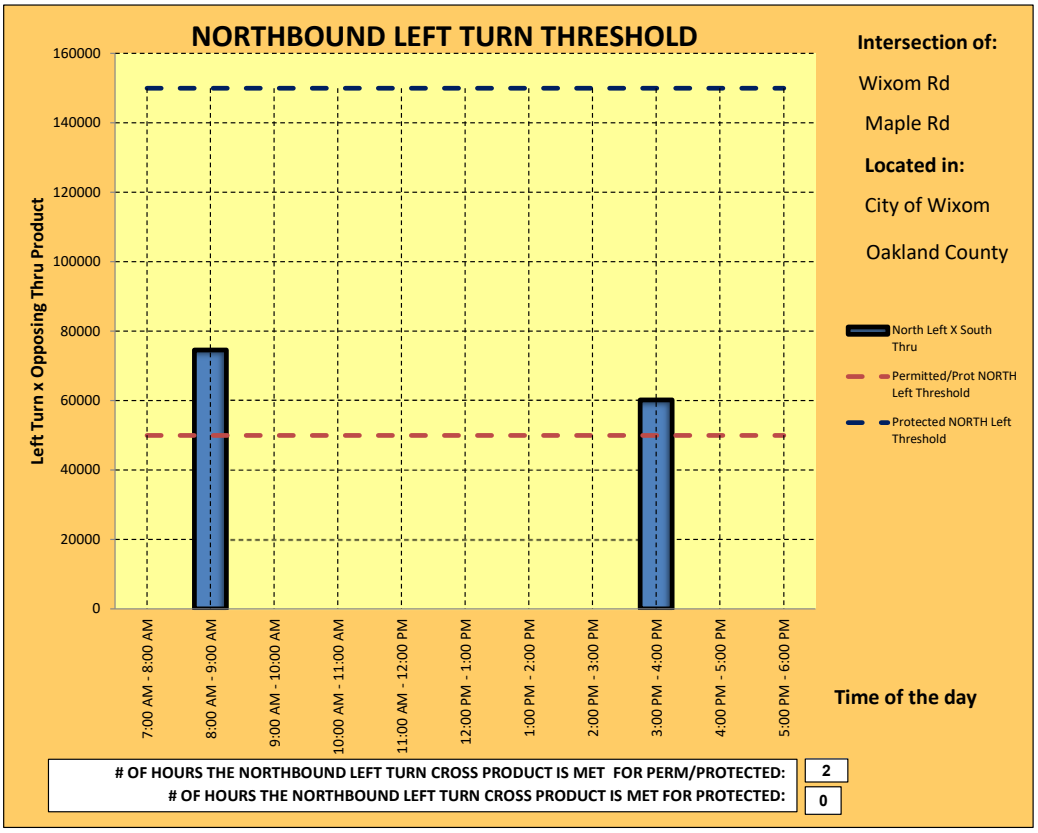

WESTBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
West Left X East Thru
Permitted/Prot WEST Left Threshold
Protected WEST Left Threshold
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED: 0
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED: 0

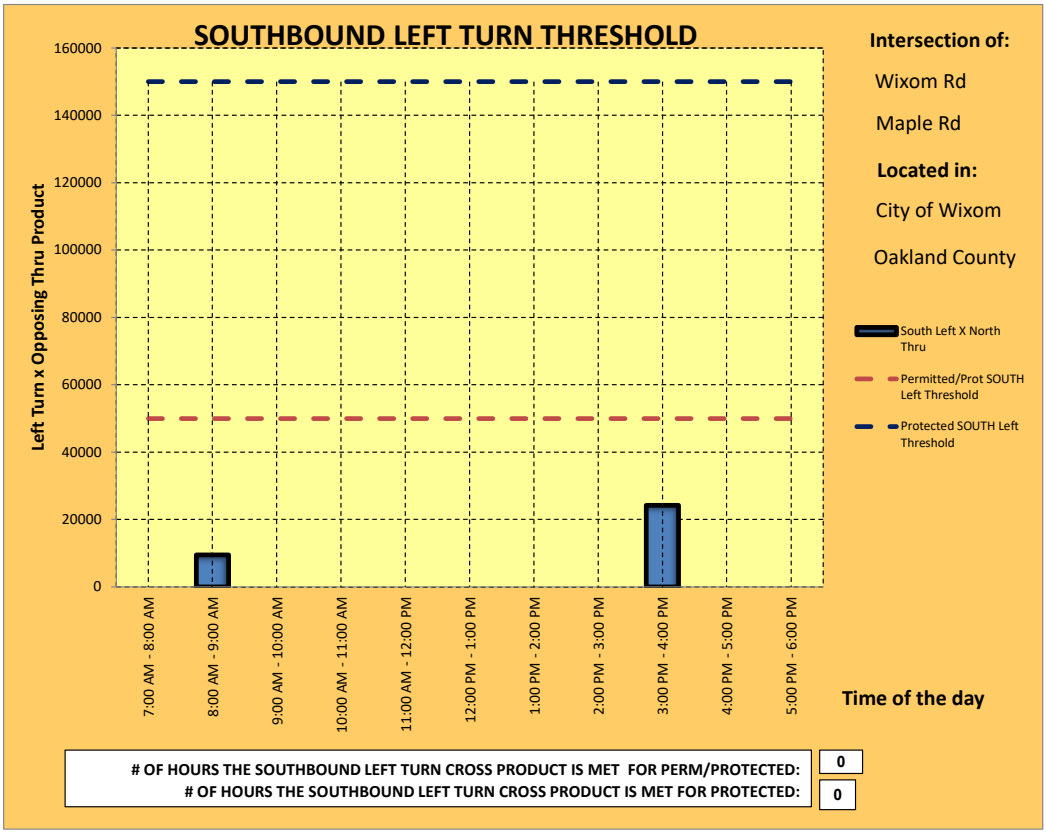
NORTHBOUND AND SOUTHBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
NORTHBOUND LEFT TURN GEOMETRY			
No. of Opposing SOUTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing SOUTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing SOUTHbound speed limit or 85%ile? (mph)	45	NO	N / A
No. of NORTHbound Left Turning Lanes	1	NO	N / A
What is the NORTHbound sight distance in the field? (ft)	364	NO	YES
Minimum Required Sight Distance (ft)	364		
SOUTHBOUND LEFT TURN GEOMETRY			
No. of Opposing NORTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing NORTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing NORTHbound speed limit or 85%ile? (mph)	25	NO	N / A
No. of SOUTHbound Left Turning Lanes	1	NO	N / A
What is the SOUTHbound sight distance in the field? (ft)	202	NO	YES
Minimum Required Sight Distance (ft)	202		
TRAFFIC CHARACTERISTICS			
NORTHbound Left Turn Vol (vph)	116	YES	
SOUTHbound Left Turn Vol (vph)	32	NO	
Cross Product of LEFT TURN NORTH (See Chart Below)	74529	NO	YES
Cross Product of LEFT TURN SOUTH (See Chart Below)	24220	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Northbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
NORTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	45.3	NO	
NORTHbound TOTAL Left Turn DELAY? Veh-Hr	1.46		
SOUTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	15	NO	
SOUTHbound TOTAL Left Turn DELAY? Veh-Hr	0.13		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


NORTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
North Left X South Thru
Permitted/Prot NORTH Left Threshold
Protected NORTH Left Threshold
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
2
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

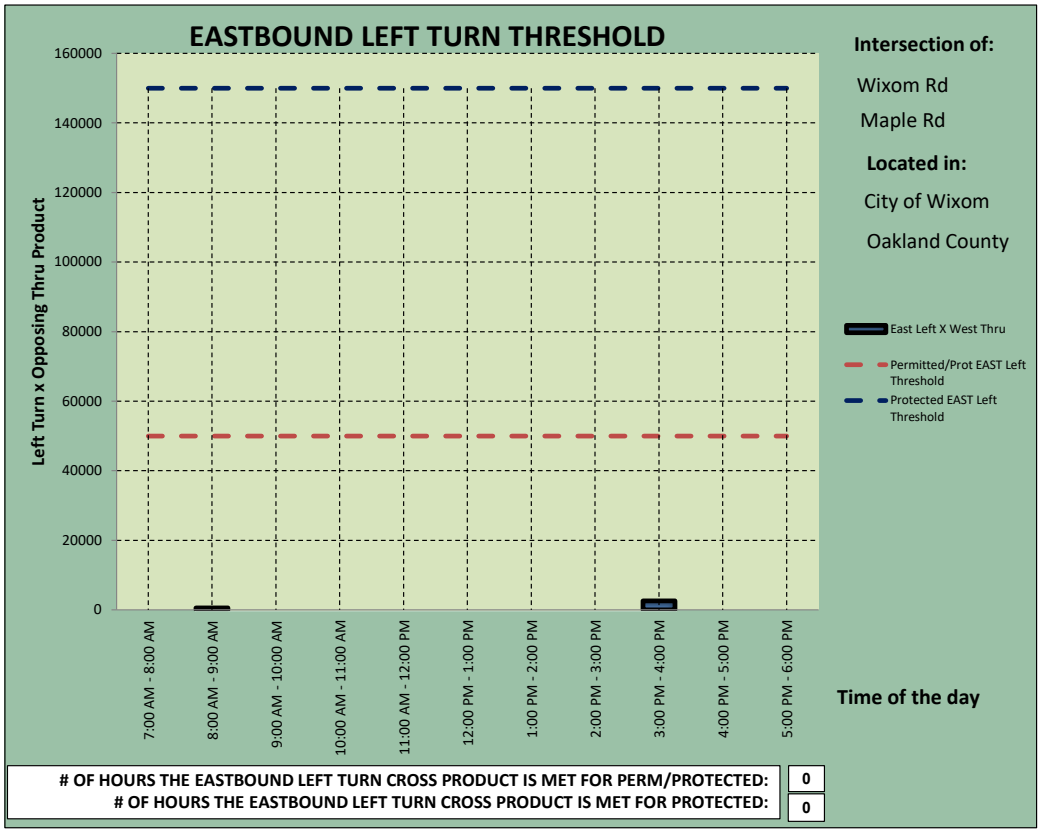

SOUTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
South Left X North Thru
Permitted/Prot SOUTH Left Threshold
Protected SOUTH Left Threshold
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

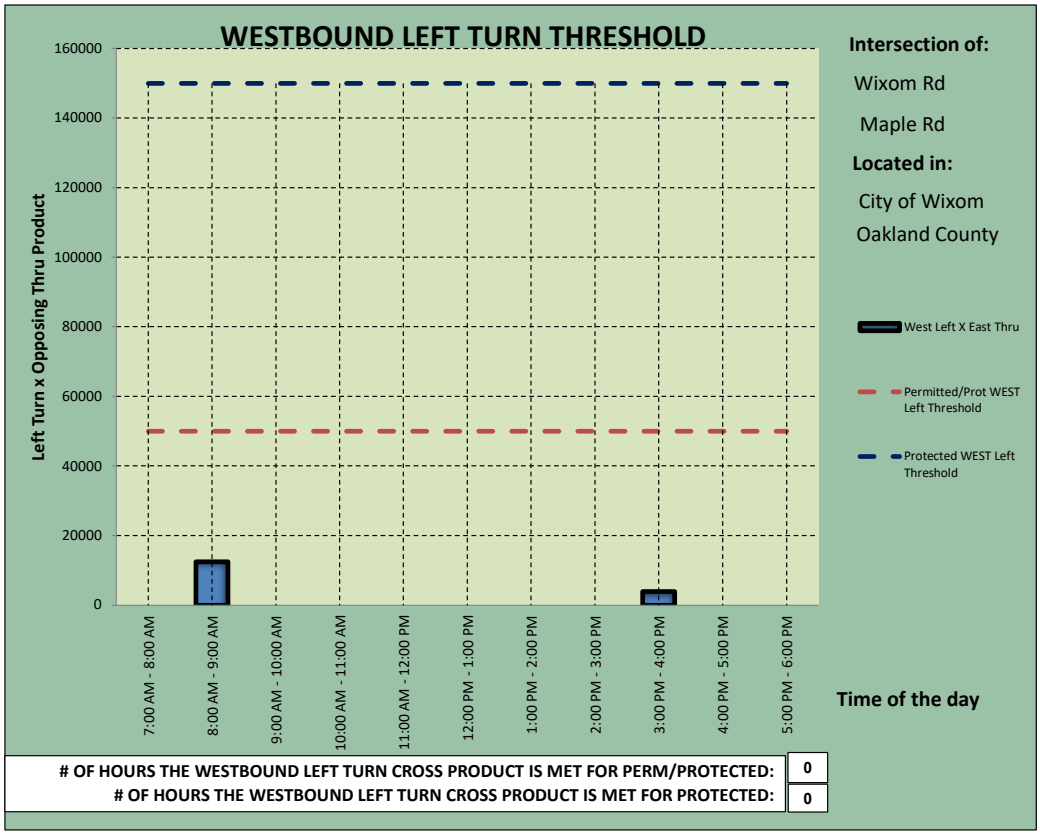
EASTBOUND AND WESTBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
EASTBOUND LEFT TURN GEOMETRY			
No. of Opposing WESTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing WESTbound Right Turn Only Lanes	0	N/A	
What is the Opposing WESTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of EASTbound Left Turning Lanes	1	NO	N / A
What is the EASTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
WESTBOUND LEFT TURN GEOMETRY			
No. of Opposing EASTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing EASTbound Right Turn Only Lanes	0	N/A	
What is the Opposing EASTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of WESTbound Left Turning Lanes	1	NO	N / A
What is the WESTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
TRAFFIC CHARACTERISTICS			
EASTbound Left Turn Vol (vph)	24	NO	
WESTbound Left Turn Vol (vph)	81	NO	
Cross Product of LEFT TURN EAST (See Chart Below)	2544	NO	NO
Cross Product of LEFT TURN WEST (See Chart Below)	12474	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Westbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
EASTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	36.1	NO	
EASTbound TOTAL Left Turn DELAY? Veh-Hr	0.24		
WESTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	45.8	NO	
WESTbound TOTAL Left Turn DELAY? Veh-Hr	1.03		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


EASTBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
East Left X West Thru
Permitted/Prot EAST Left Threshold
Protected EAST Left Threshold
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED: 0
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED: 0

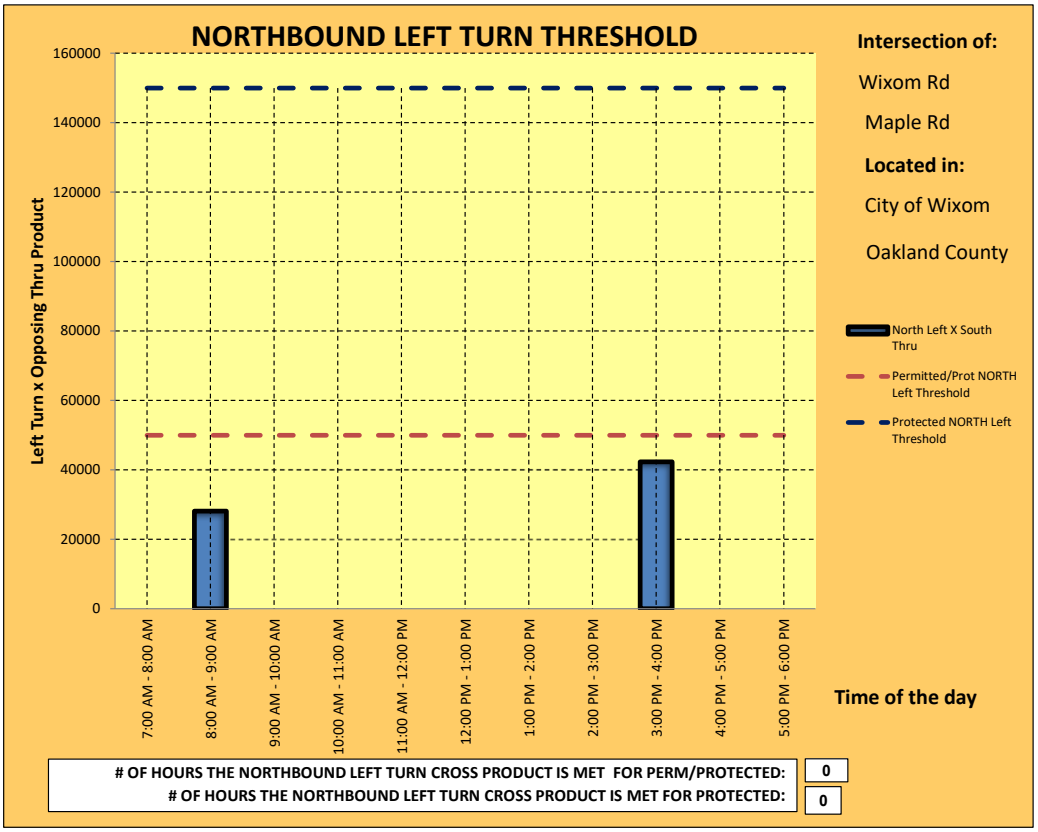

WESTBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
West Left X East Thru
Permitted/Prot WEST Left Threshold
Protected WEST Left Threshold
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED: 0
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED: 0

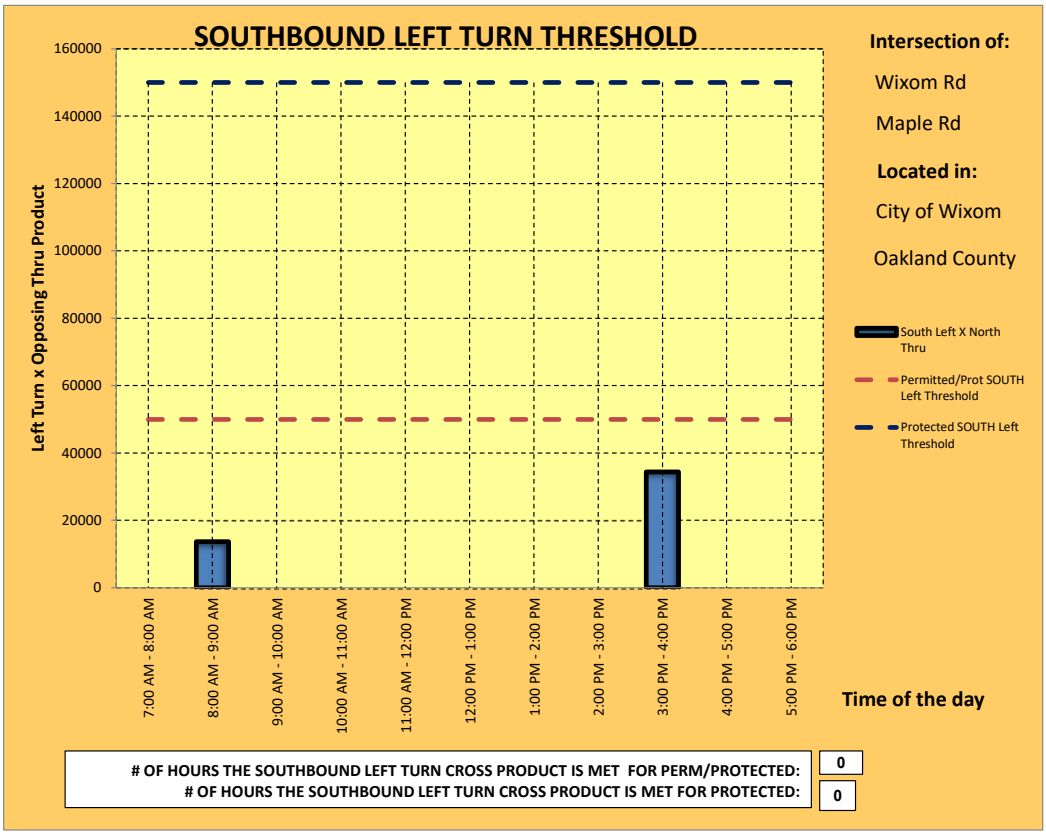
NORTHBOUND AND SOUTHBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
NORTHBOUND LEFT TURN GEOMETRY			
No. of Opposing SOUTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing SOUTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing SOUTHbound speed limit or 85%ile? (mph)	45	NO	N / A
No. of NORTHbound Left Turning Lanes	1	NO	N / A
What is the NORTHbound sight distance in the field? (ft)	364	NO	YES
Minimum Required Sight Distance (ft)	364		
SOUTHBOUND LEFT TURN GEOMETRY			
No. of Opposing NORTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing NORTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing NORTHbound speed limit or 85%ile? (mph)	25	NO	N / A
No. of SOUTHbound Left Turning Lanes	1	NO	N / A
What is the SOUTHbound sight distance in the field? (ft)	202	NO	YES
Minimum Required Sight Distance (ft)	202		
TRAFFIC CHARACTERISTICS			
NORTHbound Left Turn Vol (vph)	72	NO	
SOUTHbound Left Turn Vol (vph)	35	NO	
Cross Product of LEFT TURN NORTH (See Chart Below)	42336	NO	NO
Cross Product of LEFT TURN SOUTH (See Chart Below)	34419	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Northbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
NORTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	41.9	NO	
NORTHbound TOTAL Left Turn DELAY? Veh-Hr	0.84		
SOUTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	91.7	NO	
SOUTHbound TOTAL Left Turn DELAY? Veh-Hr	0.89		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


NORTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
North Left X South Thru
Permitted/Prot NORTH Left Threshold
Protected NORTH Left Threshold
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

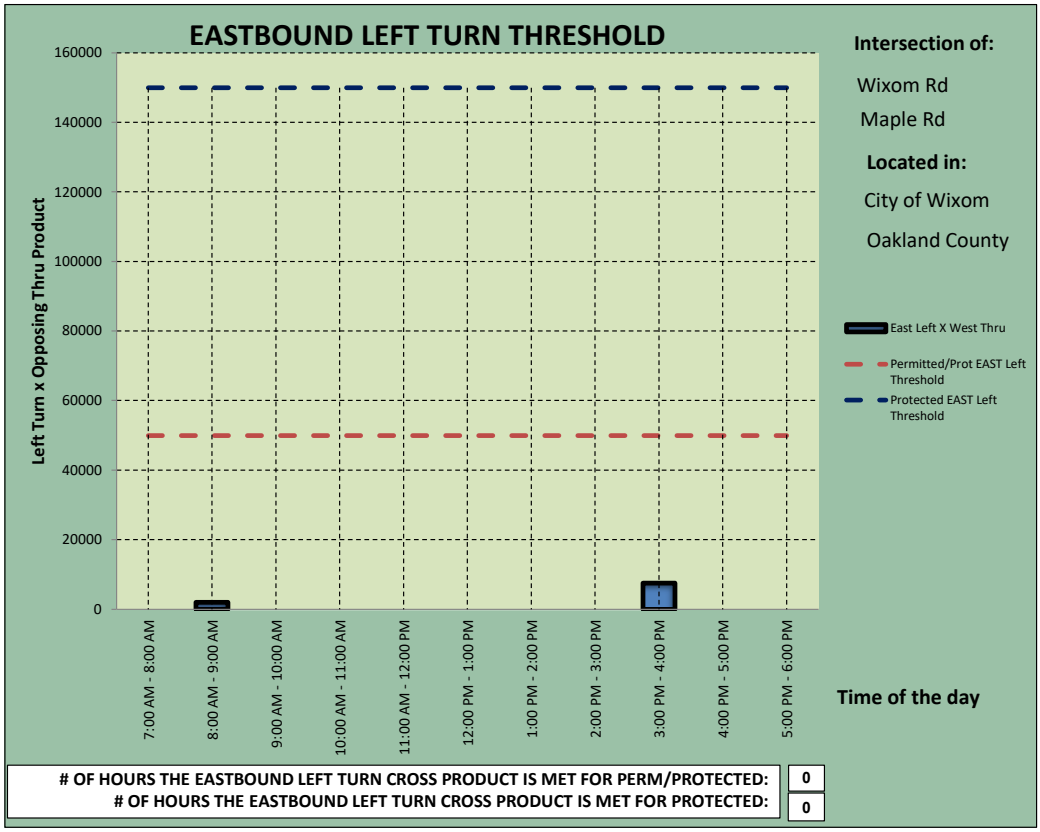

SOUTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
South Left X North Thru
Permitted/Prot SOUTH Left Threshold
Protected SOUTH Left Threshold
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

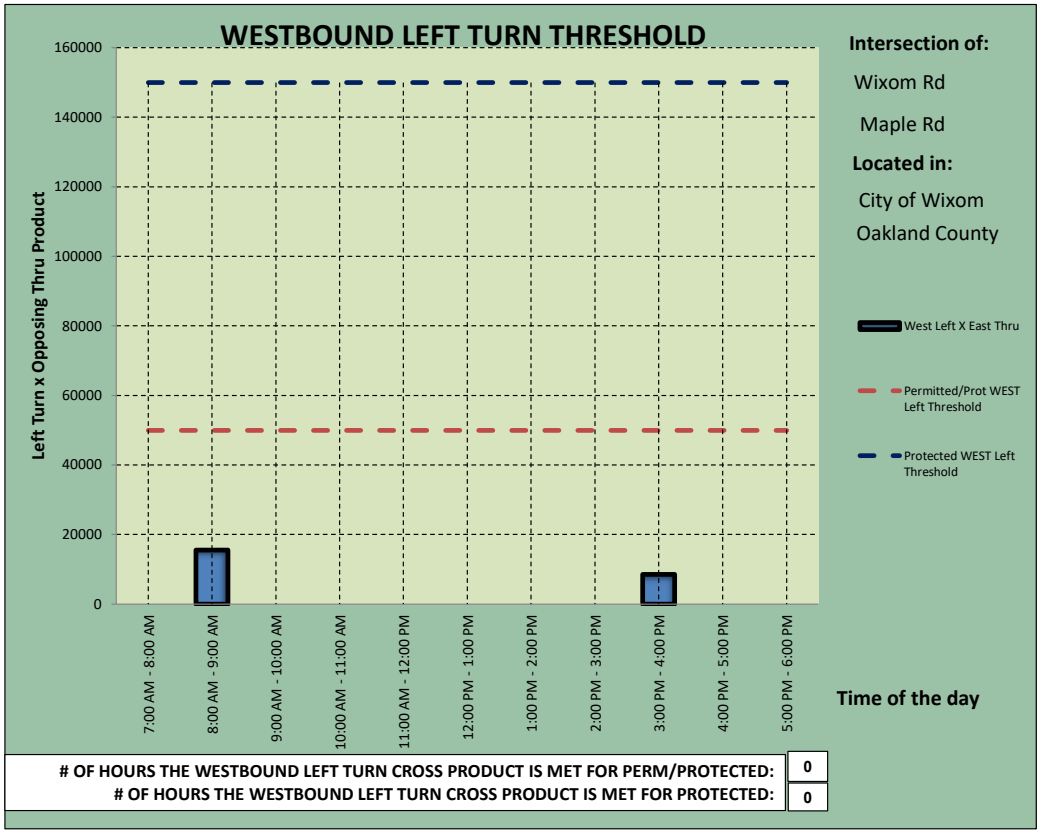
EASTBOUND AND WESTBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
EASTBOUND LEFT TURN GEOMETRY			
No. of Opposing WESTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing WESTbound Right Turn Only Lanes	0	N/A	
What is the Opposing WESTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of EASTbound Left Turning Lanes	1	NO	N / A
What is the EASTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
WESTBOUND LEFT TURN GEOMETRY			
No. of Opposing EASTbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing EASTbound Right Turn Only Lanes	0	N/A	
What is the Opposing EASTbound speed limit or 85%ile? (mph)	30	NO	N / A
No. of WESTbound Left Turning Lanes	1	NO	N / A
What is the WESTbound sight distance in the field? (ft)	243	NO	YES
Minimum Required Sight Distance (ft)	243		
TRAFFIC CHARACTERISTICS			
EASTbound Left Turn Vol (vph)	72	NO	
WESTbound Left Turn Vol (vph)	72	NO	
Cross Product of LEFT TURN EAST (See Chart Below)	7488	NO	NO
Cross Product of LEFT TURN WEST (See Chart Below)	15480	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Westbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	2	NO	NO
EASTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	41.7	NO	
EASTbound TOTAL Left Turn DELAY? Veh-Hr	0.83		
WESTbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	53	NO	
WESTbound TOTAL Left Turn DELAY? Veh-Hr	1.06		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


EASTBOUND LEFT TURN THRESHOLD
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
East Left X West Thru
Permitted/Prot EAST Left Threshold
Protected EAST Left Threshold
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE EASTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

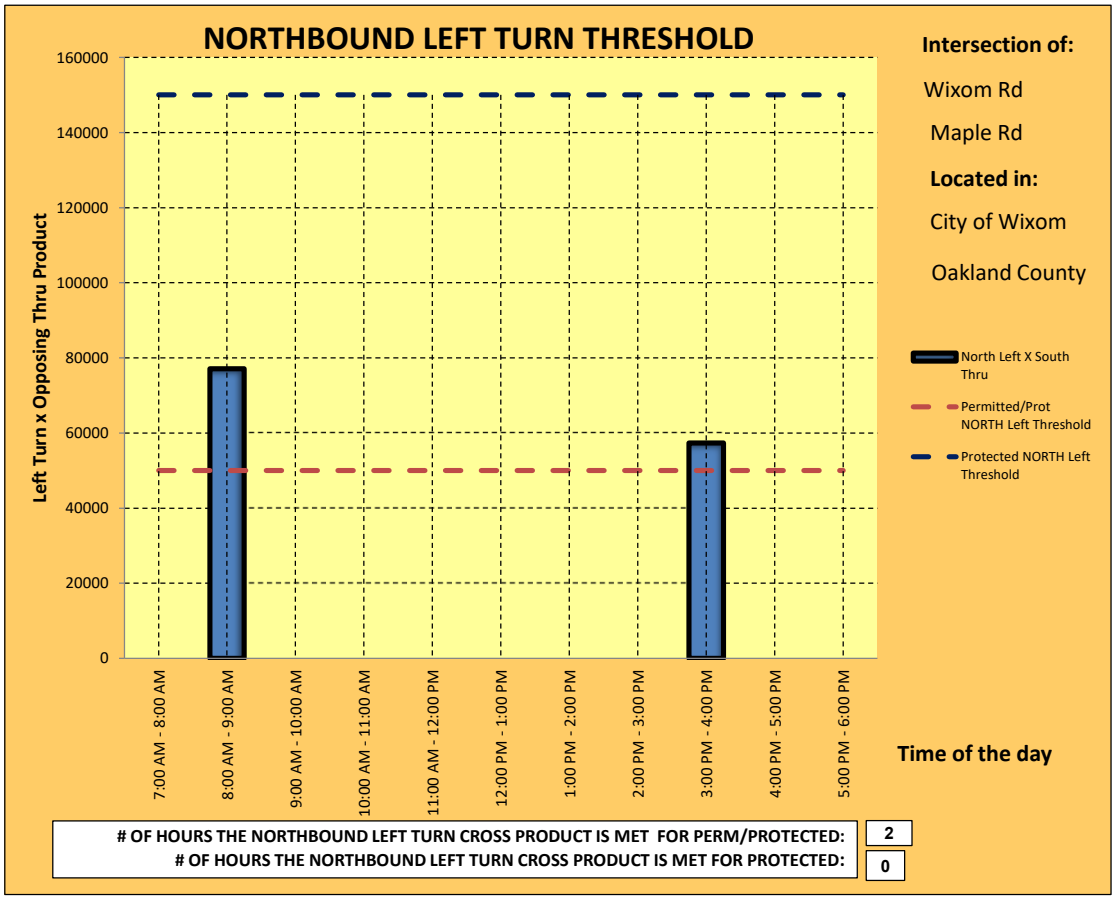

WESTBOUND LEFT TURN THRESHOLD
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
West Left X East Thru
Permitted/Prot WEST Left Threshold
Protected WEST Left Threshold
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE WESTBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

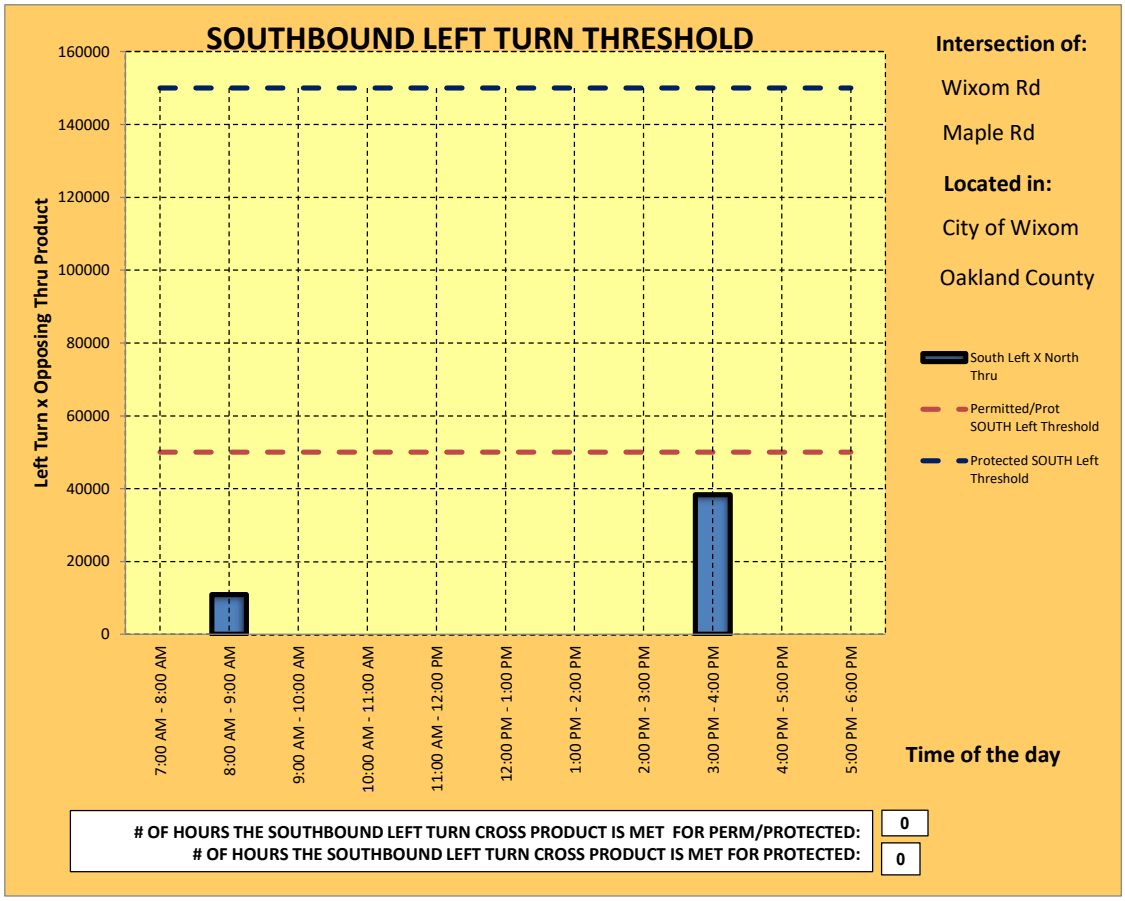
NORTHBOUND AND SOUTHBOUND LEFT TURN PHASE THRESHOLDS

Please enter Data in Yellow Boxes ONLY

CONDITIONS		Items to Consider for Protected Only	Items to Consider for Permissive/Protected
NORTHBOUND LEFT TURN GEOMETRY			
No. of Opposing SOUTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing SOUTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing SOUTHbound speed limit or 85%ile? (mph)	45	NO	N / A
No. of NORTHbound Left Turning Lanes	1	NO	N / A
What is the NORTHbound sight distance in the field? (ft)	364	NO	YES
Minimum Required Sight Distance (ft)	364		
SOUTHBOUND LEFT TURN GEOMETRY			
No. of Opposing NORTHbound Thru Lanes (include combination thru lanes)	1	NO	YES
No. of Opposing NORTHbound Right Turn Only Lanes	0	N/A	
What is the Opposing NORTHbound speed limit or 85%ile? (mph)	25	NO	N / A
No. of SOUTHbound Left Turning Lanes	1	NO	N / A
What is the SOUTHbound sight distance in the field? (ft)	202	NO	YES
Minimum Required Sight Distance (ft)	202		
TRAFFIC CHARACTERISTICS			
NORTHbound Left Turn Vol (vph)	107	YES	
SOUTHbound Left Turn Vol (vph)	36	NO	
Cross Product of LEFT TURN NORTH (See Chart Below)	77142	NO	YES
Cross Product of LEFT TURN SOUTH (See Chart Below)	38340	NO	NO
CRASH HISTORY			
Is there an existing permissive/protected or protected/permissive LT phase?	NO		
"One Left Turn Movement" refers to	Northbound		
ONE LEFT TURN MOVEMENT: Crash History for 12 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
ONE LEFT TURN MOVEMENT: Crash History for 24 Month Period			
ONE LEFT TURN MOVEMENT: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 12 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
TWO LEFT TURN MOVEMENTS: Crash History for 24 Month Period			
TWO LEFT TURN MOVEMENTS: Number of Correctable crashes (Left-Turn Head-On)	1	NO	NO
NORTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	64	NO	
NORTHbound TOTAL Left Turn DELAY? Veh-Hr	1.90		
SOUTHbound Left Turn DELAY per vehicle? Sec. / Veh. (from Synchro)	76.2	NO	
SOUTHbound TOTAL Left Turn DELAY? Veh-Hr	0.76		

Left-turn phasing should only be approved and installed after a comprehensive engineering study indicates such an operation is necessary for the safe and efficient operation of an intersection. The type of left-turn phasing will be determined based on data from the engineering study which includes the amount of delay experienced by left-turning traffic, crash patterns that may be occurring and available capacity of the intersection.


NORTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
North Left X South Thru
Permitted/Prot NORTH Left Threshold
Protected NORTH Left Threshold
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
2
OF HOURS THE NORTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0


SOUTHBOUND LEFT TURN THRESHOLD
Left Turn x Opposing Thru Product
160000
140000
120000
100000
80000
60000
40000
20000
0
7:00 AM - 8:00 AM
8:00 AM - 9:00 AM
9:00 AM - 10:00 AM
10:00 AM - 11:00 AM
11:00 AM - 12:00 PM
12:00 PM - 1:00 PM
1:00 PM - 2:00 PM
2:00 PM - 3:00 PM
3:00 PM - 4:00 PM
4:00 PM - 5:00 PM
5:00 PM - 6:00 PM
Time of the day
Intersection of:
Wixom Rd
Maple Rd
Located in:
City of Wixom
Oakland County
South Left X North Thru
Permitted/Prot SOUTH Left Threshold
Protected SOUTH Left Threshold
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PERM/PROTECTED:
0
OF HOURS THE SOUTHBOUND LEFT TURN CROSS PRODUCT IS MET FOR PROTECTED:
0

APPENDIX G

SIGNAL TIMING PLANS

OAKLAND COUNTY ROAD COMMISSION
TRAFFIC - SAFETY DEPARTMENT
SIGNAL WORK ORDER

LOCATION: Maple & Wixom DATE: 3-9-16

CITY/TOWNSHIP: Wixom BY: T. Creech

COUNTY#: 978 STATE#: -- CHARGES: 53391-0989 (LABOR)
53391-0981 (MATERIALS)

PLEASE PERFORM THE FOLLOWING:

_____ ELECTRICAL DEVICE: ____ INSTALL _____ MODERNIZE _____ MAINTENANCE

_____ UNDERGROUND: _____

_____ EDISON OK: _____ YES _____ NO JOB#: _____ MAY 22 2017

_____ COORDINATE W/DISTRICT 7: _____

DIAL..	1	1	1	1		2	2	2	2		3	3	3	3		4	4	4	4
SPLIT.	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
_____ CHANGE TIMING.....																			
_____ CHANGE OFFSET.....																			
_____ CHANGE CYCLE LENGTH.....																			
_____ ADD DIAL/SPLIT.....																			

X CHANGE BREAKOUT OR EPROM: REV 1

_____ CHANGE HOURS OF OPERATION:

OLD: _____

NEW: _____

_____ REPROGRAM TBC

_____ INSTALL INTERCONNECT: _____ TBC _____ MINITROL _____ TONE

_____ MBT OK: _____ YES _____ NO

_____ NO CHANGE - RECORD CORRECTION

X OTHER: Swap out existing controller w/MOD 52 SCATS controller. Install modem & phone jack. Hook up comms. Swap out D-connector and hook up Autoscope per paperwork. Rewire cabinet per attached cabinet changes sheet. Requires a checksum change.

APPROVED BY: _____ DATE: 5/2/17

DATE INSTALLED: 5-20-17

INSTALLED BY: Oberts-Kimmel

Cabinet Changes – CO 978 rev 1

Load Switches – Per Paperwork

Remove LS1, LS3

Backpanel Jumpers – Per Paperwork

Add 233-PB1, 237-PB1, 268-269.

Remove 145-146, 147-148, 149-150, 167-168, 169-170, 171-172, 233-234, 235-236, 237-238, 239-240, 269-270.

Field Wiring – Hook up per Paperwork

Unhook NB WIXOM off LS1 & hook up on LS2
Unhook WB MAPLE off LS3 & hook up on LS4

Signal Monitor – Per Paperwork

Add jumpers:	None
Remove jumpers:	1-3, 3-4
Add switches:	None
Remove switches:	SSM 1, 3

Flash Program – Wire per Paperwork

Wire LS1 for NO FLASH
Wire LS2 for FLA
Wire LS3 for NO FLASH
Wire LS4 for FLR

Autoscope – Per Paperwork

INTERSECTION :- 978 Maple & Wixom
DESCRIPTION PROMS :- X00978 / F2402
CONTROLLER TYPE :- STANDARD PERSONALITY CONTROLLER
SOFTWARE: MOD 52 SCATS

INPUTS :-
1. WB MAPLE L (LK)
2. WB MAPLE R (LK)
3. SB WIXOM L (LK)
4. SB WIXOM R (LK)
5. EB MAPLE L (LK)
6. EB MAPLE R (LK)
7. NB WIXOM L (LK)
8. NB WIXOM R (LK)

Note: All detectors are autoscope (2004 cameras)

PED 2: WIXOM PEDS WFG
PED 4: MAPLE PEDS P.B.

APPROACHES :-
A APP 1 : SB WIXOM L,R
B APP 1 : WB MAPLE L,R
A APP 2 : NB WIXOM L,R
B APP 2 : EB MAPLE L,R

FLEXIDATA :-

SEQUENCE	A,B	A,B
AUTO REL		
R- REL	A	A
R+ REL	B	B
Q- REL		
Q+ REL		

PEDESTRIANS :-
1. -
2. WIXOM PEDS
3. -
4. MAPLE PEDS (P-)

SPECIAL FEATURES :-
Personality revision is 1 (=A).
Pedestrians have automatic introduction using SCATS Y-.
A STAGE has a permanent demand.
Demand for stages B FLEXI and ISOL, set ZNEG to disable.
WIXOM PEDS is walk for green in A stage and is secret under masterlink.
WIXOM PEDS has automatic introduction in A stage.

BACKPANEL - 4 PHASE

LOAD SWITCH 2 - WIXOM	A & C	FLA
LOAD SWITCH 4 - MAPLE	B & D	FLR
LOAD SWITCH 6 - WIXOM PEDS	WA & WC	-
LOAD SWITCH 8 - MAPLE PEDS	WB & WD	-

JUMPERS :-
121-213,151-152,153-154,155-156,173-174,175-176,177-178,179-180,185-186,
223-224,229-230,233-PB1,237-PB1,241-PB1,255-256,257-258,259-260,261-262,
263-PB1,268-269,273-274.

SIGNAL MONITOR: NONE.
All switches OFF EXCEPT:DUAL SELECT A&B, G&Y ENABLE,SSM 2,4.
MINIMUM FLASH = 4 + 2 + 1 (7)

```
********************************
* CONTROLLER INFORMATION SHEET *
*     FOR SITE NO. 978         *
*          T. Creech           *
*         09-Mar-2016          *
********************************
```

CHECKSUMS:
Times C3 / 303
Pers 02 / 002
Total C1 / 301

FLEXILINK PLAN DATA

Intersection # 978 **State #** _____ **Date:** 03/09/16 **Prepared By:** T. Creech

Intersection: Maple & Wixom **City:** Wixom

Hours of Operation: 7 Days: 24 Hours **Approved By:** R. Jones

Hours of Flashing: NONE

		PL0	PL1	PL2	PL3	PL4	PL5	PL6	PL7	PL8
0	CL		80	120	120					
1	A		0	0	0					
2	B		49	80	80					
3	C									
4	D									
5	E									
6	F									
7	G									
8	R-									
9	R+									
10	Of (Y-)		0	0	0					
11	Y+	C								
12	Z-									
13	Z+									
14	Q-									
15	Q+									
16	XH									
17	XL									

NOTE: Stages with 1 second of phase time are skipped. Blank entries are default values equal to 0. Except for an AWA controller, entries #8 to #15 (=254) and 'C' entry means continuous (=255).

							Timers		
Phase	**Direction**	**Min**	**Max**	**ECO**	**Amber**	**All Red**	**Gap**	**Hdwy**	**Waste**
A	Wixom	10.0	40.0	5.0	4.3	2.5	3.0	1.2	10.0
B	Maple	7.0	20.0		3.5	2.5	3.5	1.2	10.0
C									
D									
E									
F									
G									

	Day	Hours	Plan#
SC1	8	6:00	2
SC2	8	9:00	1
SC3	8	15:00	3
SC4	8	19:00	1
SC5	14	0:00	1
SC6			
SC7			
SC8			
SC9			
SC10			

Pedestrian Crossing Times

Direction	Walk	CL 1	CL 2
Wixom Peds	7.0	5.0	3.8
Maple Peds	7.0	5.0	3.0

Normal Operating Mode

Isolated	Flexilink	Masterlink	Master Isolated	Flexi Isolated
		X		

DAY OF WEEK CODE NUMBER

0	End of Schedule	4	WED	8	MON-FRI	12	MON,FRI,SAT
1	SUN	5	THUR	9	MON-SAT	13	SAT,SUN
2	MON	6	FRI	10	TUE,WED,THU	14	EVERY DAY
3	TUE	7	SAT	11	MON,FRI	15	NEVER

Autoscope 37-Pin Male Output Harness (33457G2) Wiring

Autoscope Output Harness Pins #1 & 20 to Logic Common
Autoscope Output Harness Pins #18 & 37 to +24VDC

#978

Camera Number	EIM Switch Position	Autoscope EIM LED #	Autoscope Output Harness Pin #	SCATS D-Connector Terminal #	SCATS Detector Description
1	1	LED 1	29	1	WB Maple L
	1	LED 2	30	2	WB Maple R
	1	LED 3	31		
	1	LED 4	32		
	1	LED 5	33		
	1	LED 6	34		
	1	LED 7	35		
	1	LED 8	36		
2	2	LED 1	10	3	SB Wixom L
	2	LED 2	11	4	SB Wixom R
	2	LED 3	12		
	2	LED 4	13		
	2	LED 5	14		
	2	LED 6	15		
	2	LED 7	16		
	2	LED 8	17		
3	3	LED 1	21	5	EB Maple L
	3	LED 2	22	6	EB Maple R
	3	LED 3	23		
	3	LED 4	24		
	3	LED 5	25		
	3	LED 6	26		
	3	LED 7	27		
	3	LED 8	28		
4	4	LED 1	2	7	NB Wixom L
	4	LED 2	3	8	NB Wixom R
	4	LED 3	4		
	4	LED 4	5		
	4	LED 5	6		
	4	LED 6	7		
	4	LED 7	8		
	4	LED 8	9		

Autoscope 37-Pin Female Input Harnes (33457G3) Wiring

Autoscope Output Harness Pins #1 & 20 to Logic Common
Autoscope Output Harness Pins #18 & 37 to +24VDC

EIM Switch Position	Autoscope EIM LED #	Autoscope Input Harness Pin #	Phase Status Input From +24VDC	Back Panel Terminal Position
5	1	29	Ø8 Green	
5	2	30	Ø7 Green	
5	3	31	Ø6 Green	
5	4	32	Ø5 Green	
5	5	33	Ø4 Green	
5	6	34	Ø3 Green	
5	7	35	Ø2 Green	
5	8	36	Ø1 Green	
6	1	10	Ø8 Red	
6	2	11	Ø7 Red	
6	3	12	Ø6 Red	
6	4	13	Ø5 Red	
6	5	14	Ø4 Red	
6	6	15	Ø3 Red	
6	7	16	Ø2 Red	
6	8	17	Ø1 Red	

The preceeding table represents the correct wiring for phase inputs from the SCATS controller. The Autoscope™ input harness wires should be terminated at the +24VDC location on the back panel. The far right column is intetionally left blank so that the back panel terminal positions can be added as the cabinet is completed. This information is used for Autoscope™ extension and delay calculations. It is imperative that this harness is wired correctly. Failure to do so will result in erratic detector performance.

CASE SIGN LEGEND

ONLY

FACING ALL DIRECTIONS

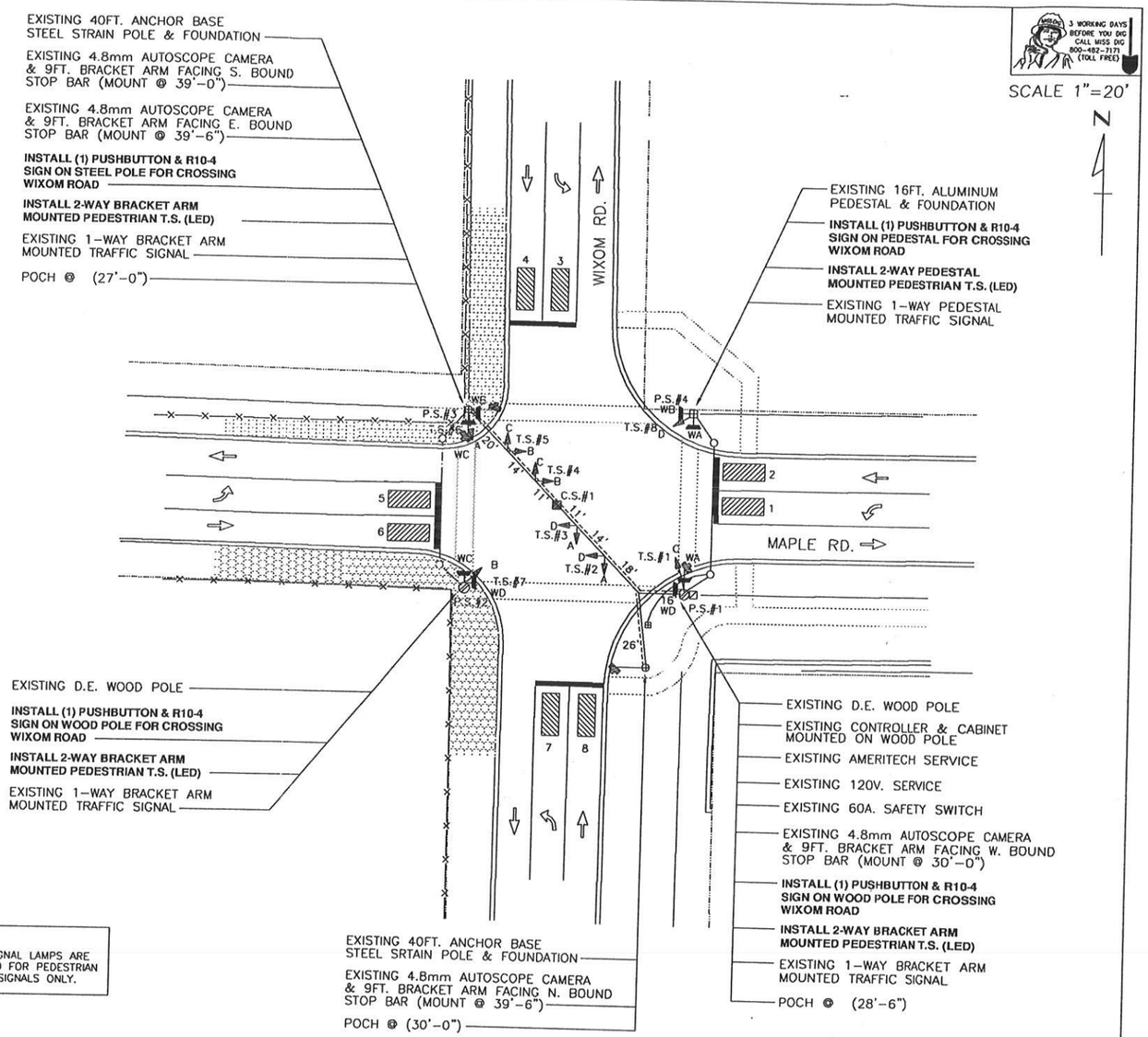
EXISTING FOUR-WAY, 24"X30" ILLUMINATED CASE SIGN C.S.#1

EXISTING PIPE EXTENSIONS AS FOLLOWS:

T.S.#2 - 17 INCHES
T.S.#3 - NO PIPE
T.S.#4 - NO PIPE
T.S.#5 - 17 INCHES
C.S.#1 - NO PIPE

LIST OF MATERIALS		
ITEM	QUANTITIES	CODE NO.
2-WAY BRACKET ARM MOUNTED PEDESTRIAN T.S. (LED)	3 EACH	6917050
2-WAY PEDESTAL MOUNTED PEDESTRIAN T.S. (LED)	1 EACH	6917050
PUSHBUTTON & SIGN	4 EACH	6910287

NOTE:
L.E.D. SIGNAL LAMPS ARE REQUIRED FOR PEDESTRIAN TRAFFIC SIGNALS ONLY.



INSTALLATION PLAN

SCALE: 1"=50'

DRAWN M.M.M.	CITY WIXOM			
DESIGNED J.S.H.	LOCATION # 978			
APPROVED D.M.D.	LOCATION MAPLE & WIXOM			
TRAFFIC-SAFETY DEPARTMENT	DATE 07/31/01	PROJECT #	PROJECT NAME	SHEET NO. 01 / TOTAL SHEETS 01

08/08/01 DATE — ADDED P.S. & PED SIGNALS REVISION