

**PLANNING COMMISSION
TOWNSHIP OF ONTWA – COUNTY OF CASS
MINUTES FOR PLANNING COMMISSION HELD
ON WEDNESDAY
OCTOBER 11TH, 2023 @ 7:00 PM**

Members in Attendance: Chris Marbach, Sandra Seanor, Don Delong, Meryl Christianson, Richard Gates, William Mahaney, Todd Haberlund. Mike Mroczek, Shane Szalia

Members Absent: None

Chairman Marbach called the meeting of the Ontwa Township Planning Commission to order at 7:07pm

Pledge of Allegiance: All rose for the pledge of allegiance.

Chairman Marbach welcomed everyone, stating that there was a quorum present. The Chair also welcomed and acknowledged the Ontwa Township Zoning Administrator Dawn Bolock. She was welcomed.

Agenda: Chairman Marbach asked if there were any changes, corrections or additions to the agenda as presented. Hearing none he asked for a motion to approve. Dick Gates moved to approve the agenda; Don Delong seconded the motion. All were in favor, and the motion carried.

Approval of July 5th, 2023, Minutes: Chairman Marbach asked for questions or corrections. Mike Mroczek motioned to approve. Dick Gates seconded the motion. Chairman Marbach called for a vote, all were in favor, none opposed. Motion passed.

Land Divisions: There were not Land Divisions

New Business: There was no new business.

Old Business: Eddies Market Rezoning – Attorney Pelociuos representing Eddies Market rose to address the Planning Commission. She stated that although they had not provided the traffic and housing data as previously promised, she now had reports and wanted to provide a review of the data they now had in their possession.

A discussion ensued with several members noting that at the Planning Commission meeting in August Attorney Pelociuos had requested the October 11th meeting (a week after the normal Planning Commission date) to accommodate her schedule and insure delivery of the traffic/housing data at least 30 days in advance of the meeting.

No information was delivered to the Planning Commission, or the Zoning Administrator as previously agreed. The Attorney indicated that she wanted to present the information even though the Commission had not reviewed any of it.

Given the high degree of public participation, a promise to provide the data to the public and the high interest in the rezoning it was noted that the Planning Commission had been diligent and patient in waiting for the requested information beginning as far back as March 2023. Sandra Seanor noted that citizens had been attending meeting after meeting without receiving the information the applicant promised. Don Delong expressed that he had understood that if the information was not provided that the rezoning application could be denied and would have to be re-applied for. Bill Mahaney expressed his concern that the requirement for a 30-day review period was necessary making the next opportunity for discussion December 6th, 2023. He made a motion to delay the presentation on traffic and housing data until the Planning Commission had an opportunity to study the data in full. Sandra Seanor seconded the motion, and a voice vote was called. Bill Mahaney, Y, Merly Christianson Y, Don Delong Y, Shane Szalia N, Mike Mroczek N, Sandra Seanor Y, Todd Haberlund N, Dick Gates N, Chris Marbach, N. The motion was denied 4 – 5.

Discussion continued and Mike Mroczek motioned to have the attorney proceed with a presentation. Dick Gates seconded, and a voice vote was called. Mike Mroczek Y, Dick Gates Y, Merly Christianson Y, Don Delong Y, Shane Szalia Y, Sandra Seanor Y, Todd Haberlund Y, Chris Marbach, Y. The motion was approved 9-0.

Attorney Pelociuos introduced Mr. Jabolonski from Abonmarche Engineering regarding the traffic study. He noted that the traffic study was based on what the proposed commercial and multi-family proposals might generate using International Transportation Engineering estimated. He noted that traffic modelling data was not included and did not consider either the Sports Complex or Church traffic generation in his analysis. He concluded that there might need for a traffic signal at the location but that would have to be coordinated with MDOT, signal warrants to be met and more analysis completed. There was discussion again from the Planning Commission. Bill Mahaney noted that it took nearly 17 years to get the signal at Section St.

Attorney Pelociuos previewed the housing report noting that the author was not available.

Zoning Ordinance Review Committee Report: There was no meeting of the Zoning Review Committee

Master Plan Update: Seanor noted that the Open House on the Master Plan update October 12, 2023, will occur from 4pm to 7pm. A community survey is available. The Planning Commission encouraged citizens to participate/

Zoning Administrator's Report: Zoning Administrator Bolock provided the Planning Commission with the permit compilation report.

Public Comments: Chairman Marbach asked for public comment.

Lynn Schantz, 29353 Pokagon Hwy, Dowagiac remonstrated against the use of farmland for commercial or housing uses, citing several statistics.

Lisa Smith - 69483 Conrad Rd Edwardsburg Rd - asked about the rationale for rezoning and is concerned about commercial/industrial development and other environmental concerns.

Charles Fish that he was concerned about covenant/deed changes – Michiana Shores

Jerry Duck had questions regarding the Brady Rd development. Chris Marbach noted that the delays were a result of permit delays.

Announcements: The only announcement was the Master Plan Open House October 12th, 2023

Adjourn Meeting: Chairman Marbach adjourned the meeting.

The
Township of Ontwa
&
Village of Edwardsburg

Invite you to:

A Community Master Plan
Open House

Ontwa Township and the Village of Edwardsburg are undertaking a collaborative effort to develop a joint Master Plan. Come voice your opinion on the future of your community!

October 12, 2023
4:00pm to 7:00pm

at

Ontwa Township Hall
26225 US-12
Edwardsburg, MI 49112

Scan the
QR code
to take the
survey, or
visit:



<https://www.surveymonkey.com/r/OEMP>

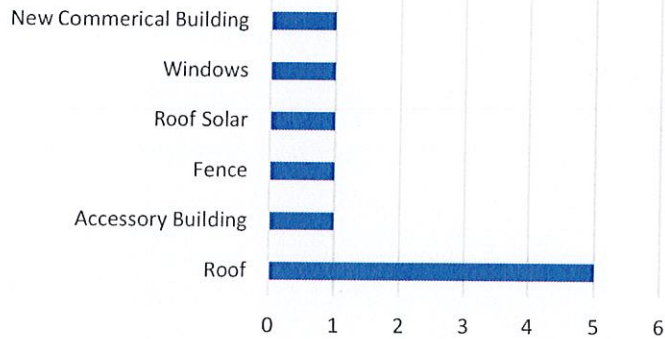
Questions? Please Contact:

Dawn Bolock, Village of Edwardsburg
(269) 663-8484

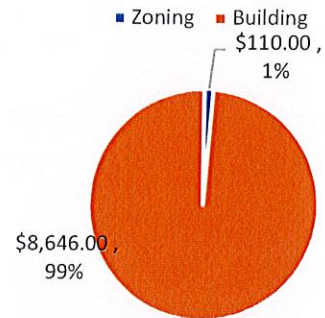
John Hanson, Township of Ontwa
(269) 663-2347

Zoning and Building Permit Report for September 2023

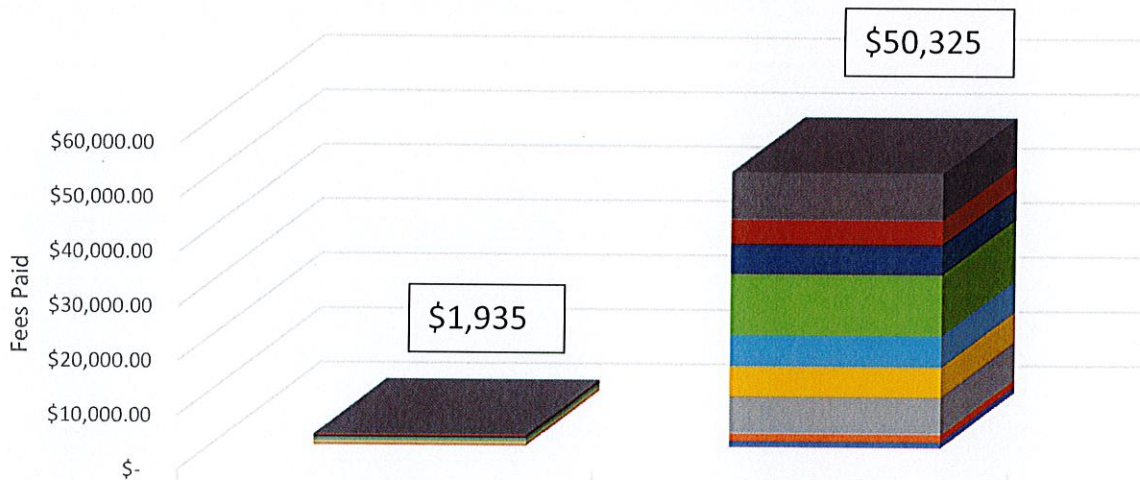
September 2023
Permits Issued



September 2023
Zoning and Building Fees



YTD Zoning and Building Fees



	Zoning	Building
September	\$110.00	\$8,646.00
August	\$280.00	\$4,518.00
July	\$220.00	\$5,471.00
June	\$310.00	\$11,198.00
May	\$320.00	\$5,815.00
April	\$285.00	\$5,381.00
March	\$260.00	\$6,876.00
February	\$125.00	\$1,438.00
January	\$25.00	\$982.00

October 9, 2023

Ms. Emily Palacios
Miller Johnson
500 Woodward Ave, Ste 2800
Detroit, MI 48226

Subject: **Eddies Market Park**, proposed location on the north side of US-12, approximately 35 acres.

Dear Ms. Palacios:

At your request, we are providing this opinion letter concerning the need/demand for housing to be included in a proposed roughly 35-acre mixed-use development in Ontwa Township, Michigan, to be built in phases over the next several years. The development will include attached multi-family housing and also consist of a number of commercial land uses to be built in the first few phases.

Based on our understanding of the project, there is need for new housing which will help with the overall housing shortage and will also provide sustainable support for the proposed retail as a result of residential unit development. Additionally, we understand the Township's desire to maintain a rural character as well as minimize development impacts to the township as a result of population and traffic growth. For this letter, we will look at existing conditions in the area to determine the need and demand for new housing units in the community.

Please note that this is a professional planning opinion and does not determine the demand for specific housing types in the community. Instead, it reviews existing available housing information and renders an opinion regarding that data. Based upon our review of the proposed development, an analysis of surrounding land uses, review of the Ontwa Township Master Plan and relevant market data, we offer the following for your consideration:

ANALYSIS OF REQUEST

Master Plan. The Master Plan for Ontwa Township has a number of policy items related to housing within the township. One goal of the master plan is "Ontwa Township will feature stable, high-quality and welcoming neighborhoods that accommodate a variety of housing opportunities to maintain affordability for a wide range of income levels." According to the 2015 Master Plan, in 2000, renter-occupied homes accounted for 317 units or 13.3% and the rental vacancy rate

was 5.9%. The 2010 Census reveals a renter-occupied housing unit vacancy rate of 8.9%, a fairly substantial increase. The 2010 Census also indicates that there are 485 rented units in the Township, representing 18.5% of housing in the community. Owner-occupied homes accounted for 2,075 units or 86.7% in 2000; and the homeowner vacancy was only 2.2% at that time.

Since the information above was reported, the percentage of renter-occupied housing in the township according to the American Community Survey 2021 estimates is now 17%, a decrease of 1.5%. While this may seem like a small decrease, from the 2000 data, it is still indicative of the need for more housing options throughout the community as a result of declining housing options.

Additionally, it is important to understand the vacancy status of units in the township. The table below represents vacant units by type according to the 2021 ACS Census Estimates.

As of the 2021 census estimates, the total number of vacant, for-lease units in the township was zero. The predominant vacancies in the township are seasonal or temporary housing or short-term rentals such as AirBnB or VRBO housing units.

Housing Unit Vacancy	
Total:	334
For rent	0
Rented, not occupied	0
For sale only	21
Sold, not occupied	0
For seasonal, recreational, or occasional use	237
For migrant workers	0
Other vacant	76

The Master Plan also states that primary purpose of the high-density designation is to offer the potential for a variety of residential options for a variety of age and income levels. It also states a long-term objective for this designation is the creation of high-density areas that are designed and located to create human scale, walkable neighborhoods in close proximity to commercial services and recreational amenities with high-quality design that works with the area's natural features. Given the subject property's close proximity to the Village of Edwardsburg, the adjacent sports complex, access to US-12 and available water and sewer, this site seems to be an ideal fit for the high-density residential classification identified in the township's Master Plan.

Recognizing that there are vast rural areas throughout the township with natural features and a lack of public utilities, this request presents an opportunity to increase the amount of higher density housing with public utility service and have no impact on natural features.

State-wide Housing Shortage

The State of Michigan is currently experiencing a state-wide housing shortage. This shortage is not specific to a certain type or format of housing such as one-unit detached or multi-unit styles as all formats of housing are needed at this time. As a result of the shortage, all costs related to housing – whether purchase prices or rents -- have increased significantly. As a measure to address and offset rising costs, the State of Michigan has prepared a state-wide housing plan which identifies market needs and gaps. For the Ontwa Township area which includes the township, Edwardsburg and Dowagiac, the plan has identified a need for over 3,000 for-lease housing units to become available over the next 5 years.

CONCLUSION

Based upon our review of relevant data including the Master Plan, Zoning Ordinance along with additional housing data we have collected from Ontwa Township specific US Census data, we believe that there is a demand for new rental housing within Ontwa Township and that the current proposed housing will be a welcomed addition to the township as well as the nearby village.

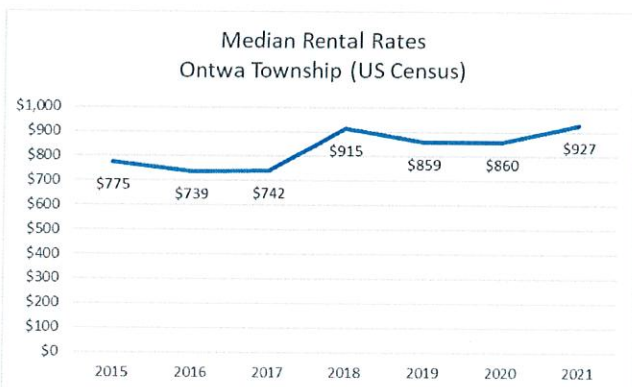
The multifamily housing demand in Ontwa Township, Michigan is expected to remain strong in the coming years. The township is located in a desirable area, with close proximity to both urban and rural amenities.

There are a number of factors that are contributing to the strong demand for multifamily housing in Ontwa Township. One factor is the rising cost of single-family homes. The median sales price of a single-family home in Ontwa Township is over \$256,500 per Rocket Homes mortgage and lending company, which is out of reach for many buyers. Multifamily housing offers a more affordable option to homeownership.

Another factor contributing to the demand for multifamily housing is the changing lifestyle preferences of residents. Many people are choosing to live in multifamily housing because they value the convenience and flexibility that it offers. Multifamily housing units are typically located in close proximity to shopping, dining, and entertainment options. They also offer amenities such as fitness centers, swimming pools, and laundry facilities. Looking at age profiles, we can get a better understanding of the size of the township population that could be seeking multi-family housing as an alternative to owning a single-family home. There are two large age blocks in the township currently that in similar communities are showing a shift in lifestyle patterns noted above. These age blocks can be seen in the adjacent figure.

AGE	
Under 5 years	488
5 to 9 years	298
10 to 14 years	516
15 to 19 years	408
20 to 24 years	160
25 to 29 years	337
30 to 34 years	371
35 to 39 years	409
40 to 44 years	353
45 to 49 years	511
50 to 54 years	488
55 to 59 years	592
60 to 64 years	604
65 to 69 years	443
70 to 74 years	363
75 to 79 years	221
80 to 84 years	162
85 years and over	144

The multifamily housing market in Ontwa Township is currently underserved. There is a shortage of multifamily housing units in the township. This shortage is driving up rents and making it difficult for people to find affordable housing.



Here are some specific data points that support the strong demand for multifamily housing in Ontwa Township:

- The population of Ontwa Township is expected to grow by 5% in the next five years according to Census estimates.
- The median household income in Ontwa Township is \$61,184, which is above

the state average of \$57,683.

- The vacancy rate for rental units in Ontwa Township is 0%, which is below the state average of 3%.
- The average rent for a two-bedroom apartment in Ontwa Township is \$1,300 per month.

Overall, the multifamily housing demand in Ontwa Township, Michigan is expected to remain strong in the coming years. There are a number of factors that are contributing to this demand, including the rising cost of single-family homes, the changing lifestyle preferences of residents, and the current shortage of multifamily housing units.

If you have any further questions, please contact us at 810-734-0000.

Sincerely,

CIB Planning

Justin Sprague,
Vice President

**Eddies Market Park
 Traffic Analysis Memo
 Project #: 23-0835**

September 20, 2023

Background and Development Summary

Mr. Shier is seeking to rezone two parcels of land, totaling 35.73 acres, from Agricultural (A-R) to Commercial (C-2) and Multi-Family Residential (MFR). The land is in Ontwa Township, west of M-62 with frontage on US-12. The site is bounded by the Edwardsburg Sports Complex to the west, US-12 to the south, a church to the east, and farmland to the north. Mr. Shier is seeking to rezone parcel numbers 14-090-007-001-0 and 14-090-006-015-04 to C-2 and parcel number 14-090-006-015-05 to MFR.

This analysis is intended to satisfy the Planning Commission's initial request for traffic analysis to assess the impact of the proposed rezoning on US-12 and adjacent land uses. For the purposes of this analysis, the land Proposed for C-2 zoning is anticipated to contain a mix of sit-down restaurants, fast food restaurants (with drive-thru), small offices, and a retail plaza. The land proposed for MFR zoning is anticipated to contain multi-family dwellings. The trip generation associated with these uses is derived from ITE's Trip Generation Manual, 11th Edition as seen below in **Table 1**.

Table 1: Anticipated Development Summary

ITE Code	ITE Land Use	Unit	Quantity
220	Multifamily Housing (Low-Rise)	Dwelling Units	200
712	Small Office Building	1,000 Sft Gross Floor Area	36
822	Strip Retail Plaza (<40k)	1,000 Sft Gross Floor Area	14
932	High-Turnover (Sit-Down) Restaurant	1,000 Sft Gross Floor Area	12
934	Fast-Food Restaurant with Drive-Through Window	1,000 Sft Gross Floor Area	15

Development Phasing

This analysis assumes that the land is developed in phases and will be fully developed by 2031. The anticipated phasing for the development is as follows:

- Phase 1 (By End of 2025)
 - 12,000 SFT Fast Food Restaurants with Drive Thru
 - 12,000 SFT Sit-Down Restaurants
 - 12,000 SFT Office Buildings
 - 32 Dwelling Units of Multi-family Housing

- Phase 2 (By End of 2027)
 - 14,000 SFT Strip Retail Plaza
 - 24,000 SFT Office Buildings
 - 32 Dwelling Units of Multi-family Housing
- Phase 3 (By End of 2029)
 - 72 Dwelling Units of Multi-family Housing
- Phase 4 (By End of 2031)
 - 64 Dwelling Units of Multi-family Housing

Analysis Locations

This analysis focuses on the US-12 corridor from M-62 to Conrad Road with select intersections reviewed. The intersections analyzed in the analysis are as follows:

- | | |
|------------------------------|------------------|
| • US-12 at M-62 | Signalized |
| • US-12 at Development Drive | To Be Determined |
| • US-12 at Conrad Road | Unsignalized |

This analysis assumes a single access point per the direction of the Michigan Department of Transportation (MDOT). The access is anticipated to have dedicated right and left turn lanes. The access point was analyzed to determine if a signal may be warranted based on existing roadway and generated site volumes. Per MDOT, a full Traffic Impact Study (TIS) with intersection improvement modeling will be required prior to the issuance of any permits to confirm that the recommended traffic management measures are appropriate.

Additionally, US-12 was analyzed to determine the need for dedicated turn lanes at the anticipated access point. This analysis included the Phase 1 peak hour volumes along with the combined Phase 1 and 2 peak hour volumes. The analysis determined that an eastbound left-turn lane as well as a westbound right-turn lane are recommended.

Proposed Development Trip Generation

As discussed previously, the rezoned land is anticipated to be built out in four (4) phases from 2025 to 2031. Anticipated traffic volumes generated by the anticipated land uses were estimated using ITE models. **Table 2** summarizes these projected traffic volumes by phase, by land use, and by direction of travel (into or out of the site). The total trips generated by the site are split into entering and exiting trips based on percentages developed from studies of similar land uses currently in operation. A summary of the anticipated use codes and corresponding trips are in **Table 2** on the following page. A fully detailed report of the trip generation is provided following this memo.



Table 2: Development Trip Generation Summary

Phase 1 Trip Generation Summary							
ITE Code	Land Use	AM Peak Hour			PM Peak Hour		
		<i>Trips</i>	<i>In</i>	<i>Out</i>	<i>Trips</i>	<i>In</i>	<i>Out</i>
220	Multifamily Housing (Low-Rise)	33	8	25	34	21	13
712	Small Office Building	20	16	4	16	9	17
932	High-Turnover (Sit-Down) Restaurant	115	63	52	109	66	43
934	Fast-Food Restaurant with Drive-Through Window	535	273	262	396	206	190
Phase 1 Trip Totals:		703	361	342	565	303	262
Phase 2 Trip Generation Summary							
ITE Code	Land Use	AM Peak Hour			PM Peak Hour		
		<i>Trips</i>	<i>In</i>	<i>Out</i>	<i>Trips</i>	<i>In</i>	<i>Out</i>
220	Multifamily Housing (Low-Rise)	33	8	25	34	21	13
712	Small Office Building	40	33	7	52	18	34
822	Strip Retail Plaza (<40k)	36	22	14	99	50	50
Phase 2 Trip Totals:		109	63	46	185	89	97
Phase 3 Trip Generation Summary							
ITE Code	Land Use	AM Peak Hour			PM Peak Hour		
		<i>Trips</i>	<i>In</i>	<i>Out</i>	<i>Trips</i>	<i>In</i>	<i>Out</i>
220	Multifamily Housing (Low-Rise)	45	11	34	52	33	19
Phase 3 Trip Totals:		45	11	34	52	33	19
Phase 4 Trip Generation Summary							
ITE Code	Land Use	AM Peak Hour			PM Peak Hour		
		<i>Trips</i>	<i>In</i>	<i>Out</i>	<i>Trips</i>	<i>In</i>	<i>Out</i>
220	Multifamily Housing (Low-Rise)	43	10	33	48	30	18
Phase 4 Trip Totals:		43	10	33	48	30	18
Development Trip Total:		900	444	456	850	455	396



Proposed Development Trip Distribution

Once trips are generated for proposed land uses, they are then assigned origins and destinations to determine how they will travel through the analyzed intersections. Each specific land use has the potential to have varying distributions based upon the use of the site, location within a given development, and mix for anticipated vehicles that use the site. Due to the relative isolated nature of this site from other major localities and its placement on a significant roadway network it is anticipated that all noted uses will have similar distributions of trips and therefore all uses were correlated to one distribution.

Detailed routings through the analyzed intersection are provided following this memo but a summary is provided below describing the overall trip routing.

All Land Uses: Trip Routing

- 50% of trips come from west of the site
 - 40% come from US-12 via west of Conrad
 - 5% come from Conrad via northbound
 - 5% come from Conrad via southbound
- 50% of trips come from east of the site
 - 25% come from M-62 via northbound
 - 12.5% come from US-12 via east of M-62
 - 12.5% come from M-62 via southbound

- 100% of the trips leave via the Access Point
 - 60% leave via a southbound right
 - 40% leave via a southbound left

Land Use 934: Fast-Food Restaurant with Drive Through Window Trip Routing

- 50% of trips are pass-by trips
 - 25% come via eastbound on US-12
 - 25% come via westbound on US-12
 - 25% leave via a southbound right
 - 25% leave via a southbound left

Note that Land Use 934 has a 50 percent pass-by trip percentage which indicates that half of all trips generated by the site come from existing traffic on the roadway adjacent to the site. This means that vehicles that existed prior to any development are pulled from the network into the site and then exit the site and continue with their normal trip routing.



Summary of Analysis Findings

Based on the information reviewed and analysis conducted to date, the findings about the site are presented for consideration:

- Development Volumes and US-12 Traffic Volumes are sufficient to Warrant a traffic signal installation at the site access point
- A single access point is desired by MDOT, and if combined with a traffic signal installation, has the potential to service vehicles utilizing the site and US-12
A formal Traffic Impact Study (TIS) will validate these findings and signal design/timings will be coordinated with MDOT further into the design process

Attachments

Trip Generation Summary

Trip Distribution Summary

Access Point Signal Warrant Summary

US-12 Right and Left Turn Summary



Appendix A Trip Generation Summary





Eddies Market Park Trip Generation Summary

Project:	Eddies Market Park (404 East Main Street)	Project No.:	23-0835
Client:	Brian Sher	Client Project No.:	N/A
Description:	Trip Generation Summary	Project Stage:	Traffic Analysis
Prepared By:	Ryan Kafer, EIT	Date Prepared:	6/5/2023
Reviewed By:	Sam Jablonowski, PE	Date Reviewed:	6/6/2023

ITE Code	Land Use	Units	Quantity	Phase 1: Generated Trips															
				Weekday		AM Peak Hour		PM Peak Hour											
				Rate (Eq. 1)	Trips	In	Out	Rate (Eq. 2)	Trips	In	Out								
220	Multifamily Housing (Low-Rise)	Dwelling Units	32	140	280	50%	140	280	50%	140	280	24%	8	25	76%	34	63%	21	13
712	Small Office Building	1,000 SFT GFA	12	87	173	50%	87	173	50%	87	173	82%	16	4	18%	26	34%	9	17
932	High-Turnover (Sit-Down) Restaurant	1,000 SFT GFA	12	643	1286	50%	643	1286	50%	643	1286	55%	63	52	45%	109	61%	66	39
934	Fast-Food Restaurant with Drive-Through Window	1,000 SFT GFA	12	2805	5610	50%	2805	5610	50%	2805	5610	51%	273	262	49%	396	52%	206	190
Trip Totals:				Weekday	7349	3675	3675	3675	3675	AM Peak	703	361	342	PM Peak	565	303	262		

ITE Code	Land Use	Units	Quantity	Phase 2: Generated Trips															
				Weekday		AM Peak Hour		PM Peak Hour											
				Rate (Eq. 1)	Trips	In	Out	Rate (Eq. 2)	Trips	In	Out								
220	Multifamily Housing (Low-Rise)	Dwelling Units	32	140	280	50%	140	280	50%	140	280	24%	8	25	76%	34	63%	21	13
712	Small Office Building	1,000 SFT GFA	24	173	345	50%	173	345	50%	173	345	82%	33	7	18%	52	34%	18	34
822	Strip Retail Plaza (<40k)	1,000 SFT GFA	14	410	820	50%	410	820	50%	410	820	60%	22	14	40%	99	50%	50	50
Trip Totals:				Weekday	1445	723	723	723	723	AM Peak	109	63	46	PM Peak	185	89	97		

ITE Code	Land Use	Units	Quantity	Phase 3: Generated Trips															
				Weekday		AM Peak Hour		PM Peak Hour											
				Rate (Eq. 1)	Trips	In	Out	Rate (Eq. 2)	Trips	In	Out								
220	Multifamily Housing (Low-Rise)	Dwelling Units	72	269	537	50%	269	537	50%	269	537	24%	11	34	76%	52	63%	33	19
Trip Totals:				Weekday	537	269	269	269	269	AM Peak	45	11	34	PM Peak	52	33	19		

ITE Code	Land Use	Units	Quantity	Phase 4: Generated Trips															
				Weekday		AM Peak Hour		PM Peak Hour											
				Rate (Eq. 1)	Trips	In	Out	Rate (Eq. 2)	Trips	In	Out								
220	Multifamily Housing (Low-Rise)	Dwelling Units	64	243	486	50%	243	486	50%	243	486	24%	10	33	76%	48	63%	30	18
Trip Totals:				Weekday	486	243	243	243	243	AM Peak	43	10	33	PM Peak	48	30	18		



95 West Main Street
 P.O. Box 1088
 Benton Harbor, MI 49923
 T: (269) 927-2295
 F: (269) 927-1017
 www.abonmarche.com

Eddies Market Park Trip Generation Summary

Project:	Eddies Market Park (404 East Main Street)	Project No.:	23-0835
Client:	Brian Shier	Client Project No.:	N/A
Description:	Trip Generation Summary	Project Stage:	Traffic Analysis
Prepared By:	Ryan Karer, EIT	Date Prepared:	6/5/2023
Reviewed By:	Sam Jablonowski, PE	Date Reviewed:	6/6/2023

Generated Trip Summary

Trip Totals:	Weekday		Trips		In		Out		AM Peak		Trips		In		Out		PM Peak		Trips		In		Out	
	9817	4909	4909	444	900	456	850	455	396															

Indicates no equation basis for rate calculation. Value based on land use specific rate value.

Land Use 220 Equations:

Eq. 1 $T = 6.41(X) + 75.31$

Land Use 822 Equations:

Eq. 4 $T = 42.20(X) + 229.68$

Eq. 2 $T = 0.31(X) + 22.85$

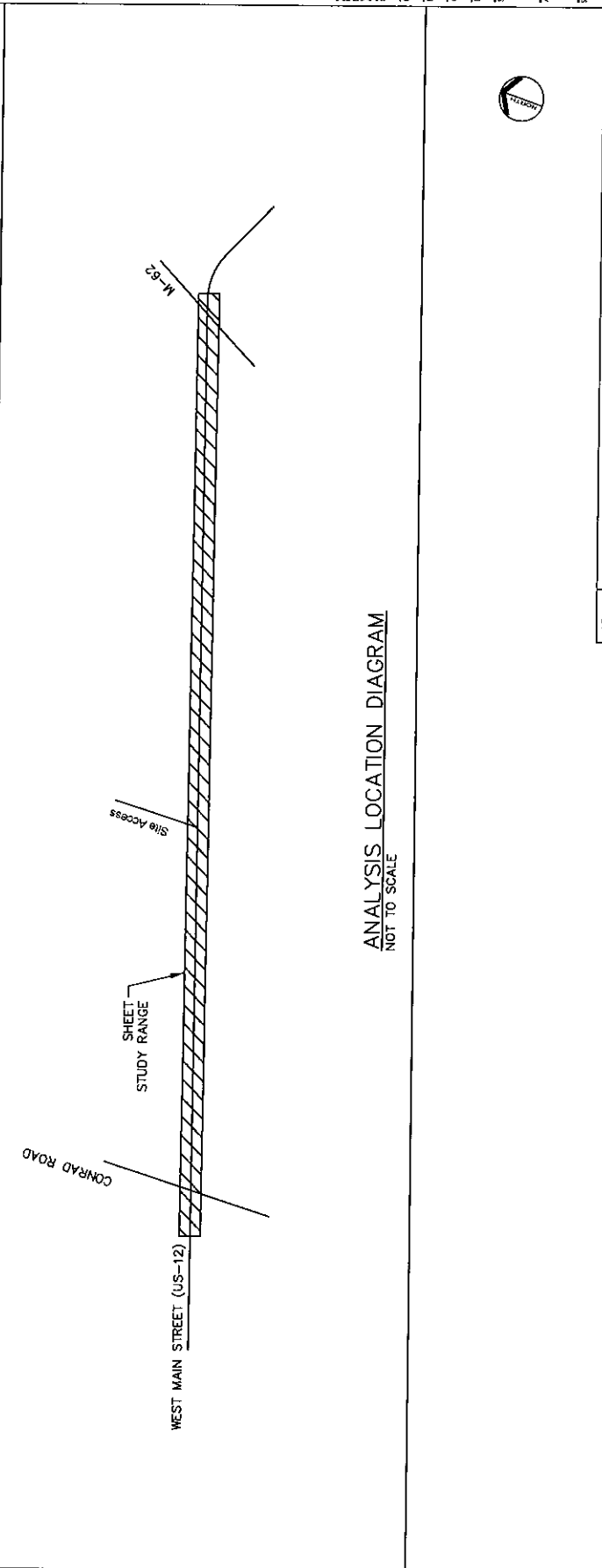
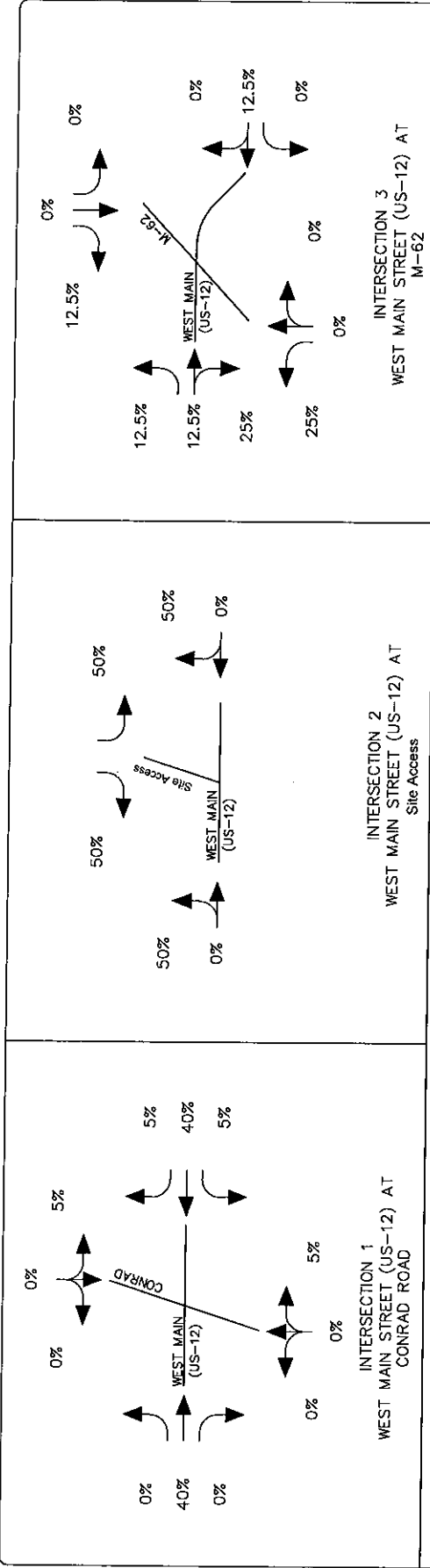
Eq. 5 $Ln(T) = 0.66 * Ln(X) + 1.84$

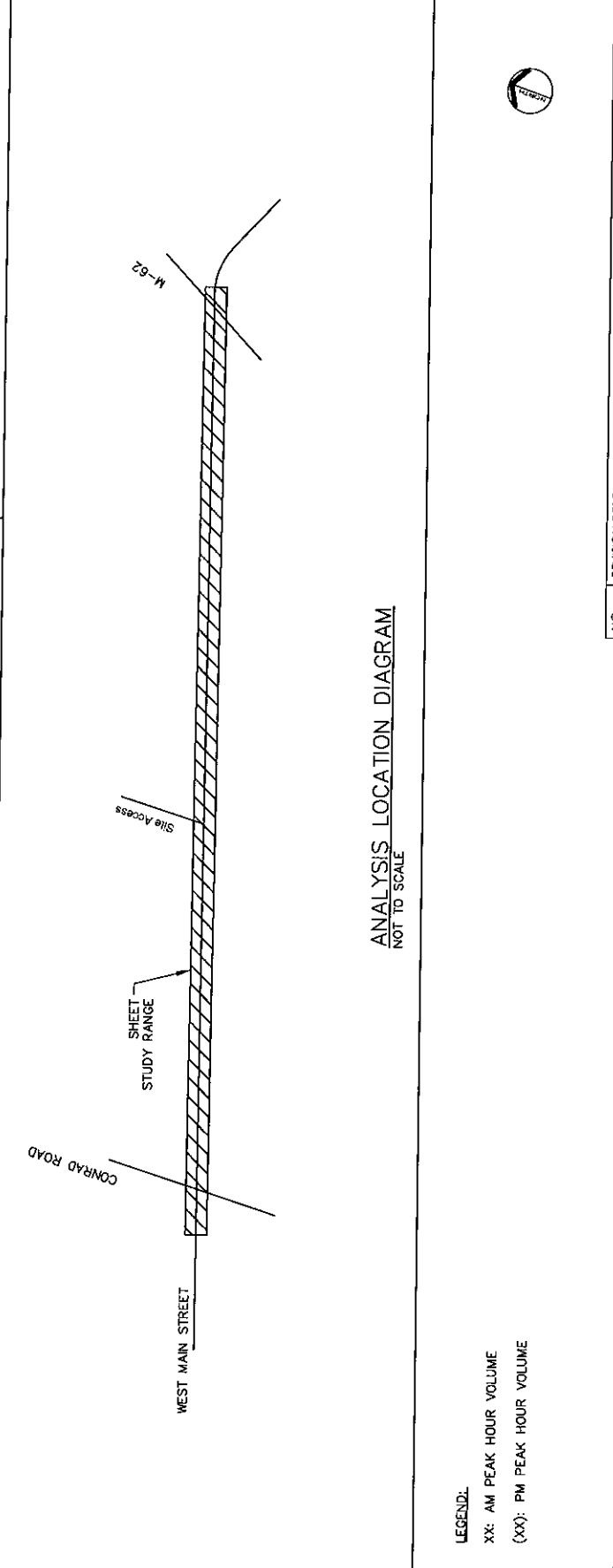
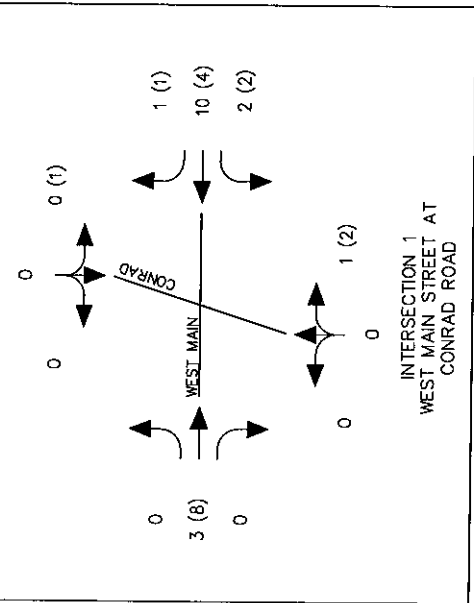
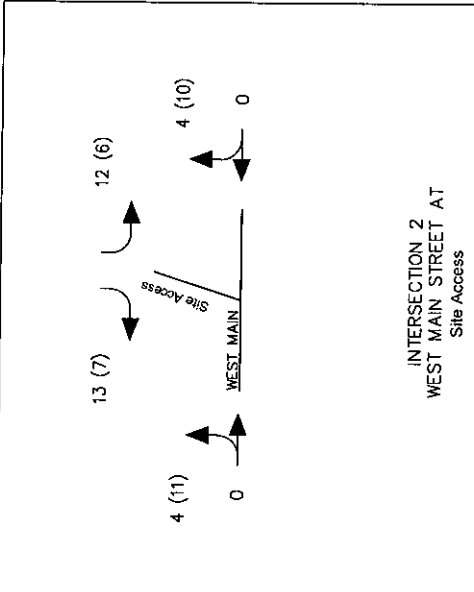
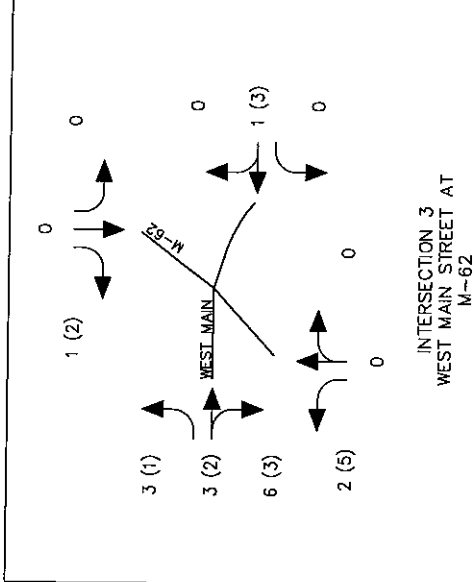
Eq. 3 $T = 0.43(X) + 20.55$

Eq. 6 $Ln(T) = 0.71 * Ln(X) + 2.72$

Appendix B Trip Distribution Summary

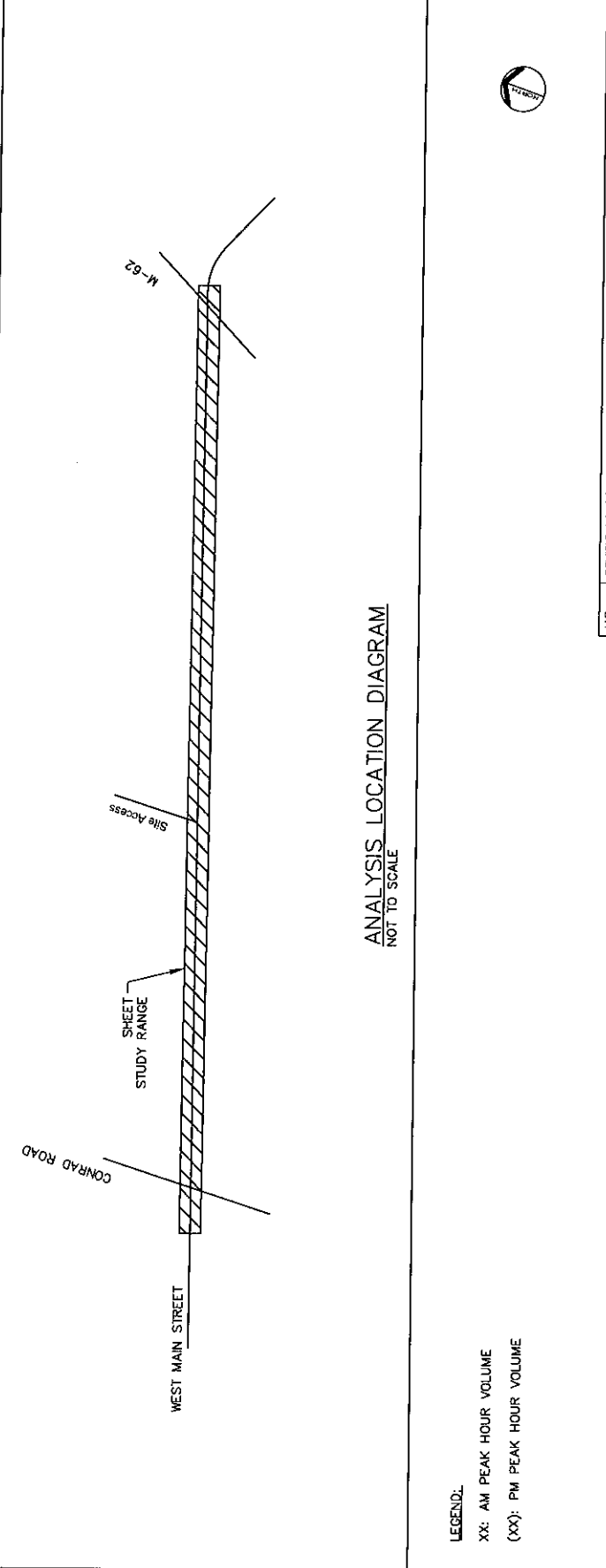
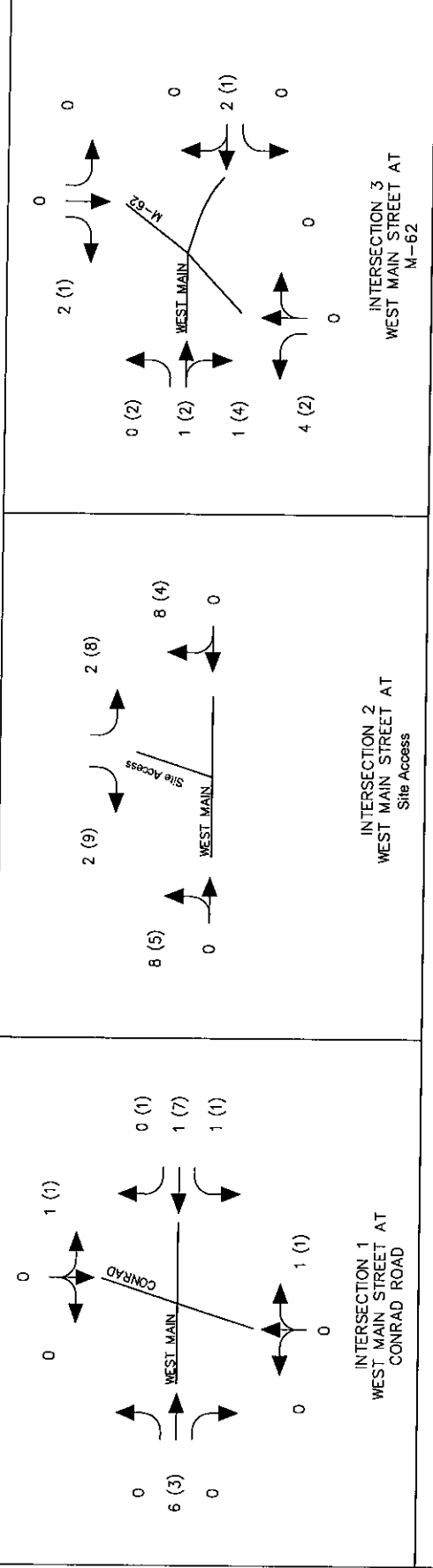






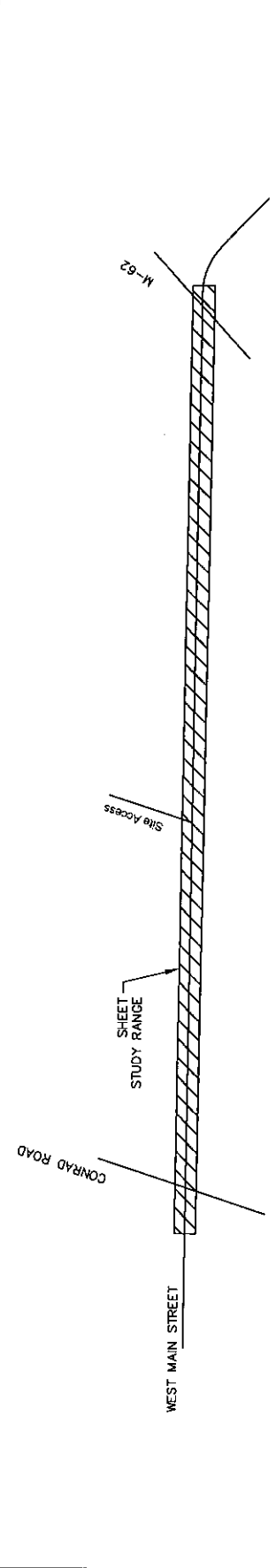
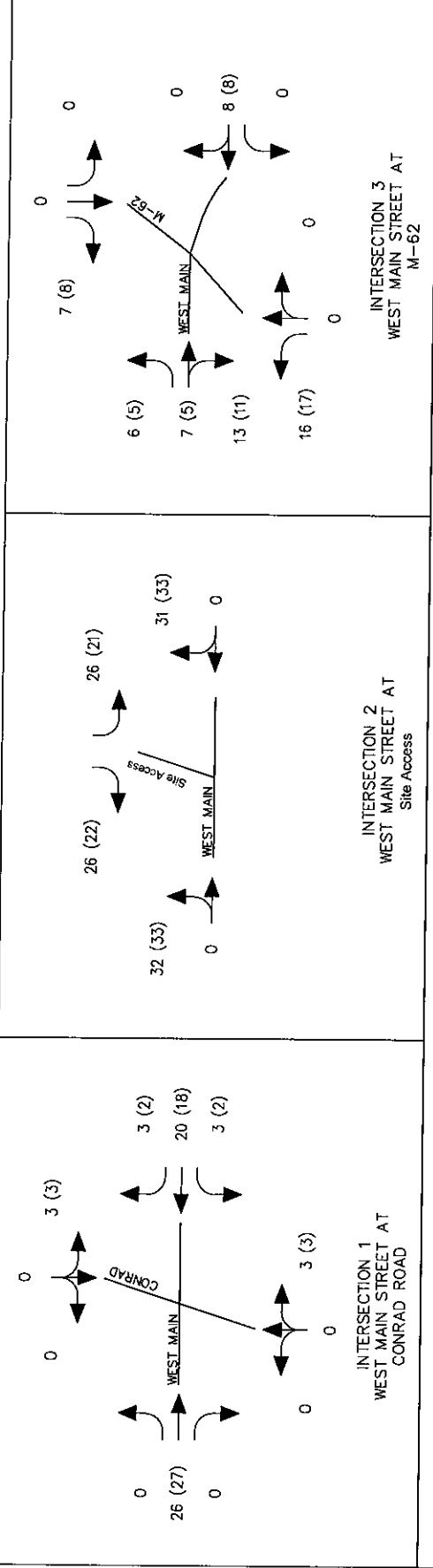
LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:



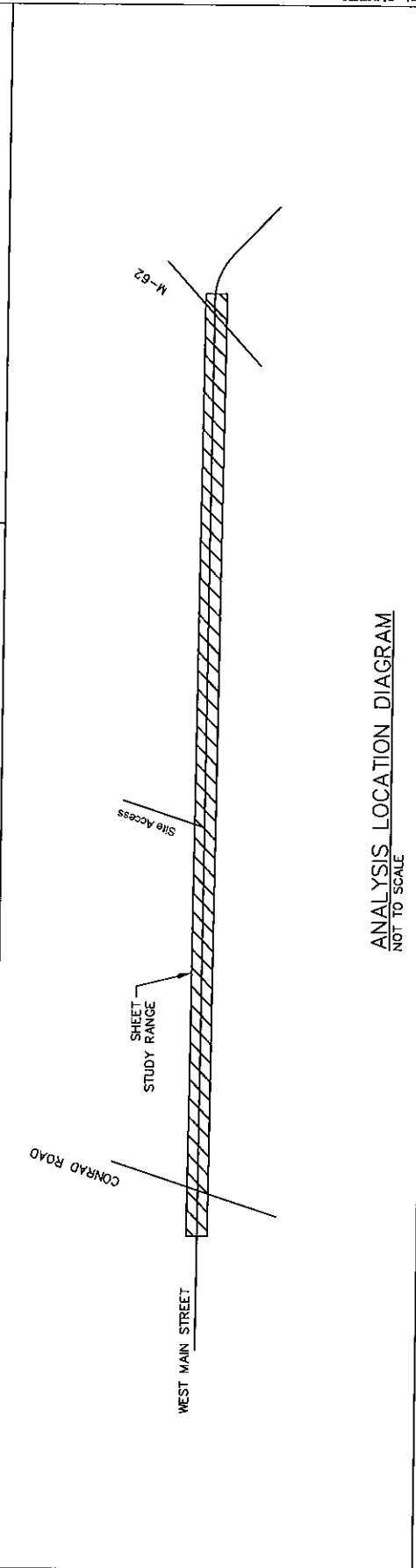
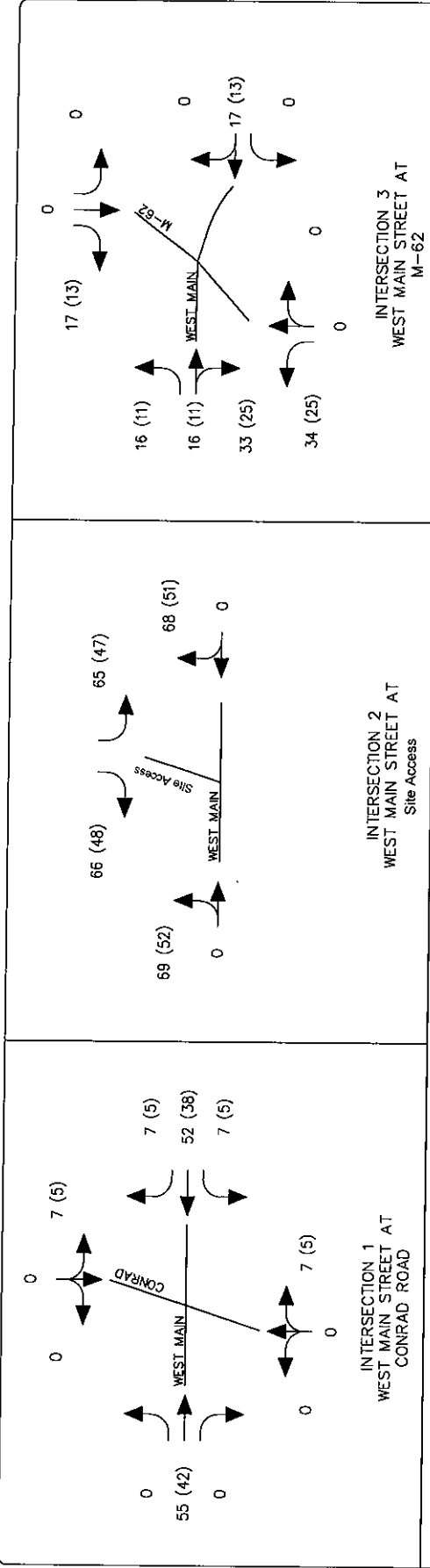
LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:



LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:

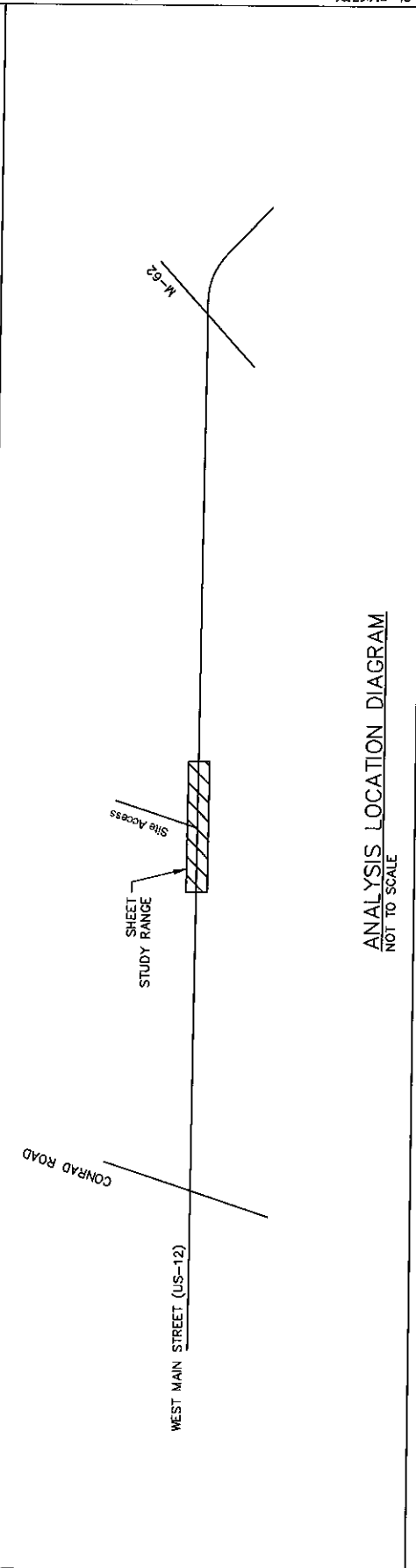
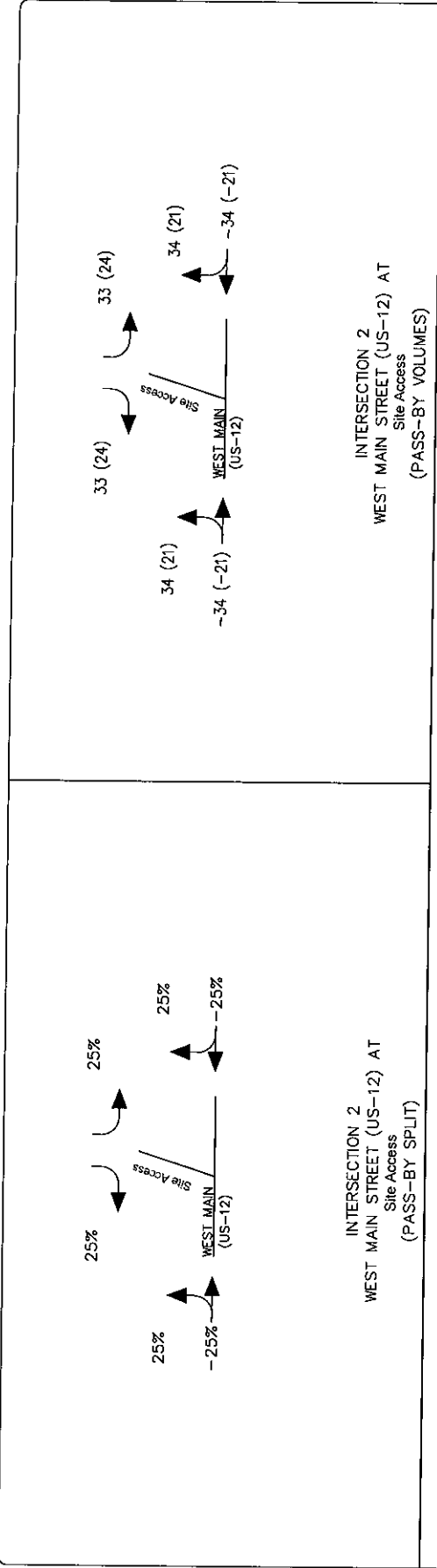


LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NOTE:
 1. LAND USE 934 HAS AN AVERAGE "PASS-BY" TRIP RATE OF 50% TRIPS ON WEST MAIN (US-12) REDIRECT TO LAND USE, THEN CONTINUE BACK TO WEST MAIN (US-12).

NO. _____ REVISION DESCRIPTION: _____
 BY: _____ DATE: _____

DRAWN BY:	BAK
DESIGNED BY:	BAK
PAI REVIEWED BY:	SPJ
DATE:	JUNE 2023
SCALE:	HORIZ: N/A VERT: N/A
PROJECT NO.:	23-0835
SHEET NO.:	6 of 12

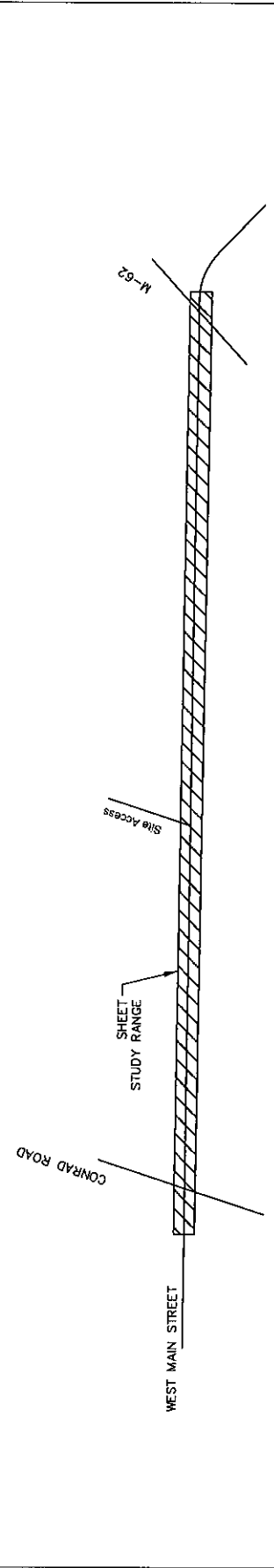
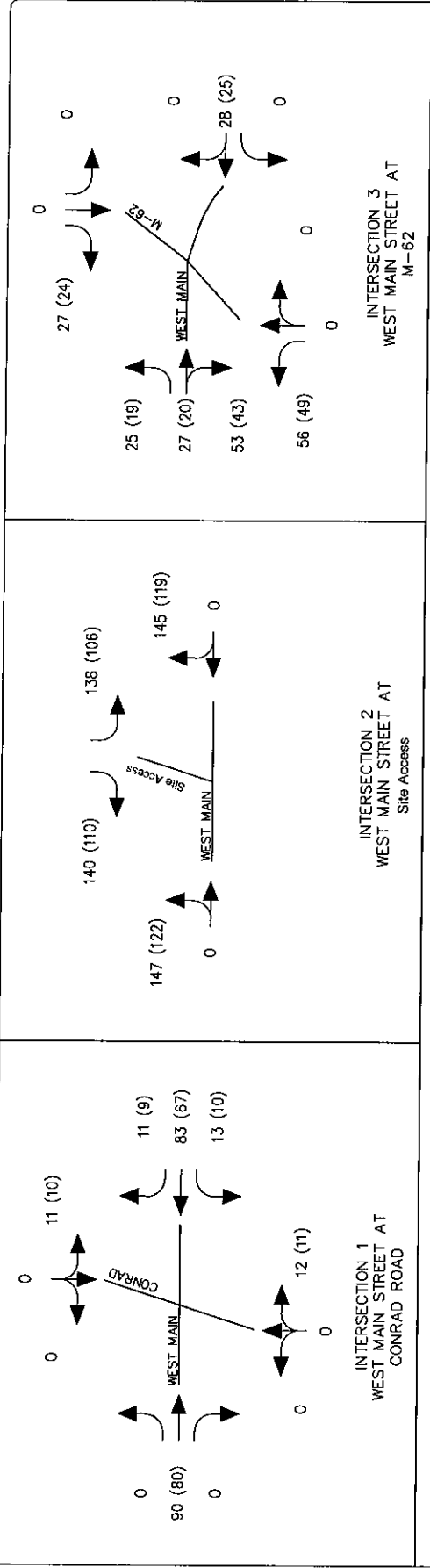


LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NOTE:
 1. LAND USE 934 HAS AN AVERAGE "PASS-BY" TRIP RATE OF 50% TRIPS ON WEST MAIN (US-12) REDIRECT TO LAND USE, THEN CONTINUE BACK TO WEST MAIN (US-12).

NO.	REVISION DESCRIPTION:	BY:	DATE:

DRAWN BY:	BMK
DESIGNED BY:	BMK
IN REVIEW:	SPJ
DATE:	JUNE 2023
SCALE:	HORIZ: N/A VERT: N/A
PROJECT:	23-0835
SHEET NO.:	7 of 12



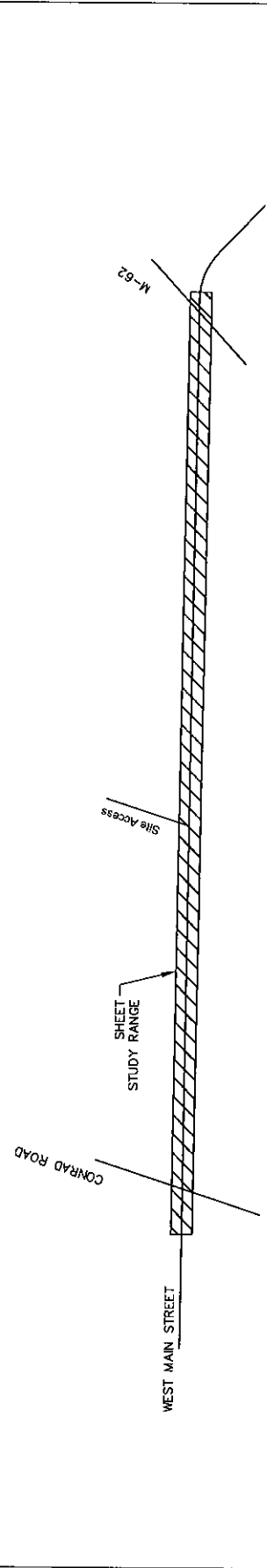
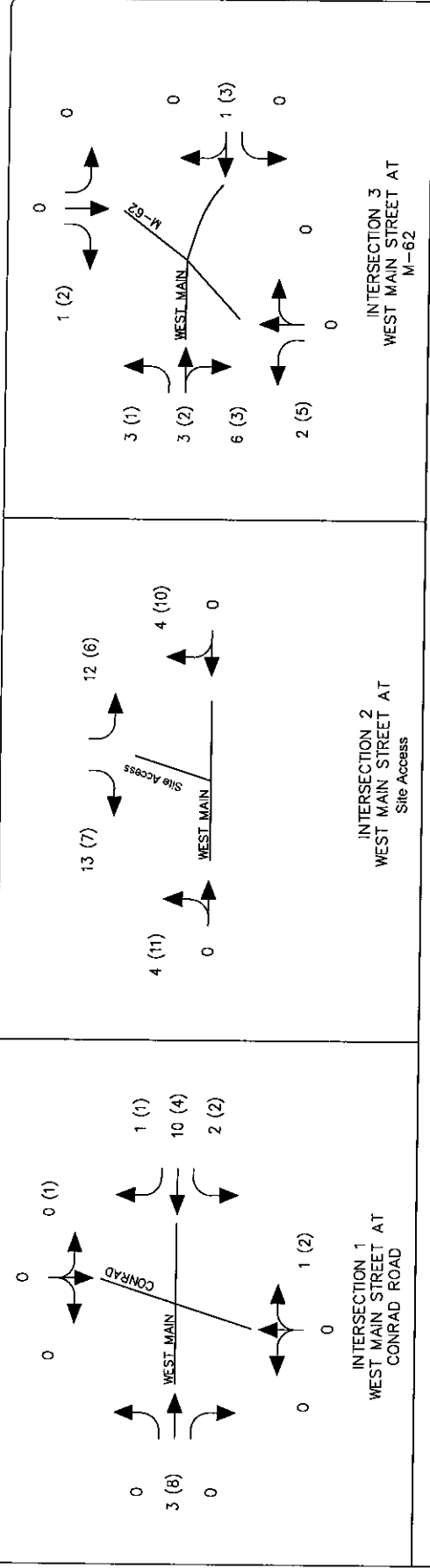
**ANALYSIS LOCATION DIAGRAM
 NOT TO SCALE**

LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME



NOTE:
 1. LAND USE 934 HAS AN AVERAGE "PASS-BY" TRIP RATE OF 50%. TRIPS ON WEST MAIN (US-12) REDIRECT TO LAND USE, THEN CONTINUE BACK TO WEST MAIN (US-12).

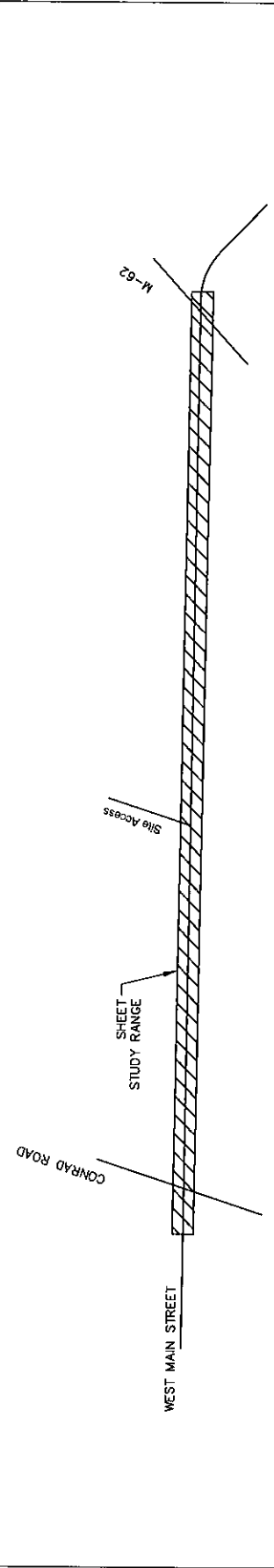
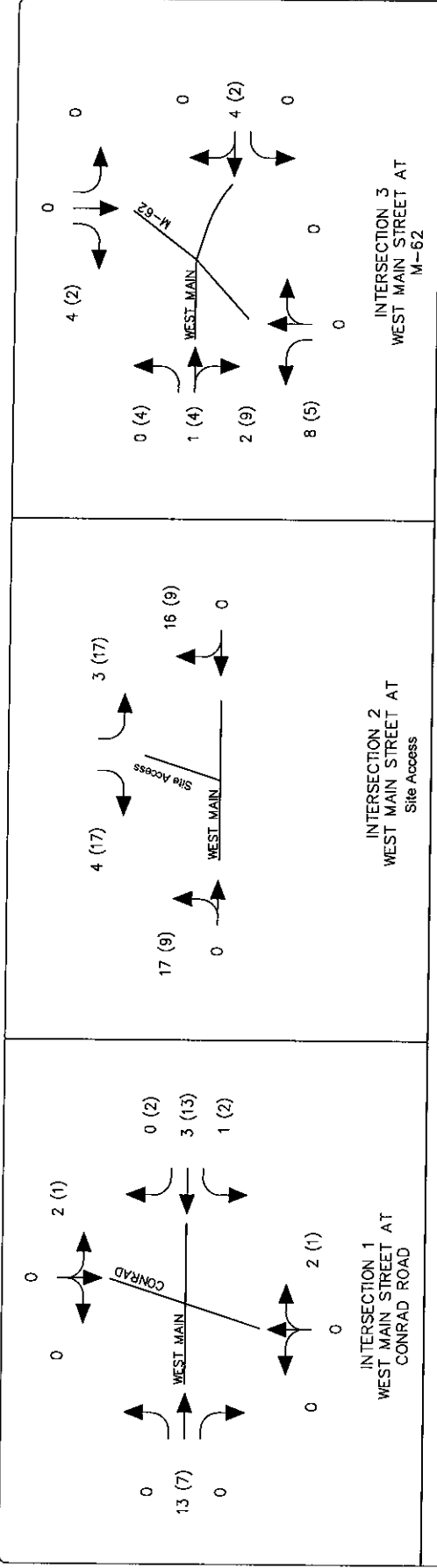
NO.	REVISION DESCRIPTION:	BY:	DATE:
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LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:

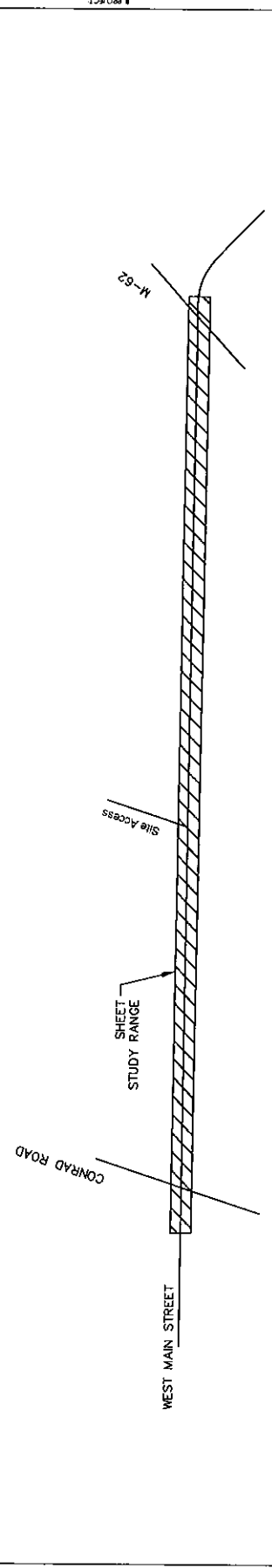
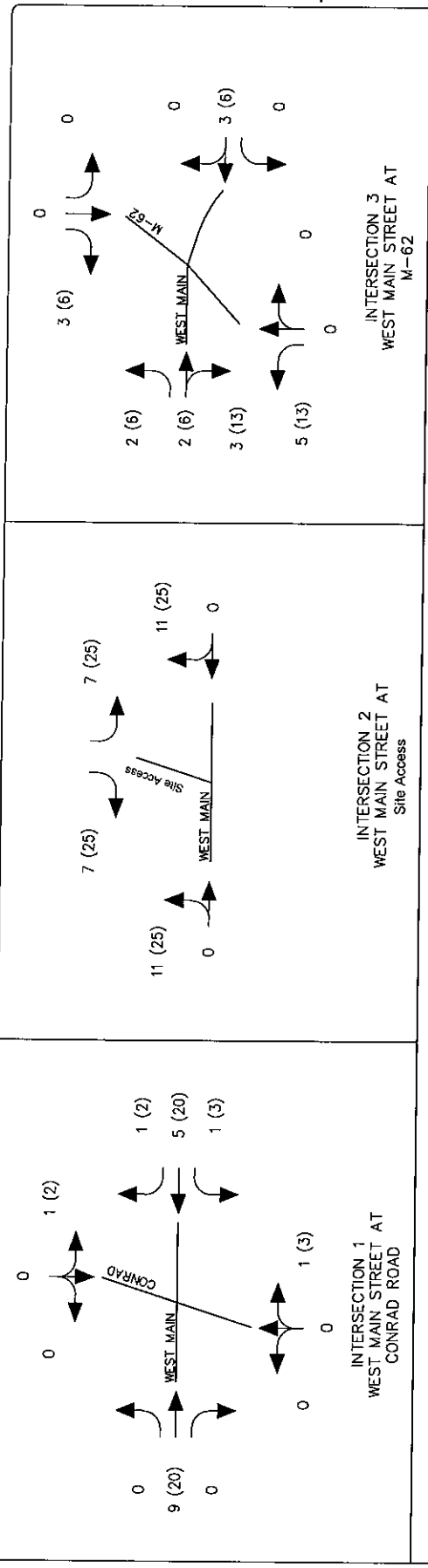




ANALYSIS LOCATION DIAGRAM
 NOT TO SCALE

LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

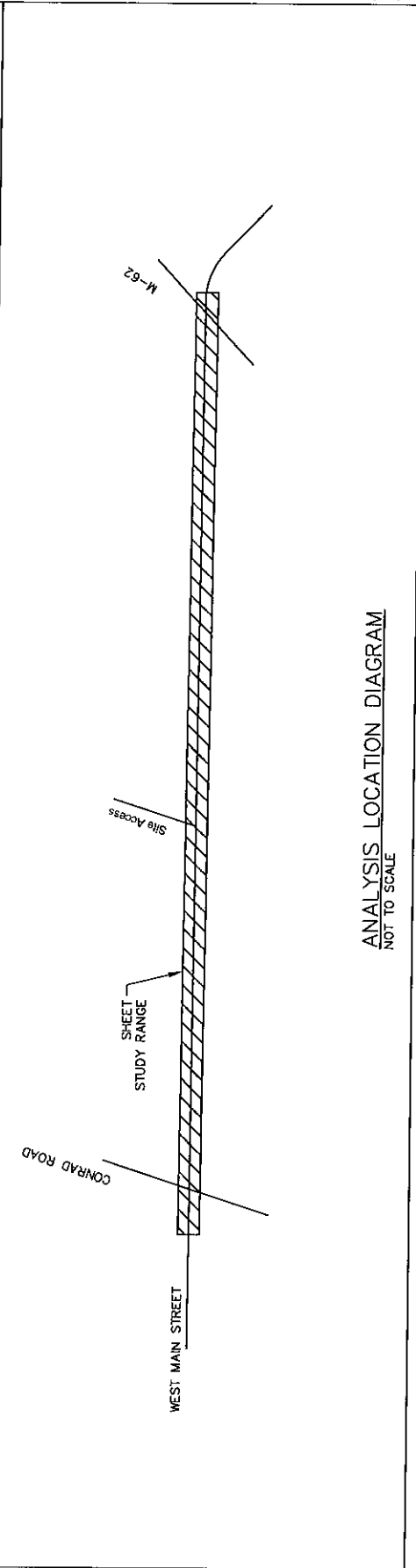
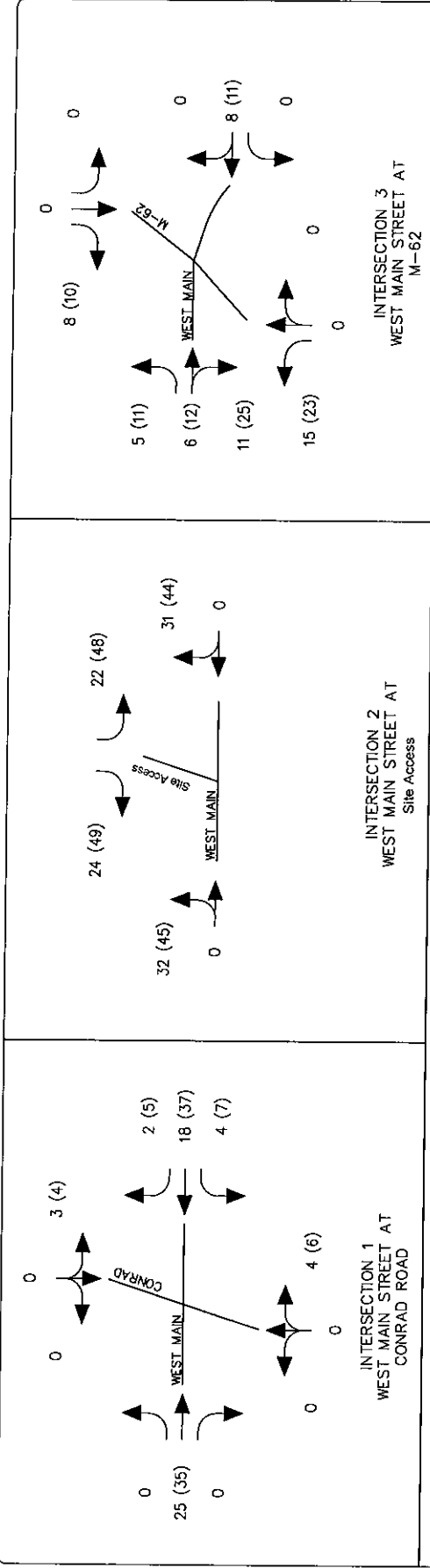
NO.	REVISION DESCRIPTION	BY:	DATE:



ANALYSIS LOCATION DIAGRAM
 NOT TO SCALE

LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:



LEGEND:
 XX: AM PEAK HOUR VOLUME
 (XX): PM PEAK HOUR VOLUME

NO.	REVISION DESCRIPTION:	BY:	DATE:

Appendix C Access Point Signal Warrant Summary



Michigan Manual of Uniform Traffic Control Devices
Volume Summary
 Prepared by MDOT for the 2011 Edition of the MMUTCD

Spot Number:	0		
Major Street:	US 12	Minor Street:	Access Point
Intersection:	US 12 @ Access Point		
City/Twp:	Edwardsburg		
Date Performed:	6/7/2023	Performed By:	Ryan Kafer
Date Volumes Collected:	6/7/2023		

	Minor		Major		Total Major	Highest		Total
	NB	SB	EB	WB		Minor		
00:01 - 01:00	0	28	27	35	62	28	90	
01:00 - 02:00	0	17	18	10	28	17	45	
02:00 - 03:00	0	10	22	20	42	10	52	
03:00 - 04:00	0	12	66	19	85	12	97	
04:00 - 05:00	0	14	162	37	199	14	213	
05:00 - 06:00	0	28	174	79	253	28	281	
06:00 - 07:00	0	80	265	178	443	80	523	
07:00 - 08:00	0	139	474	309	783	139	922	
08:00 - 09:00	0	167	346	402	748	167	915	
09:00 - 10:00	0	164	278	293	571	164	735	
10:00 - 11:00	0	189	285	324	609	189	798	
11:00 - 12:00	0	332	415	449	864	332	1196	
12:00 - 13:00	0	489	488	481	969	489	1458	
13:00 - 14:00	0	373	419	407	826	373	1199	
14:00 - 15:00	0	279	459	473	932	279	1211	
15:00 - 16:00	0	260	372	580	952	260	1212	
16:00 - 17:00	0	238	281	535	816	238	1054	
17:00 - 18:00	0	326	291	540	831	326	1157	
18:00 - 19:00	0	326	347	364	711	326	1037	
19:00 - 20:00	0	292	268	275	543	292	835	
20:00 - 21:00	0	256	210	223	433	256	689	
21:00 - 22:00	0	195	161	145	306	195	501	
22:00 - 23:00	0	107	67	89	156	107	263	
23:00 - 00:00	0	63	43	42	85	63	148	
Total	0	4384	5938	6309	12247	4384	16631	

Summary of Warrants

Spot Number:	0		
Major Street:	US 12	Minor Street:	Access Point
Intersection:	US 12 at Access Point		
City/Twp:	Edwardsburg		
Date Performed:	6/7/2023	Performed By:	Ryan Kafer
Date Volumes Collected:	6/7/2023		

Warrant	Condition	Is Warrant Met
Data Validation Error		NO
WARRANT 1: Eight-Hour Vehicular Volume		YES
	Condition A	YES
	Condition B	YES
	Condition A&B	YES
WARRANT 2: Four-Hour Vehicular Volume	(100%)	YES
WARRANT 3: Peak-Hour Vehicular Volume	(100%)	YES
	Condition A	N/A
	Condition B	YES
WARRANT 4: Pedestrian Volume	(100%)	NO
	Four Hour	NO
	Peak Hour	NO
	(Threshold) HAWK	NO
	(Threshold) RRFB	NO
WARRANT 5: School Crossing		NO
WARRANT 6: Coordinated Signal System		NO
WARRANT 7: Crash Experience		NO
	Condition A	NO
	Condition B	NO
WARRANT 8: Roadway Network		NO
WARRANT 9: Intersection Near a Grade Crossing		#N/A

Issue to Be Addressed by Signalization:

Ease the flow of traffic caused by the addition of trips that will be generated by potential development

Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 1: Eight-Hour Vehicular Volume

Intersection: US 12 @ Access Point
 Date: 6/7/2023 by: Ryan Kafer

1 : No. of Lanes on Major St?
 2 : No. of Lanes on Minor St?
 3 : Speed limit or 85th Percentile? (MPH)
 NO : Is the intersection within an isolated community?
 0 : If answer 4 is Yes, then what is the of the population isolated community?
 YES : Have other remedial measures been tried?

USE 100% FOR WARRANTS 1A AND 1B. USE 80% FOR WARRANT 1A&B

Time	Major Volume (Both Apr.)	Minor Volume (One Apr.)	Condition A Major Volume	Condition A Minor Volume	Warrant Condition A Met?	Condition B Major Volume	Condition B Minor Volume	Warrant Condition B Met?	Combination Major A	Combination Minor A	Combination Major B	Combination Minor B	Warrant Condition A&B met?
00:01 - 01:00	52	28	500	200	NO	750	100	NO	400	160	600	80	NO
01:00 - 02:00	28	17	500	200	NO	750	100	NO	400	160	600	80	NO
02:00 - 03:00	42	10	500	200	NO	750	100	NO	400	160	600	80	NO
03:00 - 04:00	85	12	500	200	NO	750	100	NO	400	160	600	80	NO
04:00 - 05:00	199	14	500	200	NO	750	100	NO	400	160	600	80	NO
05:00 - 06:00	233	23	500	200	NO	750	100	NO	400	160	600	80	NO
06:00 - 07:00	443	80	500	200	NO	750	100	NO	400	160	600	80	NO
07:00 - 08:00	783	139	500	200	NO	750	100	NO	400	160	600	80	NO
08:00 - 09:00	748	167	500	200	NO	750	100	NO	400	160	600	80	NO
09:00 - 10:00	571	164	500	200	NO	750	100	NO	400	160	600	80	NO
10:00 - 11:00	609	189	500	200	NO	750	100	NO	400	160	600	80	NO
11:00 - 12:00	854	332	500	200	YES	750	100	YES	400	160	600	80	YES
12:00 - 13:00	969	489	500	200	YES	750	100	YES	400	160	600	80	YES
13:00 - 14:00	826	373	500	200	YES	750	100	YES	400	160	600	80	YES
14:00 - 15:00	932	279	500	200	YES	750	100	YES	400	160	600	80	YES
15:00 - 16:00	852	250	500	200	YES	750	100	YES	400	160	600	80	YES
16:00 - 17:00	816	238	500	200	YES	750	100	YES	400	160	600	80	YES
17:00 - 18:00	831	326	500	200	YES	750	100	YES	400	160	600	80	YES
18:00 - 19:00	711	326	500	200	YES	750	100	NO	400	160	600	80	YES
19:00 - 20:00	543	292	500	200	NO	750	100	NO	400	160	600	80	NO
20:00 - 21:00	433	256	500	200	NO	750	100	NO	400	160	600	80	NO
21:00 - 22:00	306	195	500	200	NO	750	100	NO	400	160	600	80	NO
22:00 - 23:00	156	107	500	200	NO	750	100	NO	400	160	600	80	NO
23:00 - 00:00	85	63	500	200	NO	750	100	NO	400	160	600	80	NO

Number of Hours that met the warrant 1A = 9
 Number of Hours that met the warrant 1B = 8
 Number of Hours that met the warrant 1 A & B = 10

A. Is the Minimum Vehicular Volume Warrant Met? (Condition A) YES
 B. Is the Interruption of Continuous Traffic Met? (Condition B) YES
 C. Combination of Warrants A and B Criteria Met? YES

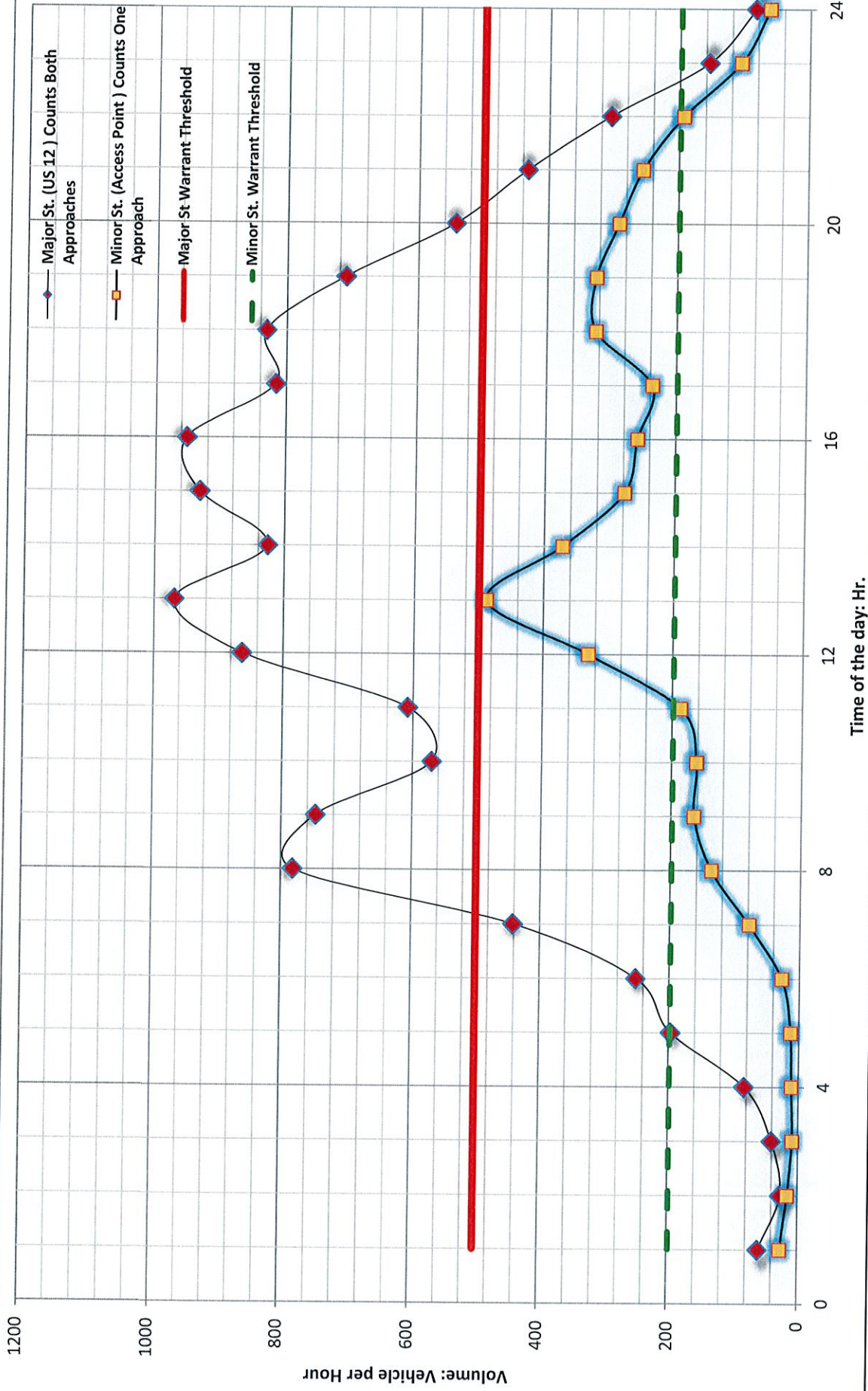


FIGURE 1: WARRANT 1A

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? NO

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number:

US 12 @ Access Point

NO. OF LANES ON MAJOR ST.? 1

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 9

Does this intersection meet Warrant 1A for signal installation? YES

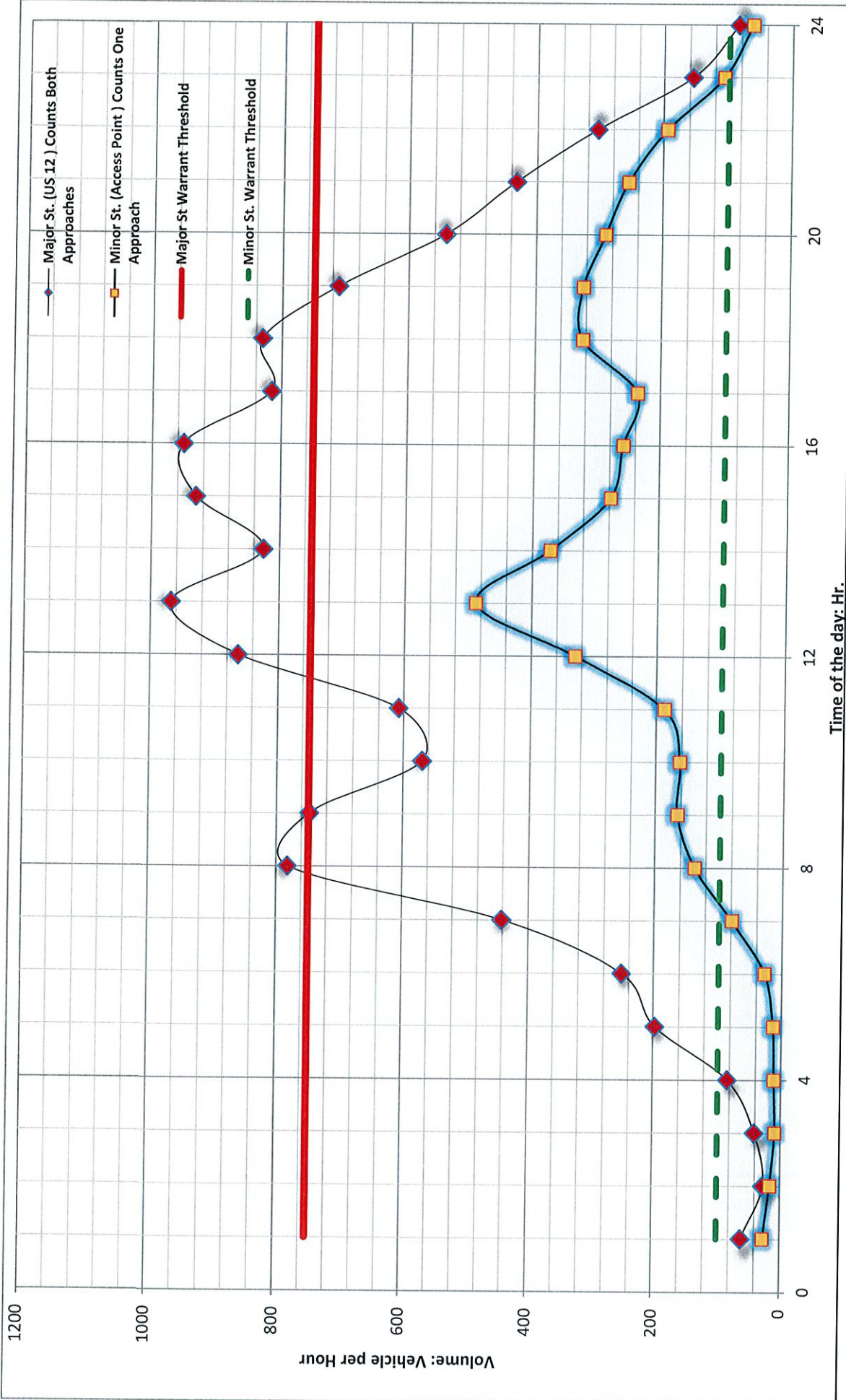


FIGURE 1: WARRANT 1B

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? NO

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number:

US 12 @ Access Point

NO. OF LANES ON MAJOR ST.: 1

NO. OF LANES ON MINOR ST.: 2

Number of Hours that met the Warrant: 8

Does this intersection meet Warrant 1B for signal installation? YES

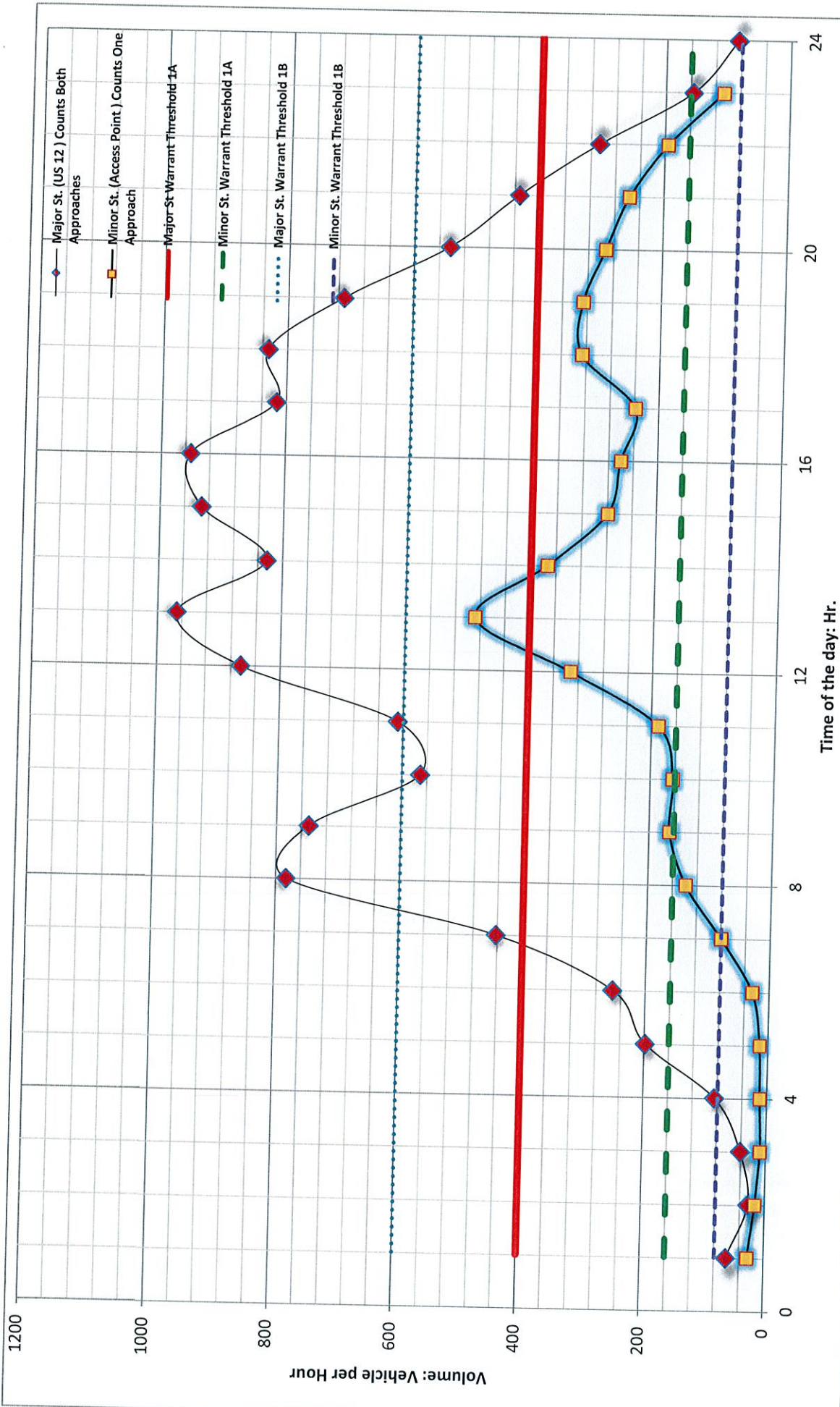


FIGURE 3: WARRANT 1A&B

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 56% ...

1- DUE TO SPEED? NO

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? NO

Spot Number:

US 12 @ Access Point

NO. OF LANES ON MAJOR ST.? 1

NO. OF LANES ON MINOR ST.? 2

Number of Hours that met the Warrant: 10

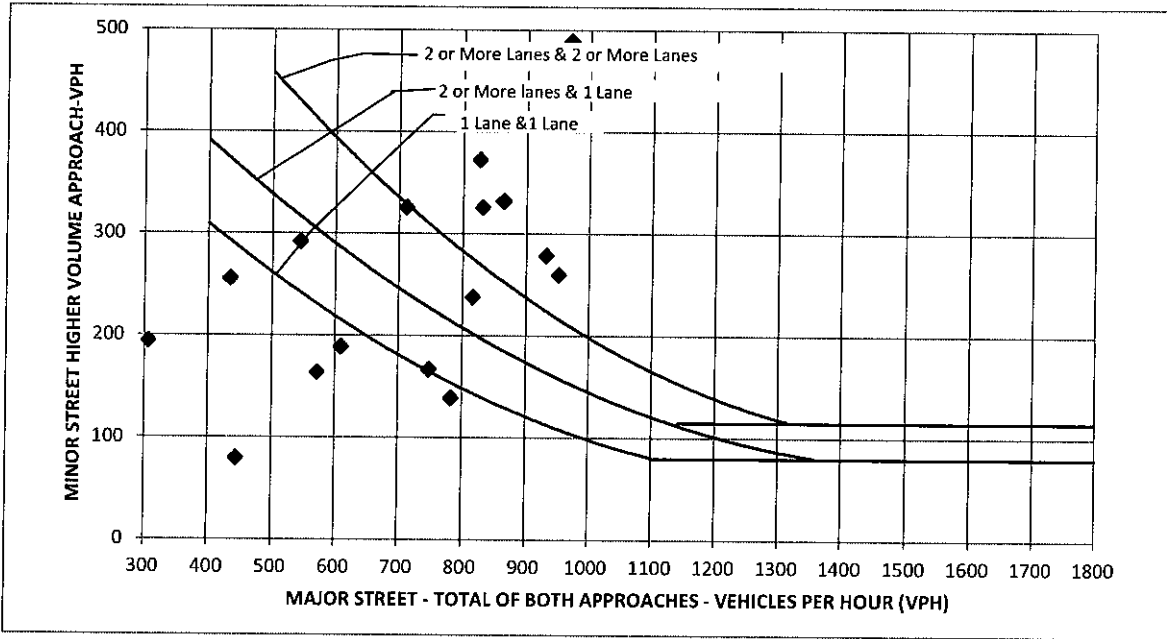
Does this intersection meet Warrant 1A&B for signal installation? YES

Data Collection Date: 6/7/2023

**Michigan Manual of Uniform Traffic Control Devices
Worksheet for Signal Warrants (Section 4C)
WARRANT 2: Four-Hour Vehicular Volume**

Spot Number:	0
Intersection:	US 12 @ Access Point
Date	6/7/2023 by Ryan Kafer

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



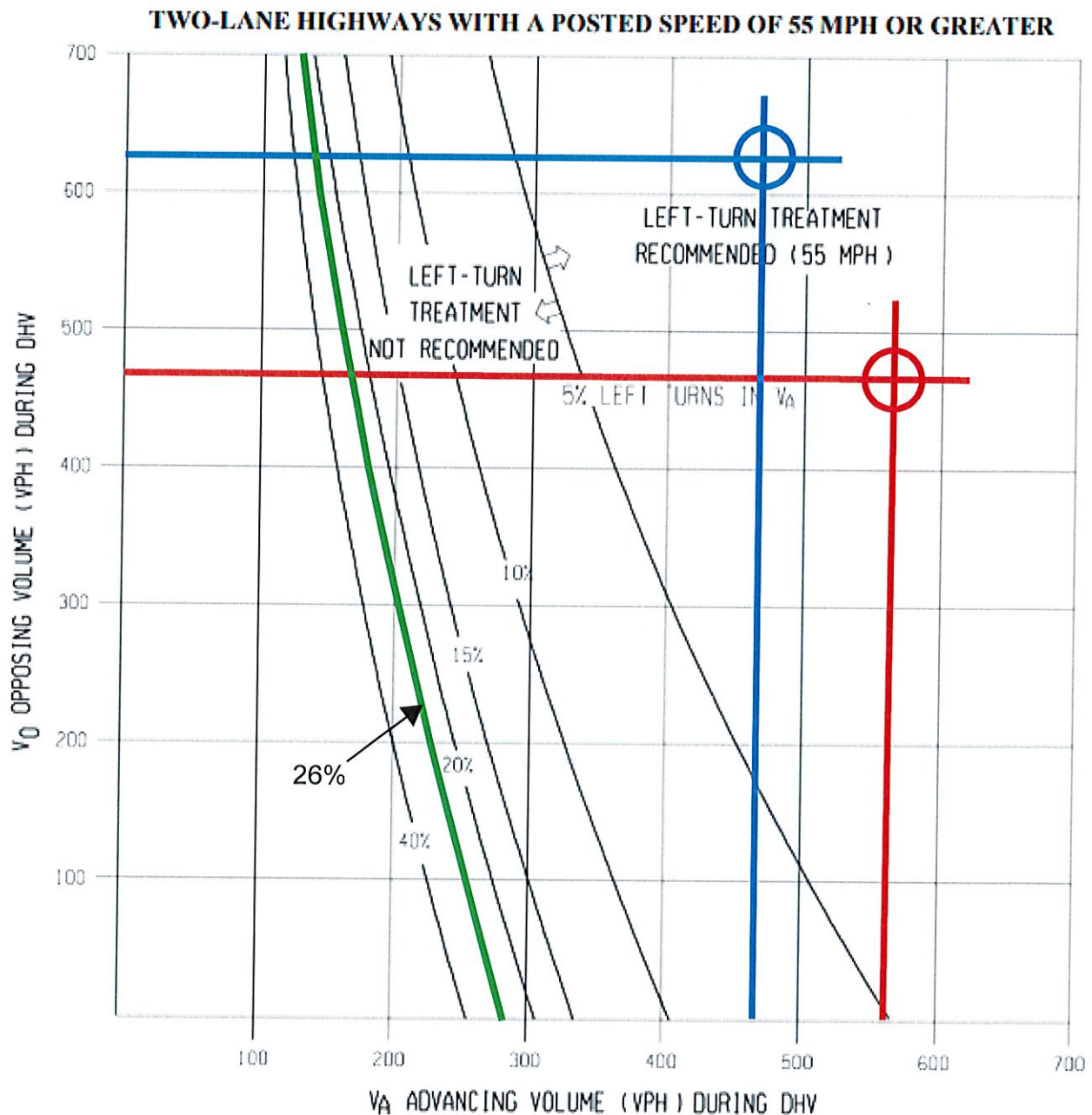
How Many Hours Are Met	8
Is Warrant 2 (100%) Met?	YES

Appendix D US-12 Right and Left Turn Summary



Phase 1 Eastbound Left-Turn

AM: —
PM: —

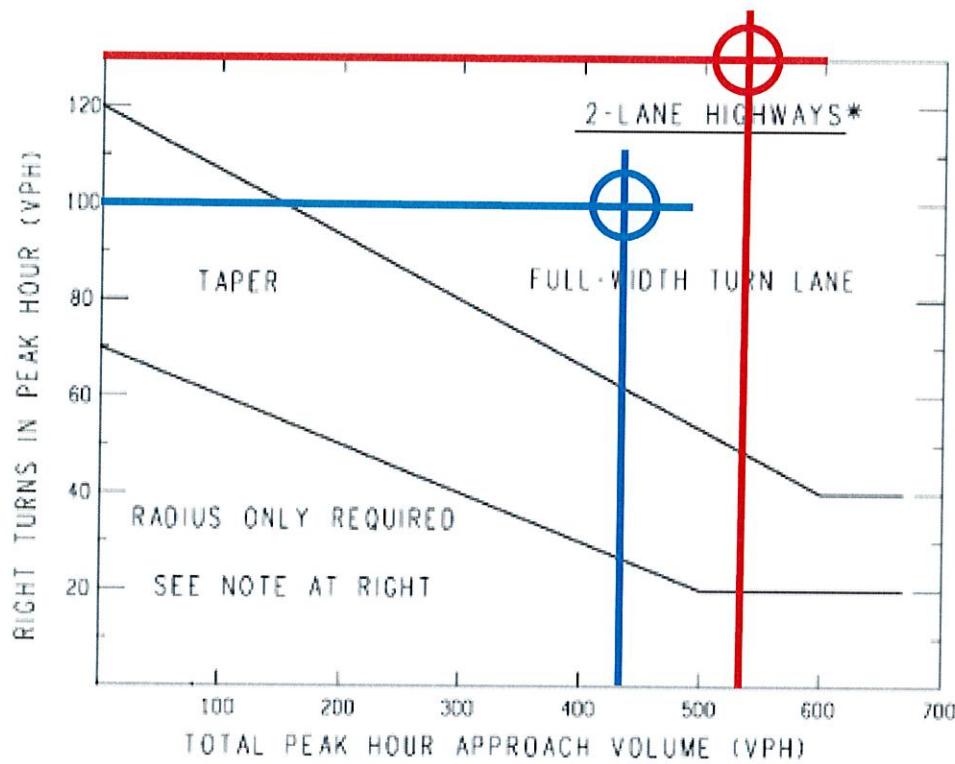


Instructions:

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

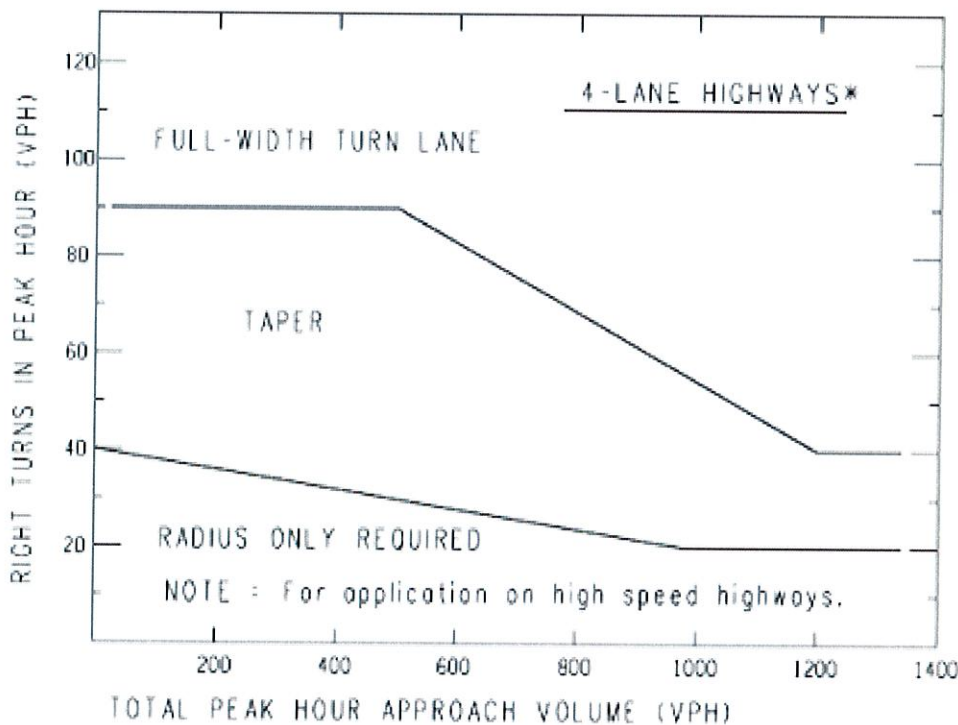
Phase 1 Westbound Right-Turn

AM: —
 PM: —



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

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

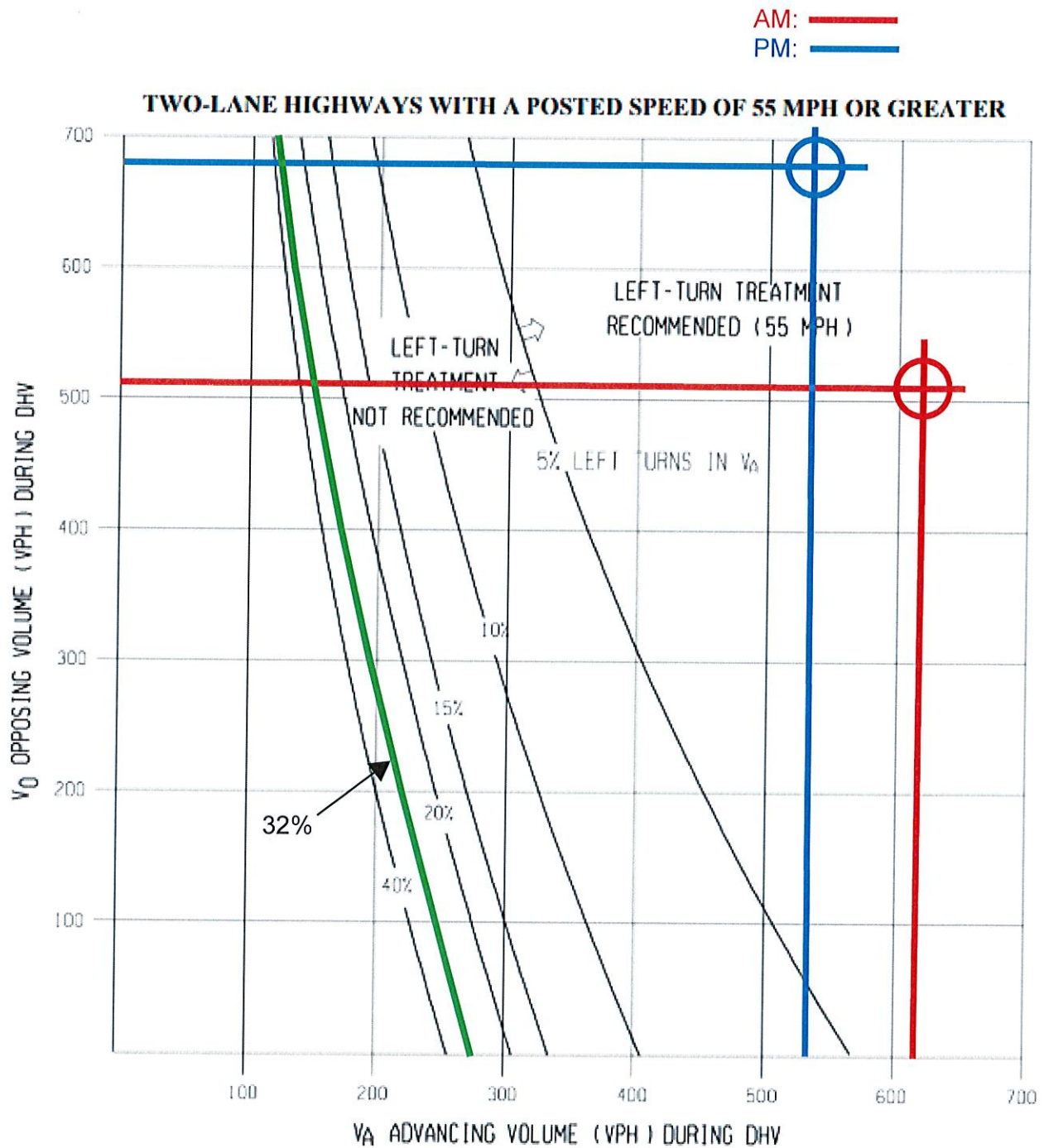


*If a center left-turn lane exists (ie 3 or 5 lane roadway), subtract the number of left turns in approach volume from the total approach volume to get an adjusted total approach volume.

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

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

Phase 1+2 Eastbound Left-Turn

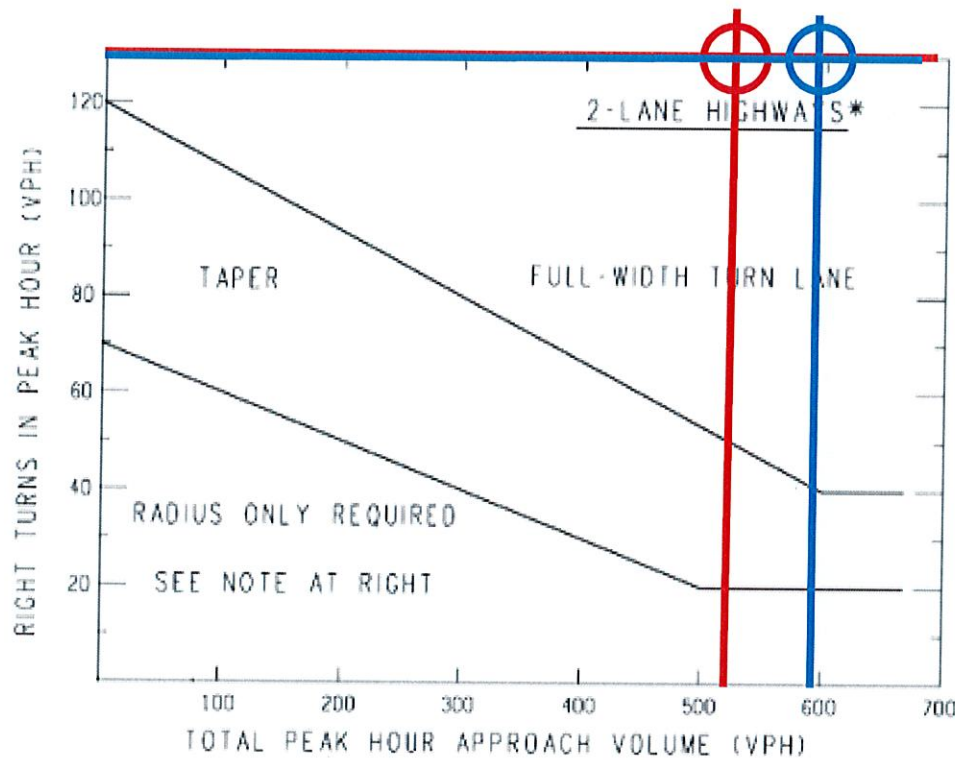


Instructions:

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

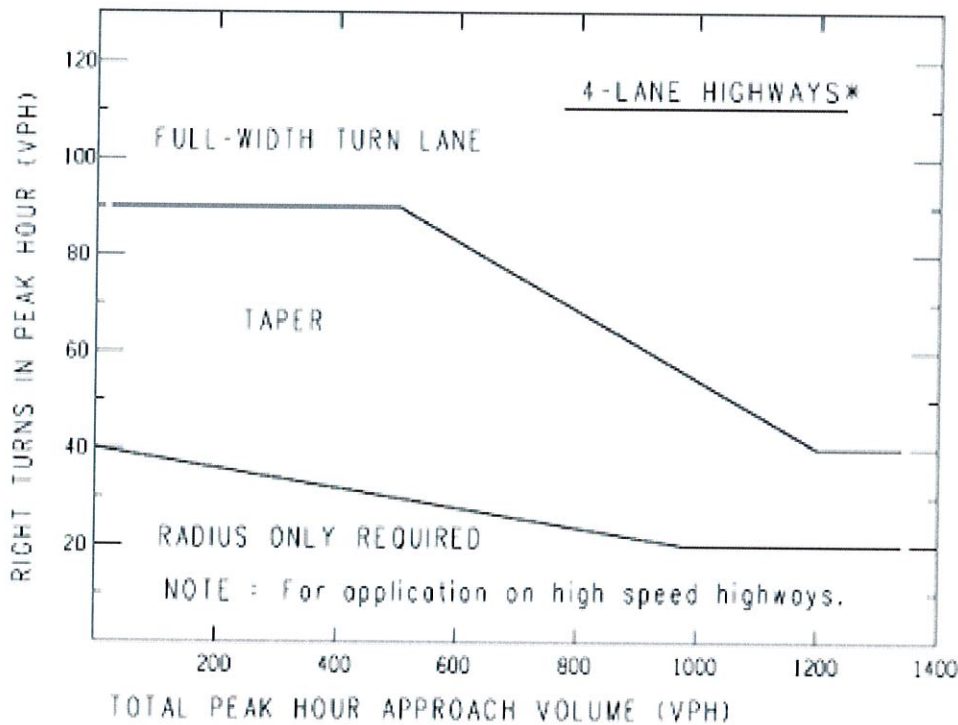
Phase 1+2 Westbound Right-Turn

AM: —
 PM: —



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

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



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