

Nov 30, 2023

Paul Modi, PE
S.M. Engineers, LLC
1939 Lincolnshire Drive
Rochester Hills, MI 48309

RE: Intersection Analysis, M-36 at Hamburg Rd, Hamburg Twp, Michigan

Dear Mr. Modi:

Per your request Atkins Michigan, Inc. has updated the traffic study, dated May 2022, completed for evaluating impact of a proposed residential development south of M-36/Hamburg Road intersection in Hamburg Township. This update covers the changes in the site plan developed since the previous version of the study was completed and submitted to MDOT for review.

The junction is a three-leg stop sign-controlled intersection, located on M-36 approximately 2.75 miles west of US-23 in Hamburg Township, a part of the MDOT University Region. Figure 1 shows the intersection location.



Figure 1- Site Location

As a part of the original study, Atkins collected peak hour traffic volume data, prepared trip generation estimates and distributed traffic to the roadway network. Subsequently we conducted capacity analysis for the existing and proposed conditions. The development has expanded from the original concept and the revised site plan has the following details:

- Single-family housing 40 units (seven 4 unit buildings, one 5 unit building, and one 7 unit building)
- Proposed 1,395 ft² office area
- Two additional fuel pump stations added to the existing gas station

- Additional 2,000 ft² retail area added to existing gas station

Existing Conditions

M-36 is a state trunkline that runs in the east-west direction providing a key connection between US-23 and the US-127. At the project location, it has a three-leg intersection with M-36 on the east leg with a 2-lane cross section with a posted speed limit of 45 mph. The north leg is also M-36 with a 3-lane cross section with a posted speed limit of 40 mph. Hamburg Road is the westerly leg with a 2-lane cross section and a posted speed limit of 25 mph.

The M-36 southbound approach and the Hamburg Road eastbound approach have Stop sign control. The westbound M-36 approach has a free flow movement with a continuous green arrow for the right turning movement, see Figure 2 below.

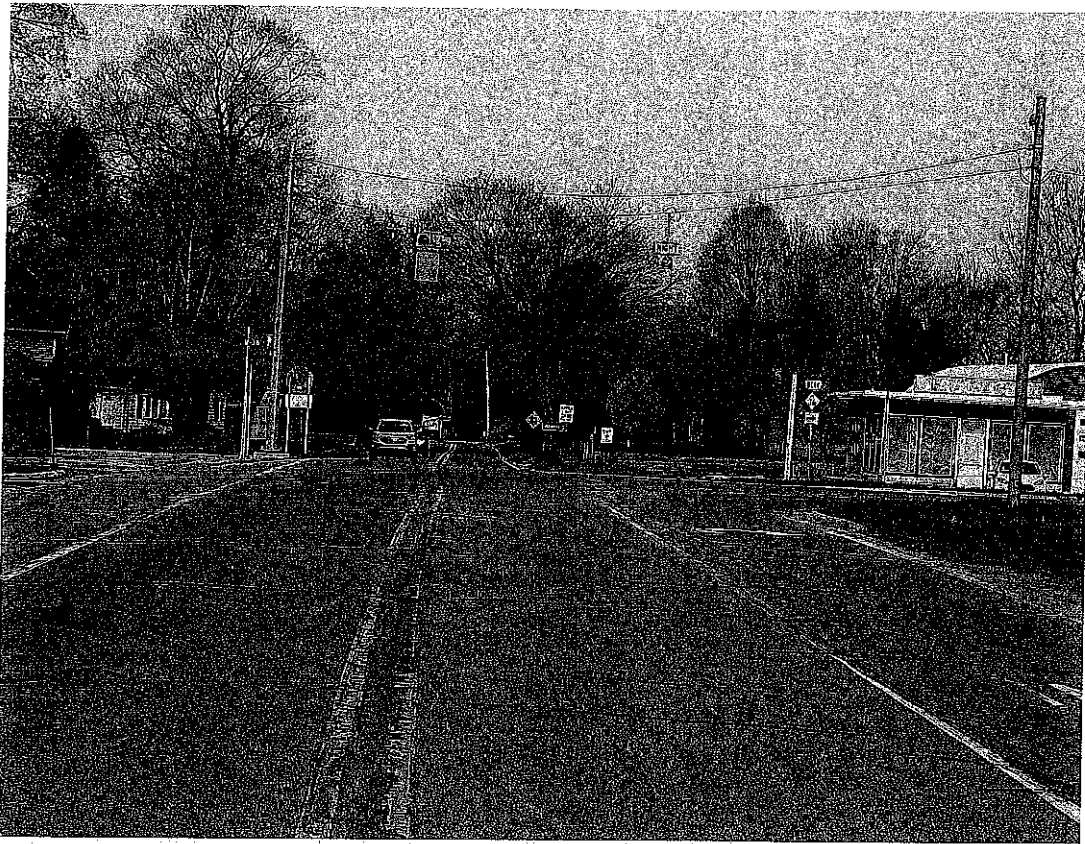


Figure 2- Westbound M-36 Approach at Hamburg Rd Intersection

Data Collection

Atkins collected existing weekday intersection turning movement counts on Wednesday May 11, 2022, during the morning (7:00-9:00 am) and afternoon (3:45-5:45 pm) peak hours. The highest hour period of traffic was observed to be 7:15-8:15 am for morning and 4:30-5:30 pm for the afternoon. The traffic count data is provided in the Attachment A.

Development Details

The existing location is an undeveloped site. The proposed residential development is comprised of 38 units of single-family homes and a community office with an area of 1,395 ft². The proposed site plan is included as Attachment B. The development will be connected to the existing M-36/Hamburg Rd intersection on the south side as a fourth leg, see Figure 3 below.

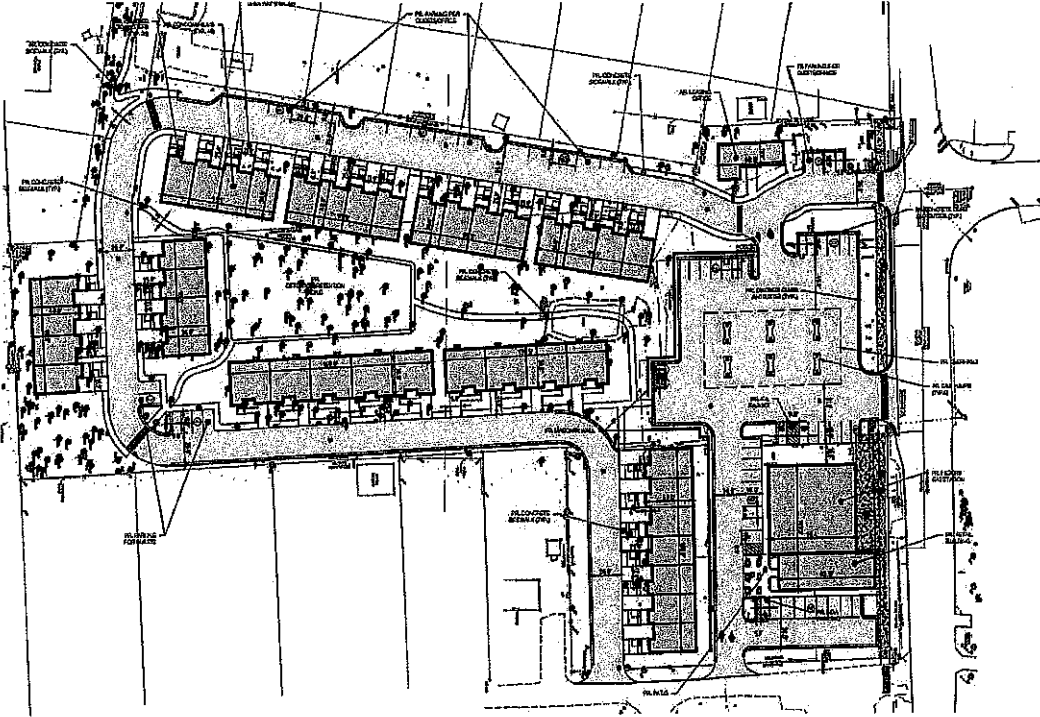


Figure 3- Proposed Site Plan and Access Layout

Trip Generation Estimate for the Proposed Development

To evaluate the trip generation potential for a proposed development, an estimate of number of trips to be generated using variables such as land use type, area, number of employees etc. is conducted. A trip is a single or one-directional vehicle movement with either the origin or the destination as the study site. Thus a vehicle entering and leaving a site would be recorded as generating two trips.

The most widely used source for estimating future trips is the *Trip Generation Manual* published by the Institute of Transportation Engineers (ITE). Trips are estimated by rates or equations provided in the *Trip Generation Manual* for the applicable type of land use. The average trip generation rates in the *Trip Generation Manual* represent weighted averages from studies conducted throughout the United States and Canada.

The number of trips that would be generated by the proposed residential development was estimated based on ITE Land Use type **Single-Family Detached Housing (Code 210)** using the number of dwelling units (38). The number of trips that would be generated by the proposed office area manufacturing development was estimated based on ITE Land Use type **General Office (Code 710)** using the gross floor area (1,395 ft²). The number of trips that would be generated by the additional fuel pumps and retail area was estimated based on ITE Land Use **Convenience Store/Gas Station (Code 945)**.

Table 1 – ITE Site Generated Peak Hour Traffic Volumes Rates

Land Use	Trips	Rate	In	Out
210 Single-Family Housing	AM Peak Hour	$\text{Ln}(T)=0.91 \text{ Ln}(X)+0.20$	26%	74%
	PM Peak Hour	$\text{Ln}(T)=0.94 \text{ Ln}(X)+0.34$	64%	36%
710 Office	AM Peak Hour	1.16/1,000 ft ² GFA	83%	17%
	PM Peak Hour	1.15/1,000 ft ² GFA	17%	83%
945 Convenience Store	AM Peak Hour	10.98/Veh Fueling Stn	50%	50%
	PM Peak Hour	4.34/Veh Fueling Stn	50%	50%

Based on the rates and equations provided in Table 1, future site trips were estimated. These estimates are based on peak hour of the adjacent street traffic, typically 7-9 am in the morning and 4-6 pm in the afternoon and are provided in Table 2

Table 2 – Estimated Site Generated Peak Hour Traffic Volumes

Land Use	Trips	Total	In	Out
210 Single-Family Housing	AM Peak Hour	34	9	25
	PM Peak Hour	39	25	14
710 Office	AM Peak Hour	4	4	0
	PM Peak Hour	5	1	4
945 Convenience Store/Gas Stn	AM Peak Hour	22	11	11
	PM Peak Hour	9	4	5
Total AM peak hour		60	24	36
Total PM Peak Hour		53	30	23

The trip estimate for the Convenience store and gas station was estimated based on the difference in the trip rate for the Convenience Store/Gas Station (GFA 2-4K) with 8 fueling pumps and 945 Convenience Store/Gas Station (GFA 4-5.5K) with 10 fueling pumps.

Trip Distribution

The directions from which vehicles will approach and depart a site is a function of several variables, including the population and employment distribution within the development's area of influence, the operational characteristics of the street system, and the ease with which drivers can travel over various sections of the roadway network without encountering congestion.

The directional distribution of new trips generated by the proposed development was based on the existing traffic pattern and is summarized in Table 3.

Table 3 – Trip Distribution Percentage AM/PM Peak Hours

Trips	In			Out		
	From East M-36	From North M-36	From West Hamburg Rd	To East M-36	To North M-36	To West Hamburg Rd
AM Peak Hour	32%	56%	12%	59%	34%	7%
PM Peak Hour	60%	33%	7%	28%	60%	12%

The estimate of directional distribution of new trips generated by the proposed development based on the existing traffic pattern is provided in Table 4.

Table 4 – Trip Distribution Estimate AM/PM Peak Hours

Trips	In			Out		
	From East M-36	From North M-36	From West Hamburg Rd	To East M-36	To North M-36	To West Hamburg Rd
AM Peak Hour	8	13	3	21	12	3
PM Peak Hour	18	10	2	6	14	3

Existing Condition -Level of Service Analysis

Existing peak hour vehicle delays and Levels of Service (LOS) were performed for the un-signalized three-legged intersection of M-36 and Hamburg Rd using Synchro (Version 11) traffic analysis software. This analysis was based on the existing, traffic volumes, lane use and traffic control. The Highway Capacity Manual grade intersections in terms of Level of Service (LOS) from A to F with F being the worst traffic operation condition.

The directional distribution of new trips generated by the proposed development was based on the existing traffic pattern.

Table 5 – Existing Peak Hour Traffic Volumes

Condition	SB M-36		WB-36		EB Hamburg Rd	
	Left	Right	Thru	Right	Left	Thru
Existing AM	377	28	25	204	41	45
Existing PM	260	74	47	566	50	25

The existing traffic control, stop sign for southbound and eastbound movements, in Synchro doesn't produce correct delay results. Therefore, minor modifications were introduced by making the east-west legs free and kept the southbound approach Stop sign controlled. The LOS based on existing conditions is provided in Table 6.

Table 6 – Existing Peak Hour LOS (Delay) Results

Condition	SB M-36		WB-36		EB Hamburg Rd
	Left	Right	Thru	Right	Left/Thru
Existing AM	B (14.2)	A (8.5)	Free	Free	A (7.8)
Existing PM	B (12.6)	A (8.8)	Free	Free	A (9.1)

Future Condition – Level of Service Analysis

Future peak hour vehicle delays and Levels of Service (LOS) were performed for the new 4-legged intersection of M-36 and Hamburg Rd using Synchro (Version 11) traffic analysis software. This analysis was based on the future projected traffic volumes, new intersection geometry and traffic control. The future volumes at the intersection are provided in Table 7.

Table 7 – Future Projected Peak Hour Traffic Volumes

Volumes	SB M-36			NB Driveway			EB Hamburg Rd			WB M-36		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Existing AM	377	n/a	28	n/a	n/a	n/a	41	45	n/a	n/a	25	204
New Trips	0	13	0	3	12	21	0	0	3	18	0	0
Total	377	13	28	3	12	21	41	45	3	18	25	204
Existing PM	260	n/a	74	n/a	n/a	n/a	50	25	n/a	n/a	47	566
New Trips	0	10	0	3	14	6	0	0	2	18	0	0
Total	260	10	74	3	14	6	50	25	2	18	47	566

The traffic control used in the existing conditions, two-way stop sign control for east and west legs, was retained with the new south leg added as stop sign controlled approach. The LOS based on future geometry and projected traffic volumes is provided in Table 8.

Table 8 – Future Peak Hour LOS (Delay) Results – Two Way Stop Control

Approach	NB Driveway	SB M-36		EB Hamburg Rd	WB M-36
Control	Stop Sign	Stop Sign		Free	Free
Movement	Left/Thru/Right	Left/Thru	Right	Left	Left
AM Peak	B (10.5)	C (22.9)	A (8.6)	A (7.9)	A (7.4)
PM Peak	C (17.3)	B (17.3)	A (8.9)	A (9.4)	A (7.3)

In addition to the 2-way stop control, a 4-way stop control scenario was also evaluated. A channelized island was assumed to be in place for the westbound right turn movement. The LOS based on a 4-Way Stop control is provided in Table 9.

Table 9 – Future Peak Hour LOS (Delay) Results – Four Way Stop Control

Approach	NB Driveway	SB M-36		EB Hamburg Rd	WB M-36	
Control	Stop Sign	Stop Sign		Stop Sign	Stop Sign	Free
Movement	Left/Thru/Right	Left/Thru	Right	Left	Left/Thru	Right
AM Peak	A (9.9)	D (30.5)	A (8.1)	B (11.6)	B (10.1)	B (12.1)
PM Peak	B (11.2)	C (22.8)	A (10.0)	B (12.0)	B (10.1)	F (66.6)

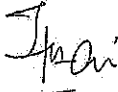
Summary

The proposed development will add 60 new trips in the AM peak and 53 new trips in the PM peak. It is recommended to update the existing traffic control for the intersection to a Two-Way Stop sign control with the north and south legs operating with a Stop sign control and east and west legs operating as free movements.

Based on the overall intersection analysis the intersection will continue to operate at LOS B or better with the reconfigured geometry, 2-way traffic control and addition of the new south leg. The critical movement, southbound left-turns, will experience a minor degradation from LOS B to LOS C during the AM Peak hour.

Should you have any questions or need additional information, please contact me at (248) 250 4843 or by email Tanveer.khan@atkinsrealis.com.

Sincerely,



Tanveer Khan, PE, PTOE
Senior Project Manager

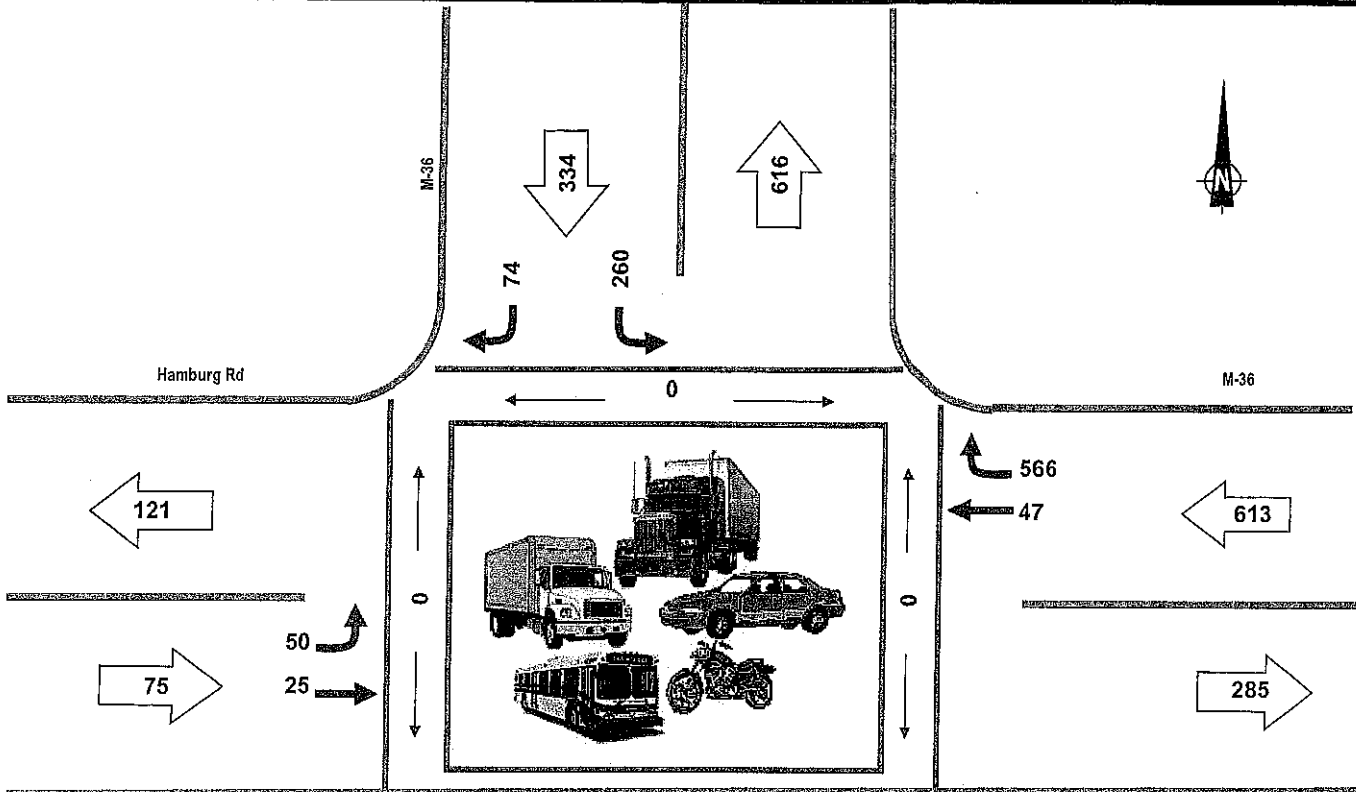
Attachment A: Proposed Development Site Plan

Attachment B: Traffic Volumes

Project: 100079442
Municipality: Hamburg Twp, MI
Weather: Clear
Vehicle Class: All Motorized Vehicles
Notes: Peak Hour Traffic Counts

Afternoon Peak Period

Peak Hour Traffic by Movement 7:15 AM to 8:15 AM



Intersection Peak Hour is Highlighted in YELLOW

Time	SOUTHBOUND			NORTHBOUND			EASTBOUND			WESTBOUND			PEDESTRIANS				Total Volumes
	left	thru	right	left	thru	right	left	thru	right	left	thru	right	N	S	W	E	
Peak Hour	260		74				50	25			47	566					1,022
PHF	1.00		0.97				0.11	0.69			0.98	1.10					0.96
Peak 15 X 4	260		76				436	36			48	516					2,108
Average Hour																	
03:45 PM	65		10				17	10			7	108					217
04:00 PM	64		15				11	10			10	135					245
04:15 PM	66		17				14	11			11	112					231
04:30 PM	65		19				11	8			14	151					266
04:45 PM	55		19				18	4			7	136					239
05:00 PM	71		19				10	6			14	150					270
05:15 PM	69		17				11	9			12	129					247
05:30 PM	66		15				11	7			11	109					219

Attachment B: Synchro Analysis Reports

Intersection						
Int Delay, s/veh	8.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	41	45	25	204	377	28
Future Vol, veh/h	41	45	25	204	377	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	225	250	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	49	27	222	410	30

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	249	0	-	0	166 27
Stage 1	-	-	-	-	27 -
Stage 2	-	-	-	-	139 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1317	-	-	-	824 1048
Stage 1	-	-	-	-	996 -
Stage 2	-	-	-	-	888 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1317	-	-	-	795 1048
Mov Cap-2 Maneuver	-	-	-	-	795 -
Stage 1	-	-	-	-	961 -
Stage 2	-	-	-	-	888 -

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1317	-	-	-	795	1048
HCM Lane V/C Ratio	0.034	-	-	-	0.515	0.029
HCM Control Delay (s)	7.8	-	-	-	14.2	8.5
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	3	0.1

Intersection

Int Delay, s/veh 4.3

Movement EBL EBT WBT WBR SBL SBR

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	50	25	47	566	260	74
Future Vol, veh/h	50	25	47	566	260	74
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	225	250	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	27	51	615	283	80

Major/Minor Major1 Major2 Minor2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	666	0	186
Stage 1	-	-	51
Stage 2	-	-	135
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pol Cap-1 Maneuver	923	-	803
Stage 1	-	-	971
Stage 2	-	-	891
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	923	-	756
Mov Cap-2 Maneuver	-	-	756
Stage 1	-	-	914
Stage 2	-	-	891

Approach EB WB SB

HCM Control Delay, s	6.1	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 SBLn2

Capacity (veh/h)	923	-	-	756	1017
HCM Lane V/C Ratio	0.059	-	-	0.374	0.079
HCM Control Delay (s)	9.1	-	-	12.6	8.8
HCM Lane LOS	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	1.7	0.3

Intersection

Int Delay, s/veh 12.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↑		↑			↑	↑
Traffic Vol, veh/h	41	45	3	18	24	204	3	12	21	377	13	28
Future Vol, veh/h	41	45	3	18	24	204	3	12	21	377	13	28
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	-	-	-	-	-	225	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	54	3	20	29	244	3	13	23	451	14	33

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	273	0	0	57
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1290	-	-	1547
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1290	-	-	1547
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	0.5	10.5	21.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	691	1290	-	-	1547	-	-	654	1046
HCM Lane V/C Ratio	0.057	0.038	-	-	0.013	-	-	0.711	0.032
HCM Control Delay (s)	10.5	7.9	-	-	7.4	-	-	22.9	8.6
HCM Lane LOS	B	A	-	-	A	-	-	C	A
HCM 95th %ile Q(veh)	0.2	0.1	-	-	0	-	-	5.9	0.1

Intersection

Int Delay, s/veh 5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↑		↔			↑	↑
Traffic Vol, veh/h	50	25	2	18	47	566	3	14	6	260	10	74
Future Vol, veh/h	50	25	2	18	47	566	3	14	6	260	10	74
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	-	-	-	-	-	225	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	60	30	2	20	56	677	3	15	7	311	11	88

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	733	0	0	32
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	872	-	-	1580
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	872	-	-	1580
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.1	0.2	17.3	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	318	872	-	-	1580	-	-	611	1011
HCM Lane V/C Ratio	0.079	0.069	-	-	0.012	-	-	0.527	0.088
HCM Control Delay (s)	17.3	9.4	-	-	7.3	-	-	17.3	8.9
HCM Lane LOS	C	A	-	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	0.2	-	-	0	-	-	3.1	0.3

Intersection	
Intersection Delay, s/veh	20.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↑		↑			↑	↑
Traffic Vol, veh/h	41	45	3	18	24	204	3	12	21	377	13	28
Future Vol, veh/h	41	45	3	18	24	204	3	12	21	377	13	28
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	54	3	20	29	244	3	13	23	451	14	33
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	11.6	11.8	9.9	29
HCM LOS	B	B	A	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	46%	43%	0%	97%	0%
Vol Thru, %	33%	51%	57%	0%	3%	0%
Vol Right, %	58%	3%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	89	42	204	390	28
LT Vol	3	41	18	0	377	0
Through Vol	12	45	24	0	13	0
RT Vol	21	3	0	204	0	28
Lane Flow Rate	39	106	48	244	465	33
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.069	0.201	0.089	0.388	0.81	0.047
Departure Headway (Hd)	6.324	6.821	6.658	5.73	6.275	5.08
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	564	525	537	627	576	704
Service Time	4.386	4.882	4.41	3.482	4.009	2.814
HCM Lane V/C Ratio	0.069	0.202	0.089	0.389	0.807	0.047
HCM Control Delay	9.9	11.6	10.1	12.1	30.5	8.1
HCM Lane LOS	A	B	B	B	D	A
HCM 95th-ile Q	0.2	0.7	0.3	1.8	8	0.1

Intersection	
Intersection Delay, s/veh	43.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑	↑		↔			↑	↑
Traffic Vol, veh/h	50	25	2	18	47	566	3	14	6	260	10	74
Future Vol, veh/h	50	25	2	18	47	566	3	14	6	260	10	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	60	30	2	20	56	677	3	15	7	311	11	88
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	12	60.9	11.2	20
HCM LOS	B	F	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	65%	28%	0%	96%	0%
Vol Thru, %	61%	32%	72%	0%	4%	0%
Vol Right, %	26%	3%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	77	65	566	270	74
LT Vol	3	50	18	0	260	0
Through Vol	14	25	47	0	10	0
RT Vol	6	2	0	566	0	74
Lane Flow Rate	25	92	76	677	322	88
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.052	0.182	0.133	1.032	0.649	0.149
Departure Headway (Hd)	7.746	7.349	6.337	5.488	7.422	6.219
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	465	491	565	663	489	580
Service Time	5.746	5.349	4.081	3.232	5.122	3.919
HCM Lane V/C Ratio	0.054	0.187	0.135	1.021	0.658	0.152
HCM Control Delay	11.2	12	10.1	66.6	22.8	10
HCM Lane LOS	B	B	B	F	C	A
HCM 95th-tile Q	0.2	0.7	0.5	17.2	4.6	0.5