1800 Indian Wood Circle, Maumee, Ohio 43537
Tel: 419.891.2222 Fax: 419.891.1595
www.MannikSmithGroup.com

TECHNICAL MEMORANDUM

To: **Steven Black – RACER Trust**
From: Daniel Helou, PE
CC: Van Defibaugh, PE – Mannik and Smith Group, Inc
Shannon Selby – Detroit Regional Partnership
Date: December 10, 2024
Project #: 401.2401289.000
Re: **Preliminary Coldwater Industrial Desktop Traffic Study**
Beecher, Genesee County, Michigan

Background

The Detroit Regional Partnership has been assisting site owners to cover the costs associated with due diligence and promotion. The goal of this study is to clearly define the potential traffic impacts in terms of site traffic additions to the adjacent roadway network due to potential off site roadway improvements and traffic impact study needs.

Site Location and Local Zoning

The proposed 118.27-acre site is located at 1245 E. Coldwater Road within the Beecher city limits in Genesee County, see **Figure 1**. This document is not a traffic impact study and is intended as a high-level traffic analysis document. A full Traffic Impact Study (TIS) or Traffic Impact Assessment (TIA) will still be required for the site to be reviewed by Genesee County Road Commission and the MDOT Davison TSC only if impacts to MDOT intersections or roadways are recommended to mitigate offsite impacts. A TIS is required for any proposed development expected to generate over 100 peak hour directional driveway trips to the adjacent roadway network. If a development generated 500 or more peak hour trips, a minimum 5-year horizon analysis is required. A TIA is an abbreviated TIS typically for sites expected to generate less than 100 peak hour trips with a scope of evaluating the impacts the at site driveway intersections with the public roadways.

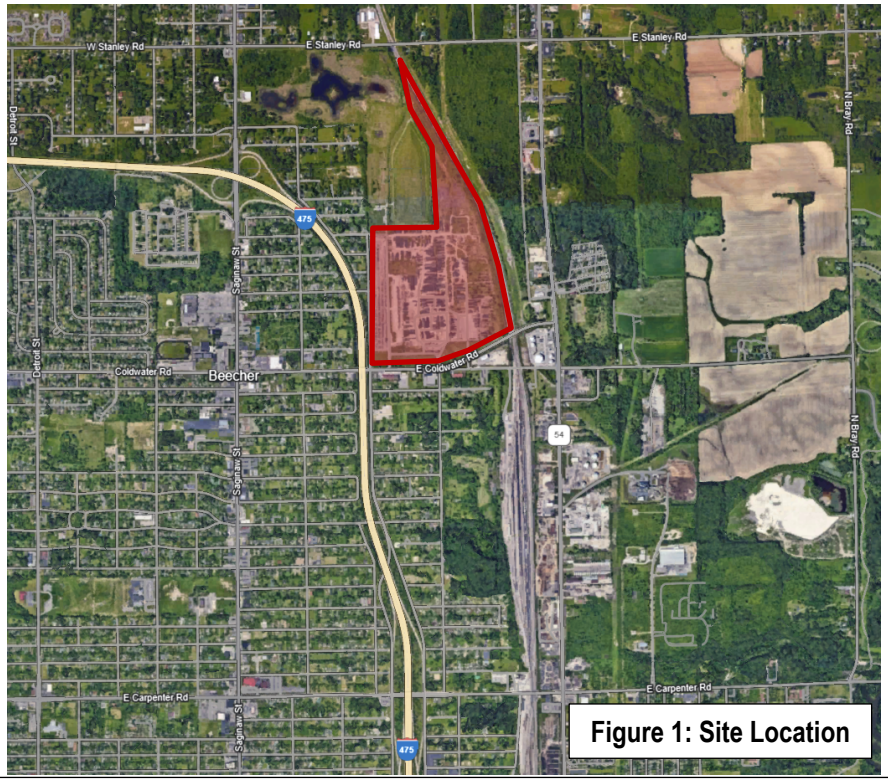


Figure 1: Site Location

Parcel ID 25-11-18-400-006, 25-11-18-200-010, and 25-11-18-200-011 is currently zoned as Heavy Industrial as show in **Figure 2** below.

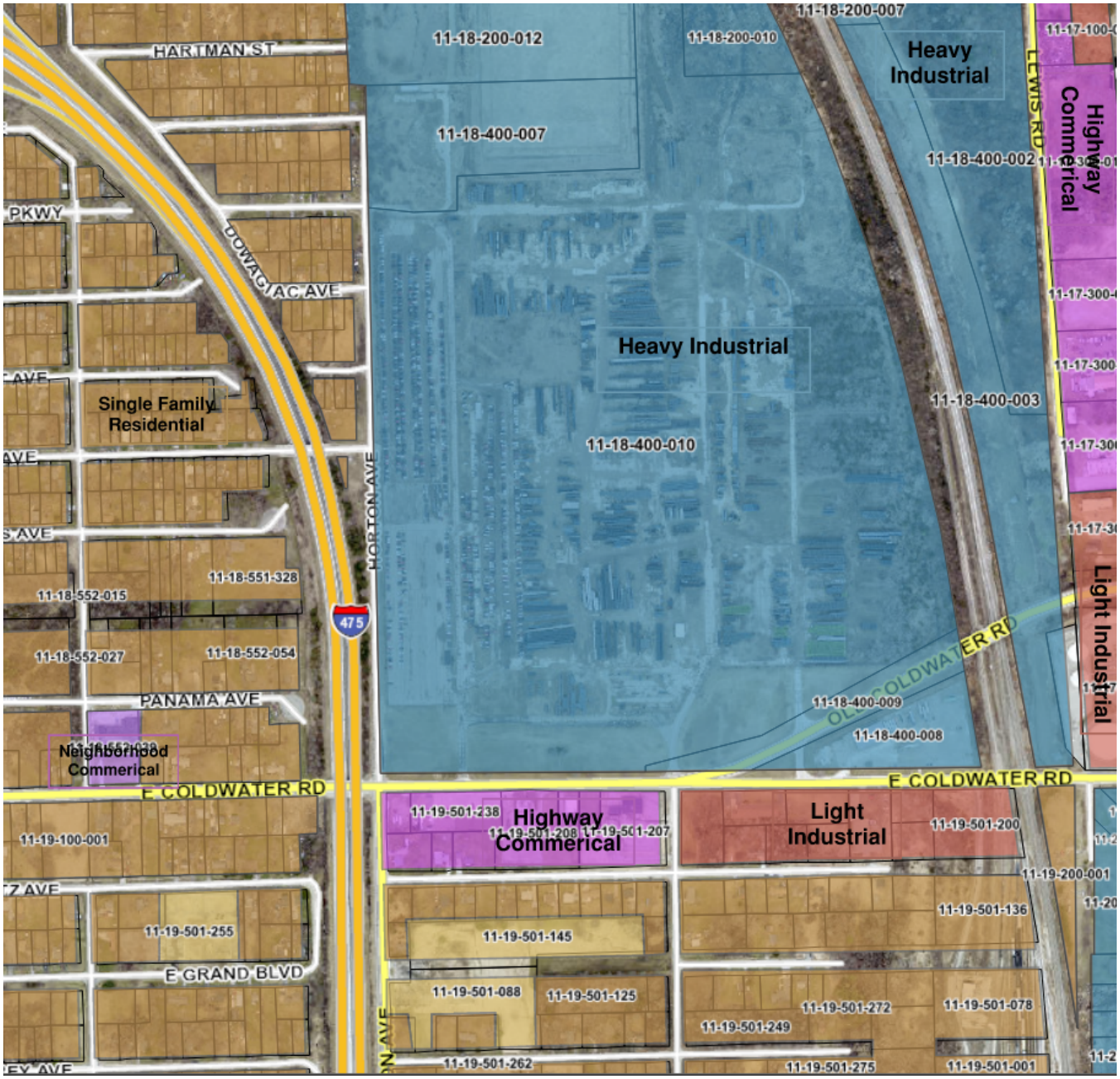


Figure 2: Genesee County GIS Zoning Map

Adjacent Roadway Network and Intersections

The existing site has six (6) existing points of access, three (3) access points off Horton Avenue, and three (3) access points off E Coldwater Road. The existing Horton Avenue access points are currently gated and/or blocked to/from the existing land use site; based on existing roadway classifications and access to local roadways, it is recommended that the Horton Avenue site access points remain closed or eliminated as site ingress/egress points and that all traffic (e.g. employee, shipping, delivery, etc.) use the existing access points along E Coldwater Road. Shown in **Table 1** is the roadway features for the surrounding network.

Figure 3: Existing Site Points of Access

Table 1: Coldwater Industrial Adjacent Roadway Features

Characteristic	Study Roadway			
	Saginaw Street	**Horton Avenue**	**E Coldwater Road**	**M-54 (Dort Hwy)**
Functional Classification	Principal Arterial	Major Collector	Minor Arterial	Principal Arterial
Roadway Direction	North-South	East-West	East-West	North-South
Lane Width	12 ft	12 ft	12 ft	12 ft
Shoulder Width	0 ft	0 to 8 ft	0 to 8 ft	0 to 12 ft
Posted Speed Limit	35 mph	25 to 45 mph	45 mph	55 mph
ADT (2023)	9,584	1,475	5,777	10,371
Number of Lanes	5	2 to 3	3	4

ADT Data from MDOT and GCMPC Traffic County Databases

This document identifies the following 11 intersections that are recommended to be included in the future developments TIS or TIA, as required to meet Genesee County and MDOT TIS/TIA guidelines:

1. Horton Avenue and Morris Hills Parkways/Existing Closed Site Access Point – Unsignalized Intersection (OWSC)``
2. Horton Avenue and Terry Avenue/Existing Closed Site Access Point – Unsignalized Intersection (OWSC)
3. Horton Avenue and Existing Closed Site Access Point – Unsignalized Intersection (OWSC)
4. E Coldwater Road and Existing Site Access Point – Unsignalized Intersection (OWSC)
5. E Coldwater Road and Harry Street/ Existing Site Access Point – Unsignalized Intersection (TWSC)
6. E Coldwater Road and Existing Site Access Point – Unsignalized Intersection (TWSC)
7. E Coldwater Road and M-54 (Dort Highway) North – Signalized Intersection
8. E Coldwater Road and M-54 (Dort Highway) South – Signalized Intersection
9. Horton Avenue and E Coldwater Road – Unsignalized Intersection (AWSC)
10. E Coldwater Road and Saginaw Street – Signalized Intersection
11. Horton Avenue and E Cornell Avenue – Unsignalized Intersection (TWSC)

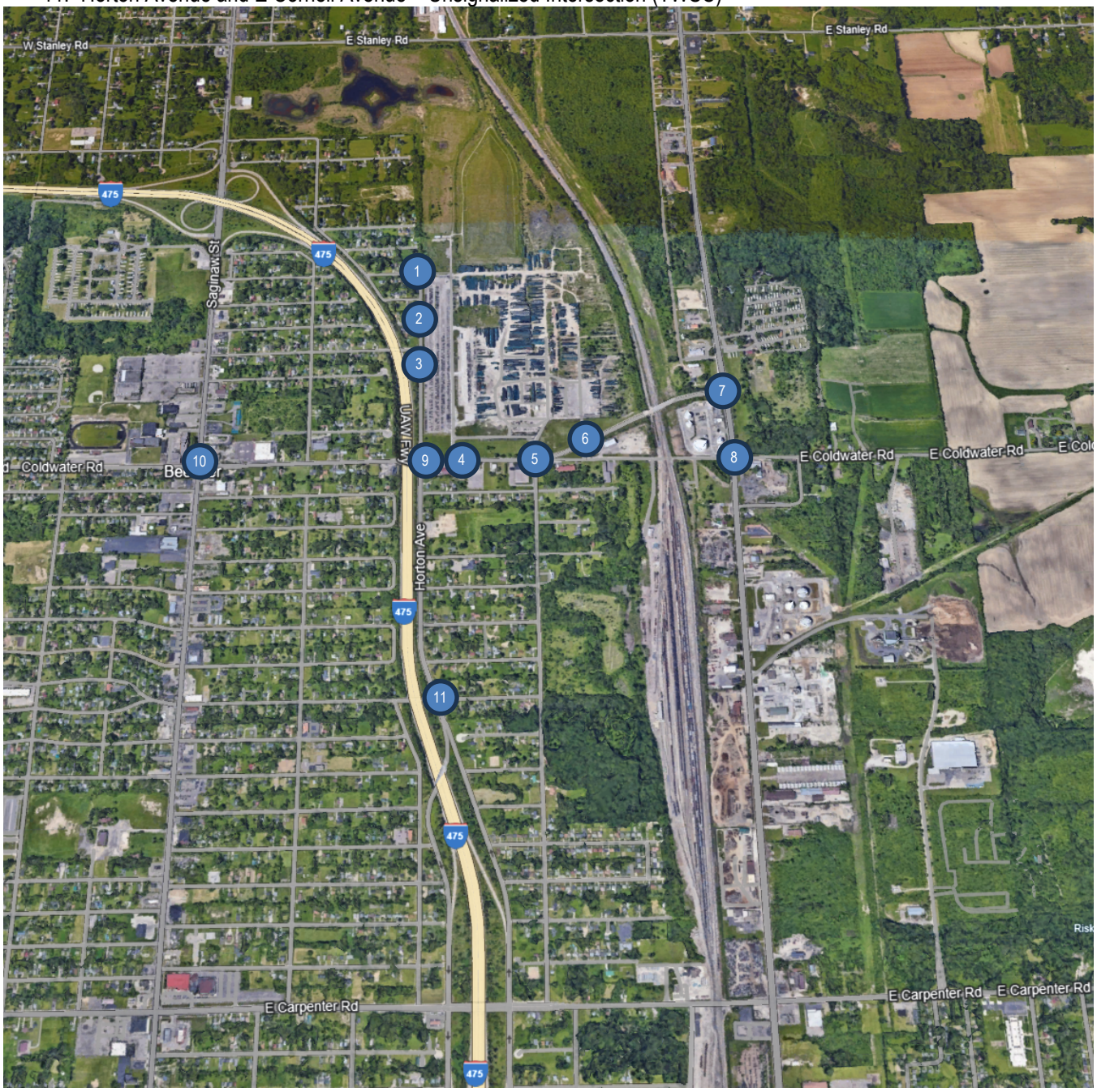


Figure 4: Proposed TIS/TIA Study Intersections

Due to the nature of the trips coming to and from the site, the industrial heavy vehicles have a greater effect on the deterioration of the pavement when compared with passenger vehicles. Shown in **Figure 5** is a map of pavement condition surrounding the site. E Coldwater Road from M-54 to Harry Street has a PASER rating of 3 (poor condition) and from Harry Street to Horton Avenue a PASER rating of 6 (fair condition).

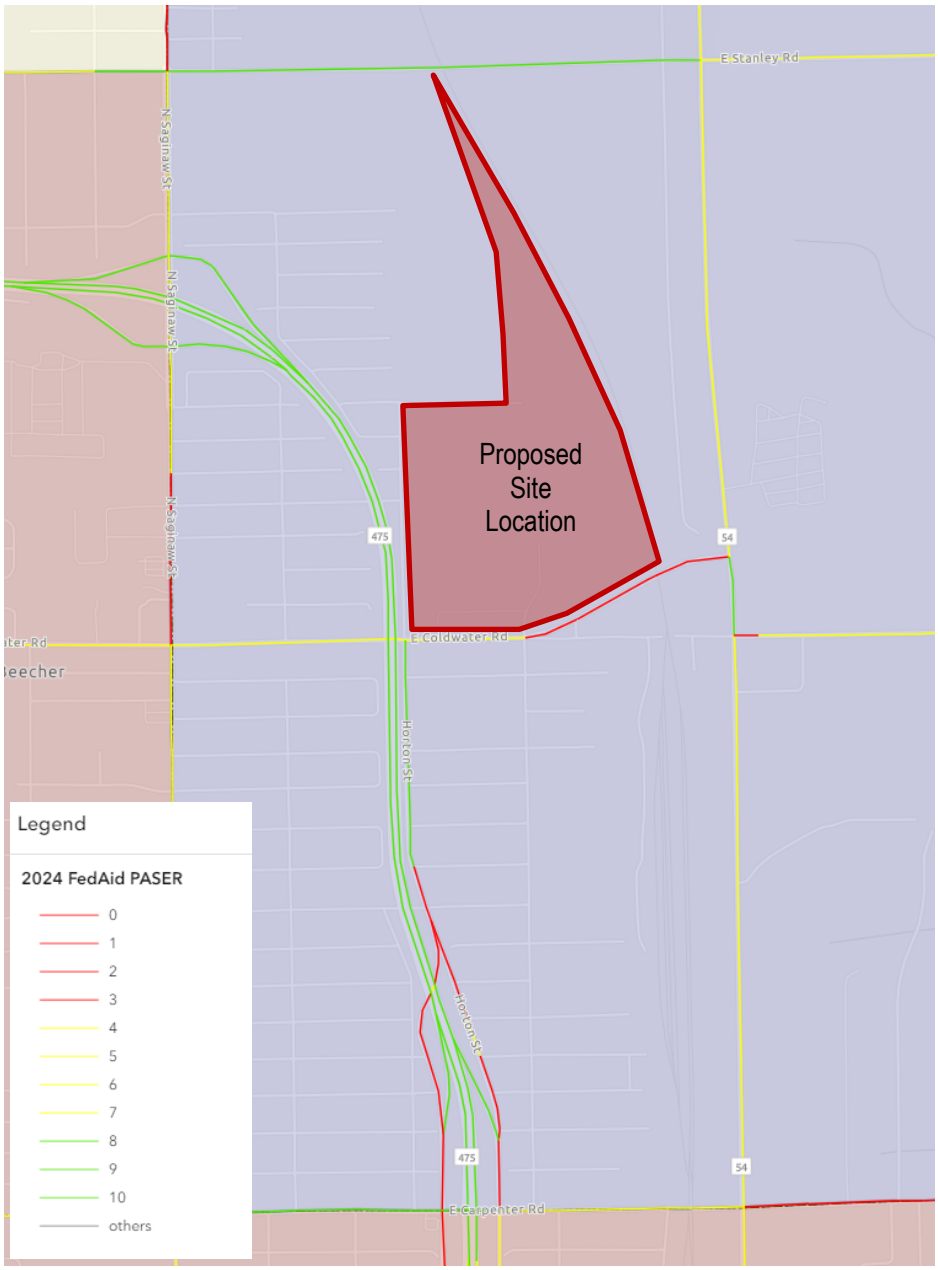


Figure 5: PASER Pavement Condition

Heavy/Commercial Vehicle Designated Routes

Heavy/Commercial vehicles connecting to/from the site proposed with the adjacent roadway network is expected to be limited to the Genesee County and MDOT truck operators network. Expected truck routing is expected to have an origin-destination utilizing I-475 via Saginaw Street and Selby Street and M-54 (Dort Highway) via E Coldwater Road

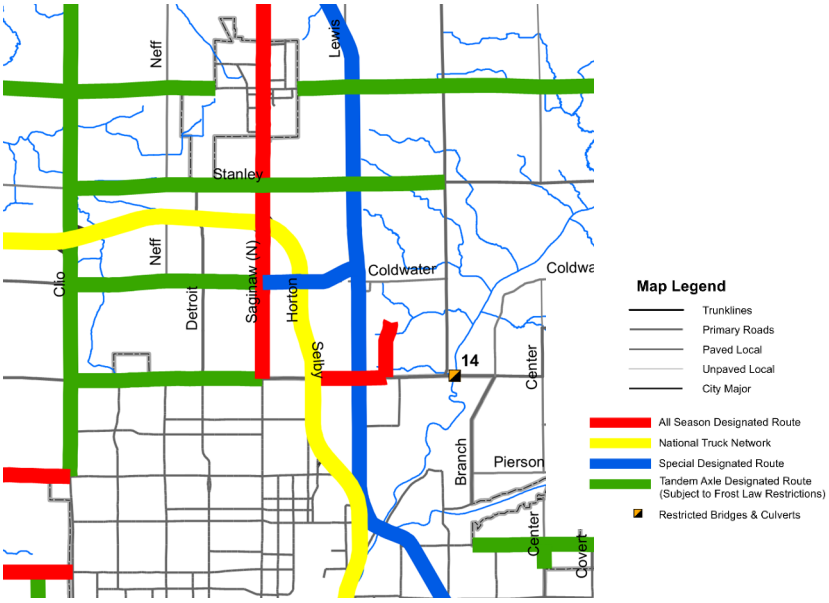


Figure 6: Genesee County Truck Operators Network

To understand the existing and anticipated ingress and egress of the proposed site generated traffic, a cordon analysis monitoring traffic volumes entering and exiting the study network boundary based on available average daily traffic is shown in Table 2 below.

Table 2: Cordon Analysis – Study Network Area

	East via Coldwater	West via Coldwater	North via I-475	North via M-54	South via I-475	South via M-54	South via Saginaw
Inbound Traffic	5%	6%	31%	13%	24%	11%	11%
Outbound Traffic	5%	6%	31%	13%	24%	11%	11%

Regional Roadway Safety

Safety inefficiences along a roadway are sometimes indicated by a reoccurance of crashes in one area of the roadway. Shown below in **Figure 7** is a crash density map of the surrounding area around the site. The areas around the site show a low density of crashes in the last 5 years (2019-2023). This crash data is not expected to have an effect on a future traffic study.

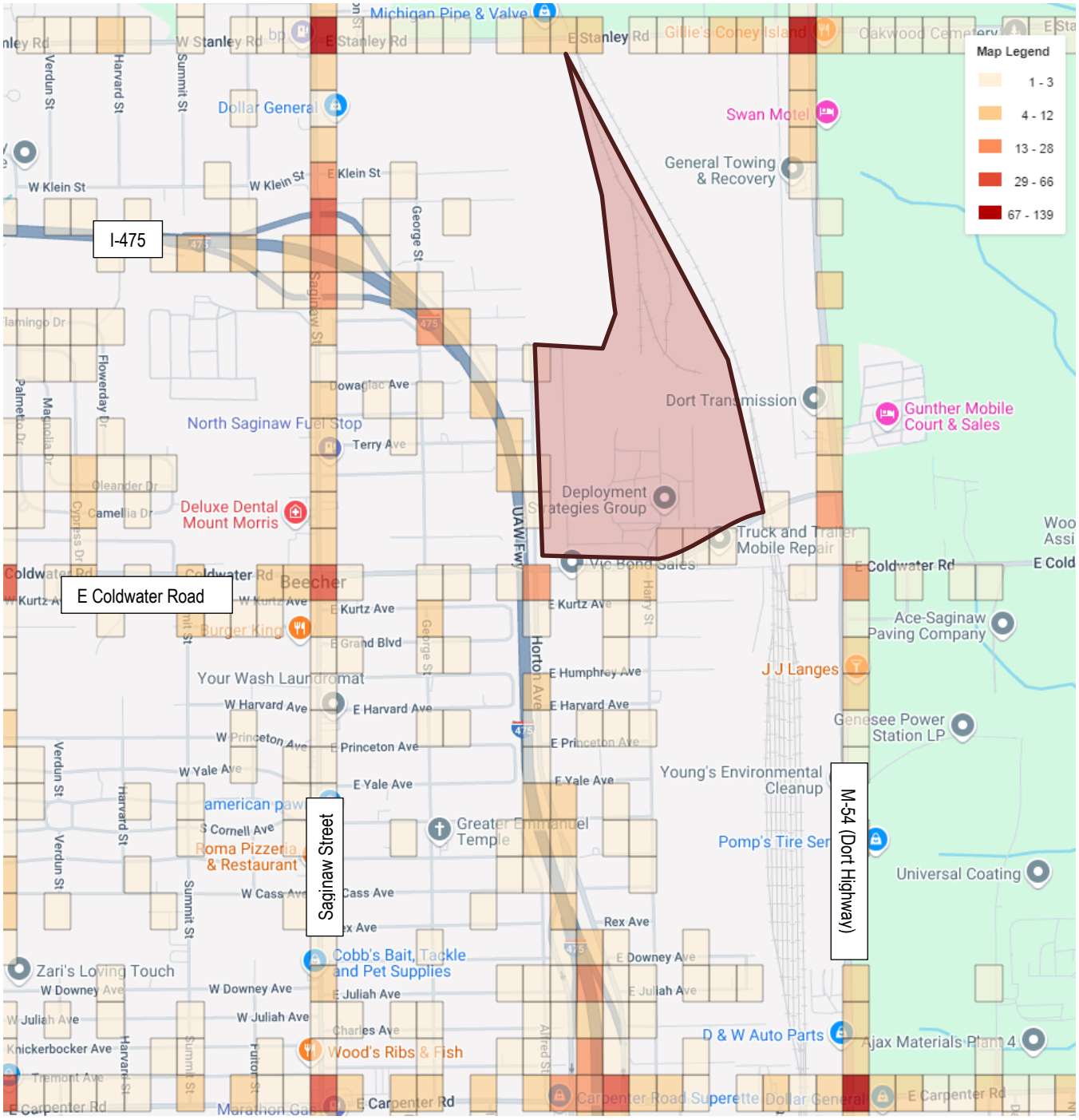


Figure 7: Crash Density Map

ITE Trip Generation and Expected Trip Distribution

Shown in **Table 3** below is the expected trips that are to be generated based on different scenarios for the land uses on the site. The potential trips are shown for two different peak hour scenarios. The adjacent street traffic peak hour focuses on the peak hour for the roadway network around the site which can differ from the peak hour of generator with is the peak hour from the trips entering and exiting the site ignoring the roadway traffic. When there is a large amount of surrounding roadway traffic the new generated traffic may not be enough to adjust the peak hour however, with this development it could be important to analyze the peak hour of the generator due to the small vehicle volumes on the surrounding network.

The proposed development lot totals 118.27-acres, it is estimated for industrial sites that an approximate development building footprint ranges between 10%-20% of total the parcel; for this high level review 15% was used to develop an approximate proposed development footprint of 77,280 square fee. Three different scenarios were analyzed and shown in **Table 3**.

The 3 scenarios focus on different Land Use Codes provided by ITE, below is a list with definitions for each of the land uses:

Light Industrial (LUC 110) – An industrial facility has an emphasis on activities other than manufacturing with minimal office space. Typical examples are printing, material testing and assembly.
Industrial Park (LUC 130) – An industrial park contains several industrial facilities of a mix of manufacturing, service, and warehouse facility. Can have multiple small businesses or can be dominated by 1 or 2 dominant industries with other smaller facilities.
Warehousing (LUC 150) – A facility primarily devoted to the storage of materials and may contain office and maintenance areas.

Table 3: ITE Trip Generation

Scenario	Development Square Footage	ITE Land Use Code	Weekday			Adjacent Street Traffic Peak Hour						Peak Hour of Generator					
						AM			PM			AM			PM		
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1	**77,280 Sft**	**Light Industrial (LUC 110)**	**188**	**188**	**376**	50	7	57	7	43	50	**61**	**9**	**70**	**11**	**51**	**62**
2	38,640 Sft	1/2 - Light Industrial (LUC 110)	94	94	188	24	4	28	4	21	25	33	5	38	6	28	34
	38,640 Sft	1/2 - Warehouse (LUC 150)	33	33	66	5	2	7	2	5	7	22	11	33	6	20	26
	Total		**127**	**127**	**254**	**29**	**6**	**35**	**6**	**26**	**32**	**55**	**16**	**71**	**12**	**48**	**60**
3	77,280 Sft	Warehouse (LUC 150)	**66**	**66**	**132**	**10**	**3**	**13**	**4**	**10**	**14**	**24**	**13**	**37**	**8**	**24**	**32**

Site trips are expected to be distributed based on the existing traffic patterns entering and exiting the study network. Table 2 of this report presents the expected ingress and egress traffic distributions to and from the proposed site location. Expected site AM and PM peak hour trip distributions are presented in **Figure 8** through **Figure 11**.

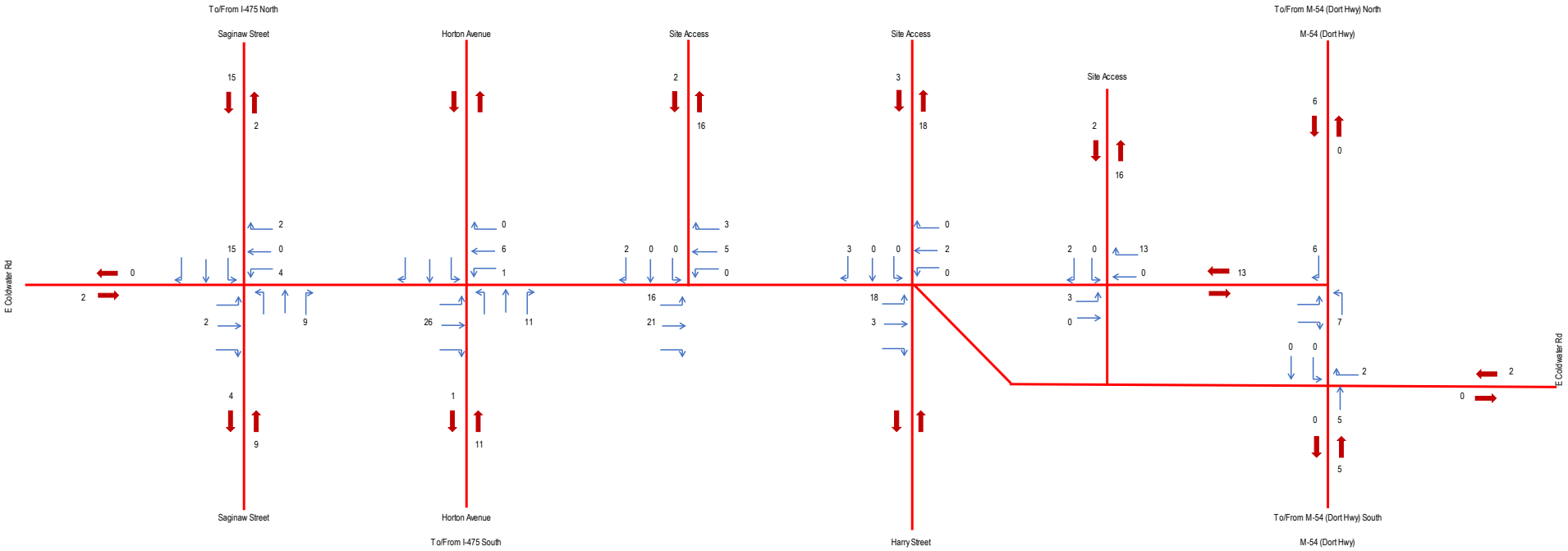


Figure 8: Anticipated Site Trip Distribution – Adjacent Street Peak Hour – AM Peak Hour

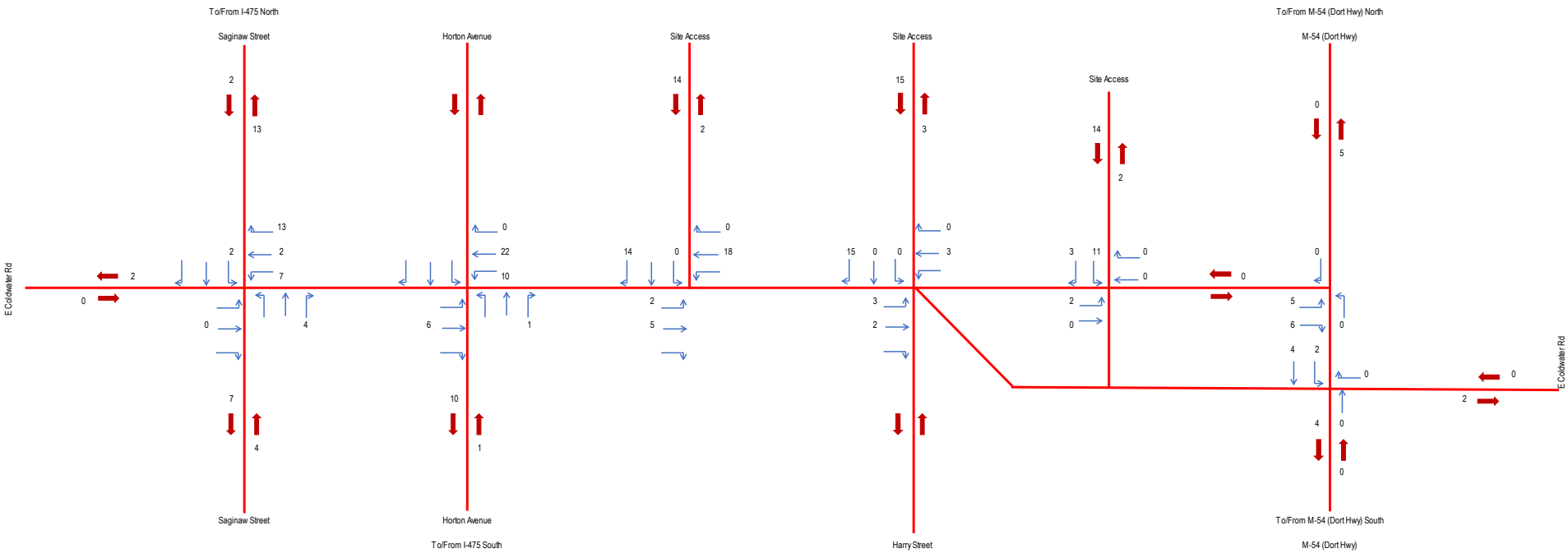


Figure 9: Anticipated Site Trip Distribution – Adjacent Street Peak Hour – PM Peak Hour

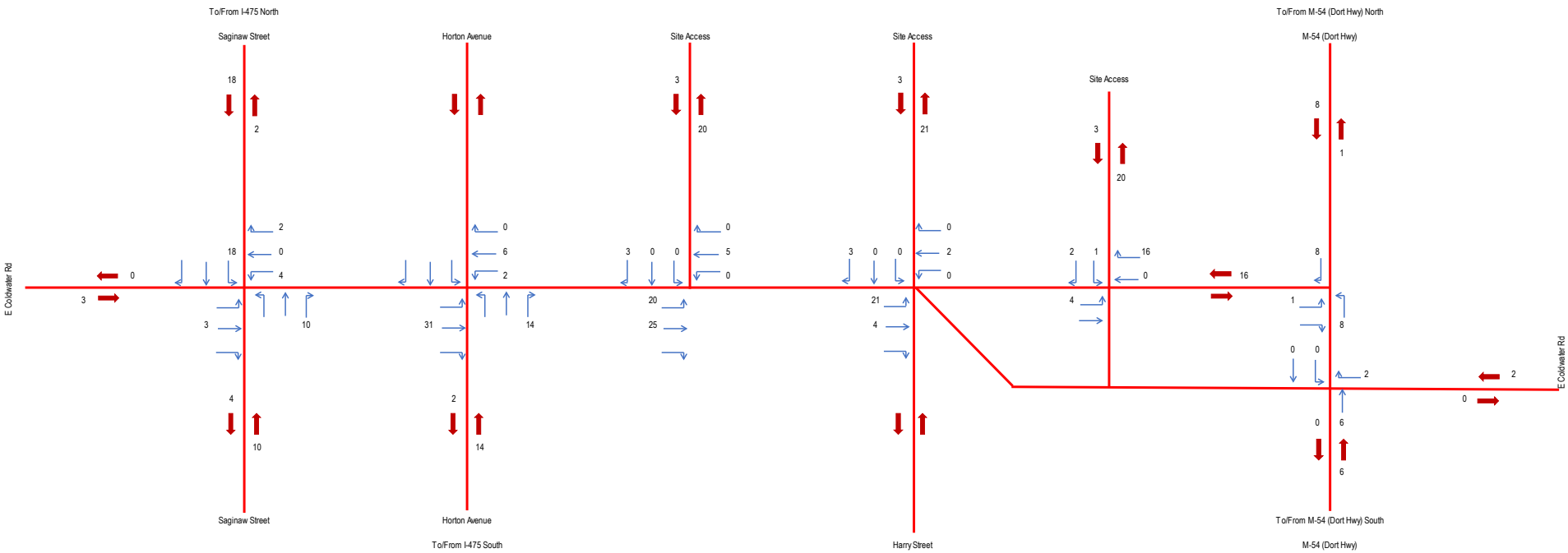


Figure 10: Anticipated Site Trip Distribution – Generator Peak Hour – AM Peak Hour

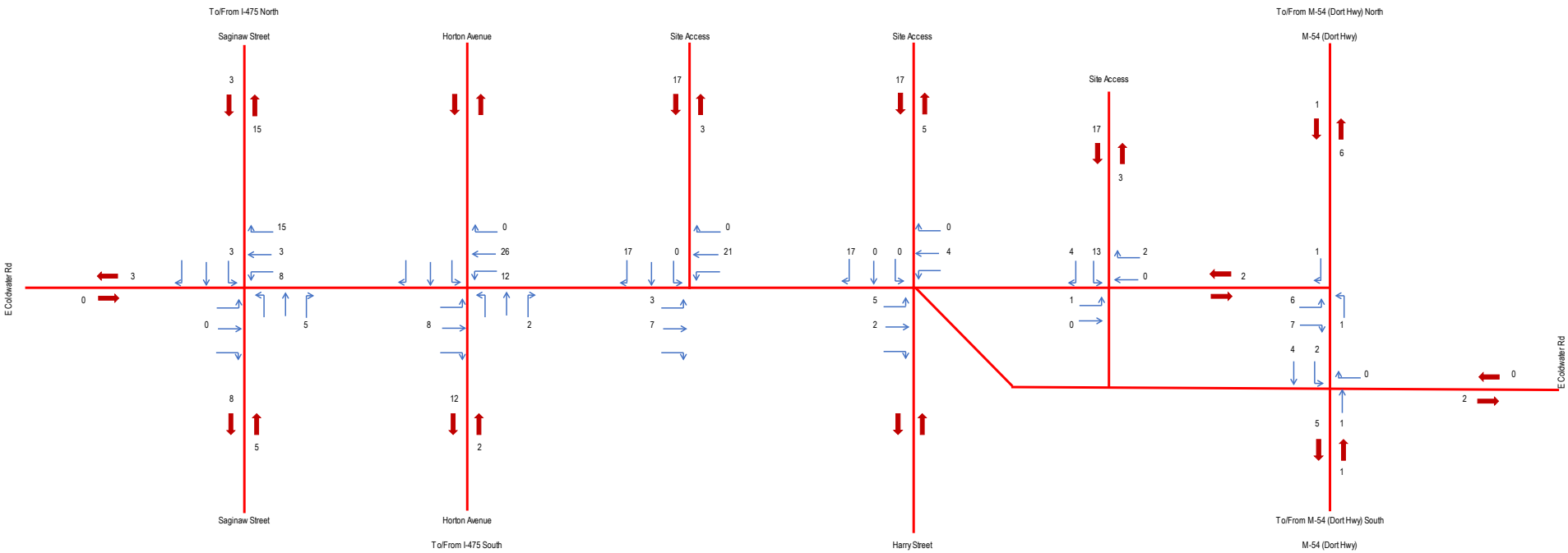


Figure 11: Anticipated Site Trip Distribution – Generator Peak Hour – PM Peak Hour

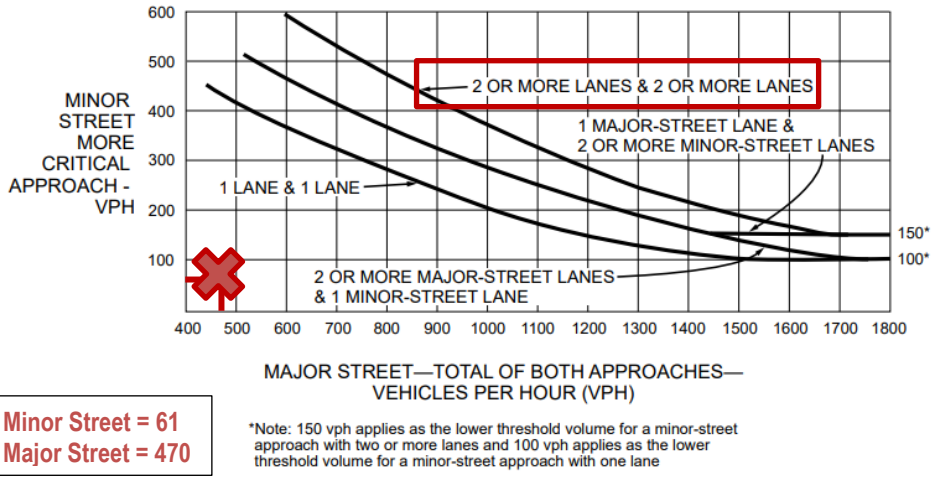
Anticipated Infrastructure Improvements

To address potential negative traffic outcomes that can come from additional trips being added to the roadway network mitigations can be required to ensure efficient vehicular movement. The main infrastructure improvements to mitigate offsite impacts are installing left- and/or right-turn lanes and installing traffic signals at unsignalized locations, if the Michigan Manual on Uniform Traffic Control Devices (MMUTCD) criteria are met. The figures below present turn lane and signal warrants based on the high-level traffic analysis herein this report.

As previously mentioned in this report, it is proposed that the future development maintain the three (3) existing driveways along E Coldwater Road with the three (3) access driveways along Horton Avenue remain closed to minimize impacts to local/neighborhood streets. For a conservative analysis the following turn lane and signal warrant evaluations assumed all generated site traffic utilize the unsignalized 5-leg intersection at E Coldwater Road and Harry Street/Existing Access Driveway.

Figure 12 below presents the peak hour signal warrant as per the MMUTCD Section 4C. According to the 2020 US Census, Beecher Michigan has a population of 8,840 and E Coldwater Road has a posted speed limit 45 mph; Peak Hour Warrant 4-C with the 70% Factor is applicable. Based on the existing ADT volumes, a PM peak hour volume of 470 vehicles is expected on E Coldwater Road. If all exiting traffic volumes occur at the Harry Street intersection, the site is not anticipated to trigger the need for a traffic signal at any of the site driveways.

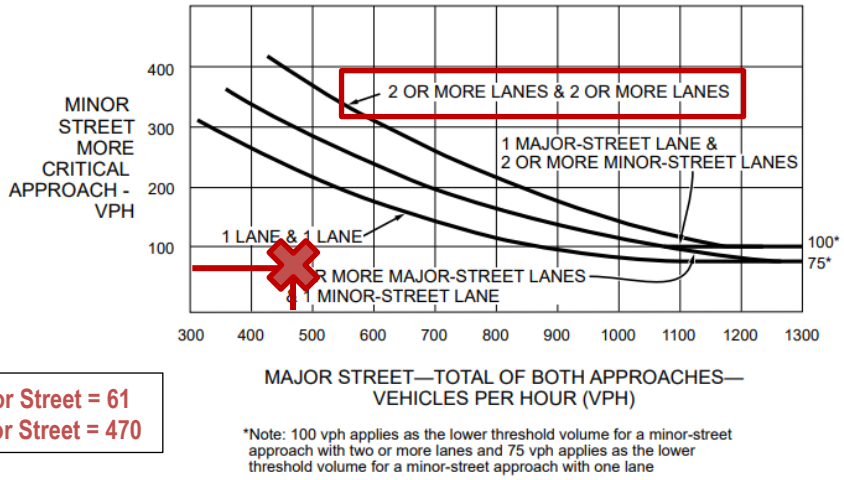
Figure 4C-3. Warrant 3, Peak Hour



Minor Street = 61
Major Street = 470

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



Minor Street = 61
Major Street = 470

Figure 12: MMUTCD Peak Hour Signal Warrant Evaluation

Adjacent to the proposed site parcel, a center two-way left-turn lane currently exists along E Coldwater Road from Saginaw Street to M-54 (Dort Highway). A left-turn lane warrant evaluation is not required.

Full width right-turn lanes currently do not exist at any of the existing site access driveways along E Coldwater Road. For a conservative analysis, the right turn lane warrant evaluated using the anticipated trip distributions (see Table 2 and Figures 8-11) as well as assumed all generated trips enter the site from the east via M-54. As shown in **Figure 13**, based on the Michigan Geometric Design Guidance Section 1.1.4, if all entering traffic volumes occur at the Harry Street intersection, the site is not anticipated to trigger the need for full width right-turn lane; however, a tapered radius may be advisable to offer better driveway approach geometry for heavy/commercial right turning vehicles.

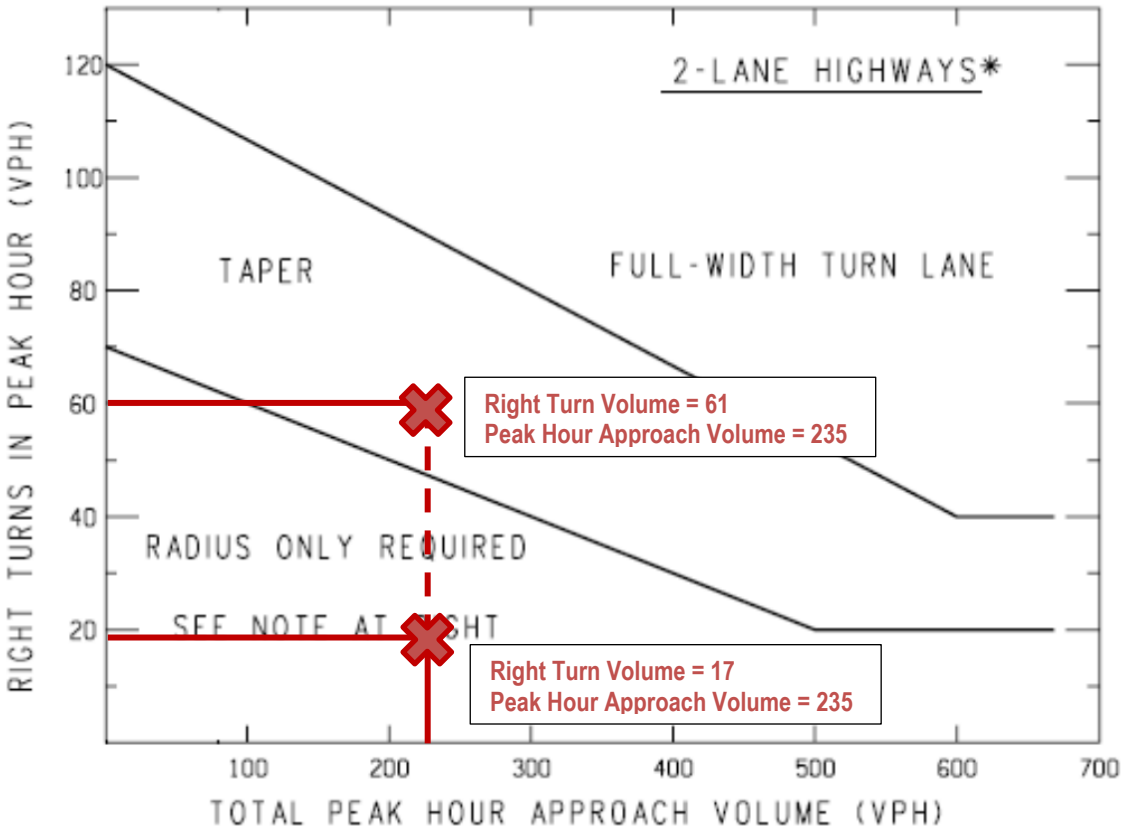


Figure 13: Right-Turn Lane Warrant Evaluation

Conclusions

The expected traffic added to the roadway network by any proposed development is expected to have impacts on the network that require investigation and mitigations. These items that need investigated are:

- It is proposed that site access to Horton Avenue remain closed in all future conditions to minimize impacts to local and neighborhood roadways.
- Right-turn lanes is not anticipated to be required to be installed at any site driveway; however, additional analysis is recommended pending final site plan and land uses impacting trip generation and distribution.
- A two-way center left-turn lane currently exists along E Coldwater Road and each site driveway is expected to have appropriate left-turn vehicle storage space for queuing.
- Queue storage length will need to be calculated for the left turn lane that warranted.
- Surrounding intersections will need the Level of Service of intersections to be analyzed to ensure effective performance.
- Connections to surrounding freeways are expected to operate satisfactorily but will require deeper analysis to ensure operations.

APPENDIX A
ITE Trip Generation

Land Use: 110
General Light Industrial

Description

A light industrial facility is a free-standing facility devoted to a single use. The facility has an emphasis on activities other than manufacturing and typically has minimal office space. Typical light industrial activities include printing, material testing, and assembly of data processing equipment. Industrial park (Land Use 130) and manufacturing (Land Use 140) are related uses.

Additional Data

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

The sites were surveyed in the 1980s, the 2000s, and the 2010s in Colorado, Connecticut, Indiana, New Jersey, New York, Oregon, Pennsylvania, and Texas.

Source Numbers

106, 157, 174, 177, 179, 184, 191, 251, 253, 286, 300, 611, 874, 875, 912

Land Use: 150
Warehousing

Description

A warehouse is primarily devoted to the storage of materials, but it may also include office and maintenance areas. High-cube transload and short-term storage warehouse (Land Use 154), high-cube fulfillment center warehouse (Land Use 155), high-cube parcel hub warehouse (Land Use 156), and high-cube cold storage warehouse (Land Use 157) are related uses.

Additional Data

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

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Connecticut, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, and Texas.

Source Numbers

184, 331, 406, 411, 443, 579, 583, 596, 598, 611, 619, 642, 752, 869, 875, 876, 914, 940, 1050