FLEIS&VANDENBRINK
DESIGN. BUILD. OPERATE.

MEMO

VIA EMAIL bobl@elevate-property.com

To:	**Elevate Land Holdings**
From:	**Jacob Swanson, PE, PTOE** **Paul Bonner, EIT** **Fleis & VandenBrink**
Date:	**September 5, 2024**
Re:	**The Crossing at Lakelands Trail** **Hamburg Township, Michigan** **Traffic Impact Study**

1 INTRODUCTION

This memorandum presents the results of the Traffic Impact Study (TIS) for the proposed residential development in Hamburg Township, Michigan. The project site is located south of M-36, adjacent to the existing Learning Lane, as shown on the attached **Figure 1**. The proposed development includes the construction of multi-family residential units on property that is currently vacant; however, the site was previously occupied by Hamburg Elementary School. Site access is proposed via the existing Learning Lane access location on M-36, which is under the jurisdiction of the Michigan Department of Transportation (MDOT). This TIS has been performed pursuant to MDOT requirements for the permitting of site access and the requirements of Hamburg Township for site plan approval.

The scope of work for this study was developed based on Fleis & VandenBrink's (F&V) knowledge of the study area, understanding of the development program, accepted traffic engineering practices, and information published by the Institute of Transportation Engineers (ITE). The study analyses were completed using Synchro/SimTraffic (Version 11) traffic analysis software. Sources of data for this study include F&V subconsultant Quality Counts, LLC (QC), Hamburg Township, MDOT, the Southeast Michigan Council of Governments (SEMCOG), and ITE.

2 BACKGROUND DATA

2.1 EXISTING ROAD NETWORK

The lane use and traffic control at the study intersections is shown on the attached **Figure 2** and the study roadways are further described below. For the purposes of this study, minor streets and driveways were assumed to have an operating speed of 25 miles per hour (mph), unless otherwise noted.

M-36 runs in the generally in the east / west directions, adjacent to the north side of the project site. The study section of M-36 is classified as a *Minor Arterial*, is under the jurisdiction of MDOT, and has an Annual Average Daily Traffic (AADT) volume of approximately 9,300 (SEMCOG 2022) vehicles per day (vpd). The posted speed limit changes at the Hall Road intersection, from 45-mph east of the intersection to 40-mph west of the intersection. The study section of roadway provides a typical two-lane cross-section, with one (1) lane of travel in each direction. Additionally, the roadway turns north/south for a short section, north of Hamburg Road, and widens to provide a typical three-lane cross-section, with one (1) lane of travel in each direction and a center two-way left-turn lane (TWLTL). An exclusive westbound right-turn lane is also provided on the M-36 approach at the Hamburg Road intersection.

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Hamburg Road generally runs in the north / south directions, southwest of M-36, approximately 600-feet west of the project site. Hamburg Road is classified as a *Major Collector*, is under the jurisdiction of LCRC, has a posted speed limit of 25-mph, and has an AADT volume of approximately 3,500 vpd (SEMCOG 2022). The study section of roadway provides a typical two-lane cross-section, with one (1) lane of travel in each direction.

Hall Road runs in the north / south directions, approximately 700-feet east of the project site. The study section of roadway is classified as a *Local Road*, is under the jurisdiction of LCRC, has an assumed prima facie speed limit of 55-mph, and has an AADT volume of approximately 592 vpd (MDOT 2023). Hall Road provides a typical two-lane cross-section, with one (1) lane of travel in each direction.

2.2 Existing Traffic Volumes

F&V subconsultant QC collected existing Turning Movement Count (TMC) data on Thursday, July 18, 2024, during the AM (7:00 AM to 9:00 AM) peak period and Wednesday, July 17, 2024, during the PM (4:00 PM to 6:00 PM) peak period, at the following study intersections:

- M-36 & Hamburg Road
- M-36 & Hall Road
- M-36 & Learning Lane

During collection of the turning movement counts, Peak Hour Factors (PHFs), pedestrian and bicycle volumes, and commercial truck percentages were recorded and used in the traffic analysis. The peak hour of each of the study intersections was utilized and the through volumes were balanced upwards through the roadway network. Therefore, the traffic volumes utilized in the analysis and shown on the attached traffic volume figures may not match the raw traffic volumes shown in the attached data collection.

The weekday AM and PM peak hours for the adjacent study roadway network were observed to generally occur between 7:15 AM to 8:15 AM and 4:00 PM to 5:00 PM, respectively. F&V collected an inventory of the existing lane use and traffic control, as shown on the attached **Figure 2**. The existing 2024 peak hour traffic volumes used in the analysis are shown on the attached **Figure 3**. All applicable background data is attached.

3 Existing Conditions (2024)

Existing peak hour vehicle delays and Levels of Service (LOS) were calculated at the study intersections using Synchro/SimTraffic (Version 11) traffic analysis software. This analysis was based on the existing lane use and traffic control shown on the attached **Figure 2**, the existing peak hour traffic volumes shown on the attached **Figure 3**, and the methodologies presented in the *Highway Capacity Manual, 6th Edition* (HCM6).

Note: The study intersection of M-36 & Hamburg Road currently contains unique two-way stop-control, with stop signs on adjacent approaches (eastbound and southbound). None of the HCM methodologies support this unique geometry; therefore, SimTraffic Delay Reports were utilized to evaluate this study intersection.

Descriptions of LOS "A" through "F", as defined in the HCM6, are attached. Typically, LOS D is considered acceptable, with LOS A representing minimal delay, and LOS F indicating failing conditions. Additionally, SimTraffic network simulations were reviewed to evaluate network operations and vehicle queues. The results of the existing conditions analysis are attached and summarized in **Table 1**.

The results of the existing conditions analysis indicates that all approaches and movements at the study intersections are currently operating acceptably, at LOS D or better, during both the AM and PM peak hours, with the exception of the following:

M-36 & Hamburg Road

- During the PM peak hour: The eastbound approach is currently operating at LOS E.

  Review of SimTraffic network simulations indicates occasional periods of vehicle queues; however, these queues were observed to dissipate and were not present throughout the entire peak period. The reported 95th percentile vehicle queue lengths were observed to not exceed 180-feet (7-8 vehicles). Additionally, it should be noted that MDOT has programmed improvements for this study intersection (all-way stop-control); therefore, mitigation measures are not recommended at this time.

Review of SimTraffic network simulations for the remaining study roadway network indicates acceptable operations during both peak periods. Vehicles were observed to find adequate gaps within the through traffic along M-36, without experiencing significant delays or excessive vehicle queueing.

Table 1: Existing Intersection Operations

Intersection		Control	Approach	Existing Conditions			
				AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	M-36 & Hamburg Road	Stop (EB & SB)	EB	9.3	A	40.1	E
			WBT	Free			
			WBR	Free			
			SBL	10.7	B	15.1	C
			SBT	3.4	A	4.9	A
2	M-36 & Learning Lane / Church Drive	Stop (Minor)	EBL	0.0*	A	9.3	A
			WBL	0.0*	A	0.0*	A
			NB	0.0*	A	0.0*	A
			SB	0.0*	A	17.2	C
3	M-36 & Hall Road	Stop (Minor)	EB	Free			
			WBL	9.1	A	8.2	A
			NB	16.3	C	21.0	C

** Indicates no vehicle volume present.*

4 Background Conditions (2028)

4.1 Background Growth

Historical population and economic profile data was obtained for Hamburg Township from the Southeast Michigan Council of Governments (SEMCOG) database, in order to calculate an annual background growth rate to project the existing 2024 peak hour traffic volumes to the site buildout year of 2028. Population and employment projections from 2020 to 2050 were reviewed and showed average annual growth rates of approximately 0.35% and 0.40%, respectively. Therefore, a conservative annual background growth rate of **0.50%** per year was applied to the existing 2024 peak hour traffic volumes, in order to forecast the background 2028 peak hour traffic volumes without the proposed development.

In addition to background growth, it is important to account for traffic that will be generated by approved developments within the vicinity of the study roadway network, that have yet to be constructed or are currently under construction. At the time of this study, the following development plan was identified by MDOT and was included as background traffic:

- M-36 & Hamburg Road – Mixed Use Development

The projected trips generated by this development were applied to the study roadway network, based on the TIS completed for the project site. Therefore, these trips were added to the existing traffic volumes, after applying the **0.50%** annual growth rate, in order to calculate the background 2028 peak hour traffic volumes ***without the proposed development***, as shown on the attached **Figure 4**.

Additionally, the background development has proposed a fourth leg to the existing study intersection of M-36 & Hamburg Road. Therefore, as part of the background development, MDOT has programmed improvements to update the existing traffic control for the intersection to all-way stop-control; these improvements were assumed as a baseline condition for the study roadway network for both the background and the future conditions analyses. Furthermore, the revised intersection geometry and traffic control has removed the unique stop-control condition; therefore, the HCM6 evaluation methodologies were utilized for this study intersection under the background and future condition analyses.

4.2 Background Intersection Operations

Background peak hour vehicle delays and LOS ***without the proposed development*** were calculated at the study intersections based on the background lane use and traffic control shown on the attached **Figure 2**, the background peak hour traffic volumes shown on the attached **Figure 4**, and the methodologies presented in the HCM6. The results of the background conditions analysis are attached and summarized in **Table 2**.

Table 2: Background Intersection Operations

	Intersection	Control	Approach	Existing Conditions				Background Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	M-36 & Hamburg Road / Driveway	Existing Stop (EB & SB) / Background Stop (All-Way)	EB	9.3	A	40.1	E	12.9	B	14.3	B	3.6	A→B	-25.8	E→B
			WBTL	Free				10.8	B	10.5	B	N/A			
			WBR	Free				16.5	C	108.9	F	N/A			
			NB	N/A				10.6	B	11.9	B	N/A			
			SBL	10.7	B	15.1	C	52.6	F	28.0	D	41.9	B→F	12.9	C→D
			SBTR	3.4	A	4.9	A	8.9	A	10.8	B	5.5	-	5.9	A→B
			Overall	**N/A**				**32.5**	**D**	**64.8**	**F**	**N/A**			
2	M-36 & Learning Lane / Church Drive	Stop (Minor)	EBL	0.0*	A	9.3	A	0.0*	A	9.4	A	0.0*	-	0.1	-
			WBL	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
			NB	0.0*	A	0.0*	A	0.0*	A	0.0*	A	0.0*	-	0.0*	-
			SB	0.0*	A	17.2	C	0.0*	A	18.0	C	0.0*	-	0.8	-
3	M-36 & Hall Road	Stop (Minor)	EB	Free				Free				Free			
			WBL	9.1	A	8.2	A	9.2	A	8.3	A	0.1	-	0.1	-
			NB	16.3	C	21.0	C	17.2	C	22.5	C	0.9	-	1.5	-

** Indicates no vehicle volume present. NOTE: Decreased delays and improved LOS are the result of* the baseline background improvements.

The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating acceptably, at LOS D or better, during both peak periods, in a manner similar to the existing conditions analysis, with the exception of the following:

M-36 & Hamburg Road

- During the AM peak hour: The southbound left-turn lane is expected to operate at LOS F.
- During the PM peak hour: The westbound right-turn is expected to operate at LOS F.

  Review of SimTraffic network simulations indicates occasional periods of vehicle queues; however, these queues were observed to dissipate and were not present throughout the entire peak period.

Review of SimTraffic network simulations indicates acceptable operations throughout the remaining study roadway network, similar operations to the existing conditions observations.

5 Site Trip Generation

The number of weekday peak hour (AM and PM) and daily vehicle trips that would be generated by the proposed development were calculated using the information published by ITE in the *Trip Generation Manual, 11th Edition*. The proposed development includes the construction of multi-family residential units, with access provided via the existing Learning Lane access location on M-36. The stie trip generation forecast utilized for this study is summarized in **Table 3**.

Table 3: Site Trip Generation Summary

Land Use	ITE Code	Amount	Units	Average Daily Traffic (vpd)	AM Peak Hour (vph)			PM Peak Hour (vph)		
					In	Out	Total	In	Out	Total
Multi-Family Housing (Low-Rise)	220	208	DU	1,409	21	66	87	69	41	110

6 SITE TRIP DISTRIBUTION

The vehicular trips that would be generated by the proposed development were assigned to the study roadway network based on the proposed site access plan and driveway configurations, the existing peak hour traffic patterns in the adjacent roadway network, and the methodologies published by ITE. The ITE trip distribution methodology assumes that new trips will enter the network and access the development, then leave the development and return to their direction of origin. The site trip distributions utilized in the analysis are summarized in **Table 4**.

Table 4: Site Trip Distribution

To/From	Via	AM	PM
Northwest	M-36	33%	30%
South	Hall Road	2%	4%
East	M-36	58%	56%
Southwest	Hamburg Road	7%	10%
Total		**100%**	**100%**

The site-generated traffic volumes shown in **Table 3** were distributed to the study roadway network according to the distribution shown in **Table 4**. The site-generated trips shown on the attached **Figure 5** were added to the background peak hour traffic volumes shown on the attached **Figure 4**, in order to calculate the future peak hour traffic volumes, ***with the addition of the proposed development***. Future peak hour traffic volumes are shown on the attached **Figure 6**.

7 FUTURE CONDITIONS (2028)

Future peak hour vehicle delays and LOS ***with the addition of the proposed development***, were calculated based on the background and proposed lane use and traffic controls shown on the attached **Figure 2**, the future peak hour traffic volumes shown on the attached **Figure 6**, and the methodologies presented in the HCM6. The results of the future conditions analysis are attached and summarized in **Table 5**.

Table 5: Future Intersection Operations

	Intersection	Control	Approach	Background Conditions				Future Conditions				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
1	M-36 & Hamburg Road / Driveway	Stop (All-way)	EB	12.9	B	14.3	B	13.2	B	14.9	B	0.3	-	0.6	-
			WBT	10.8	B	10.5	B	11.0	B	10.8	B	0.2	-	0.3	-
			WBR	16.5	C	108.9	F	18.4	C	127.1	F	1.9	-	18.2	-
			NB	10.6	B	11.9	B	10.8	B	12.1	B	0.2	-	0.2	-
			SBTL	52.6	F	28.0	D	59.7	F	32.8	D	7.1	-	4.8	-
			SBR	8.9	A	10.8	B	9.1	A	10.9	B	0.2	-	0.1	-
			Overall	**32.5**	**D**	**64.8**	**F**	**36.0**	**E**	**74.5**	**F**	**3.5**	**D→E**	**9.7**	**-**
2	M-36 & Learning Lane / Church Drive	Stop (Minor)	EBL	0.0*	A	9.4	A	0.0*	A	9.4	A	0.0*	-	0.0	-
			WBL	0.0*	A	0.0*	A	9.1	A	8.4	A	9.1	-	8.4	-
			NB	0.0*	A	0.0*	A	20.1	C	23.3	C	20.1	A→C	23.3	A→C
			SB	0.0*	A	18.0	C	0.0*	A	20.0	C	0.0*	-	2.0	-
3	M-36 & Hall Road	Stop (Minor)	EB	Free				Free				Free			
			WBL	9.2	A	8.3	A	9.4	A	8.4	A	0.2	-	0.1	-
			NB	17.2	C	22.5	C	18.4	C	26.0	D	1.2	-	3.5	C→D

** Indicates no vehicle volume present.*

The results of the future conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating in a manner similar to the background conditions analysis, with minimal increases in delay. Additionally, the proposed site driveway (Learning Lane) intersection is expected to operate acceptably, at LOS D or better, during both peak periods.

Review of SimTraffic network simulations throughout the study roadway network indicates similar observations to those made during the existing and background conditions analyses. Occasional periods of vehicle queues were observed at the programmed all-way stop-control study intersection of M-36 & Hamburg Road; however, these queues were observed to dissipate and were not present throughout the peak periods. Additionally, vehicles were observed to find adequate gaps within the through traffic along M-36, without experiencing significant delays or excessive vehicle queueing.

8 Access Management

8.1 Driveway Spacing

The MDOT Geometric Design Guidance, Section 1.2.2, was utilized to evaluate the proposed site driveway location, in relation to the nearby driveways and access points along M-36. The MDOT desirable unsignalized access spacing criteria were evaluated for the 40-mph section of roadway. The distance of the proposed site driveways from nearby access points and the warranting criteria are summarized in **Table 6** and displayed in **Exhibit 1**.

Table 6: Driveway Spacing Summary

Adjacent Driveways & Intersections			Spacing	Criteria (40-mph)	Meets
Learning Lane	To	Water Treatment Drive	50 feet	300 feet	No
Learning Lane	to	CEI Drive	370 feet	300 feet	Yes

The results of the driveway spacing analysis indicates that the proposed site driveway (Learning Lane) is not expected to meet desirable MDOT spacing criteria. Additional and/or alternative site access to the west, via Washington Road, was reviewed; however, it was determined that only emergency access would be feasible at the location on Washington Road.

Furthermore, potential ingress left-turn conflict with the existing Church Driveway was evaluated. The results indicate that the potential for interlocking left-turns occurring between the proposed site driveway (Learning Lane) and the Church is negligible, based on the minimal volume (3 vehicles or less) of ingress left-turn traffic associated with the church activities.

Exhibit 1: Driveway & Intersection Spacing

8.2 Auxiliary Turn Lane Evaluation

The MDOT auxiliary turn lane warranting criteria were evaluated at the proposed site driveway (Learning Lane) on M-36. This analysis was based on the future peak hour traffic volumes shown on the attached **Figure 6**. The results of the analysis are shown on the attached MDOT warranting charts and summarized in **Table 7**.

Table 7: Auxiliary Turn Lane Analysis Summary

Intersection	Treatment	AM Peak Hour	PM Peak Hour	Recommendation
M-36 & Learning Lane / Church Drive	Right-Turn	No Treatment	No Treatment	**No Treatment**
	Left-Turn	No Treatment	Left-Turn Lane	**Left-Turn Lane**

The results of the auxiliary turn lane evaluation indicates that a westbound left-turn lane is warranted on M-36 at the proposed site driveway (Learning Lane).

8.3 Future Conditions with Improvements Analysis

The results of the future improvements analysis, with the implementation of the recommended auxiliary westbound left-turn lane at Learning Lane, are attached and summarized in **Table 8**.

Table 8: Future Intersection Operations

	Intersection	Control	Approach	Future Conditions				Future IMP				Difference			
				AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
				Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
2	M-36 & Learning Lane / Church Drive	Stop (Minor)	EBL	0.0*	A	9.4	A	0.0*	A	9.4	A	0.0*	-	0.0	-
			WBL	0.0*	A	0.0*	A	9.1	A	8.4	A	0.0	-	0.0	-
			NB	20.1	C	23.3	C	20.1	C	22.9	C	0.0	-	-0.4	-
			SB	0.0*	A	20.0	C	0.0*	A	19.8	C	0.0*	-	-0.2	-

** Indicates no vehicle volume present.*

The results of the future conditions with improvements analysis indicates that, with the implementation of the recommended auxiliary left-turn lane, all approaches and movements at the study intersection of M-36 & Learning Lane / Church Drive are expected to continue to operate acceptably, at LOS D or better, during both the AM and PM peak hours.

Review of SimTraffic microsimulations also indicates acceptable operations during both peak periods, throughout the study roadway network.

9 Conclusions

Conclusions of this TIS are as follows:

1. Existing Conditions (2024)

- The results of the existing conditions analysis indicates that all approaches and movements at the study intersections are currently operating acceptably, at LOS D or better, during both the AM and PM peak hours, with the exception of the following:

  M-36 & Hamburg Road: The EB approach is currently operating at LOS E during the PM peak hour. Review of SimTraffic network simulations indicates occasional periods of vehicle queues; however, these queues were observed to dissipate and were not present throughout the entire peak period.

- Review of SimTraffic network simulations for the remaining study roadway network indicates acceptable operations during both peak periods. Vehicles were observed to find adequate gaps within the through traffic along M-36, without experiencing significant delays or excessive vehicle queueing.

2. Background Conditions (2028)

- A conservative annual background growth rate of **0.5%** per year was utilized to project the existing 2024 peak hour traffic volumes to the buildout year of 2028.
- The following approved background developments were identified for construction within the vicinity of the project site and were included within the background traffic volumes:
    - *M-36 & Hamburg Road – Mixed Use Development*
    - As part of the background development, a fourth leg will be added to the study intersection of M-36 & Hamburg Road. Therefore, MDOT has programmed improvements to update the existing traffic control for the intersection to all-way stop-control.
- The results of the background conditions analysis indicates that all approaches and movements at the study intersections are expected to continue operating acceptably, at LOS D or better during both peak periods, in a manner similar to the existing conditions analysis, with the exception of the following:

  M-36 & Hamburg Road: The SB left-turn movement is expected to operate at LOS F during the AM peak hour. Additionally, the WB right-turn movement is expected to operate at LOS F during the PM peak hour.

3. Future Conditions (2028)

- The results of the future conditions analysis indicates that all approaches and movements at the study intersections are expected to continue to operate in a manner similar to the background conditions analysis, with minor increases in delay. Additionally, the proposed site driveway (Learning Lane) intersection is expected to operate acceptably, at LOS D or better, during both peak periods.
- Review of SimTraffic indicates similar observations to those made during the existing and background conditions analyses. Occasional periods of vehicle queues were observed at the programmed all-way stop-control study intersection of M-36 & Hamburg Road; however, these queues were observed to dissipate and were not present throughout the peak periods. Additionally, vehicles were observed to be able to find adequate gaps within the through traffic along M-36, without experiencing significant delays or excessive vehicle queueing.

4. Access Management

- The driveway spacing analysis indicates that the proposed site driveway (Learning Lane) is not expected to meet the desirable MDOT spacing criteria. However, the Learning Lane access is the only access for this development and there is not sufficient property frontage to locate the driveway in an alternative location along M-36.
- Additional and/or alternative site access to the west, via Washington Road, was reviewed; however, it was determined that only emergency access would be feasible at the location on Washington Road
- The results of the auxiliary turn lane treatment evaluation indicates that a westbound left-turn lane is warranted along M-36 at the proposed site driveway (Learning Lane).

5. Future Conditions with Improvements (2028)

- The results of the future conditions with improvements analysis indicates that, with the implementation of the recommended auxiliary westbound left-turn lane, all approaches and movements at the proposed site driveway (Learning Lane) are expected to continue to operate acceptably, at LOS D or better, during both peak periods.

  Review of SimTraffic network simulations also indicates acceptable operations, throughout the remaining study roadway network, during both peak periods.

10 RECOMMENDATIONS

Recommendations of this TIS are as follows:

M-36 & Learning Lane / Church Drive

- Provide a westbound left-turn lane along M-36 at the proposed site driveway (Learning Lane).

Any questions related to this memorandum, study, analysis, and results should be addressed to Fleis & VandenBrink.

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Michigan.

Digitally signed by Jacob Swanson
Date: 2024.09.05 15:09:23 -04'00'

Attachments: Figures 1 – 6
Proposed Site Plan
Traffic Volume Data
SEMCOG Data
Synchro / SimTraffic Results
Auxiliary Lane Warrants

FIGURE 1

SITE LOCATION MAP

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

SITE SITE LOCATION

NORTH

SCALE: NOT TO SCALE

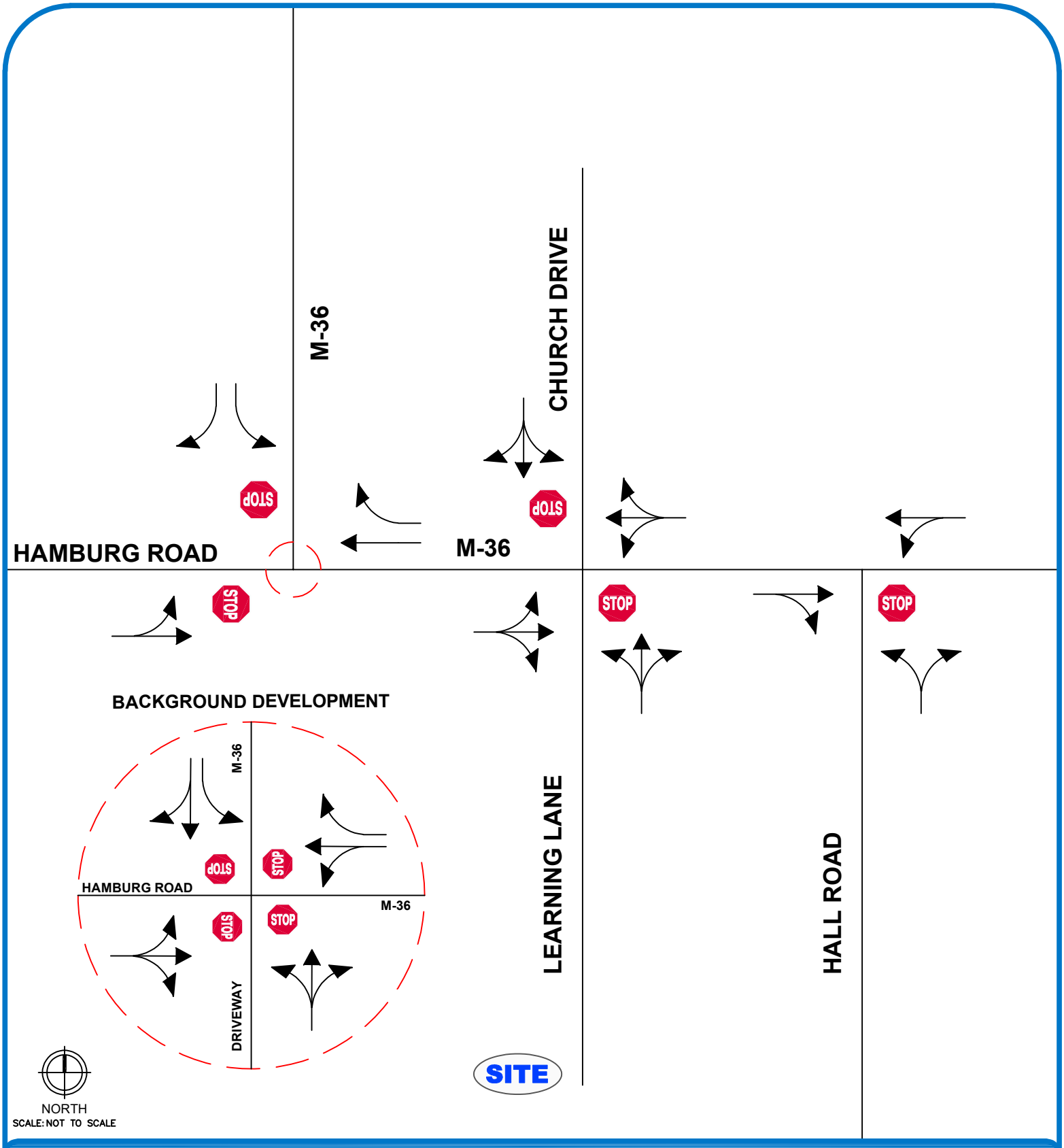


FIGURE 2

LANE USE AND TRAFFIC CONTROL

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

- ROADS
- LANE USE
- UNSIGNALIZED INTERSECTION

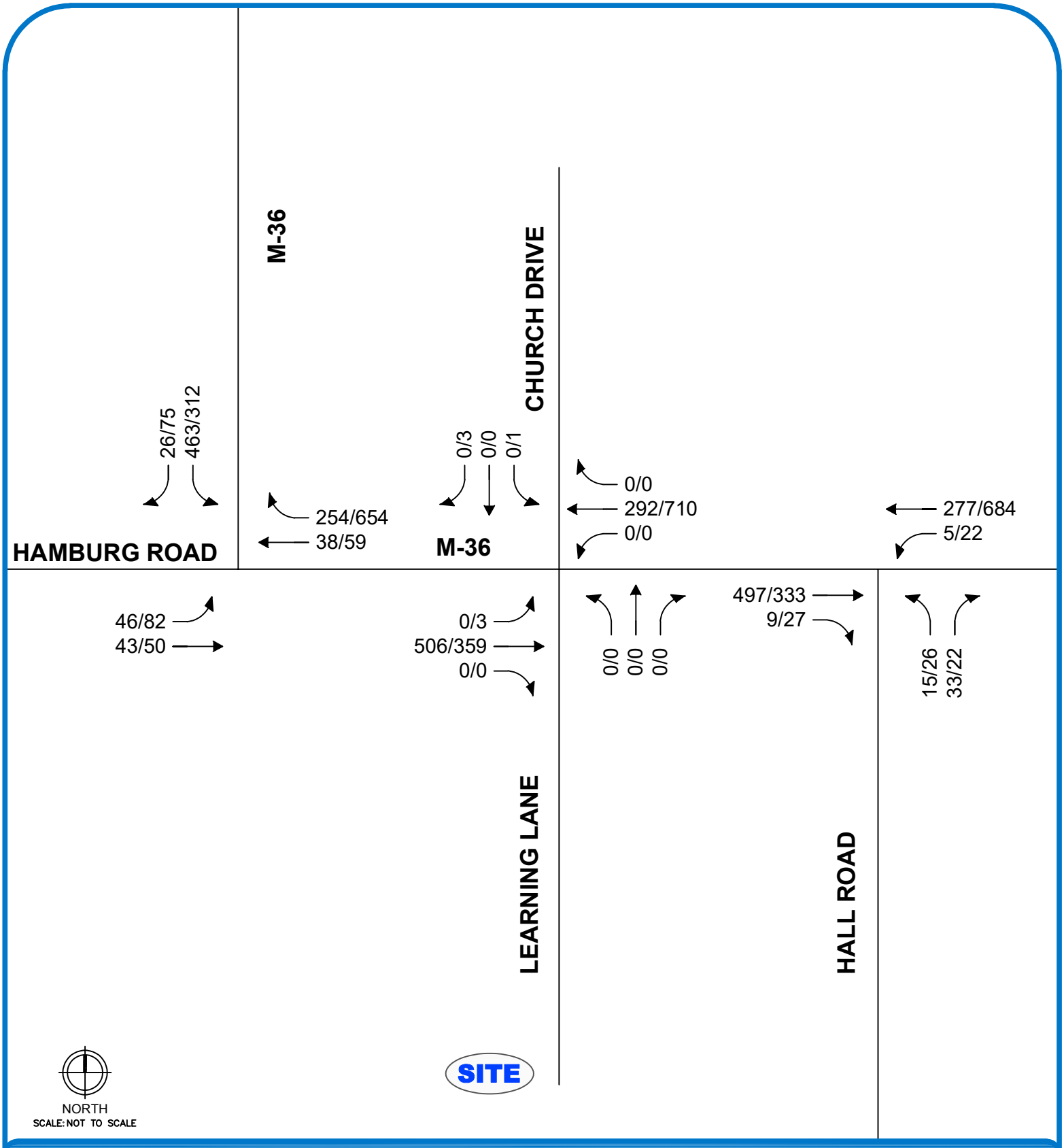


FIGURE 3

EXISTING (2024) TRAFFIC VOLUMES

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (AM/PM)

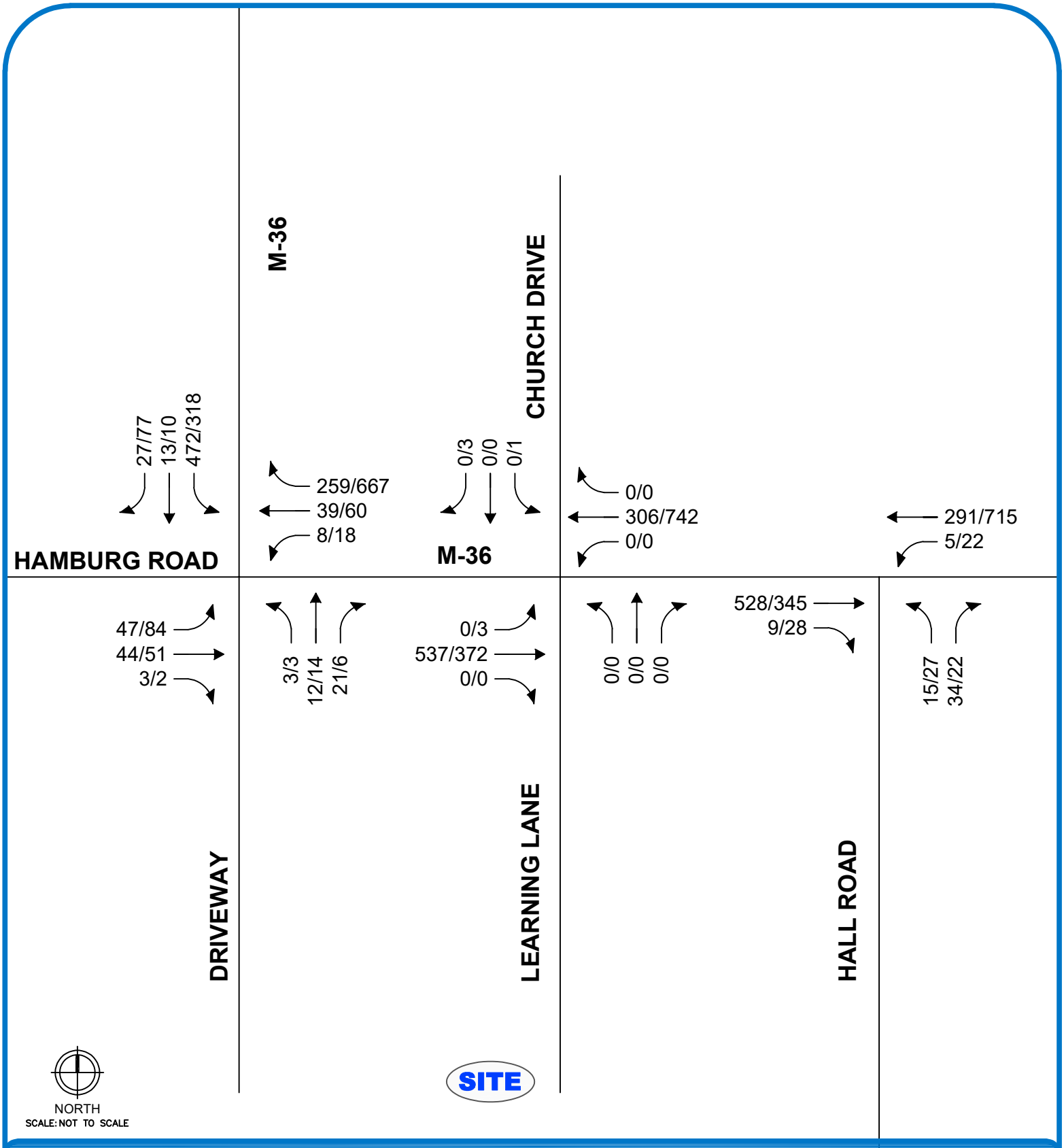


FIGURE 4

BACKGROUND (2028) TRAFFIC VOLUMES

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

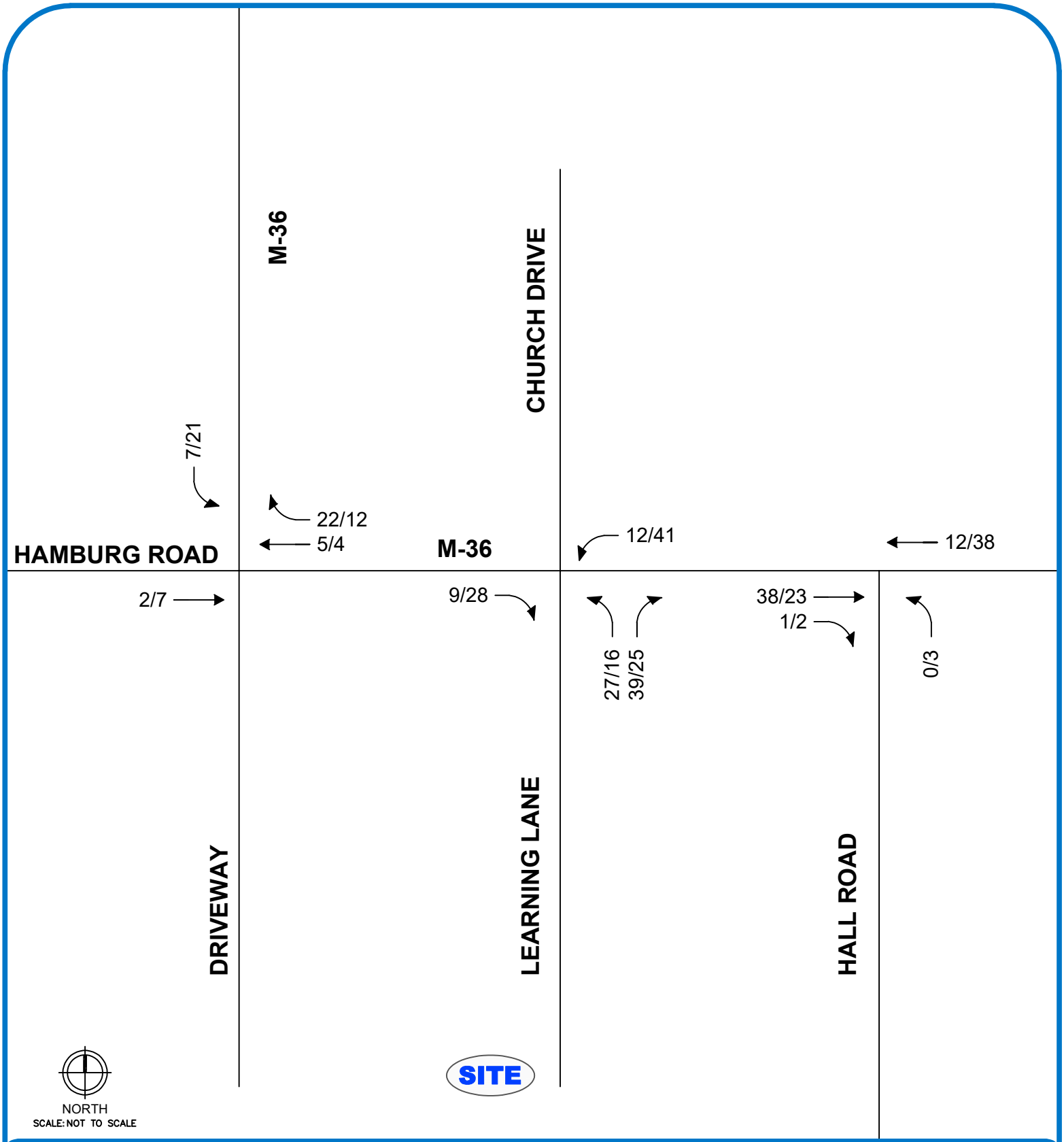


FIGURE 5

SITE-GENERATED TRAFFIC VOLUMES

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

ROADS

PROPOSED ROADS

TRAFFIC VOLUMES (AM/PM)

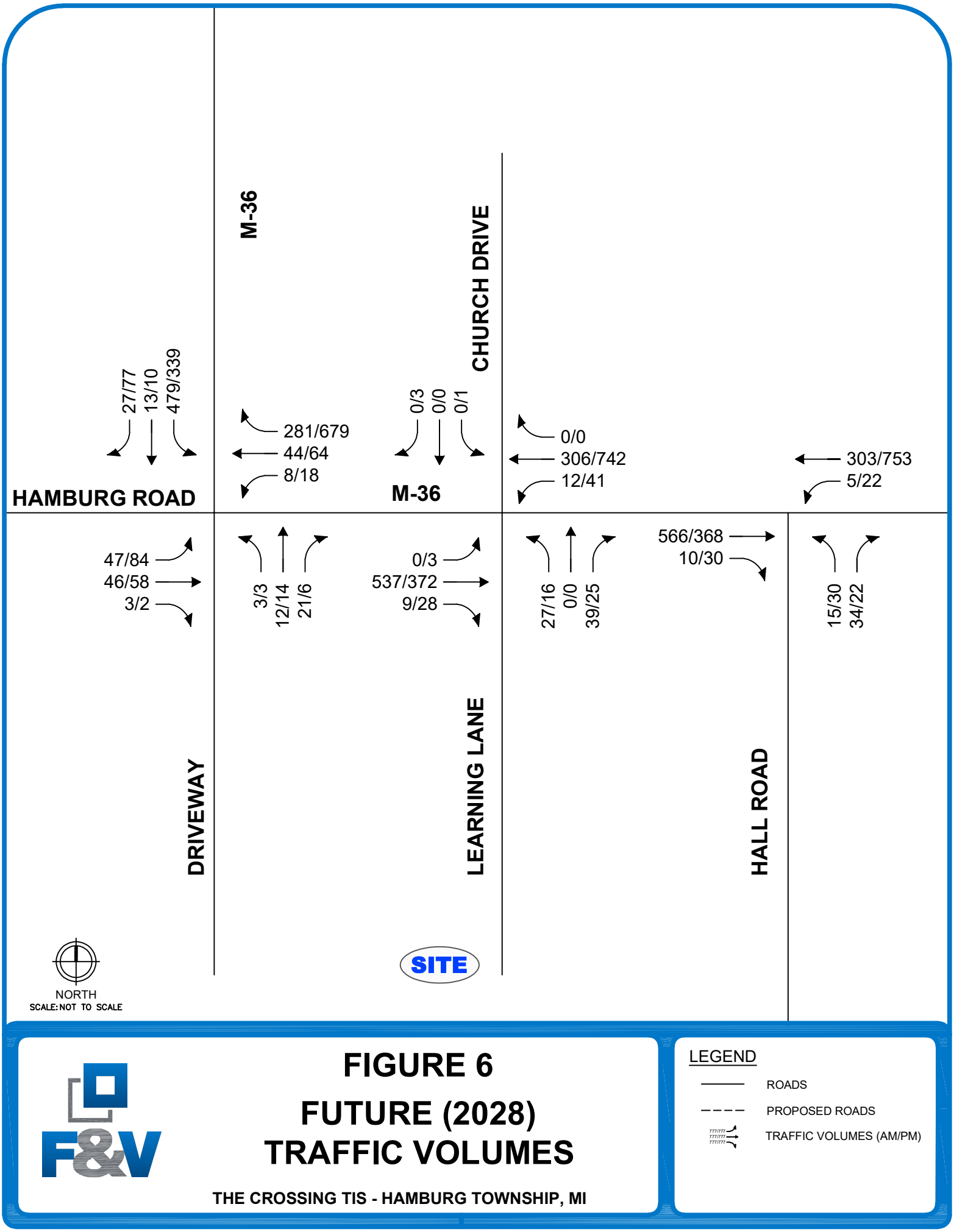


FIGURE 6

FUTURE (2028) TRAFFIC VOLUMES

THE CROSSING TIS - HAMBURG TOWNSHIP, MI

LEGEND

- ROADS
- PROPOSED ROADS
- TRAFFIC VOLUMES (AM/PM)

PRELIMINARY SITE PLANS FOR:

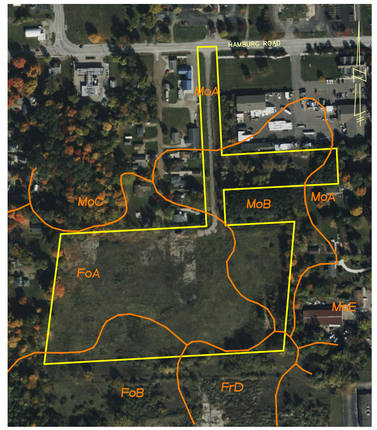
THE CROSSING AT LAKELANDS TRAIL

PART OF E. 1/2 OF SECTION 25, TOWN 1 NORTH, RANGE 5 EAST
HAMBURG TWP., LIVINGSTON COUNTY, MICHIGAN

PREPARED FOR:

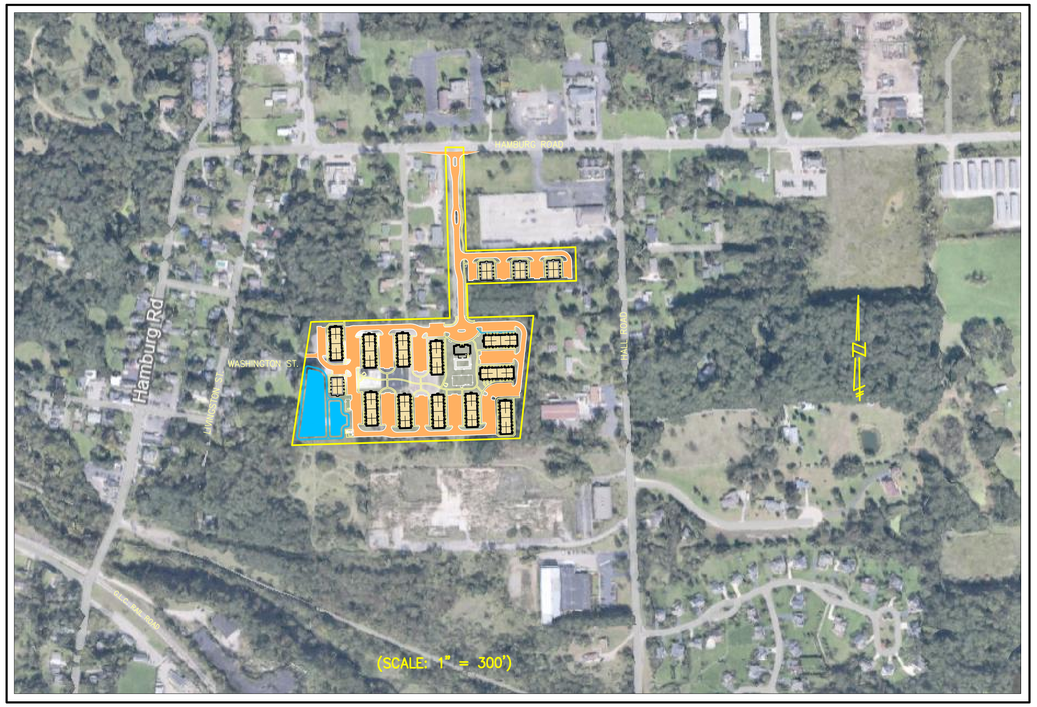
ELEVATE LAND HOLDINGS - THE CROSSING

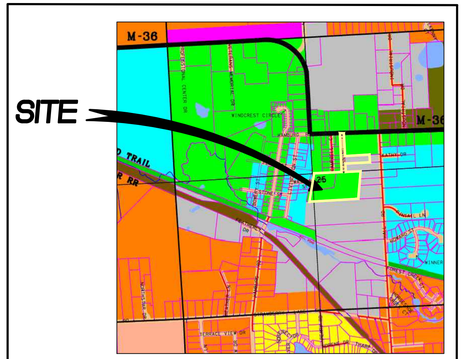
128 N. CENTER STREET
NORTHVILLE, MICHIGAN 48167
248.344.1885



SOILS MAP

MoA	WAWASEE LOAM, 0 TO 2 PERCENT SLOPES
MoB	WAWASEE LOAM, 2 TO 6 PERCENT SLOPES
MoC	WAWASEE LOAM, 6 TO 12 PERCENT SLOPES
MoE	MIAMI LOAM, 18 TO 25 PERCENT SLOPES
FoA	FOX SANDY LOAM 0 TO 2 PERCENT SLOPES
FoB	FOX SANDY LOAM 2 TO 6 PERCENT SLOPES
FrD	FOX-BOYER COMPLEX, 12 TO 18 PERCENT SLOPES





SHEET INDEX

ENGINEERING PLANS:

LANDSCAPE PLANS:

ARCHITECTURAL PLANS PREPARED BY:
TK DESIGN & ASSOCIATES
26030 PONTIAC TRAIL
SOUTH LYON, MICHIGAN, 48178
PHONE: 248.446.1960

LANDSCAPE PLANS PROVIDED BY:
ALLEN DESIGN
557 CARPENTER
NORTHVILLE, MICHIGAN 48167
PHONE: 248.467.4668

TOPOGRAPHIC SURVEY PREPARED BY:
M. E. G. A.
298 VETERANS DRIVE
FOWLERVILLE, MICHIGAN, 48836
PHONE: 517.223.3512

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

CLINTON TOWNSHIP OFFICE
17001 NINETEEN MILE ROAD, SUITE 3
CLINTON TOWNSHIP, MI 48038
586.412.7050

FARMINGTON HILLS OFFICE
39205 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
248.308.3331

REVISIONS

NO.	ITEM	DATE
1.	PRE-APP SUBMITTAL	4-22-24

ENGINEER'S SEAL

DATE: 1-5-2024 | DESIGNED BY: A.A | CHECKED BY: C.S. | JOB NUMBER: 23-239 | DRAWING FILE: 1-23239-CV.dwg

SITE DATA

EXISTING ZONING: GENERAL PLANNED UNIT DEVELOPMENT (GPUD)
SITE AREA = 15.478 ACRES
MAX. DWELLING UNITS PER ACRE (VC): 10 DU/CCRE
NO. OF BUILDING ON SITE: 16
NO. OF UNITS PROPOSED: 208
DWELLING UNITS PER ACRE: 13.44 DU/CCRE (AMEND TO PUD AGREEMENT)

BUILDING SETBACKS:	REQUIRED	PREVIOUSLY APPOROVED	PROPOSED
FRONT (FROM PAVEMENT):	20'	15'	N/A
SIDE:	10'	15'	20' MIN.
REAR: TO PROPERTY LINE	25'	30'	20' MIN.
BUILDING TO BUILDING:	35'	N/A	N/A
BUILDING FRONT TO SIDE:	N/A	25'	N/A
BUILDING SIDE TO SIDE:	N/A	15'	N/A
MAXIMUM BUILDING HEIGHT:	35'	35'	35'
MAXIMUM BUILDING STORIES:	2.5 STORIES	2 STORIES	2 STORIES
MINIMUM FLOOR AREA:			
1 BEDROOM	550 S.F.	875 S.F.	600 S.F.
2 BEDROOMS	650 S.F.	1100 S.F.	898 S.F.
3 BEDROOMS		N/A	936 S.F.
BUILDING COVERAGE:	50% MAX.	16%	15.83%
IMPERVIOUS AREA CALCULATION:	N/A	32%	37.85%
OPEN SPACE REQUIRED: 1,500 S.F./ UNIT=1,500 x 208 = 312,000 S.F. (7.16 AC.)	44%	37%	42.56%
OPEN SPACE PROVIDED:		6.03 AC.	6.59 AC.

PARKING REQUIRED: (1.5 SPACE/UNIT)
1.5 x 208 = 312 SPACES
PARKING PROPOSED: 407 SPACES
(INCLUDING 10 B.F. SPACES)
(1.957 SPACES/UNIT)

	PREVIOUSLY APPROVED PLANS	CURRENT PLANS
SITE AREA	16.1 AC.	15.478 AC.
NO. OF BUILDING ON SITE:	23	16
NO. OF UNITS PROPOSED:	208	208
DWELLING UNITS PER ACRE:	12.91 DU/CCRE	13.44 DU/CCRE
BUILDING COVERAGE:	16%	15.8%
PAVED SURFACE PARKING AND ROADS CIRCULATION	32%	37.85%
OPEN SPACE:	37%	42.96%
PARKING PROVIDED:	406 SPACES (1.952 SPACES/UNIT)	407 SPACES (1.957 SPACES/UNIT)

SEE LANDSCAPE PLANS FOR SCREENING WALL DETAILS

PROPOSED LEGEND

- SANITARY SEWER
- WATER MAIN
- STORM SEWER
- DITCH/SWALE
- TREE PROTECTION FENCE
- SILT FENCE
- FLOODPLAIN
- WETLANDS
- 1000 CONTOUR
- CURB AND GUTTER
- SANITARY MANHOLE
- SANITARY CLEANOUT
- STORM MANHOLE
- YARD CATCH BASIN
- ROAD CATCH BASIN W/SILT SAC
- END SECTION
- FIRE HYDRANT
- GATE VALVE AND WELL
- PAVEMENT (ASPHALT)
- PAVEMENT (CONCRETE SIDEWALK)
- DIRECTION SURFACE WATER FLOW OVERFLOW ROUTE
- 1000.00 GRADE

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING

REVISIONS

NO.	DESCRIPTION	DATE
1.	REV. LAYOUT PER HAMBURG TWP. REVIEW	4-22-24
2.	REV. ISLAND, ADD VINYL FENCE	6-26-24

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE) OF UNDERGROUND FACILITIES

811

PROJECT NUMBER: 23-239
PROJECT MANAGER: B. EMERINE
DRAWN BY: A. AWAD
CHECKED BY: C.S.
DATE: 1/10/24
PROJECT: FARMINGTON HILLS

CLIENT INFO:
ELEVATE LAND HOLDINGS–
THE CROSSING
128 N. CENTER STREET
NORTHVILLE, MI 48167
248.344.1885

PROJECT NAME:
THE CROSSING AT LAKELANDS TRAIL
PART OF E 1/2 OF SEC. 25, T1N, R.5E., HAMBURG TWP., LIVINGSTON COUNTY, MI

SHEET TITLE:
OVERALL PLAN

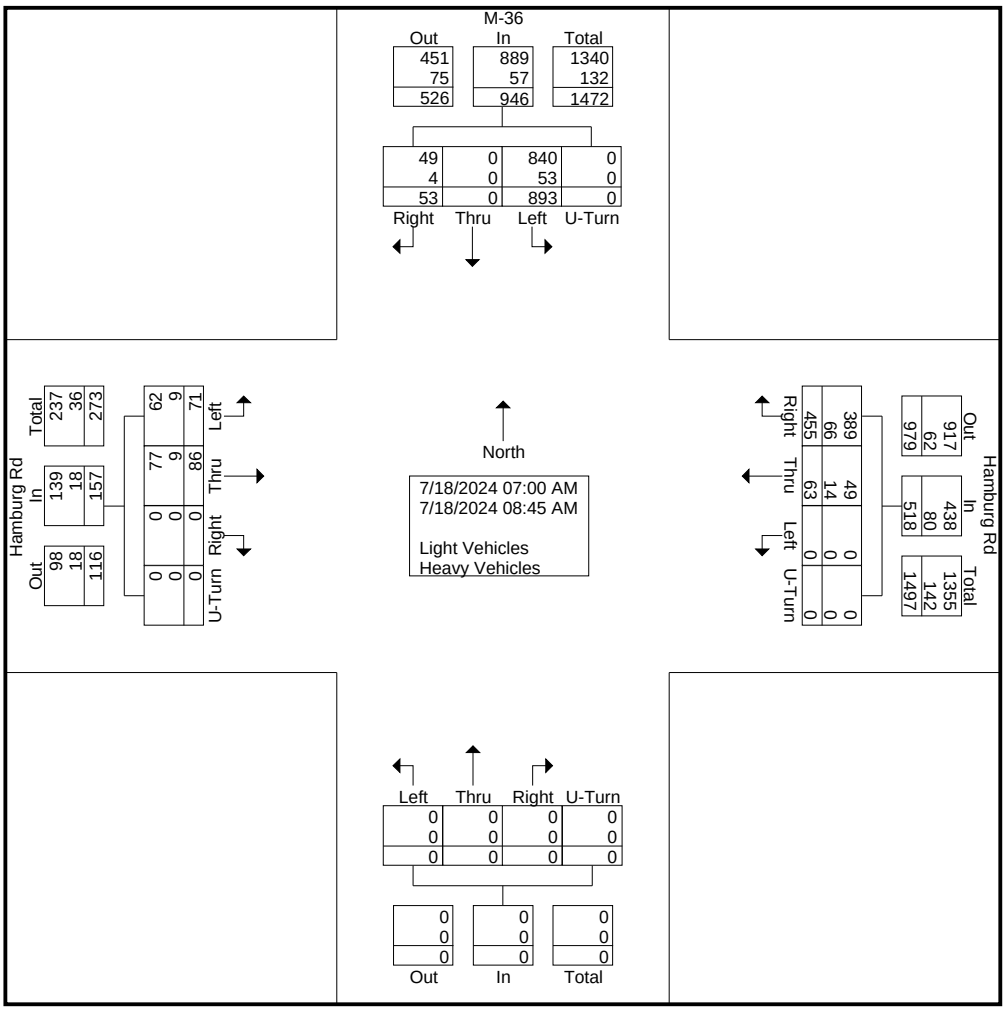
PAGE No.:
3

TRUE DATA TO IMPROVE MOBILITY

File Name : 16678701 - M-36 -- Hamburg Rd
Site Code : 16678701
Start Date : 7/18/2024
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

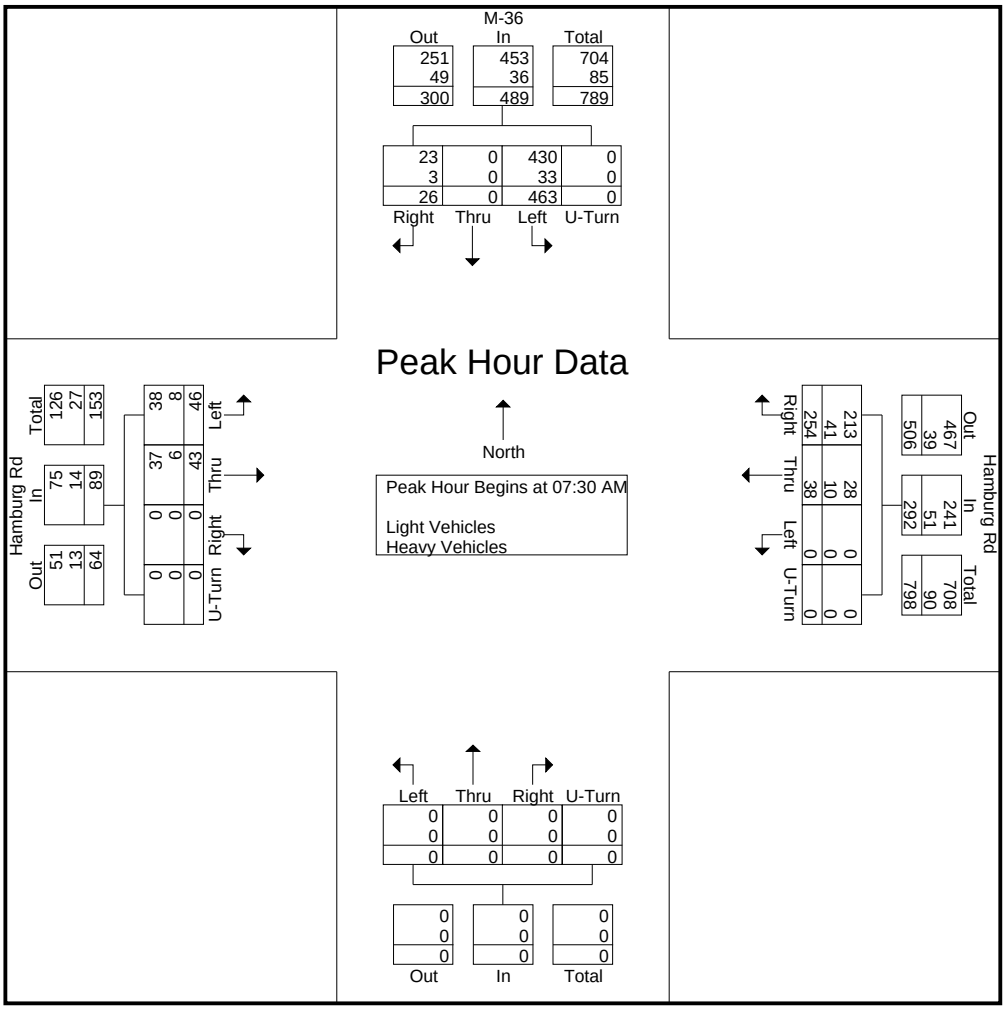
	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	3	9	0	0	12	0	6	36	0	42	0	0	0	0	0	109	0	3	0	112	166
07:15 AM	3	11	0	0	14	0	8	41	0	49	0	0	0	0	0	133	0	4	0	137	200
07:30 AM	10	10	0	0	20	0	7	51	0	58	0	0	0	0	0	123	0	9	0	132	210
07:45 AM	11	13	0	0	24	0	16	72	0	88	0	0	0	0	0	120	0	6	0	126	238
Total	27	43	0	0	70	0	37	200	0	237	0	0	0	0	0	485	0	22	0	507	814
08:00 AM	13	13	0	0	26	0	8	57	0	65	0	0	0	0	0	115	0	4	0	119	210
08:15 AM	12	7	0	0	19	0	7	74	0	81	0	0	0	0	0	105	0	7	0	112	212
08:30 AM	10	9	0	0	19	0	5	61	0	66	0	0	0	0	0	97	0	7	0	104	189
08:45 AM	9	14	0	0	23	0	6	63	0	69	0	0	0	0	0	91	0	13	0	104	196
Total	44	43	0	0	87	0	26	255	0	281	0	0	0	0	0	408	0	31	0	439	807
Grand Total	71	86	0	0	157	0	63	455	0	518	0	0	0	0	0	893	0	53	0	946	1621
Apprch %	45.2	54.8	0	0		0	12.2	87.8	0		0	0	0	0		94.4	0	5.6	0		
Total %	4.4	5.3	0	0	9.7	0	3.9	28.1	0	32	0	0	0	0	0	55.1	0	3.3	0	58.4	
Light Vehicles	62	77	0	0	139	0	49	389	0	438	0	0	0	0	0	840	0	49	0	889	1466
% Light Vehicles	87.3	89.5	0	0	88.5	0	77.8	85.5	0	84.6	0	0	0	0	0	94.1	0	92.5	0	94	90.4
Heavy Vehicles	9	9	0	0	18	0	14	66	0	80	0	0	0	0	0	53	0	4	0	57	155
% Heavy Vehicles	12.7	10.5	0	0	11.5	0	22.2	14.5	0	15.4	0	0	0	0	0	5.9	0	7.5	0	6	9.6



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678701 - M-36 -- Hamburg Rd
Site Code : 16678701
Start Date : 7/18/2024
Page No : 2

	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	10	10	0	0	20	0	7	51	0	58	0	0	0	0	0	**123**	0	**9**	0	**132**	210
07:45 AM	11	**13**	0	0	24	0	**16**	72	0	**88**	0	0	0	0	0	120	0	6	0	126	**238**
08:00 AM	**13**	13	0	0	**26**	0	8	57	0	65	0	0	0	0	0	115	0	4	0	119	210
08:15 AM	12	7	0	0	19	0	7	**74**	0	81	0	0	0	0	0	105	0	7	0	112	212
Total Volume	46	43	0	0	89	0	38	254	0	292	0	0	0	0	0	463	0	26	0	489	870
% App. Total	51.7	48.3	0	0		0	13	87	0		0	0	0	0		94.7	0	5.3	0		
PHF	.885	.827	.000	.000	.856	.000	.594	.858	.000	.830	.000	.000	.000	.000	.000	.941	.000	.722	.000	.926	.914
Light Vehicles	38	37	0	0	75	0	28	213	0	241	0	0	0	0	0	430	0	23	0	453	769
% Light Vehicles	82.6	86.0	0	0	84.3	0	73.7	83.9	0	82.5	0	0	0	0	0	92.9	0	88.5	0	92.6	88.4
Heavy Vehicles	8	6	0	0	14	0	10	41	0	51	0	0	0	0	0	33	0	3	0	36	101
% Heavy Vehicles	17.4	14.0	0	0	15.7	0	26.3	16.1	0	17.5	0	0	0	0	0	7.1	0	11.5	0	7.4	11.6

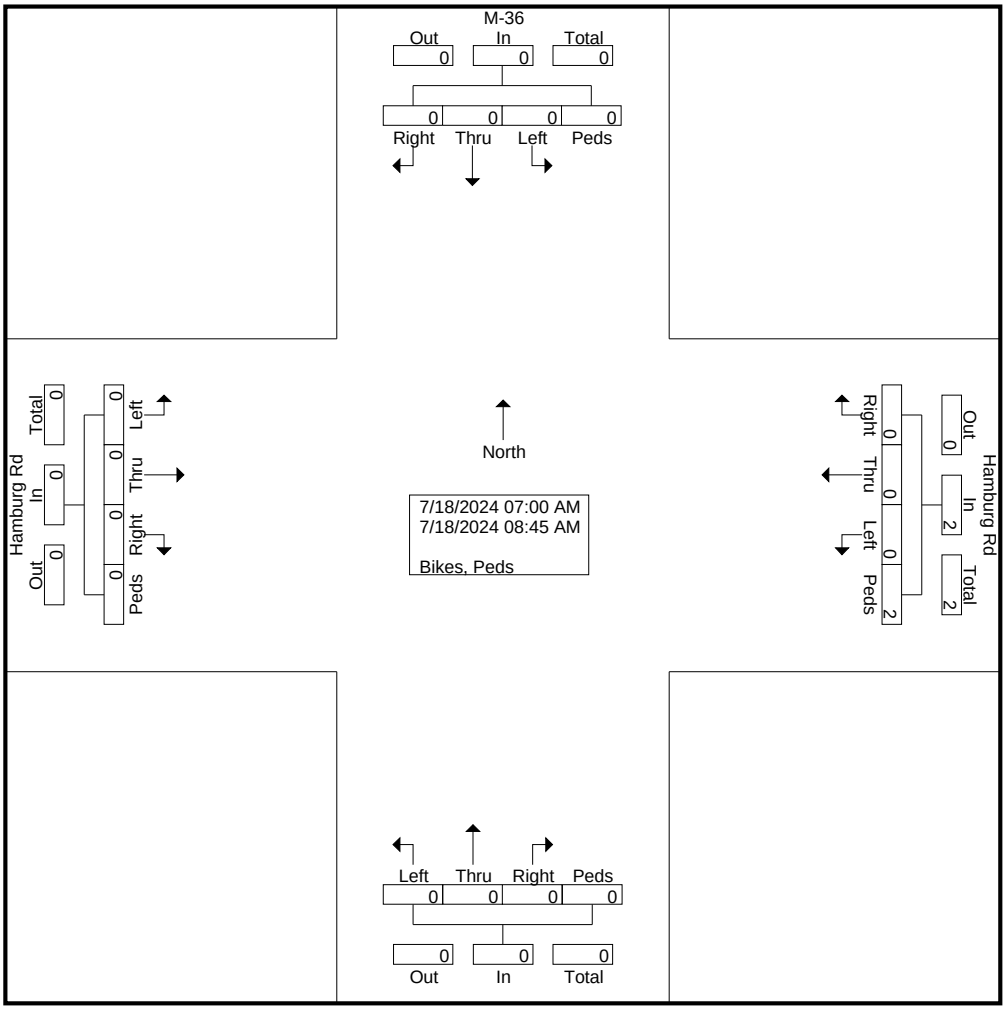


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678701 - M-36 -- Hamburg Rd
Site Code : 16678701
Start Date : 7/18/2024
Page No : 1

Groups Printed- Bikes, Peds

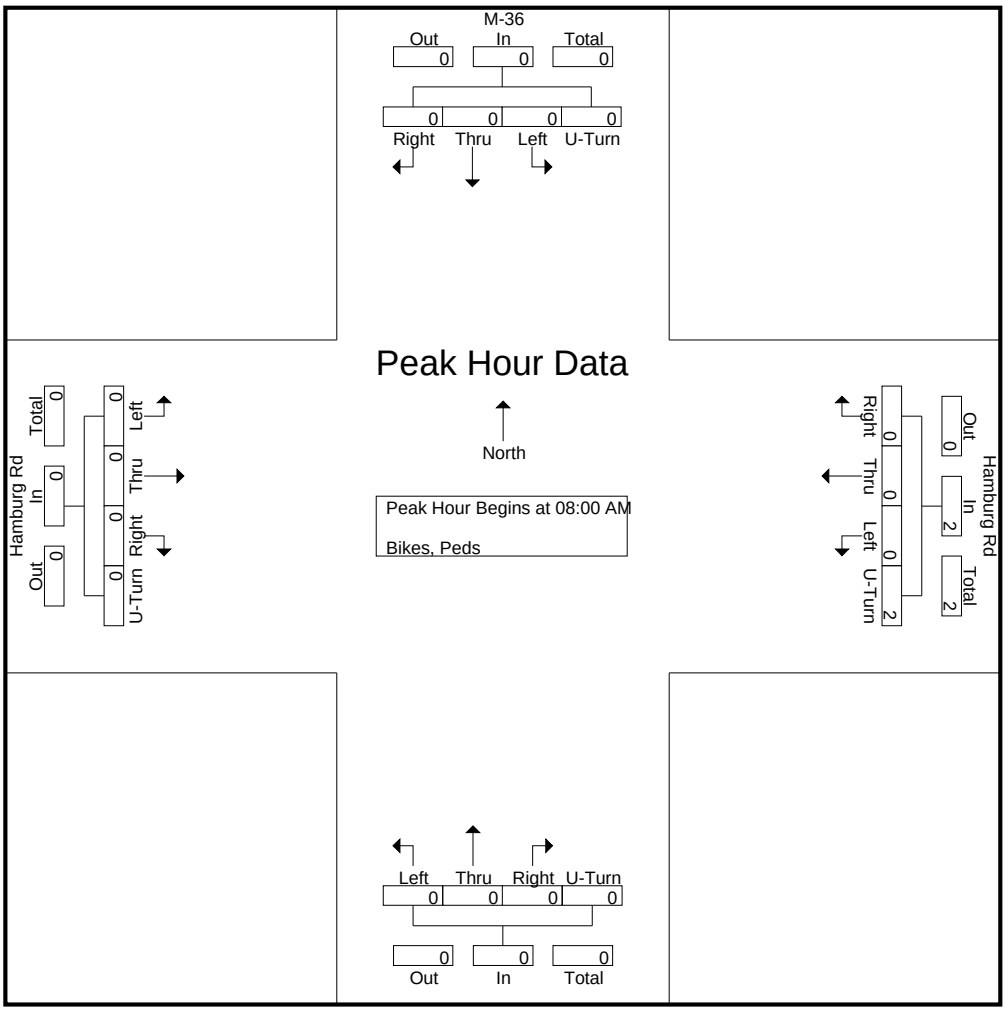
	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0	0		0	0	0	100		0	0	0	0		0	0	0	0		
Total %	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678701 - M-36 -- Hamburg Rd
Site Code : 16678701
Start Date : 7/18/2024
Page No : 2

	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	**2**	**2**	0	0	0	0	0	0	0	0	0	0	**2**
Total Volume	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0	0		0	0	0	100		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

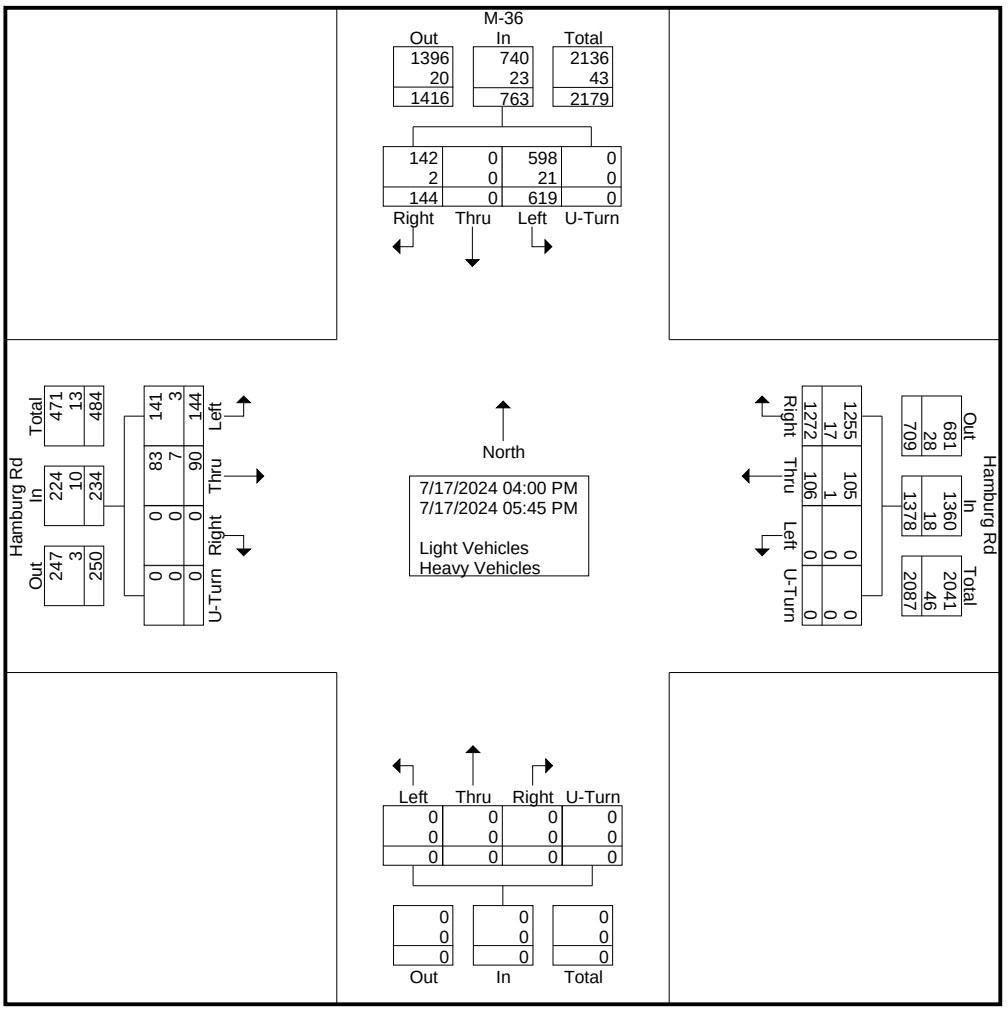


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678702 - M-36 -- Hamburg Rd
Site Code : 16678702
Start Date : 7/17/2024
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

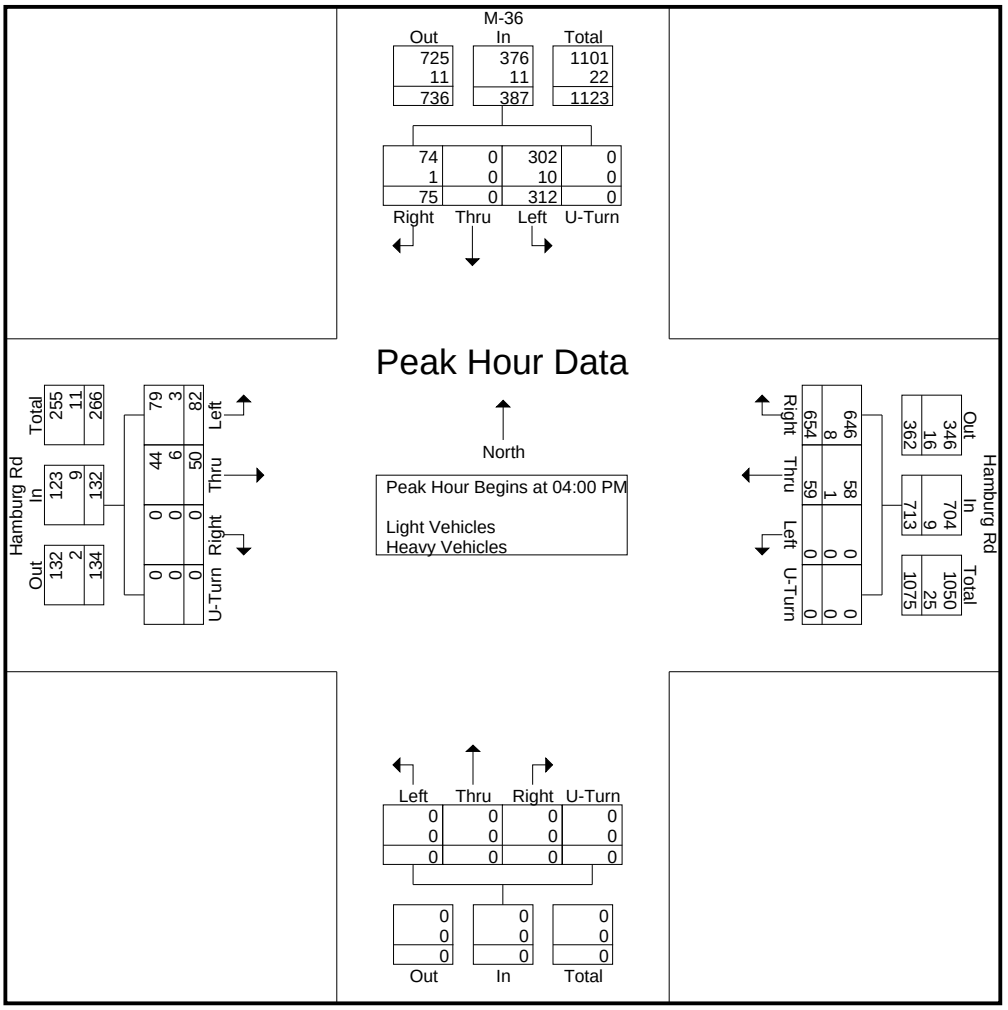
	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	15	16	0	0	31	0	13	170	0	183	0	0	0	0	0	81	0	16	0	97	311
04:15 PM	23	14	0	0	37	0	16	144	0	160	0	0	0	0	0	86	0	20	0	106	303
04:30 PM	24	9	0	0	33	0	15	176	0	191	0	0	0	0	0	69	0	18	0	87	311
04:45 PM	20	11	0	0	31	0	15	164	0	179	0	0	0	0	0	76	0	21	0	97	307
Total	82	50	0	0	132	0	59	654	0	713	0	0	0	0	0	312	0	75	0	387	1232
05:00 PM	14	9	0	0	23	0	17	163	0	180	0	0	0	0	0	82	0	18	0	100	303
05:15 PM	22	13	0	0	35	0	12	157	0	169	0	0	0	0	0	77	0	23	0	100	304
05:30 PM	15	6	0	0	21	0	9	162	0	171	0	0	0	0	0	79	0	14	0	93	285
05:45 PM	11	12	0	0	23	0	9	136	0	145	0	0	0	0	0	69	0	14	0	83	251
Total	62	40	0	0	102	0	47	618	0	665	0	0	0	0	0	307	0	69	0	376	1143
Grand Total	144	90	0	0	234	0	106	1272	0	1378	0	0	0	0	0	619	0	144	0	763	2375
Apprch %	61.5	38.5	0	0		0	7.7	92.3	0		0	0	0	0		81.1	0	18.9	0		
Total %	6.1	3.8	0	0	9.9	0	4.5	53.6	0	58	0	0	0	0	0	26.1	0	6.1	0	32.1	
Light Vehicles	141	83	0	0	224	0	105	1255	0	1360	0	0	0	0	0	598	0	142	0	740	2324
% Light Vehicles	97.9	92.2	0	0	95.7	0	99.1	98.7	0	98.7	0	0	0	0	0	96.6	0	98.6	0	97	97.9
Heavy Vehicles	3	7	0	0	10	0	1	17	0	18	0	0	0	0	0	21	0	2	0	23	51
% Heavy Vehicles	2.1	7.8	0	0	4.3	0	0.9	1.3	0	1.3	0	0	0	0	0	3.4	0	1.4	0	3	2.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678702 - M-36 -- Hamburg Rd
Site Code : 16678702
Start Date : 7/17/2024
Page No : 2

	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	15	**16**	0	0	31	0	13	170	0	183	0	0	0	0	0	81	0	16	0	97	**311**
04:15 PM	23	14	0	0	**37**	0	**16**	144	0	160	0	0	0	0	0	**86**	0	20	0	**106**	303
04:30 PM	**24**	9	0	0	33	0	15	**176**	0	**191**	0	0	0	0	0	69	0	18	0	87	311
04:45 PM	20	11	0	0	31	0	15	164	0	179	0	0	0	0	0	76	0	**21**	0	97	307
Total Volume	82	50	0	0	132	0	59	654	0	713	0	0	0	0	0	312	0	75	0	387	1232
% App. Total	62.1	37.9	0	0		0	8.3	91.7	0		0	0	0	0		80.6	0	19.4	0		
PHF	.854	.781	.000	.000	.892	.000	.922	.929	.000	.933	.000	.000	.000	.000	.000	.907	.000	.893	.000	.913	.990
Light Vehicles	79	44	0	0	123	0	58	646	0	704	0	0	0	0	0	302	0	74	0	376	1203
% Light Vehicles	96.3	88.0	0	0	93.2	0	98.3	98.8	0	98.7	0	0	0	0	0	96.8	0	98.7	0	97.2	97.6
Heavy Vehicles	3	6	0	0	9	0	1	8	0	9	0	0	0	0	0	10	0	1	0	11	29
% Heavy Vehicles	3.7	12.0	0	0	6.8	0	1.7	1.2	0	1.3	0	0	0	0	0	3.2	0	1.3	0	2.8	2.4

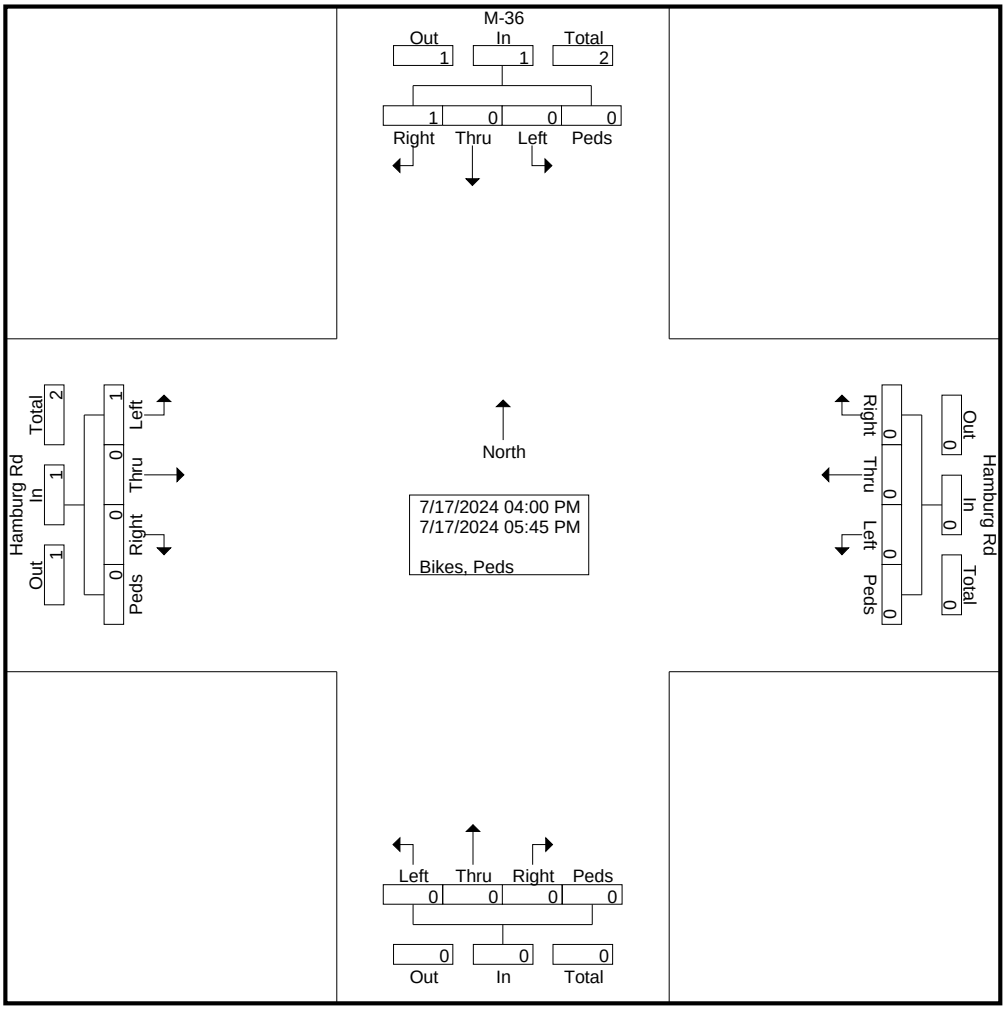


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678702 - M-36 -- Hamburg Rd
Site Code : 16678702
Start Date : 7/17/2024
Page No : 1

Groups Printed- Bikes, Peds

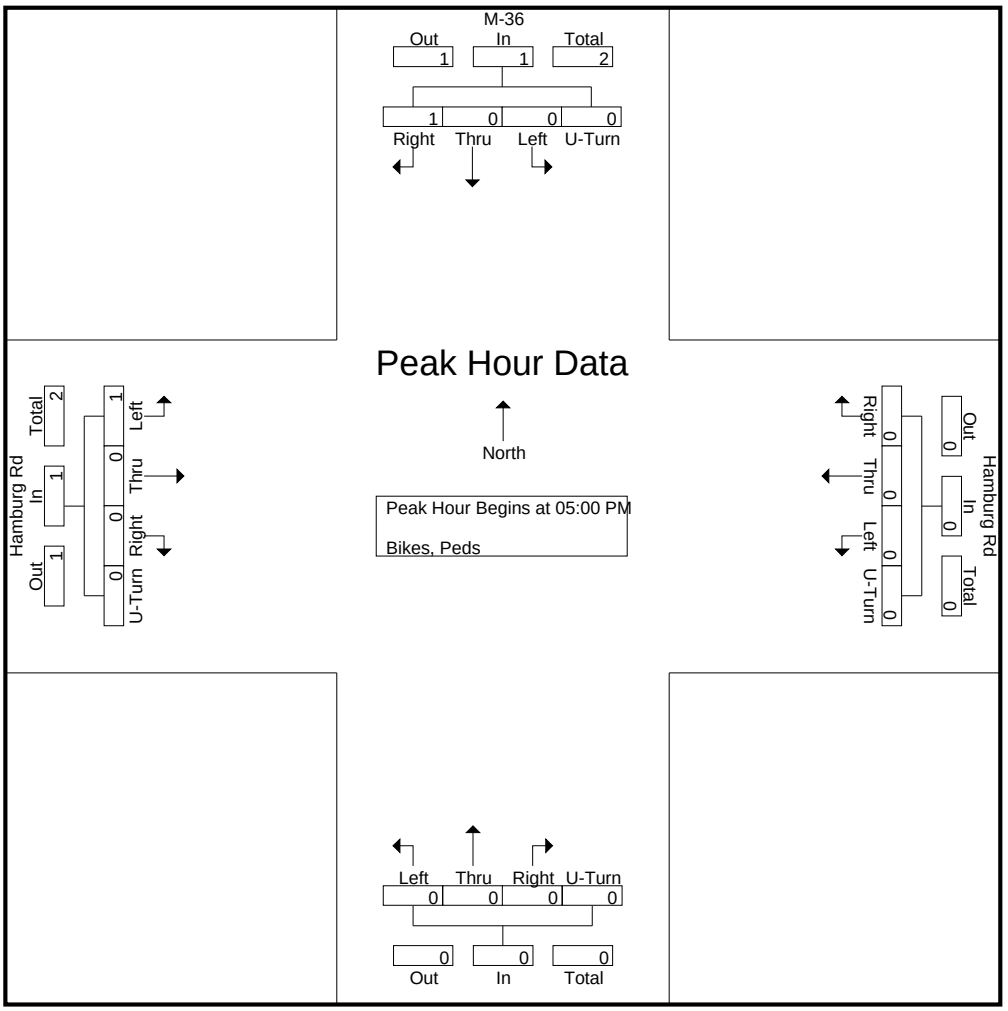
	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Grand Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Apprch %	100	0	0	0		0	0	0	0		0	0	0	0		0	0	100	0		
Total %	50	0	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	50	0	50	



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678702 - M-36 -- Hamburg Rd
Site Code : 16678702
Start Date : 7/17/2024
Page No : 2

	Hamburg Rd Eastbound					Hamburg Rd Westbound					Northbound					M-36 Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	**1**	**1**
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	**1**	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
% App. Total	100	0	0	0		0	0	0	0		0	0	0	0		0	0	100	0		
PHF	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.500

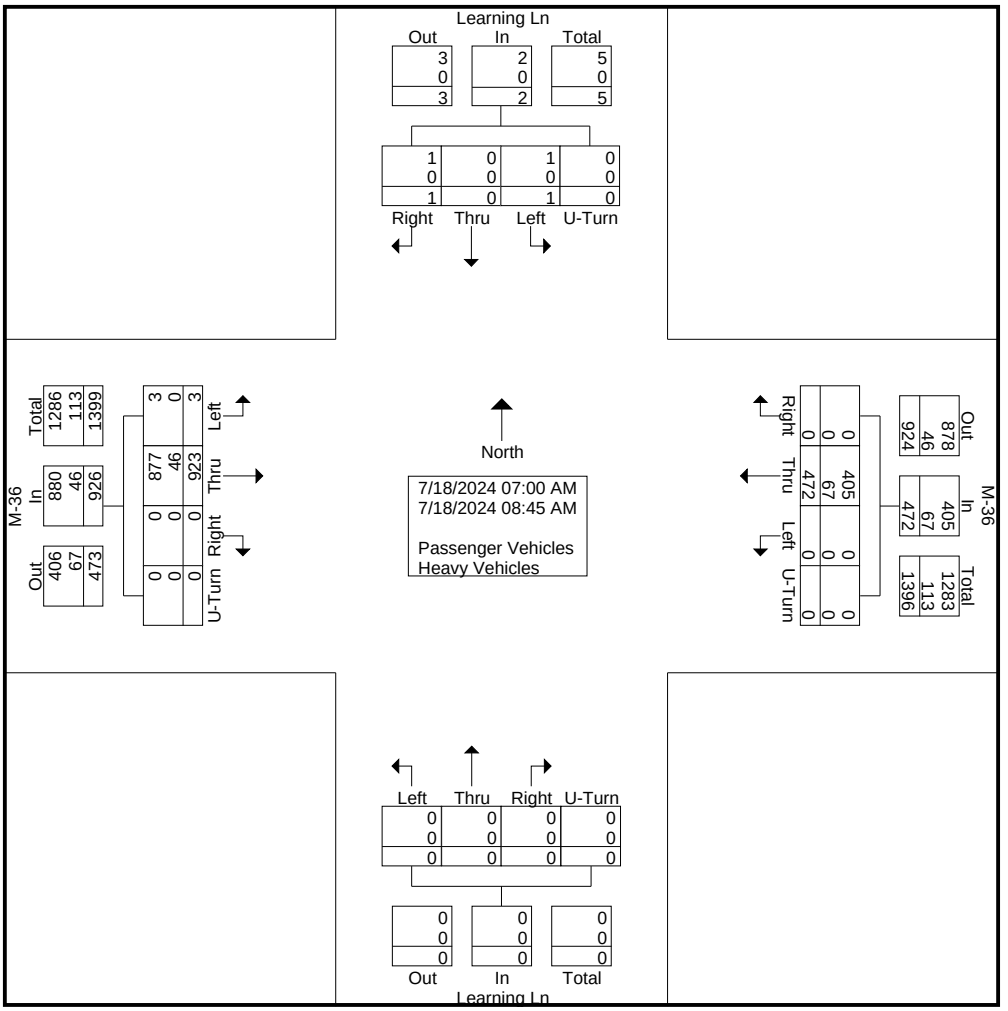


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678703 - Learning Ln -- M-36
Site Code : 16678703
Start Date : 7/18/2024
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

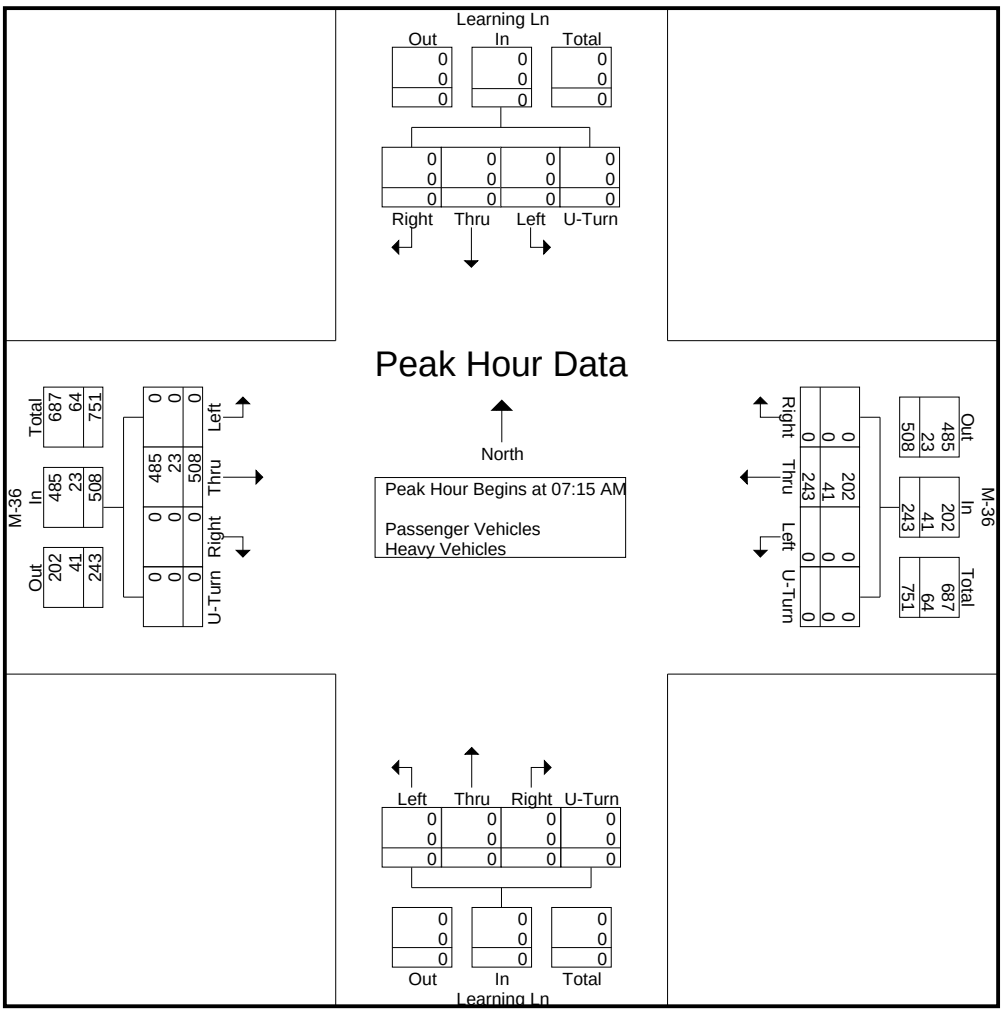
	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	2	113	0	0	115	0	37	0	0	37	0	0	0	0	0	1	0	1	0	2	154
07:15 AM	0	146	0	0	146	0	48	0	0	48	0	0	0	0	0	0	0	0	0	0	194
07:30 AM	0	130	0	0	130	0	57	0	0	57	0	0	0	0	0	0	0	0	0	0	187
07:45 AM	0	119	0	0	119	0	78	0	0	78	0	0	0	0	0	0	0	0	0	0	197
Total	2	508	0	0	510	0	220	0	0	220	0	0	0	0	0	1	0	1	0	2	732
08:00 AM	0	113	0	0	113	0	60	0	0	60	0	0	0	0	0	0	0	0	0	0	173
08:15 AM	0	106	0	0	106	0	69	0	0	69	0	0	0	0	0	0	0	0	0	0	175
08:30 AM	0	102	0	0	102	0	58	0	0	58	0	0	0	0	0	0	0	0	0	0	160
08:45 AM	1	94	0	0	95	0	65	0	0	65	0	0	0	0	0	0	0	0	0	0	160
Total	1	415	0	0	416	0	252	0	0	252	0	0	0	0	0	0	0	0	0	0	668
Grand Total	3	923	0	0	926	0	472	0	0	472	0	0	0	0	0	1	0	1	0	2	1400
Apprch %	0.3	99.7	0	0		0	100	0	0		0	0	0	0		50	0	50	0		
Total %	0.2	65.9	0	0	66.1	0	33.7	0	0	33.7	0	0	0	0	0	0.1	0	0.1	0	0.1	
Passenger Vehicles	3	877	0	0	880	0	405	0	0	405	0	0	0	0	0	1	0	1	0	2	1287
% Passenger Vehicles	100	95	0	0	95	0	85.8	0	0	85.8	0	0	0	0	0	100	0	100	0	100	91.9
Heavy Vehicles	0	46	0	0	46	0	67	0	0	67	0	0	0	0	0	0	0	0	0	0	113
% Heavy Vehicles	0	5	0	0	5	0	14.2	0	0	14.2	0	0	0	0	0	0	0	0	0	0	8.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678703 - Learning Ln -- M-36
Site Code : 16678703
Start Date : 7/18/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	**146**	0	0	**146**	0	48	0	0	48	0	0	0	0	0	0	0	0	0	0	194
07:30 AM	0	130	0	0	130	0	57	0	0	57	0	0	0	0	0	0	0	0	0	0	187
07:45 AM	0	119	0	0	119	0	**78**	0	0	**78**	0	0	0	0	0	0	0	0	0	0	**197**
08:00 AM	0	113	0	0	113	0	60	0	0	60	0	0	0	0	0	0	0	0	0	0	173
Total Volume	0	508	0	0	508	0	243	0	0	243	0	0	0	0	0	0	0	0	0	0	751
% App. Total	0	100	0	0		0	100	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.870	.000	.000	.870	.000	.779	.000	.000	.779	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.953
Passenger Vehicles	0	485	0	0	485	0	202	0	0	202	0	0	0	0	0	0	0	0	0	0	687
% Passenger Vehicles	0	95.5	0	0	95.5	0	83.1	0	0	83.1	0	0	0	0	0	0	0	0	0	0	91.5
Heavy Vehicles	0	23	0	0	23	0	41	0	0	41	0	0	0	0	0	0	0	0	0	0	64
% Heavy Vehicles	0	4.5	0	0	4.5	0	16.9	0	0	16.9	0	0	0	0	0	0	0	0	0	0	8.5

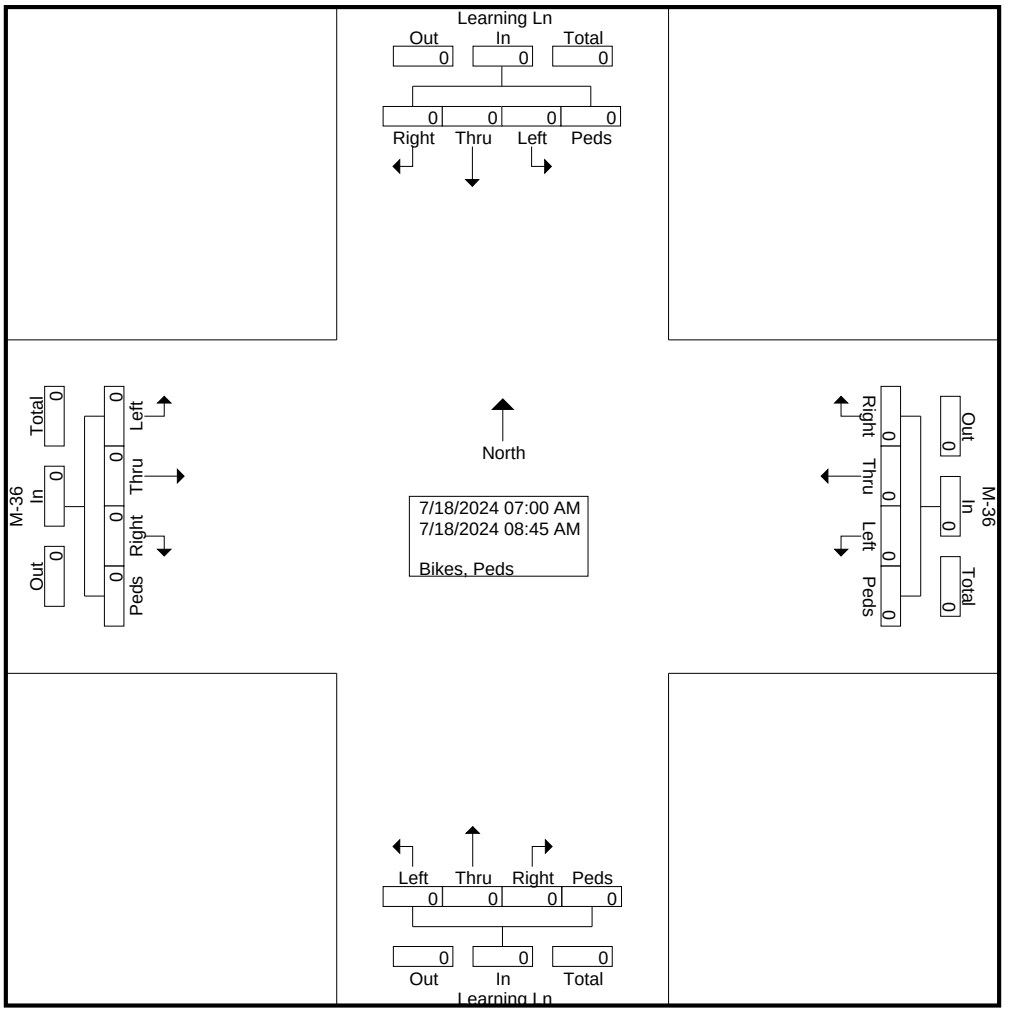


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678703 - Learning Ln -- M-36
Site Code : 16678703
Start Date : 7/18/2024
Page No : 1

Groups Printed- Bikes, Peds

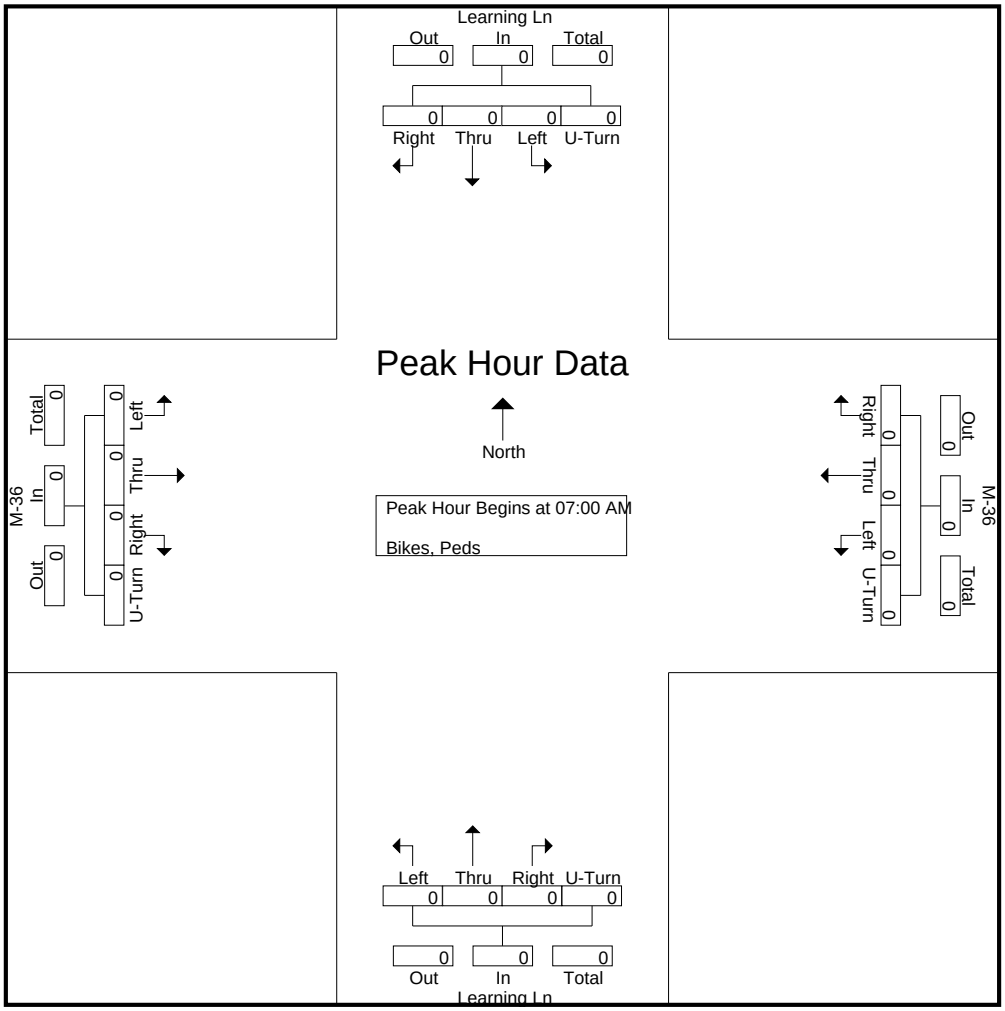
	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678703 - Learning Ln -- M-36
Site Code : 16678703
Start Date : 7/18/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

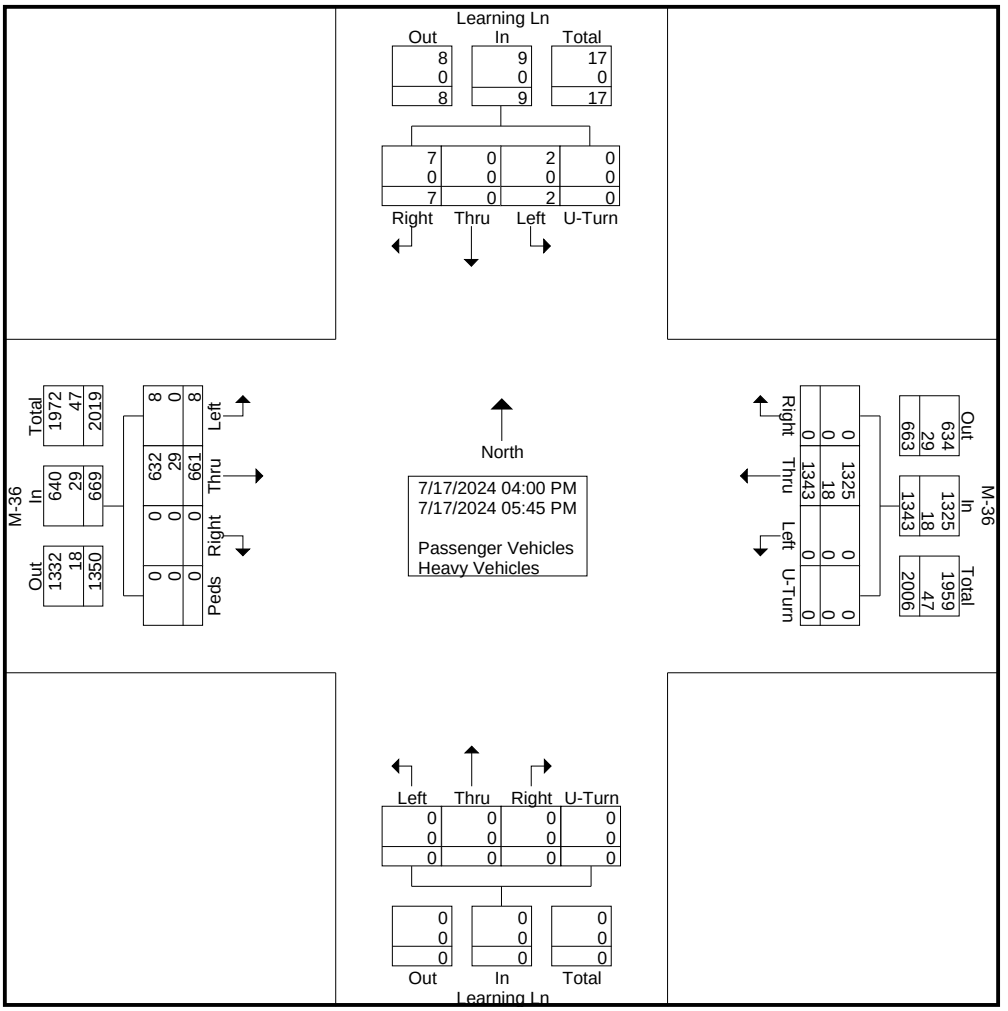


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678704 - Learning Ln -- M-36
Site Code : 16678704
Start Date : 7/17/2024
Page No : 1

Groups Printed- Passenger Vehicles - Heavy Vehicles

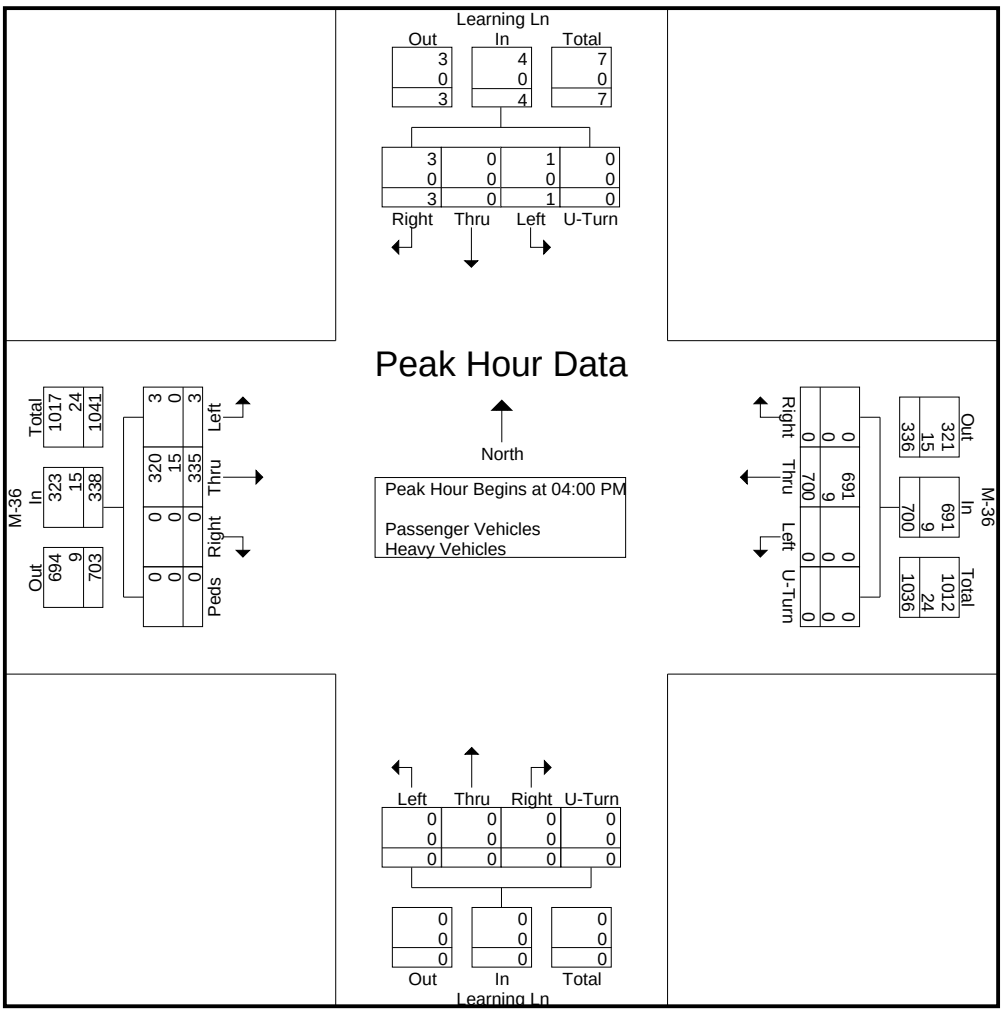
	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	0	88	0	0	88	0	188	0	0	188	0	0	0	0	0	0	0	1	0	1	277
04:15 PM	1	94	0	0	95	0	152	0	0	152	0	0	0	0	0	1	0	0	0	1	248
04:30 PM	0	74	0	0	74	0	184	0	0	184	0	0	0	0	0	0	0	0	0	0	258
04:45 PM	2	79	0	0	81	0	176	0	0	176	0	0	0	0	0	0	0	2	0	2	259
Total	3	335	0	0	338	0	700	0	0	700	0	0	0	0	0	1	0	3	0	4	1042
05:00 PM	1	79	0	0	80	0	169	0	0	169	0	0	0	0	0	0	0	1	0	1	250
05:15 PM	2	89	0	0	91	0	161	0	0	161	0	0	0	0	0	0	0	1	0	1	253
05:30 PM	0	81	0	0	81	0	173	0	0	173	0	0	0	0	0	1	0	1	0	2	256
05:45 PM	2	77	0	0	79	0	140	0	0	140	0	0	0	0	0	0	0	1	0	1	220
Total	5	326	0	0	331	0	643	0	0	643	0	0	0	0	0	1	0	4	0	5	979
Grand Total	8	661	0	0	669	0	1343	0	0	1343	0	0	0	0	0	2	0	7	0	9	2021
Apprch %	1.2	98.8	0	0		0	100	0	0		0	0	0	0		22.2	0	77.8	0		
Total %	0.4	32.7	0	0	33.1	0	66.5	0	0	66.5	0	0	0	0	0	0.1	0	0.3	0	0.4	
Passenger Vehicles	8	632	0	0	640	0	1325	0	0	1325	0	0	0	0	0	2	0	7	0	9	1974
% Passenger Vehicles	100	95.6	0	0	95.7	0	98.7	0	0	98.7	0	0	0	0	0	100	0	100	0	100	97.7
Heavy Vehicles	0	29	0	0	29	0	18	0	0	18	0	0	0	0	0	0	0	0	0	0	47
% Heavy Vehicles	0	4.4	0	0	4.3	0	1.3	0	0	1.3	0	0	0	0	0	0	0	0	0	0	2.3



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678704 - Learning Ln -- M-36
Site Code : 16678704
Start Date : 7/17/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	88	0	0	88	0	**188**	0	0	**188**	0	0	0	0	0	0	0	1	0	1	**277**
04:15 PM	1	**94**	0	0	**95**	0	152	0	0	152	0	0	0	0	0	**1**	0	0	0	1	248
04:30 PM	0	74	0	0	74	0	184	0	0	184	0	0	0	0	0	0	0	0	0	0	258
04:45 PM	**2**	79	0	0	81	0	176	0	0	176	0	0	0	0	0	0	0	**2**	0	**2**	259
Total Volume	3	335	0	0	338	0	700	0	0	700	0	0	0	0	0	1	0	3	0	4	1042
% App. Total	0.9	99.1	0	0		0	100	0	0		0	0	0	0		25	0	75	0		
PHF	.375	.891	.000	.000	.889	.000	.931	.000	.000	.931	.000	.000	.000	.000	.000	.250	.000	.375	.000	.500	.940
Passenger Vehicles	3	320	0	0	323	0	691	0	0	691	0	0	0	0	0	1	0	3	0	4	1018
% Passenger Vehicles	100	95.5	0	0	95.6	0	98.7	0	0	98.7	0	0	0	0	0	100	0	100	0	100	97.7
Heavy Vehicles	0	15	0	0	15	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	24
% Heavy Vehicles	0	4.5	0	0	4.4	0	1.3	0	0	1.3	0	0	0	0	0	0	0	0	0	0	2.3

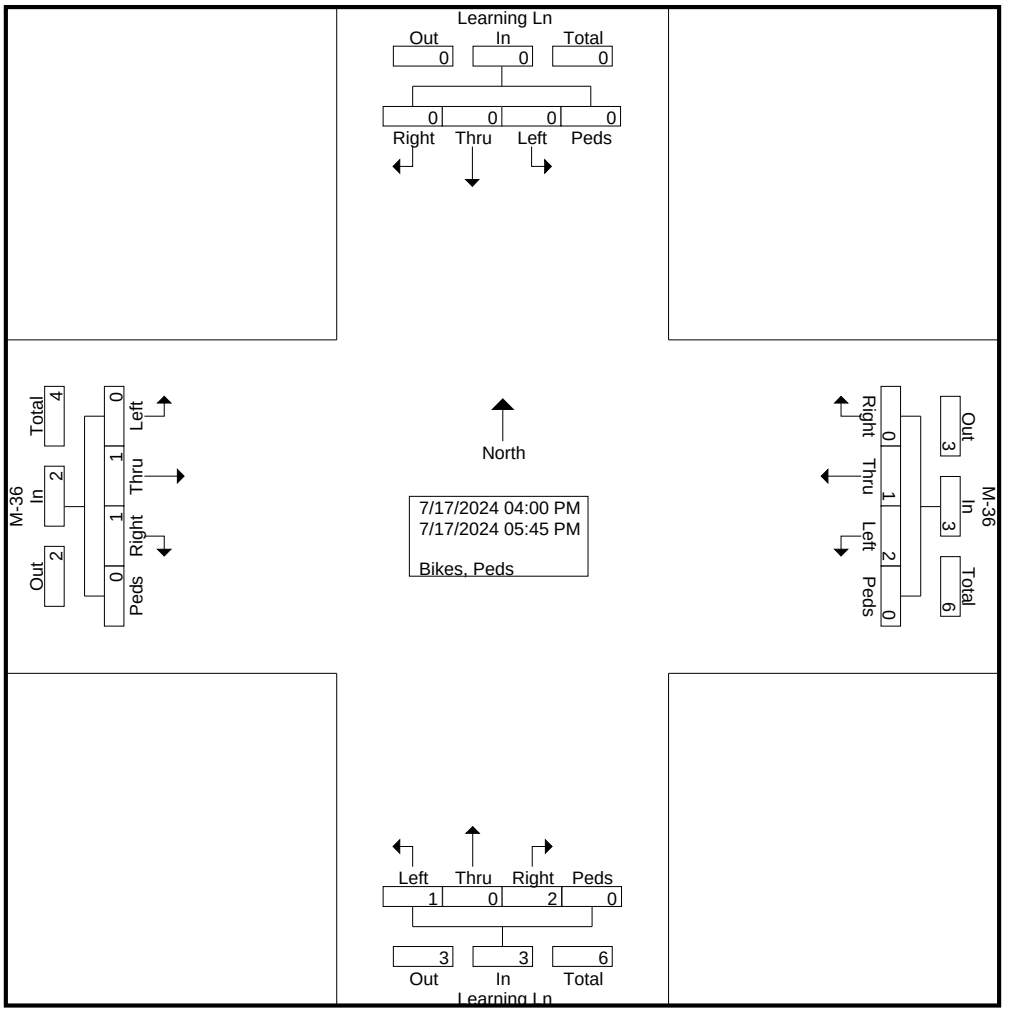


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678704 - Learning Ln -- M-36
Site Code : 16678704
Start Date : 7/17/2024
Page No : 1

Groups Printed- Bikes, Peds

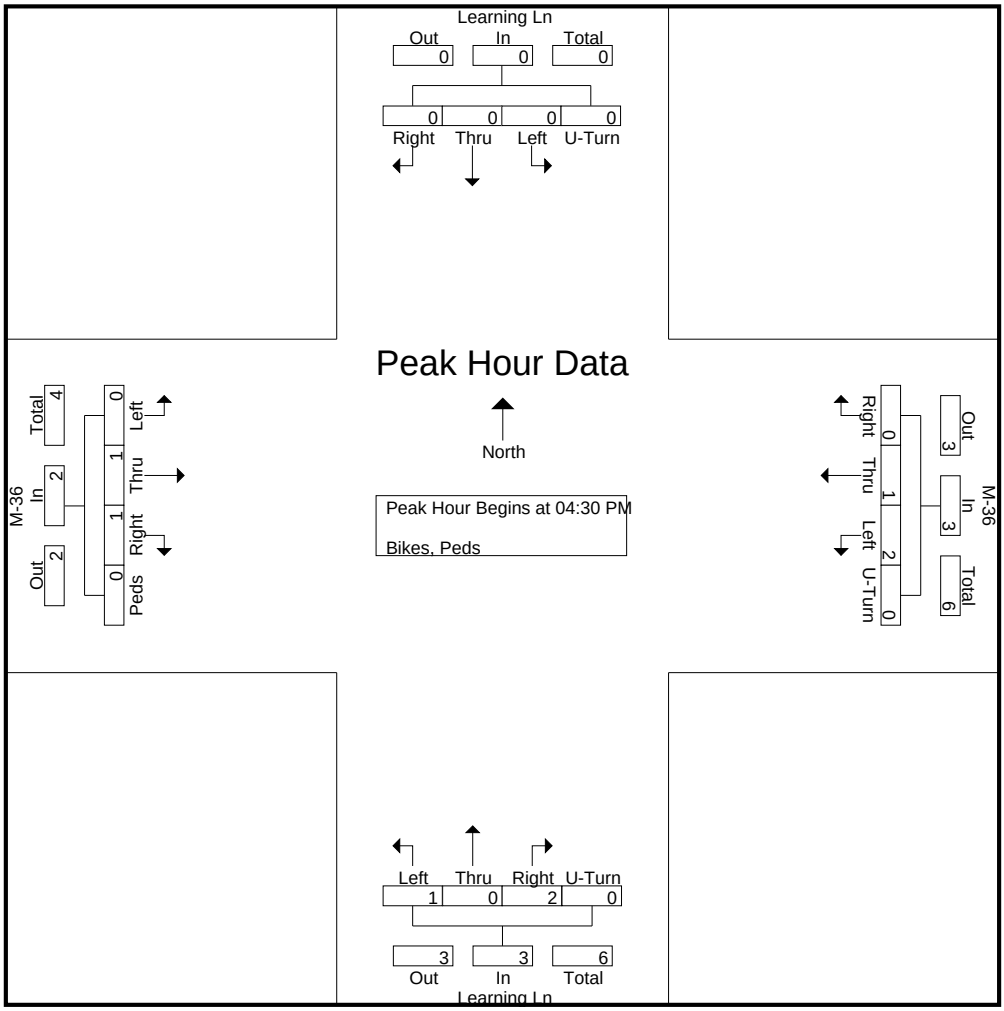
	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	2	1	0	0	3	1	0	0	0	1	0	0	0	0	0	4
05:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	0	2	2	1	0	0	3	1	0	2	0	3	0	0	0	0	0	8
Grand Total	0	1	1	0	2	2	1	0	0	3	1	0	2	0	3	0	0	0	0	0	8
Apprch %	0	50	50	0		66.7	33.3	0	0		33.3	0	66.7	0		0	0	0	0		
Total %	0	12.5	12.5	0	25	25	12.5	0	0	37.5	12.5	0	25	0	37.5	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678704 - Learning Ln -- M-36
Site Code : 16678704
Start Date : 7/17/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Learning Ln Northbound					Learning Ln Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**2**	**1**	0	0	**3**	**1**	0	0	0	1	0	0	0	0	0	**4**
05:15 PM	0	**1**	**1**	0	**2**	0	0	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	4
Total Volume	0	1	1	0	2	2	1	0	0	3	1	0	2	0	3	0	0	0	0	0	8
% App. Total	0	50	50	0		66.7	33.3	0	0		33.3	0	66.7	0		0	0	0	0		
PHF	.000	.250	.250	.000	.250	.250	.250	.000	.000	.250	.250	.000	.250	.000	.375	.000	.000	.000	.000	.000	.500

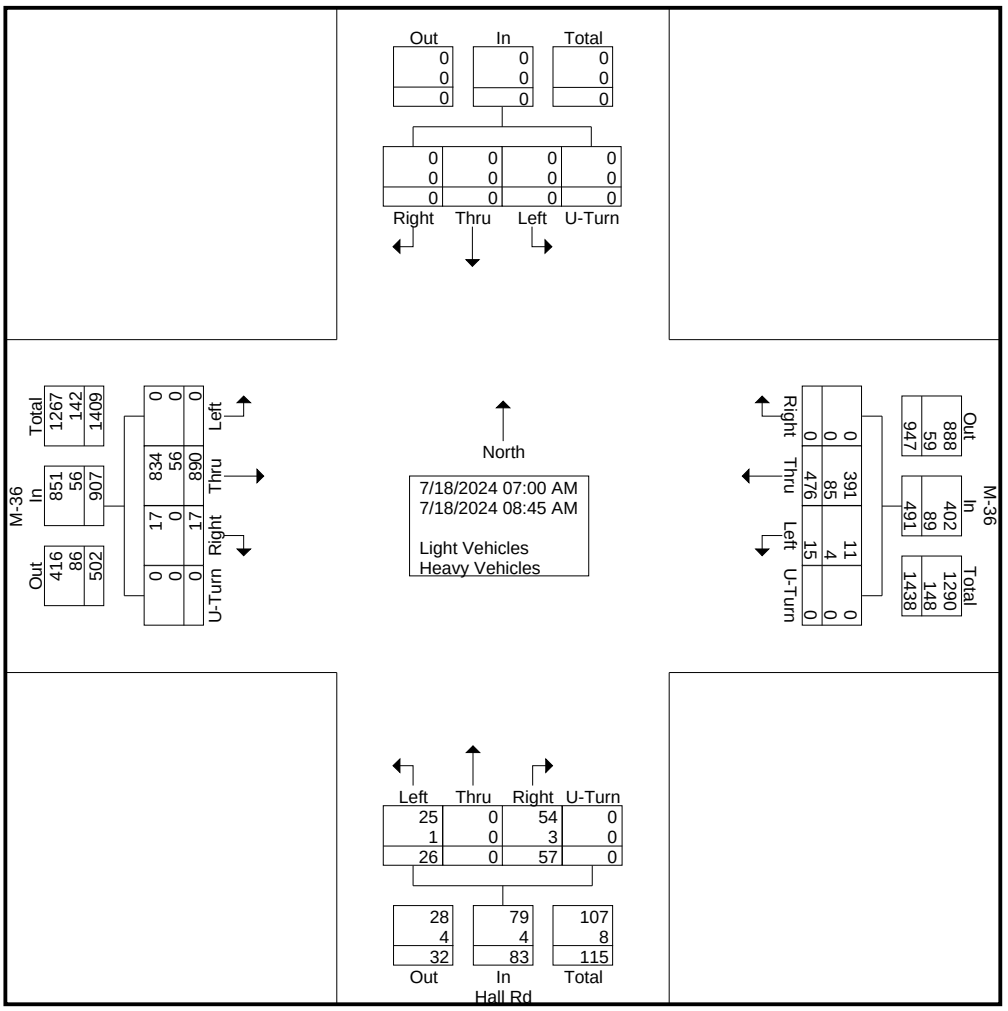


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678705 - Hall Rd -- M-36
Site Code : 16678705
Start Date : 7/18/2024
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

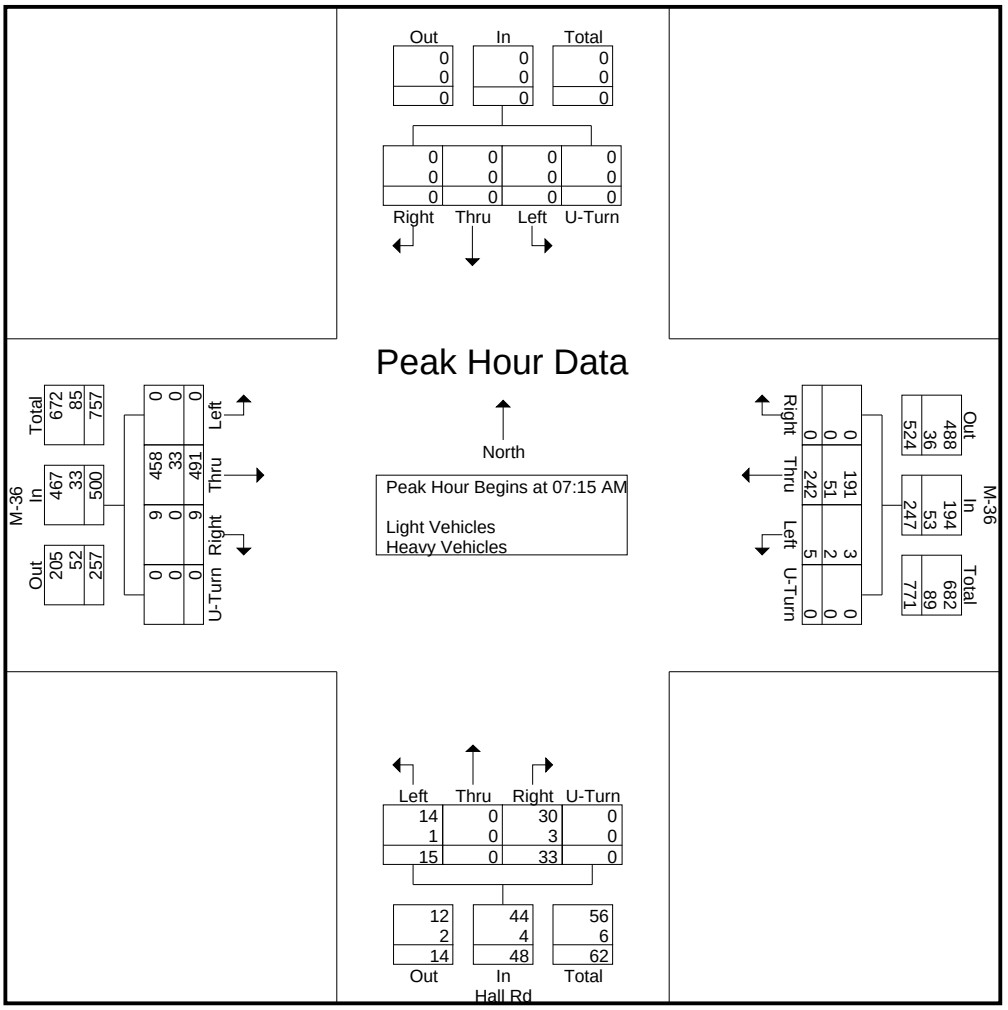
	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
07:00 AM	0	106	2	0	108	2	42	0	0	44	2	0	6	0	8	0	0	0	0	0	160
07:15 AM	0	148	1	0	149	0	46	0	0	46	3	0	3	0	6	0	0	0	0	0	201
07:30 AM	0	117	3	0	120	3	55	0	0	58	5	0	14	0	19	0	0	0	0	0	197
07:45 AM	0	113	4	0	117	0	79	0	0	79	4	0	10	0	14	0	0	0	0	0	210
Total	0	484	10	0	494	5	222	0	0	227	14	0	33	0	47	0	0	0	0	0	768
08:00 AM	0	113	1	0	114	2	62	0	0	64	3	0	6	0	9	0	0	0	0	0	187
08:15 AM	0	98	5	0	103	1	66	0	0	67	3	0	7	0	10	0	0	0	0	0	180
08:30 AM	0	102	0	0	102	3	57	0	0	60	3	0	8	0	11	0	0	0	0	0	173
08:45 AM	0	93	1	0	94	4	69	0	0	73	3	0	3	0	6	0	0	0	0	0	173
Total	0	406	7	0	413	10	254	0	0	264	12	0	24	0	36	0	0	0	0	0	713
Grand Total	0	890	17	0	907	15	476	0	0	491	26	0	57	0	83	0	0	0	0	0	1481
Apprch %	0	98.1	1.9	0		3.1	96.9	0	0		31.3	0	68.7	0		0	0	0	0		
Total %	0	60.1	1.1	0	61.2	1	32.1	0	0	33.2	1.8	0	3.8	0	5.6	0	0	0	0	0	
Light Vehicles	0	834	17	0	851	11	391	0	0	402	25	0	54	0	79	0	0	0	0	0	1332
% Light Vehicles	0	93.7	100	0	93.8	73.3	82.1	0	0	81.9	96.2	0	94.7	0	95.2	0	0	0	0	0	89.9
Heavy Vehicles	0	56	0	0	56	4	85	0	0	89	1	0	3	0	4	0	0	0	0	0	149
% Heavy Vehicles	0	6.3	0	0	6.2	26.7	17.9	0	0	18.1	3.8	0	5.3	0	4.8	0	0	0	0	0	10.1



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678705 - Hall Rd -- M-36
Site Code : 16678705
Start Date : 7/18/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	**148**	1	0	**149**	0	46	0	0	46	3	0	3	0	6	0	0	0	0	0	201
07:30 AM	0	117	3	0	120	**3**	55	0	0	58	**5**	0	**14**	0	**19**	0	0	0	0	0	197
07:45 AM	0	113	**4**	0	117	0	**79**	0	0	**79**	4	0	10	0	14	0	0	0	0	0	**210**
08:00 AM	0	113	1	0	114	2	62	0	0	64	3	0	6	0	9	0	0	0	0	0	187
Total Volume	0	491	9	0	500	5	242	0	0	247	15	0	33	0	48	0	0	0	0	0	795
% App. Total	0	98.2	1.8	0		2	98	0	0		31.2	0	68.8	0		0	0	0	0		
PHF	.000	.829	.563	.000	.839	.417	.766	.000	.000	.782	.750	.000	.589	.000	.632	.000	.000	.000	.000	.000	.946
Light Vehicles	0	458	9	0	467	3	191	0	0	194	14	0	30	0	44	0	0	0	0	0	705
% Light Vehicles	0	93.3	100	0	93.4	60.0	78.9	0	0	78.5	93.3	0	90.9	0	91.7	0	0	0	0	0	88.7
Heavy Vehicles	0	33	0	0	33	2	51	0	0	53	1	0	3	0	4	0	0	0	0	0	90
% Heavy Vehicles	0	6.7	0	0	6.6	40.0	21.1	0	0	21.5	6.7	0	9.1	0	8.3	0	0	0	0	0	11.3

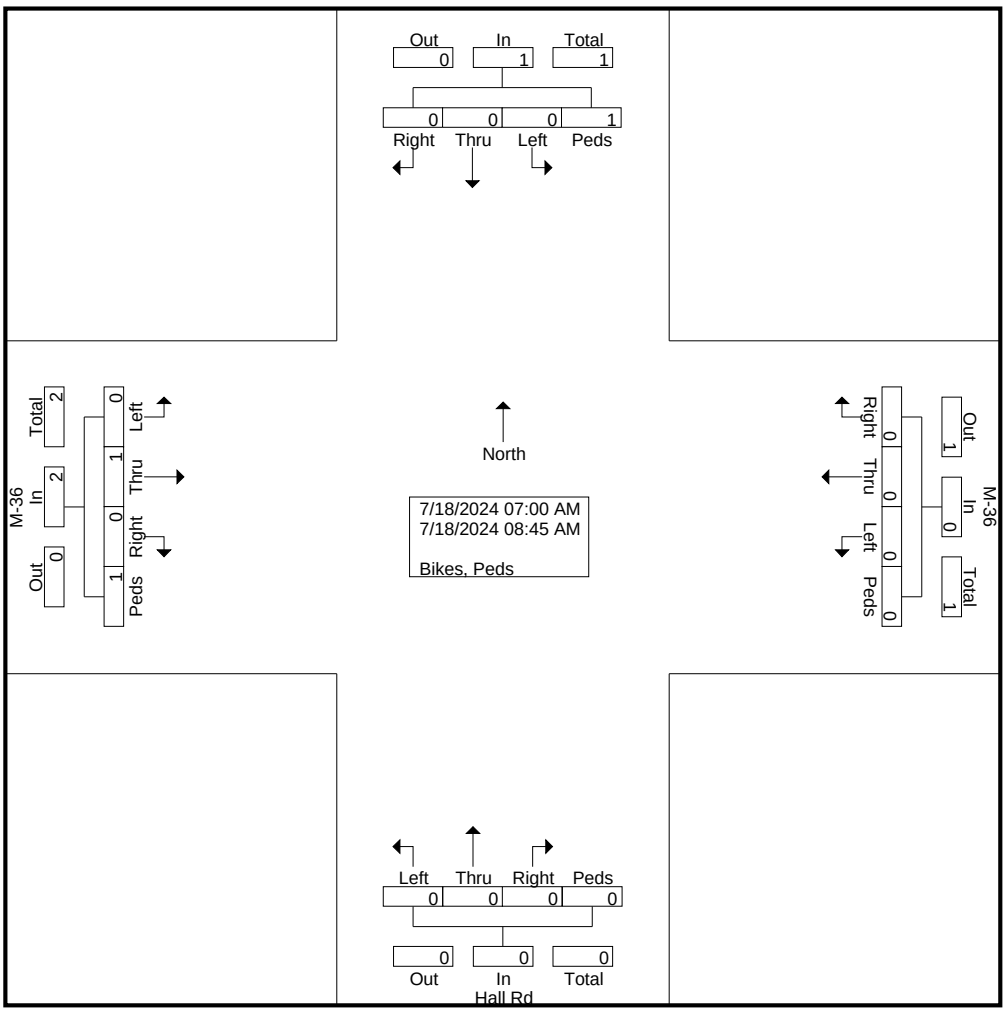


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678705 - Hall Rd -- M-36
Site Code : 16678705
Start Date : 7/18/2024
Page No : 1

Groups Printed- Bikes, Peds

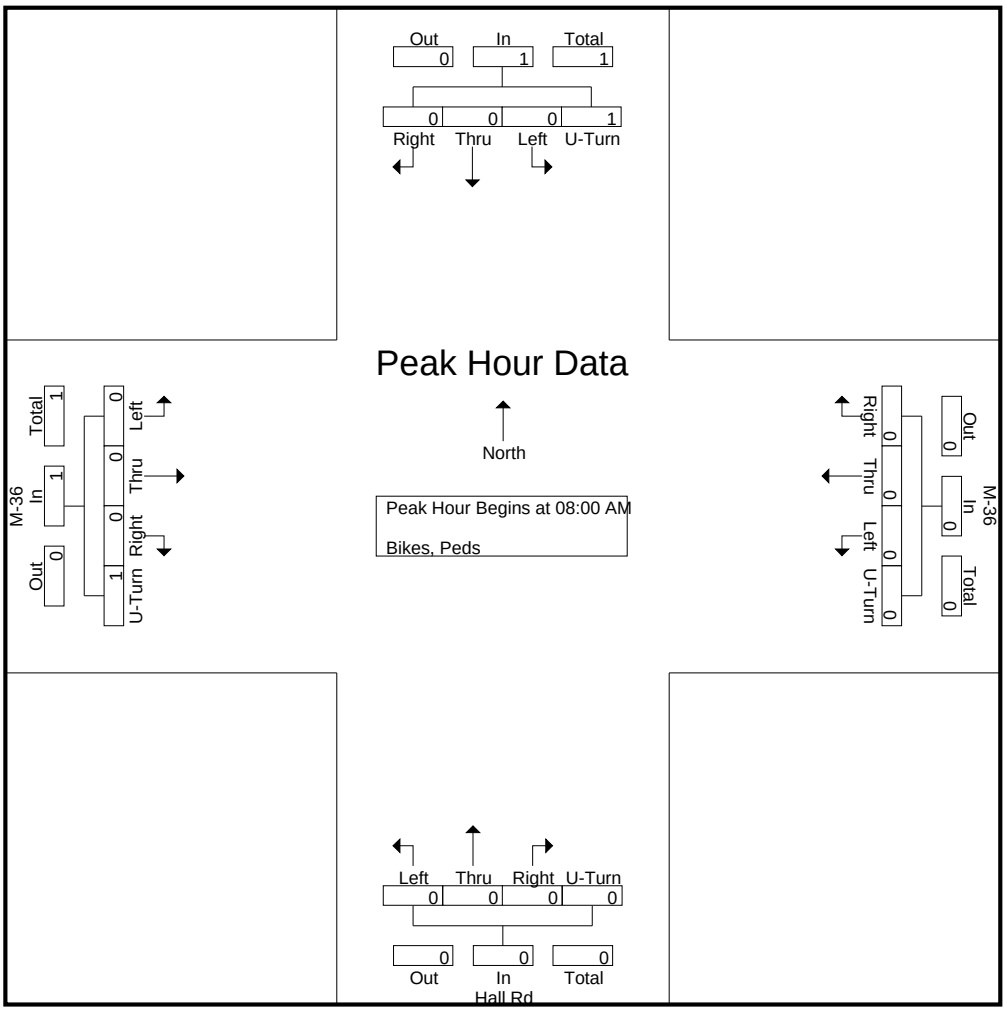
	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Grand Total	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Apprch %	0	50	0	50		0	0	0	0		0	0	0	0		0	0	0	100		
Total %	0	33.3	0	33.3	66.7	0	0	0	0	0	0	0	0	0	0	0	0	0	33.3	33.3	



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678705 - Hall Rd -- M-36
Site Code : 16678705
Start Date : 7/18/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**2**
Total Volume	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	100		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250

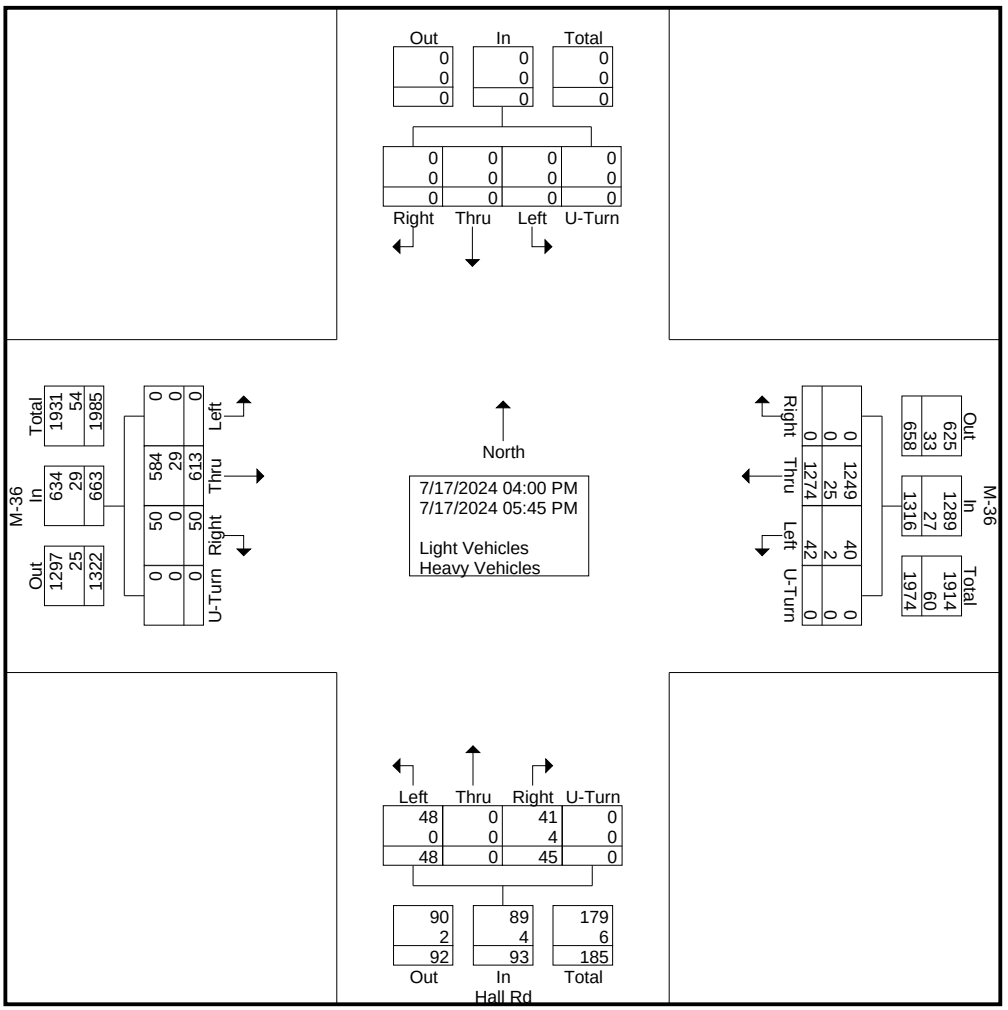


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678706 - Hall Rd -- M-36
Site Code : 16678706
Start Date : 7/17/2024
Page No : 1

Groups Printed- Light Vehicles - Heavy Vehicles

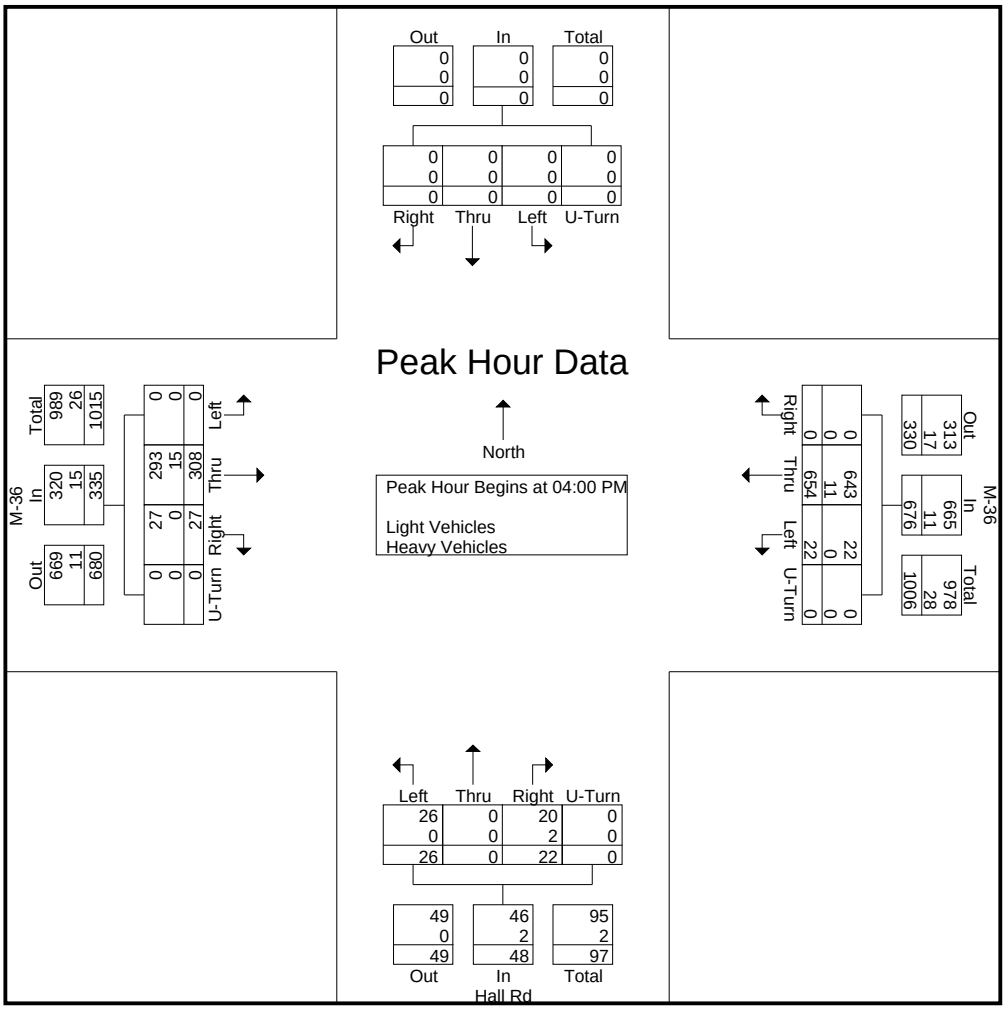
	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
04:00 PM	0	80	8	0	88	5	178	0	0	183	7	0	9	0	16	0	0	0	0	0	287
04:15 PM	0	92	5	0	97	10	142	0	0	152	7	0	5	0	12	0	0	0	0	0	261
04:30 PM	0	64	6	0	70	2	169	0	0	171	2	0	4	0	6	0	0	0	0	0	247
04:45 PM	0	72	8	0	80	5	165	0	0	170	10	0	4	0	14	0	0	0	0	0	264
Total	0	308	27	0	335	22	654	0	0	676	26	0	22	0	48	0	0	0	0	0	1059
05:00 PM	0	73	5	0	78	5	165	0	0	170	5	0	3	0	8	0	0	0	0	0	256
05:15 PM	0	82	5	0	87	1	152	0	0	153	8	0	7	0	15	0	0	0	0	0	255
05:30 PM	0	81	6	0	87	9	170	0	0	179	4	0	8	0	12	0	0	0	0	0	278
05:45 PM	0	69	7	0	76	5	133	0	0	138	5	0	5	0	10	0	0	0	0	0	224
Total	0	305	23	0	328	20	620	0	0	640	22	0	23	0	45	0	0	0	0	0	1013
Grand Total	0	613	50	0	663	42	1274	0	0	1316	48	0	45	0	93	0	0	0	0	0	2072
Apprch %	0	92.5	7.5	0		3.2	96.8	0	0		51.6	0	48.4	0		0	0	0	0		
Total %	0	29.6	2.4	0	32	2	61.5	0	0	63.5	2.3	0	2.2	0	4.5	0	0	0	0	0	
Light Vehicles	0	584	50	0	634	40	1249	0	0	1289	48	0	41	0	89	0	0	0	0	0	2012
% Light Vehicles	0	95.3	100	0	95.6	95.2	98	0	0	97.9	100	0	91.1	0	95.7	0	0	0	0	0	97.1
Heavy Vehicles	0	29	0	0	29	2	25	0	0	27	0	0	4	0	4	0	0	0	0	0	60
% Heavy Vehicles	0	4.7	0	0	4.4	4.8	2	0	0	2.1	0	0	8.9	0	4.3	0	0	0	0	0	2.9



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678706 - Hall Rd -- M-36
Site Code : 16678706
Start Date : 7/17/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	80	**8**	0	88	5	**178**	0	0	**183**	7	0	**9**	0	**16**	0	0	0	0	0	**287**
04:15 PM	0	**92**	5	0	**97**	**10**	142	0	0	152	7	0	5	0	12	0	0	0	0	0	261
04:30 PM	0	64	6	0	70	2	169	0	0	171	2	0	4	0	6	0	0	0	0	0	247
04:45 PM	0	72	8	0	80	5	165	0	0	170	**10**	0	4	0	14	0	0	0	0	0	264
Total Volume	0	308	27	0	335	22	654	0	0	676	26	0	22	0	48	0	0	0	0	0	1059
% App. Total	0	91.9	8.1	0		3.3	96.7	0	0		54.2	0	45.8	0		0	0	0	0		
PHF	.000	.837	.844	.000	.863	.550	.919	.000	.000	.923	.650	.000	.611	.000	.750	.000	.000	.000	.000	.000	.922
Light Vehicles	0	293	27	0	320	22	643	0	0	665	26	0	20	0	46	0	0	0	0	0	1031
% Light Vehicles	0	95.1	100	0	95.5	100	98.3	0	0	98.4	100	0	90.9	0	95.8	0	0	0	0	0	97.4
Heavy Vehicles	0	15	0	0	15	0	11	0	0	11	0	0	2	0	2	0	0	0	0	0	28
% Heavy Vehicles	0	4.9	0	0	4.5	0	1.7	0	0	1.6	0	0	9.1	0	4.2	0	0	0	0	0	2.6

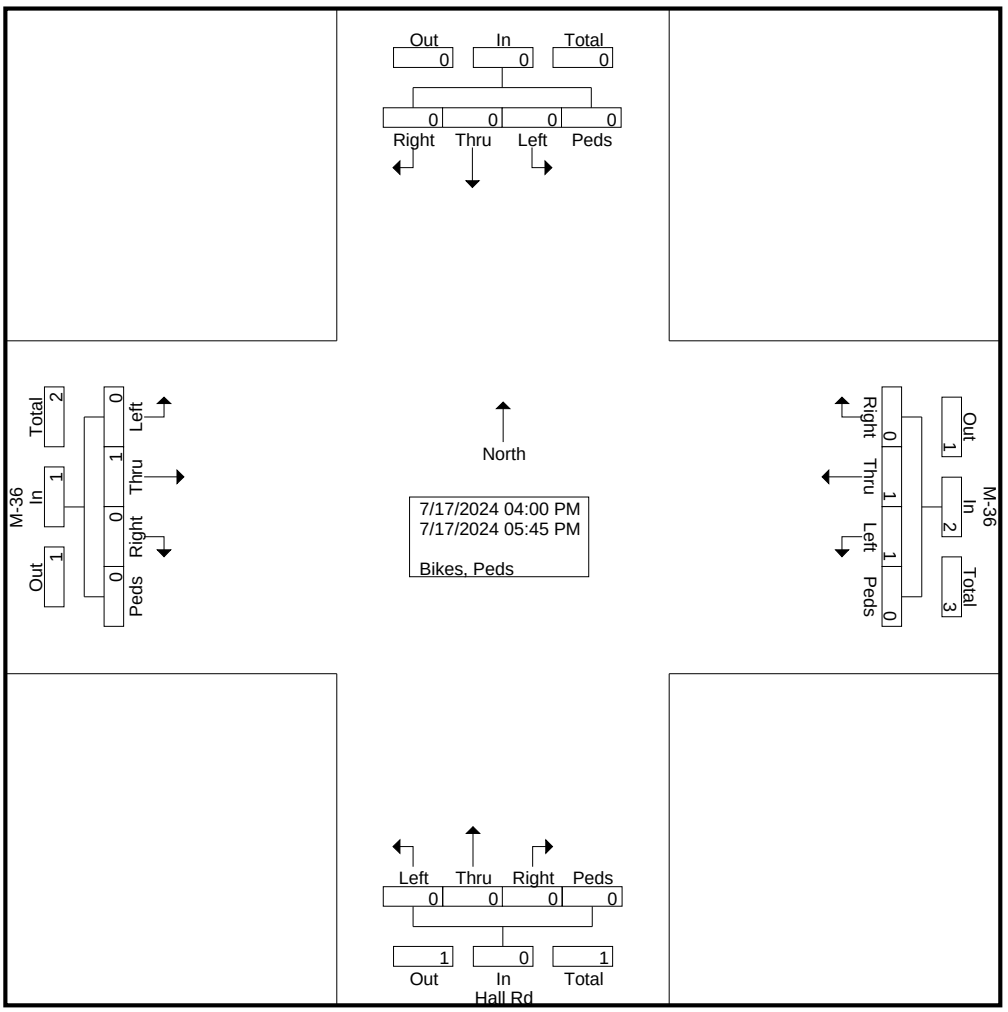


TRUE DATA TO IMPROVE MOBILITY

File Name : 16678706 - Hall Rd -- M-36
Site Code : 16678706
Start Date : 7/17/2024
Page No : 1

Groups Printed- Bikes, Peds

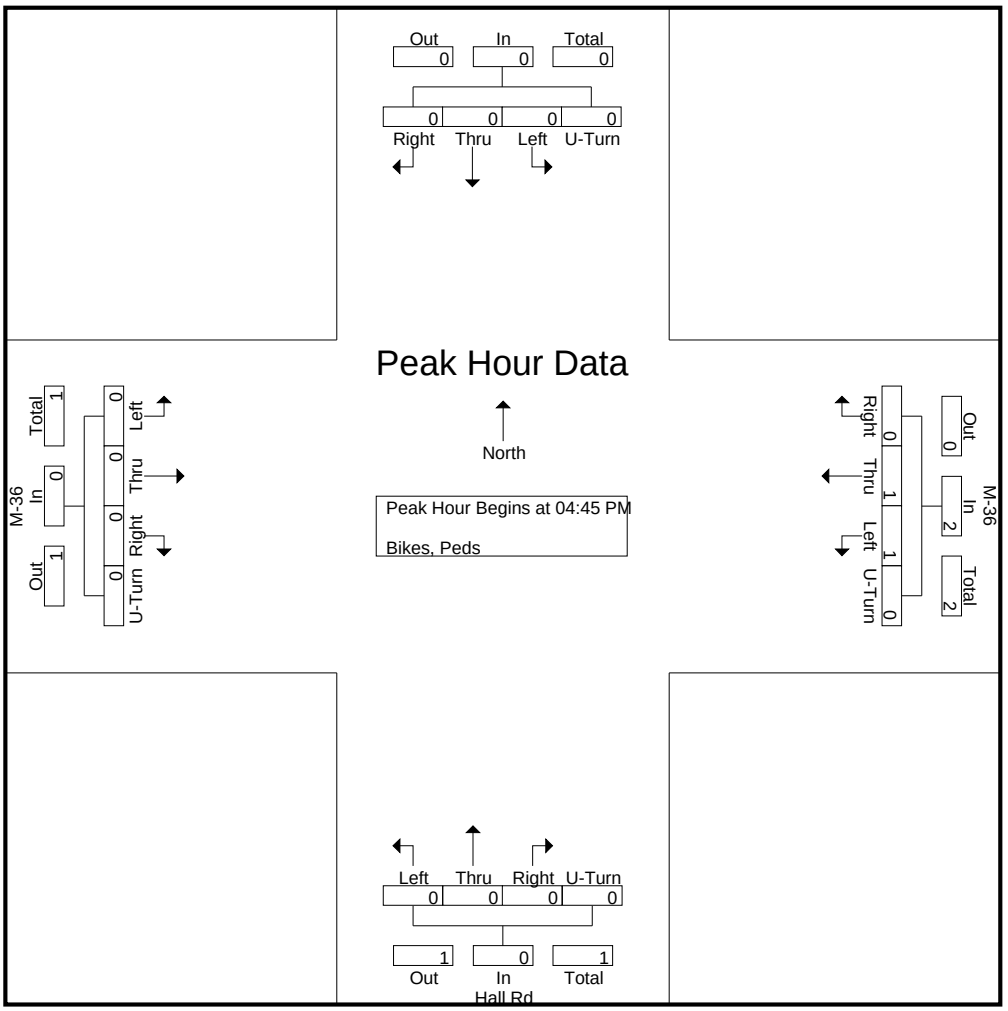
	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	3
Apprch %	0	100	0	0		50	50	0	0		0	0	0	0		0	0	0	0		
Total %	0	33.3	0	0	33.3	33.3	33.3	0	0	66.7	0	0	0	0	0	0	0	0	0	0	



TRUE DATA TO IMPROVE MOBILITY

File Name : 16678706 - Hall Rd -- M-36
Site Code : 16678706
Start Date : 7/17/2024
Page No : 2

	M-36 Eastbound					M-36 Westbound					Hall Rd Northbound					Southbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**1**	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	**1**
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	**1**	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0	0		50	50	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.250	.000	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500



Crash and Road Data

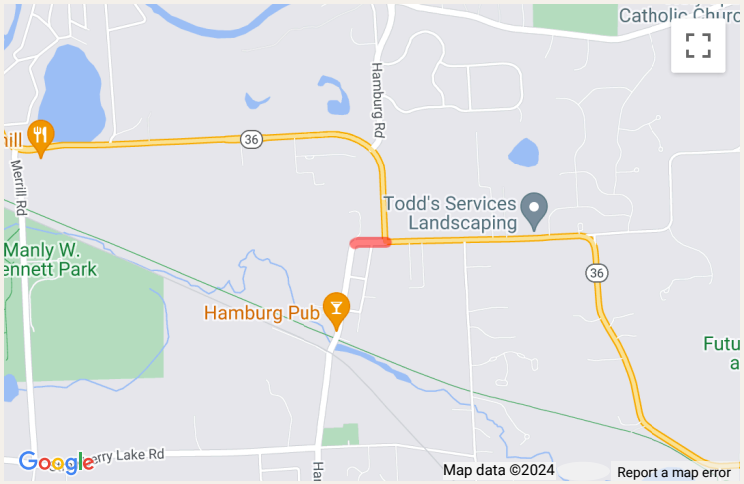
Road Segment Report

Hamburg Rd, (PR Number 932903)

From:	Hamburg Rd 0.000 BMP
To:	MI State Road 36 E 0.100 EMP
Jurisdiction:	County
FALINK ID:	5278
Community:	Hamburg Township
County:	Livingston
Functional Class:	5 - Major Collector
Direction:	2 Way
Length:	0.100 miles
Number of Lanes:	2
Posted Speed:	45 (source: TCO)
Route Classification:	Not a route
Annual Crash Average 2018-2022:	0
Traffic Volume (2022)*:	3,500 (Default AADT)
Pavement Type (2022):	Asphalt
Pavement Rating (2022):	Good

* AADT values are derived from **Traffic Counts**

Street View



Crash and Road Data

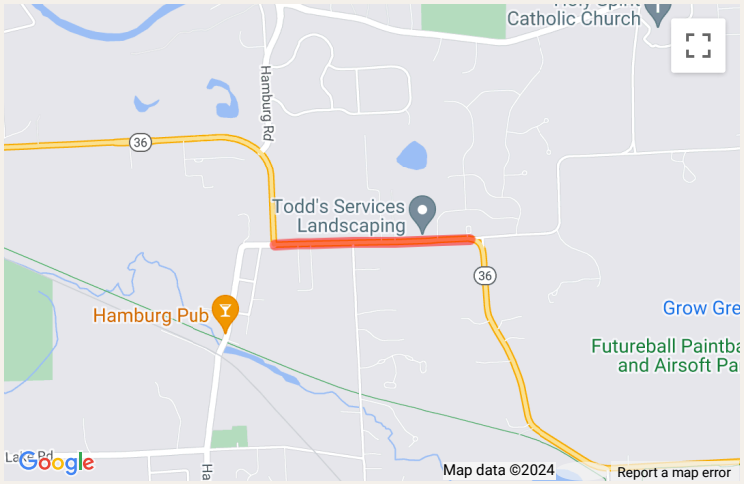
Road Segment Report

M 36, (PR Number 932903)

From:	MI State Road 36 E 0.100 BMP
To:	MI State Road 36 E 0.726 EMP
Jurisdiction:	State
FALINK ID:	5279
Community:	Green Oak Township , Hamburg Township
County:	Livingston
Functional Class:	4 - Minor Arterial
Direction:	2 Way
Length:	0.626 miles
Number of Lanes:	2
Posted Speed:	45 (source: TCO)
Route Classification:	M-36
Annual Crash Average 2018-2022:	6
Traffic Volume (2022)*:	9,300 (Default AADT)
Pavement Type (2022):	Asphalt
Pavement Rating (2022):	Poor

* AADT values are derived from **Traffic Counts**

Street View



Disclaimer: The Michigan Department of Transportation (MDOT) works with individual agencies (cities/villages, counties, metropolitan planning organizations (MPOs), regional planning organizations (RPOs), and other areas of MDOT) to identify existing traffic count programs and/or traffic data. ... more

List View | All DIRs | Report Center

Record 1 of 1 Goto Record go

Location ID	47-0359	MPO ID	1353
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	0932906	LRS Loc Pt.	1.392353
SF Group	Local Road	Route Type	
AF Group	NoFactor	Route	
GF Group	Local Road	Active	Yes
Class Dist Grp	NTL_7	Category	
Seas Clss Grp			
WIM Group			
QC Group	Default		
Fnct'l Class	(7) Local Road or Street	Milepost	
Located On	Hall Rd		
Loc On Alias			
BETWEEN	Strawberry Lake Rd AND M 59		

More Detail

STATION DATA

Directions: 2-WAY | NB | SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2023	592	52	9		562 (95%)	30 (5%)	
	2022	972[3]		11		923 (95%)	49 (5%)	Grown from 2021
	2021	981[3]		11		829 (85%)	152 (15%)	Grown from 2020
	2020	874	93	11		788 (90%)	86 (10%)	

VOLUME COUNT

	Date	Int	Total
	Tue 5/23/2023	60	601
	Wed 6/3/2020	60	874

VOLUME TREND

Year	Annual Growth
2023	-39%
2022	-1%
2021	12%

CLASSIFICATION

	Date	Int	Total
No Data			

NOTES/FILES

	Note	Date	

Community Profiles

YOU ARE VIEWING DATA FOR:

Hamburg Township

10405 Merrill Rd
Hamburg, MI 48139-0157
https://www.hamburg.mi.us/

SEMCOG MEMBER

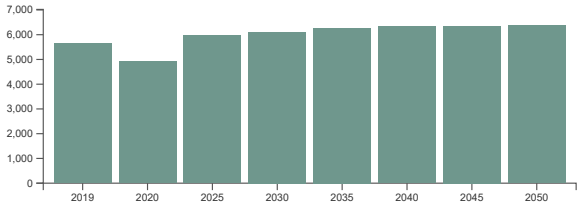
Census 2020 Population: 21,259
Area: 36 square miles

VIEW COMMUNITY EXPLORER MAP | VIEW 2020 CENSUS MAP

Economy & Jobs

Link to American Community Survey (ACS) Profiles: **Select a Year** 2018-2022 **Economic**
Historic Population and Employment by Minor Civil Division, Southeast Michigan

Forecasted Jobs



Note: The base year for the employment forecast is 2019, as 2020 employment was artificially low due to the COVID recession.

Source: **SEMCOG 2050 Regional Development Forecast**

Forecasted Jobs by Industry Sector

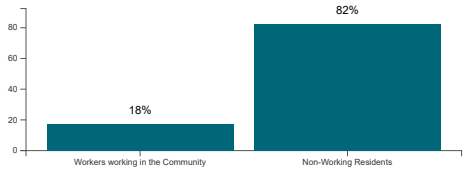
Forecasted Jobs By Industry Sector	2019	2020	2025	2030	2035	2040	2045	2050	Change 2019-2050	Pct Change 2019-2050
Natural Resources, Mining, & Construction	627	581	786	808	807	786	776	770	143	22.8%
Manufacturing	402	370	419	416	403	389	366	342	-60	-14.9%
Wholesale Trade	89	84	94	107	113	112	113	112	23	25.8%
Retail Trade	389	373	393	391	378	363	356	342	-47	-12.1%
Transportation, Warehousing, & Utilities	138	134	153	153	158	159	161	162	24	17.4%
Information & Financial Activities	892	745	864	886	918	930	943	959	67	7.5%
Professional and Technical Services & Corporate HQ	530	374	532	575	603	620	631	649	119	22.5%
Administrative, Support, & Waste Services	468	384	446	483	516	545	568	597	129	27.6%
Education Services	404	389	434	449	472	475	480	481	77	19.1%
Healthcare Services	340	312	459	470	491	501	503	510	170	50%
Leisure & Hospitality	672	548	689	713	747	769	769	765	93	13.8%
Other Services	502	427	476	477	486	499	506	511	9	1.8%
Public Administration	191	187	211	175	181	186	186	184	-7	-3.7%
Total Employment Numbers	5,644	4,908	5,956	6,103	6,273	6,334	6,358	6,384	740	13.1%

Note: The base year for the employment forecast is 2019, as 2020 employment was artificially low due to the COVID recession.

Source: **SEMCOG 2050 Regional Development Forecast**

Daytime Population

Daytime Population	ACS 2022
Workers working in the Community	2,202
Non-Working Residents	10,365
Age 15 and under	3,893
Not in labor force	5,833
Unemployed	639
Daytime Population	12,567



Source: **2018-2022 American Community Survey 5-Year Estimates**. For additional information, visit SEMCOG's **Interactive Commuting Patterns Map**

Note: The number of residents attending school outside Southeast Michigan is not available. Likewise, the number of students commuting into Southeast Michigan to attend school is also not known.

Community Profiles

YOU ARE VIEWING DATA FOR:

Hamburg Township

10405 Merrill Rd
Hamburg, MI 48139-0157
https://www.hamburg.mi.us/

SEMCOG MEMBER

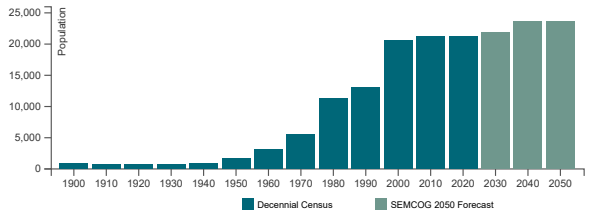
Census 2020 Population: 21,259
Area: 36 square miles

VIEW COMMUNITY EXPLORER MAP | VIEW 2020 CENSUS MAP

Population and Households

Link to American Community Survey (ACS) Profiles: **Select a Year** 2018-2022 **Social** | **Demographic**
Population and Household Estimates for Southeast Michigan, 2023
Historic Population and Employment by Minor Civil Division, Southeast Michigan

Population Forecast



Population and Households

Population and Households	ACS 2020	Census 2010	Change 2010-2020	Pct Change 2010-2020	SEMCOG Jul 2023	SEMCOG 2050
Total Population	21,259	21,165	94	0.4%	21,229	23,616
Group Quarters Population	0	14	-14	-100.0%	12	69
Household Population	21,259	21,151	108	0.5%	21,217	23,547
Housing Units	8,926	8,668	258	3.0%	9,062	-
Households (Occupied Units)	8,257	7,860	397	5.1%	8,612	9,153
Residential Vacancy Rate	7.5%	9.3%	-1.8%	-	5.0%	-
Average Household Size	2.57	2.69	-0.12	-	2.46	2.57

Source: **U.S. Census Bureau**, **2018-2022 American Community Survey 5-Year Estimates**, and **SEMCOG 2050 Regional Development Forecast**

Components of Population Change

Components of Population Change	2010-2020 Avg.	2020-2022 Avg.
Natural Increase (Births - Deaths)	17	5
Births	150	166
Deaths	133	161
Net Migration (Movement In - Movement Out)	-8	73
Population Change (Natural Increase + Net Migration)	9	78

Source: **Michigan Department of Community Health Vital Statistics**, **U.S. Census Bureau**, and SEMCOG

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Exhibit 20-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular controlled movement is a function three (capacity) factors: distribution of gaps in the major-street traffic stream, driver judgment in selecting gaps through which to execute the desired maneuvers, and the follow-up headways required by each driver in a queue.

The basic capacity model assumes gaps in the conflicting movements are randomly distributed. When traffic signals are present on the major street, upstream of the subject intersection, flows may not be random but will likely have some platoon structure. Although the procedures in this chapter provide a method for approximating the operations of a TWSC intersection with an upstream signal, the operations of such an intersection is arguably best handled by including it in a complete simulation

Exhibit 20-2. Level of Service Criteria for Stop-Controlled Intersections (Motor Vehciles)

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	$\leq$ 10
B	> 10 and $\leq$ 15
C	> 15 and $\leq$ 25
D	> 25 and $\leq$ 35
E	> 35 and $\leq$ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. A total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The LOS criteria for TWSC intersections differ somewhat from the criteria used in Chapter 19 for signalized intersections, primarily because user perceptions differ among transportation facility types. The expectation is that a signalized intersection is designed to carry higher traffic volumes and will present greater delay than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection.

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. LOS can be characterized for the entire intersection, each intersection approach, and each lane group. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle. The criteria are given in Exhibit 19-8. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

LOS A describes operations with a control delay of 10 s/veh or less. This level is typically assigned when the volume-to-capacity ratio is low and either progression is extremely favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during a green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

Exhibit 19.8. Level-of-Service Criteria for Signalized Intersections (Motorized Vehicles)

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

1. If the v/c ratio for a lane group exceeds 1.0, a LOS F is assigned to the individual lane group. LOS for approach-based and intersection-wide assessments are determined solely by the control delay.

LOS C describes operations with control delay between 20 and 35 s/veh. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e. one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number if vehicle stopping is significant, although many vehicles still pass through the intersection without stopping.

LOS D describes operations with control delay between 35 and 55 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

LOS E describes operations with control delay between 55 and 80 s/veh. This level is typically assigned when when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level, considered to be unacceptable to most drivers, often occurs with over-saturation, that is, when arrival flow rates exceed the capacity of the intersection. This level is typically assigned when the volume-to-capacity ratio is high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: Highway Capacity Manual, 6th Edition. Transportation Research Board, National Research Council

1: Hamburg Road & M-36 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.4	0.0	0.4
Denied Del/Veh (s)	0.1	0.1	0.0	0.1	3.3	0.9	1.8
Total Delay (hr)	0.1	0.1	0.0	0.1	1.3	0.0	1.6
Total Del/Veh (s)	9.3	7.1	0.8	0.8	10.7	3.4	6.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	506	0	0	292	0	0	0	0	0	0	0
Future Vol, veh/h	0	506	0	0	292	0	0	0	0	0	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	92	87	87	78	78	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	5	17	17	2	2	2	2	2	2	2
Mvmt Flow	0	582	0	0	374	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	374	0	0	582	0	0	956	956	582	956	956	374
Stage 1	-	-	-	-	-	-	582	582	-	374	374	-
Stage 2	-	-	-	-	-	-	374	374	-	582	582	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1184	-	-	922	-	-	238	258	513	238	258	672
Stage 1	-	-	-	-	-	-	499	499	-	647	618	-
Stage 2	-	-	-	-	-	-	647	618	-	499	499	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1184	-	-	922	-	-	238	258	513	238	258	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	258	-	238	258	-
Stage 1	-	-	-	-	-	-	499	499	-	647	618	-
Stage 2	-	-	-	-	-	-	647	618	-	499	499	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1184	-	-	922	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	497	9	5	277	15	33
Future Vol, veh/h	497	9	5	277	15	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	78	78	63	63
Heavy Vehicles, %	7	7	22	22	8	8
Mvmt Flow	592	11	6	355	24	52

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	603	0	965	598
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	367	-
Critical Hdwy	-	-	4.32	-	6.48	6.28
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.398	-	3.572	3.372
Pot Cap-1 Maneuver	-	-	884	-	276	491
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	884	-	274	491
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	16.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	394	-	-	884	-
HCM Lane V/C Ratio	0.193	-	-	0.007	-
HCM Control Delay (s)	16.3	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.7	-	-	0	-

1: Hamburg Road & M-36 Performance by movement

Movement	EBL	EBT	WBT	WBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.3	0.0	0.3
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	3.2	0.8	0.9
Total Delay (hr)	1.0	0.4	0.0	0.4	1.3	0.1	3.2
Total Del/Veh (s)	40.1	28.0	1.4	2.0	15.1	4.9	9.3

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	359	0	0	710	0	0	0	0	1	0	3
Future Vol, veh/h	3	359	0	0	710	0	0	0	0	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	89	89	93	93	92	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	1	1	2	2	2	2	2	2	2
Mvmt Flow	3	403	0	0	763	0	0	0	0	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	763	0	0	403	0	0	1174	1172	403	1172	1172	763
Stage 1	-	-	-	-	-	-	409	409	-	763	763	-
Stage 2	-	-	-	-	-	-	765	763	-	409	409	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	850	-	-	1161	-	-	169	192	647	169	192	404
Stage 1	-	-	-	-	-	-	619	596	-	397	413	-
Stage 2	-	-	-	-	-	-	396	413	-	619	596	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	850	-	-	1161	-	-	167	191	647	168	191	404
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	191	-	168	191	-
Stage 1	-	-	-	-	-	-	616	593	-	395	413	-
Stage 2	-	-	-	-	-	-	393	413	-	616	593	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	17.2
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	850	-	-	1161	-	-	299
HCM Lane V/C Ratio	-	0.004	-	-	-	-	-	0.015
HCM Control Delay (s)	0	9.3	0	-	0	-	-	17.2
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	333	27	22	684	26	22
Future Vol, veh/h	333	27	22	684	26	22
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	86	86	92	92	75	75
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	387	31	24	743	35	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	418	0	1194	403
Stage 1	-	-	-	-	403	-
Stage 2	-	-	-	-	791	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1141	-	204	643
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	443	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1141	-	197	643
Mov Cap-2 Maneuver	-	-	-	-	197	-
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	427	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	21
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	1141	-
HCM Lane V/C Ratio	0.221	-	-	0.021	-
HCM Control Delay (s)	21	-	-	8.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection: 1: Hamburg Road & M-36

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	100	222	54
Average Queue (ft)	44	85	13
95th Queue (ft)	80	163	36
Link Distance (ft)	713		1264
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		1000	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Learning Lane/Church Drive & M-36

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

Intersection: 3: Hall Road & M-36

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	66
Average Queue (ft)	2	26
95th Queue (ft)	14	53
Link Distance (ft)	695	515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 1: Hamburg Road & M-36

Movement	EB	WB	SB	SB
Directions Served	LT	R	L	R
Maximum Queue (ft)	246	21	204	57
Average Queue (ft)	85	1	77	24
95th Queue (ft)	180	10	171	45
Link Distance (ft)	713			1264
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		200	1000	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	EB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	30	31
Average Queue (ft)	2	4
95th Queue (ft)	16	21
Link Distance (ft)	575	296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Hall Road & M-36

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	47	67
Average Queue (ft)	4	27
95th Queue (ft)	24	55
Link Distance (ft)	695	515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection	
Intersection Delay, s/veh	32.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	44	3	8	39	259	3	12	21	472	13	27
Future Vol, veh/h	47	44	3	8	39	259	3	12	21	472	13	27
Peak Hour Factor	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles, %	16	16	16	18	18	18	2	2	2	7	7	7
Mvmt Flow	55	51	3	10	47	312	3	13	23	508	14	29
Number of Lanes	0	1	0	0	1	1	0	1	0	1	1	0

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	12.9	15.6	10.6	49.2
HCM LOS	B	C	B	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	50%	17%	0%	100%	0%
Vol Thru, %	33%	47%	83%	0%	0%	32%
Vol Right, %	58%	3%	0%	100%	0%	68%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	94	47	259	472	40
LT Vol	3	47	8	0	472	0
Through Vol	12	44	39	0	0	13
RT Vol	21	3	0	259	0	27
Lane Flow Rate	39	109	57	312	508	43
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.076	0.232	0.112	0.547	0.947	0.068
Departure Headway (Hd)	6.996	7.647	7.108	6.31	6.715	5.731
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	515	472	501	568	538	622
Service Time	5.004	5.647	4.894	4.095	4.478	3.493
HCM Lane V/C Ratio	0.076	0.231	0.114	0.549	0.944	0.069
HCM Control Delay	10.6	12.9	10.8	16.5	52.6	8.9
HCM Lane LOS	B	B	B	C	F	A
HCM 95th-tile Q	0.2	0.9	0.4	3.3	12.1	0.2

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	537	0	0	306	0	0	0	0	0	0	0
Future Vol, veh/h	0	537	0	0	306	0	0	0	0	0	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	92	87	87	78	78	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	5	17	17	2	2	2	2	2	2	2
Mvmt Flow	0	617	0	0	392	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	617	0	0	1009	1009	617	1009	1009	392
Stage 1	-	-	-	-	-	-	617	617	-	392	392	-
Stage 2	-	-	-	-	-	-	392	392	-	617	617	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	-	894	-	-	219	240	490	219	240	657
Stage 1	-	-	-	-	-	-	477	481	-	633	606	-
Stage 2	-	-	-	-	-	-	633	606	-	477	481	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	894	-	-	219	240	490	219	240	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	219	240	-	219	240	-
Stage 1	-	-	-	-	-	-	477	481	-	633	606	-
Stage 2	-	-	-	-	-	-	633	606	-	477	481	-

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

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1167	-	-	894	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	528	9	5	291	15	34
Future Vol, veh/h	528	9	5	291	15	34
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	63	63
Heavy Vehicles, %	7	7	22	22	8	8
Mvmt Flow	629	11	6	373	24	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	640	0	1020	635
Stage 1	-	-	-	-	635	-
Stage 2	-	-	-	-	385	-
Critical Hdwy	-	-	4.32	-	6.48	6.28
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.398	-	3.572	3.372
Pot Cap-1 Maneuver	-	-	855	-	256	468
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	675	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	855	-	254	468
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	372	-	-	855	-
HCM Lane V/C Ratio	0.209	-	-	0.007	-
HCM Control Delay (s)	17.2	-	-	9.2	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	64.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	51	2	18	60	667	3	14	6	318	10	77
Future Vol, veh/h	84	51	2	18	60	667	3	14	6	318	10	77
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Heavy Vehicles, %	7	7	7	1	1	1	2	2	2	3	3	3
Mvmt Flow	94	57	2	19	65	717	3	15	7	349	11	85
Number of Lanes	0	1	0	0	1	1	0	1	0	1	1	0

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	14.3	98.6	11.9	24.3
HCM LOS	B	F	B	C

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	61%	23%	0%	100%	0%
Vol Thru, %	61%	37%	77%	0%	0%	11%
Vol Right, %	26%	1%	0%	100%	0%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	137	78	667	318	87
LT Vol	3	84	18	0	318	0
Through Vol	14	51	60	0	0	10
RT Vol	6	2	0	667	0	77
Lane Flow Rate	25	154	84	717	349	96
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.055	0.318	0.154	1.156	0.717	0.169
Departure Headway (Hd)	8.413	7.731	6.631	5.802	7.845	6.701
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	428	468	543	631	465	538
Service Time	6.413	5.731	4.342	3.513	5.545	4.401
HCM Lane V/C Ratio	0.058	0.329	0.155	1.136	0.751	0.178
HCM Control Delay	11.9	14.3	10.5	108.9	28	10.8
HCM Lane LOS	B	B	B	F	D	B
HCM 95th-tile Q	0.2	1.4	0.5	23.5	5.6	0.6

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	372	0	0	742	0	0	0	0	1	0	3
Future Vol, veh/h	3	372	0	0	742	0	0	0	0	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	89	89	93	93	92	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	1	1	2	2	2	2	2	2	2
Mvmt Flow	3	418	0	0	798	0	0	0	0	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	798	0	0	418	0	0	1224	1222	418	1222	1222	798
Stage 1	-	-	-	-	-	-	424	424	-	798	798	-
Stage 2	-	-	-	-	-	-	800	798	-	424	424	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	824	-	-	1146	-	-	156	180	635	156	180	386
Stage 1	-	-	-	-	-	-	608	587	-	380	398	-
Stage 2	-	-	-	-	-	-	379	398	-	608	587	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	1146	-	-	154	179	635	155	179	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	154	179	-	155	179	-
Stage 1	-	-	-	-	-	-	605	584	-	378	398	-
Stage 2	-	-	-	-	-	-	376	398	-	605	584	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	0	18
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	824	-	-	1146	-	-	281
HCM Lane V/C Ratio	-	0.004	-	-	-	-	-	0.015
HCM Control Delay (s)	0	9.4	0	-	0	-	-	18
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	345	28	22	715	27	22
Future Vol, veh/h	345	28	22	715	27	22
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	86	86	92	92	75	75
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	401	33	24	777	36	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	434	0	1243	418
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	825	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1126	-	191	631
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	427	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1126	-	184	631
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	411	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	22.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	-	-	1126	-
HCM Lane V/C Ratio	0.242	-	-	0.021	-
HCM Control Delay (s)	22.5	-	-	8.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection: 1: Driveway & Hamburg Road & M-36

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	L	TR
Maximum Queue (ft)	96	79	137	50	167	49
Average Queue (ft)	44	31	67	23	85	18
95th Queue (ft)	77	63	109	48	142	39
Link Distance (ft)	713	575		491	1264	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 2: Learning Lane/Church Drive & M-36

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

Intersection: 3: Hall Road & M-36

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	35	61
Average Queue (ft)	2	23
95th Queue (ft)	16	51
Link Distance (ft)	695	515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 1: Driveway & Hamburg Road & M-36

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	L	TR
Maximum Queue (ft)	81	226	316	40	112	51
Average Queue (ft)	47	42	152	16	56	22
95th Queue (ft)	73	157	283	42	90	40
Link Distance (ft)	713	575		491	1264	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			10			
Queuing Penalty (veh)			8			

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	EB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	49	31
Average Queue (ft)	3	4
95th Queue (ft)	24	22
Link Distance (ft)	575	296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Hall Road & M-36

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	6	52	61
Average Queue (ft)	0	6	25
95th Queue (ft)	0	32	50
Link Distance (ft)	658	695	515
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 8

Intersection	
Intersection Delay, s/veh	36
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	46	3	8	44	281	3	12	21	479	13	27
Future Vol, veh/h	47	46	3	8	44	281	3	12	21	479	13	27
Peak Hour Factor	0.86	0.86	0.86	0.83	0.83	0.83	0.92	0.92	0.92	0.93	0.93	0.93
Heavy Vehicles, %	16	16	16	18	18	18	2	2	2	7	7	7
Mvmt Flow	55	53	3	10	53	339	3	13	23	515	14	29
Number of Lanes	0	1	0	0	1	1	0	1	0	1	1	0

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	13.2	17.2	10.8	55.8
HCM LOS	B	C	B	F

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	49%	15%	0%	100%	0%
Vol Thru, %	33%	48%	85%	0%	0%	32%
Vol Right, %	58%	3%	0%	100%	0%	68%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	96	52	281	479	40
LT Vol	3	47	8	0	479	0
Through Vol	12	46	44	0	0	13
RT Vol	21	3	0	281	0	27
Lane Flow Rate	39	112	63	339	515	43
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.078	0.241	0.125	0.599	0.977	0.07
Departure Headway (Hd)	7.184	7.782	7.164	6.373	6.83	5.845
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	501	464	497	562	531	609
Service Time	5.191	5.784	4.961	4.17	4.598	3.612
HCM Lane V/C Ratio	0.078	0.241	0.127	0.603	0.97	0.071
HCM Control Delay	10.8	13.2	11	18.4	59.7	9.1
HCM Lane LOS	B	B	B	C	F	A
HCM 95th-tile Q	0.3	0.9	0.4	3.9	13.1	0.2

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	537	9	12	306	0	27	0	39	0	0	0
Future Vol, veh/h	0	537	9	12	306	0	27	0	39	0	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	92	87	87	78	78	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	5	17	17	2	2	2	2	2	2	2
Mvmt Flow	0	617	10	15	392	0	29	0	42	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	627	0	0	1044	1044	622	1065	1049	392
Stage 1	-	-	-	-	-	-	622	622	-	422	422	-
Stage 2	-	-	-	-	-	-	422	422	-	643	627	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	-	886	-	-	207	229	487	200	227	657
Stage 1	-	-	-	-	-	-	474	479	-	609	588	-
Stage 2	-	-	-	-	-	-	609	588	-	462	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	886	-	-	203	224	487	180	222	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	203	224	-	180	222	-
Stage 1	-	-	-	-	-	-	474	479	-	609	575	-
Stage 2	-	-	-	-	-	-	596	575	-	422	476	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	20.1	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	1167	-	-	886	-	-	-
HCM Lane V/C Ratio	0.231	-	-	-	0.017	-	-	-
HCM Control Delay (s)	20.1	0	-	-	9.1	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	566	10	5	303	15	34
Future Vol, veh/h	566	10	5	303	15	34
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	63	63
Heavy Vehicles, %	7	7	22	22	8	8
Mvmt Flow	674	12	6	388	24	54

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	686	0	1080	680
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	400	-
Critical Hdwy	-	-	4.32	-	6.48	6.28
Critical Hdwy Stg 1	-	-	-	-	5.48	-
Critical Hdwy Stg 2	-	-	-	-	5.48	-
Follow-up Hdwy	-	-	2.398	-	3.572	3.372
Pot Cap-1 Maneuver	-	-	821	-	235	441
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	821	-	233	441
Mov Cap-2 Maneuver	-	-	-	-	233	-
Stage 1	-	-	-	-	492	-
Stage 2	-	-	-	-	658	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	346	-	-	821	-
HCM Lane V/C Ratio	0.225	-	-	0.008	-
HCM Control Delay (s)	18.4	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Intersection Delay, s/veh	74.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	84	58	2	18	64	679	3	14	6	339	10	77
Future Vol, veh/h	84	58	2	18	64	679	3	14	6	339	10	77
Peak Hour Factor	0.89	0.89	0.89	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Heavy Vehicles, %	7	7	7	1	1	1	2	2	2	3	3	3
Mvmt Flow	94	65	2	19	69	730	3	15	7	373	11	85
Number of Lanes	0	1	0	0	1	1	0	1	0	1	1	0

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	14.9	114.6	12.1	28.3
HCM LOS	B	F	B	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	13%	58%	22%	0%	100%	0%
Vol Thru, %	61%	40%	78%	0%	0%	11%
Vol Right, %	26%	1%	0%	100%	0%	89%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	144	82	679	339	87
LT Vol	3	84	18	0	339	0
Through Vol	14	58	64	0	0	10
RT Vol	6	2	0	679	0	77
Lane Flow Rate	25	162	88	730	373	96
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.056	0.339	0.165	1.203	0.772	0.168
Departure Headway (Hd)	8.637	7.891	6.756	5.933	7.95	6.805
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	417	458	533	613	458	531
Service Time	6.637	5.891	4.465	3.641	5.65	4.505
HCM Lane V/C Ratio	0.06	0.354	0.165	1.191	0.814	0.181
HCM Control Delay	12.1	14.9	10.8	127.1	32.8	10.9
HCM Lane LOS	B	B	B	F	D	B
HCM 95th-tile Q	0.2	1.5	0.6	25.9	6.7	0.6

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	3	372	28	41	742	0	16	0	25	1	0	3
Future Vol, veh/h	3	372	28	41	742	0	16	0	25	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	89	89	93	93	92	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	1	1	2	2	2	2	2	2	2
Mvmt Flow	3	418	31	44	798	0	17	0	27	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	798	0	0	449	0	0	1328	1326	434	1339	1341	798
Stage 1	-	-	-	-	-	-	440	440	-	886	886	-
Stage 2	-	-	-	-	-	-	888	886	-	453	455	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	824	-	-	1117	-	-	132	156	622	130	152	386
Stage 1	-	-	-	-	-	-	596	578	-	339	363	-
Stage 2	-	-	-	-	-	-	338	363	-	586	569	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	1117	-	-	123	144	622	117	140	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	144	-	117	140	-
Stage 1	-	-	-	-	-	-	593	575	-	337	337	-
Stage 2	-	-	-	-	-	-	311	337	-	558	566	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	23.3	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	241	824	-	-	1117	-	-	245
HCM Lane V/C Ratio	0.185	0.004	-	-	0.039	-	-	0.018
HCM Control Delay (s)	23.3	9.4	0	-	8.4	0	-	20
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	368	30	22	753	30	22
Future Vol, veh/h	368	30	22	753	30	22
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	86	86	92	92	75	75
Heavy Vehicles, %	5	5	2	2	4	4
Mvmt Flow	428	35	24	818	40	29

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	463	0	1312	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	866	-
Critical Hdwy	-	-	4.12	-	6.44	6.24
Critical Hdwy Stg 1	-	-	-	-	5.44	-
Critical Hdwy Stg 2	-	-	-	-	5.44	-
Follow-up Hdwy	-	-	2.218	-	3.536	3.336
Pot Cap-1 Maneuver	-	-	1098	-	173	608
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	408	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1098	-	166	608
Mov Cap-2 Maneuver	-	-	-	-	166	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	392	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	26
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	240	-	-	1098	-
HCM Lane V/C Ratio	0.289	-	-	0.022	-
HCM Control Delay (s)	26	-	-	8.4	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0.1	-

Intersection: 1: Driveway & Hamburg Road & M-36

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	L	TR
Maximum Queue (ft)	95	73	130	43	224	48
Average Queue (ft)	45	32	68	23	89	18
95th Queue (ft)	77	65	107	47	161	38
Link Distance (ft)	713	575		491	1264	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	61	84
Average Queue (ft)	6	30
95th Queue (ft)	33	61
Link Distance (ft)	658	491
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Hall Road & M-36

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	5	35	64
Average Queue (ft)	0	3	24
95th Queue (ft)	4	18	48
Link Distance (ft)	658	695	515
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 1: Driveway & Hamburg Road & M-36

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	L	TR
Maximum Queue (ft)	92	135	316	39	123	54
Average Queue (ft)	47	35	145	18	61	23
95th Queue (ft)	78	92	267	43	101	42
Link Distance (ft)	713	575		491	1264	1264
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			200			
Storage Blk Time (%)			8			
Queuing Penalty (veh)			6			

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	36	80	57	32
Average Queue (ft)	2	13	26	5
95th Queue (ft)	15	48	51	23
Link Distance (ft)	575	658	491	296
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Hall Road & M-36

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	57	67
Average Queue (ft)	6	25
95th Queue (ft)	29	52
Link Distance (ft)	695	515
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 6

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	537	9	12	306	0	27	0	39	0	0	0
Future Vol, veh/h	0	537	9	12	306	0	27	0	39	0	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	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	87	87	78	78	92	92	92	92	92	92	92
Heavy Vehicles, %	2	5	5	17	17	2	2	2	2	2	2	2
Mvmt Flow	0	617	10	15	392	0	29	0	42	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	392	0	0	627	0	0	1044	1044	622	1065	1049	392
Stage 1	-	-	-	-	-	-	622	622	-	422	422	-
Stage 2	-	-	-	-	-	-	422	422	-	643	627	-
Critical Hdwy	4.12	-	-	4.27	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.353	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1167	-	-	886	-	-	207	229	487	200	227	657
Stage 1	-	-	-	-	-	-	474	479	-	609	588	-
Stage 2	-	-	-	-	-	-	609	588	-	462	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1167	-	-	886	-	-	204	225	487	180	223	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	204	225	-	180	223	-
Stage 1	-	-	-	-	-	-	474	479	-	609	578	-
Stage 2	-	-	-	-	-	-	599	578	-	422	476	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	20	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	1167	-	-	886	-	-	-
HCM Lane V/C Ratio	0.231	-	-	-	0.017	-	-	-
HCM Control Delay (s)	20	0	-	-	9.1	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↰	↑			↕			↕	
Traffic Vol, veh/h	3	372	28	41	742	0	16	0	25	1	0	3
Future Vol, veh/h	3	372	28	41	742	0	16	0	25	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	89	89	93	93	92	92	92	92	92	92	92
Heavy Vehicles, %	2	4	4	1	1	2	2	2	2	2	2	2
Mvmt Flow	3	418	31	44	798	0	17	0	27	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	798	0	0	449	0	0	1328	1326	434	1339	1341	798
Stage 1	-	-	-	-	-	-	440	440	-	886	886	-
Stage 2	-	-	-	-	-	-	888	886	-	453	455	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	824	-	-	1117	-	-	132	156	622	130	152	386
Stage 1	-	-	-	-	-	-	596	578	-	339	363	-
Stage 2	-	-	-	-	-	-	338	363	-	586	569	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	824	-	-	1117	-	-	126	149	622	120	145	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	149	-	120	145	-
Stage 1	-	-	-	-	-	-	593	575	-	337	349	-
Stage 2	-	-	-	-	-	-	322	349	-	558	566	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.4	22.9	19.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	245	824	-	-	1117	-	-	248
HCM Lane V/C Ratio	0.182	0.004	-	-	0.039	-	-	0.018
HCM Control Delay (s)	22.9	9.4	0	-	8.4	-	-	19.8
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0.1

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	WB	NB
Directions Served	L	LTR
Maximum Queue (ft)	36	62
Average Queue (ft)	4	33
95th Queue (ft)	20	54
Link Distance (ft)		486
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 2: Learning Lane/Church Drive & M-36

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	25	30	30	106	33
Average Queue (ft)	1	8	2	30	5
95th Queue (ft)	11	25	24	99	23
Link Distance (ft)	575		658	486	290
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		100			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

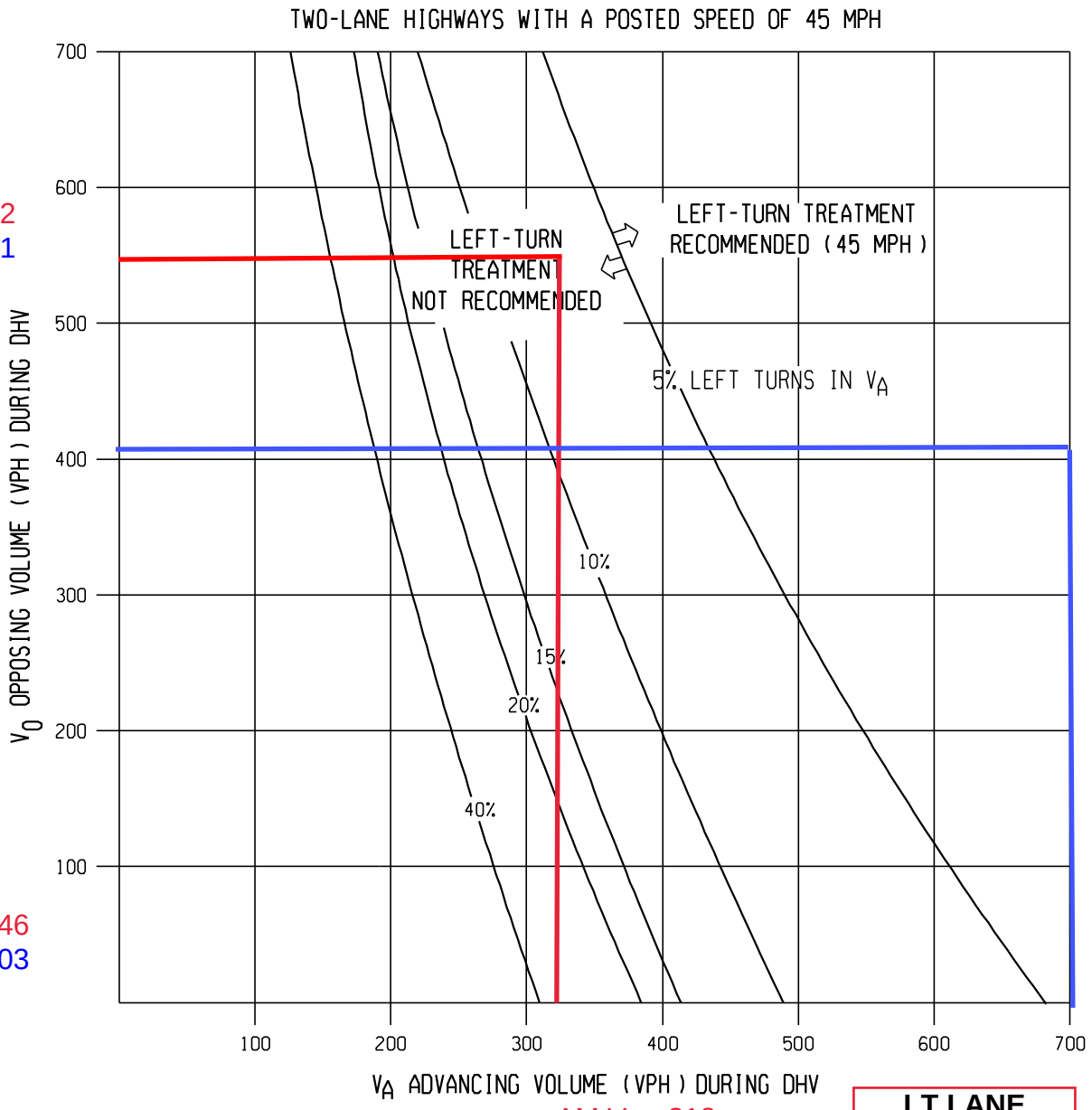
Zone Summary

Zone wide Queuing Penalty: 0

WB M-36 at Learning Lane

AM % Left in Va= 3.8%
PM % Left in Va= 5.2%

AM Left-Turn = 12
PM Left-Turn = 41



AM Vo= 546
PM Vo= 403

AM Va= 318
PM Va= 783

LT LANE Recommended

Instructions:

1. The family of curves represent the percentage of left turns in the 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.

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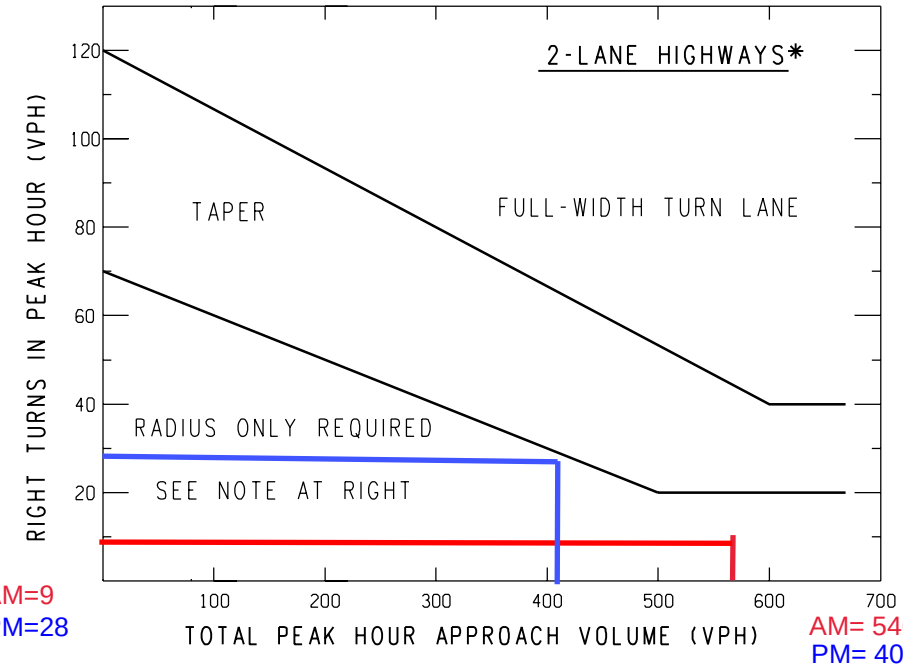
TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS

DRAWN BY: MTS	08/05/2004 PLAN DATE:	605A	SHEET 4 OF 6
CHECKED BY: JAT			
FILE: K:/DGN/ts notes/Note605A tsn.dgn		REV. 08/05/2004	

EB M-36 at Learning Lane



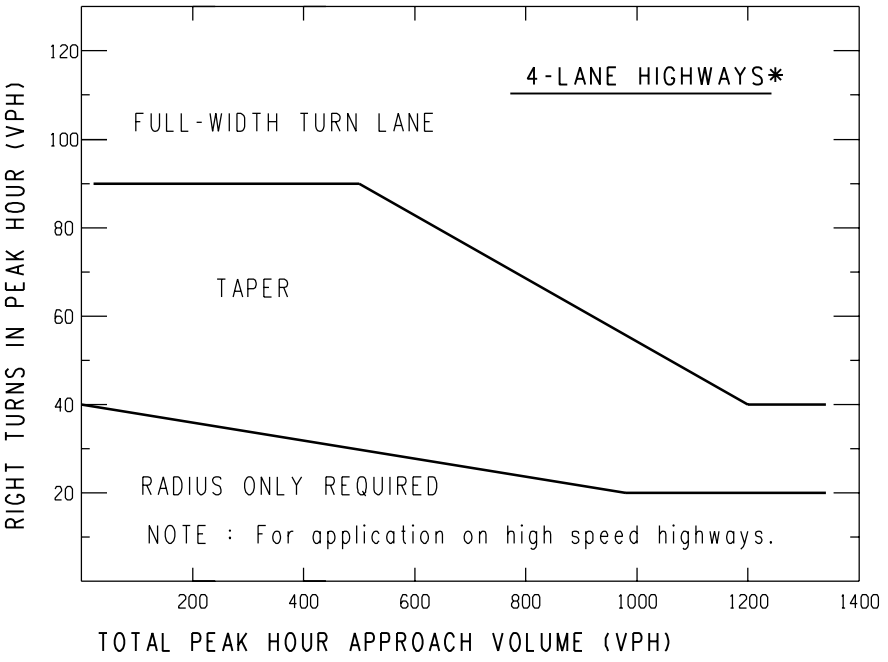
AM=9
PM=28

AM= 546
PM= 403

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

RT LANE NOT Recommended



*If a center left-turn lane exists(i.e. 3 or 5 lane highway), subtract the number of left turns in approach volume from 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 Hour 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.

MDOT Michigan Department of Transportation

TRAFFIC AND SAFETY NOTE

TRAFFIC VOLUME GUIDELINES FOR RIGHT-TURN LANES AND TAPERS

DRAWN BY: MTS	08/05/2004	604A	SHEET 2 OF 2
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FILE: K:/DGN/ts notes/Note604A tsn.dgn		REV. 08/05/2004	