CiorbaGroup
CONSULTING ENGINEERS

July 6, 2022

Technical Memorandum

Maple Leaf Crossing Traffic and Parking Study

Munster, Indiana

TOWN OF MUNSTER

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TRAFFIC AND PARKING STUDY
MAPLE LEAF CROSSING
MUNSTER, INDIANA

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Introduction

A new development called Maple Leaf Crossing is being proposed in the Town of Munster, Indiana. It will be located on the west side of Calumet Avenue just north of 45th Street. This will be a multi-use development and is intended to receive increased access from pedestrian and bicycle traffic. The goal of the study is to determine parking and traffic demand created by the development. This multi-use site includes a business hotel, three office buildings, a restaurant, a piano bar/cigar lounge, and local shops. A new road is proposed along the north end of the site which will have two entrances to the site, a bike path, and a traffic signal at the Calumet Avenue intersection. One exit-only access drive will be provided for the Pepsi-Cola Bottlers Company to the north. Two driveways will be provided on the east end of the site which will provide right-in/right-out access to Calumet Avenue. See Appendix A-1 for the Site Location Map and the Proposed Site Plan. The study summarizes observations and provides analysis on the traffic and parking demand generated by the site. The study will include:

- Trip generation and distribution projections using the *ITE Trip Generation Manual 10th Edition.*
- Parking Demand using the *ITE Parking Generation Manual 5th Edition.*

Background Information

Calumet Avenue is classified as a principal arterial route and is under the jurisdiction of the Town of Munster, Indiana. The land use around the site is a mix of commercial, residential and recreational properties. There is a hospital located about half a mile north of the site and multiple clinics located along Calumet Avenue. The annual average daily traffic (AADT) for Calumet Ave is 31,490 (2019) according to the INDOT website. An at-grade railroad crossing is located on Calumet Avenue just south of the site.

There is sidewalk along the east side of Calumet Avenue as well as an existing multi-use path along the west side of Calumet Avenue. An extension of the Pennsy Greenway, a 15-mile trail that will connect to the Burnham Greenway/Grand Illinois trail system when complete, is proposed just north and west of the site. An east-west multi-use path is proposed along the center and north end of the site which will connect into the proposed Pennsy Parkway at the west end and the existing path at the east end of the site. These connections will make the site accessible to bicycle and pedestrian traffic.

Amtrak in Dyer Indiana provides service to a train station located two miles southwest of the project site. The train route connects Chicago to multiple locations in Indiana. The Gary Public Transportation Corp (GPTC) provides bus service to the region with the nearest route (Route R4) along Calumet Avenue extending to Ridge Road which is 1.2 miles north of the site.

Trip Generation

The *ITE Trip Generation Manual 10th Edition* was used to develop trip ends and distribution for the proposed site. The *Trip Generation Manual* serves as the most widely accepted reference guide for establishing vehicle trip generations by land use. Graphs and equations are provided for each land use to calculate trip ends for general urban/suburban locations. The results of the trip generations are shown in the table on the next page.

Table 1. Trip Generations by Land Use and Peak Hours

ITE LUC	Land Use	Size	Unit	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
312	Business Hotel	105	Rooms	17	24	41	19	15	34
710	Office Building (4 Story)	61.5	1,000 SF GFA	69	11	80	11	57	68
710	Office Building (S. Office 1)	7.77	1,000 SF GFA	8	1	9	2	8	10
710	Office Building (S. Office 2)	7.77	1,000 SF GFA	8	1	9	2	8	10
876	Apparel Store	2.0	1,000 SF GFA	2	0	2	3	4	7
925	Piano Bar & Cigar Lounge	6.4	1,000 SF GFA	-	-	0	41	21	62
932	High-Turnover (Sit-Down) Restaurant	3.85	1,000 SF GFA	18	14	32	20	12	32
Total			**396**	**122**	**51**	**173**	**98**	**125**	**223**

Note: The "Apparel Store" land use from the ITE Manual was used to analyze the container park retail

Weekend traffic was not analyzed in this study as it is anticipated that the office buildings will not be open during the weekend which reduces the parking demand conflict with the restaurant, piano bar and cigar lounge, and local shops. Like three other hotels in the area, the proposed hotel is considered a business hotel and is not anticipated to be busy during the weekend.

The trip generations in Table 1 have a percent reduction incorporated to better represent the demand in a mixed-use site such as Maple Leaf Crossing. Applying the formulas from the *ITE Trip Generation Manual* without consideration of the site use can lead to an overestimation of the demand. Reductions were made by referencing ITE guidelines for internal trip reductions within a mixed-use development. Based on this analysis, the following reductions in Table 2 were used.

Table 2. Percent Reduction by Land Use

Land Use	Percentage Trip Reduction
Business Hotel	0%
Office Building	5%
Apparel Store	15%
Piano Bar & Cigar Lounge	15%
High-Turnover (Sit-Down) Restaurant	15%

Note: The "Apparel Store" land use from the ITE Manual was used to analyze the container park retail

Directional Distribution

The directional distribution of how traffic will approach and depart the site was estimated based on accessibility and location of nearby transit facilities and highways. With I-80/I-94 located two miles north of the project site, it is estimated that 60% of site traffic will be from the north and 40% will be from the south along Calumet Avenue.

Due to substandard traffic volumes at the time of this study, traffic counts were not performed along Calumet Avenue. The peak hour traffic was estimated as 10% of the AADT. The site traffic distribution and peak hour traffic projections are indicated in Appendix A-2 and A-3.

Projected Site Traffic Volumes

The projected site traffic volumes indicated in Appendix A-3 are based on trip generation and directional distribution estimates for the site. A percentage of site traffic was estimated for each driveway during the morning and evening peak traffic hours for Calumet Avenue and is indicated in Appendix A-2. This information was also used to determine the turning volumes on the proposed road and Calumet Avenue which is indicated in Table 3.

Table 3. Projected Turning Traffic Volumes at Intersection of Calumet Avenue and Proposed Road

Street	Direction	Turn	Traffic	
			AM	PM
Calumet Ave	NB	Left	49	39
	SB	Right	12	10
Proposed Road	EB	Left	30	75
	EB	Right	5	12

Based on the projected turning volumes shown in Table 3 for the proposed road, it seems that one lane of traffic in the eastbound and westbound direction could accommodate the projected traffic. An eastbound right-turn lane may not be needed. This will need to be verified once traffic counts can be obtained along Calumet Avenue to perform a traffic signal warrant and capacity analysis for the intersection.

Peak hour traffic volumes on the proposed road did not account for the proposed exit-only access drive from the Pepsi-Cola Bottlers Company. Information provided by others indicates that the main traffic from the Pepsi access will be 10 to 15 vehicles between 5:00 and 6:00 AM which is before the peak hour of traffic for the Maple Leaf Crossing site.

Parking

A parking analysis was performed using both the Town of Munster Character Based Code and the *ITE Parking Generation Manual.*

The Town of Munster Character Based Code (Article 26 Zoning Code) indicates that the required parking allows the application of a Shared Parking Factor for two different land uses. Per Table 26-6.405.O-2 of the Code, the applicable Shared Parking Factor is 1.7 for hotels and offices. Table 4 reflects the required parking per the Code and application of the factor for the hotel and office, which yields 411 parking spaces required. The proposed site plan provides 364 parking spaces which does not satisfy the Code requirements.

Table 4. Parking Spaces Adjustment per Town of Munster Character Based Code

Land Use	Required Parking	Shared Parking Factor	Parking Adjustment
NORTH OFFICE BUILDING	203	1.7	120
SOUTH OFFICE BUILDING #1	27	1.7	16
SOUTH OFFICE BUILDING #2	27	1.7	16
RESTAURANT	65	1	65
PIANO BAR & CIGAR LOUNGE	107	1	107
HOTEL	132	1.7	78
CONTAINER PARK (RETAIL)	9	1	9
Total	**570**		**411**

Note: The Required Parking is from Proposed Site Plan in Appendix A-1

Parking analysis was also performed for the site using the *ITE Parking Generation Manual*. ITE parking demand data was limited for the Apparel Store. Therefore, parking requirements indicated in the Town of Munster Character Based Code were used for this land use. Table 5 shows the projected peak parking

demand for the site. This incorporates the trip reductions for a mixed-use development indicated in Table 2.

Table 5. Parking Spaces Required through *ITE Parking Generation Manual* (Trip Reductions Included)

ITE LUC	Land Use	Size	Unit	% Reduction	Peak Parking Demand
312	Business Hotel	105	Rooms	0%	75
710	Office Building (4 Story)	61.5	1,000 SF GFA	5%	159
710	Office Building (S. Office 1)	7.77	1,000 SF GFA	5%	19
710	Office Building (S. Office 2)	7.77	1,000 SF GFA	5%	19
876	Apparel Store	2.0	1,000 SF GFA	15%	8
925	Piano Bar & Cigar Lounge	6.4	1,000 SF GFA	15%	52
932	High-Turnover (Sit-Down) Restaurant	3.85	1,000 SF GFA	15%	32
			Total		**364**

Note: The "Apparel Store" land use from the ITE Manual was used to analyze the container park retail

The Proposed Site Plan in Appendix A-1 indicates that 358 parking spaces are provided. The parking demand, as calculated above using the ITE parking data with trip reductions included, indicates that if the peak parking demand occurred at the same time for all land uses at the site, 364 parking spaces would be required. The peak parking demand for the separate land uses occur at different times, however. The ITE Parking Generation Manual indicates the following peak parking demand times:

- Business Hotel — 10:00 PM to 8:00 AM - 80% of Peak or More
- Office Building — 9:00 AM to 5:00 PM – 80% of Peak or More
- Piano Bar and Cigar Lounge — 12:00 PM to 2:00 PM – 80% of Peak or More
7:00 PM to 9:00 PM – 70% of Peak or More
- Restaurant — 12:00 PM to 2:00 PM – 80% of Peak or More
6:00 PM to 9:00 PM – 80% of Peak or More

The largest overlap between the sites occurs during lunch time around 12 PM to 2:00 PM; however, the business hotel will likely have minimal parking demand at this time. Based on this information, an analysis was done using the standard time of day distributions for parking demand from the *ITE Parking Generation Manual*. The peak parking demand for the Maple Leaf Development was calculated at 10 AM, Noon and 7 PM during weekdays. This is indicated in Table 6 below.

Table 6. Parking Spaces Required Based on Time of Day through *ITE Trip Generation Manual*

ITE LUC	Land Use	Peak Parking Demand	Peak Parking at 10 AM		Peak Parking at Noon		Peak Parking at 7 PM	
			% of Peak	Parking	% of Peak	Parking	% of Peak	Parking
312	Business Hotel	75	49	37	45	34	54	41
710	Office Building (4 Story)	159	100	159	85	136	11	18
710	Office Building (S. Office 1)	19	100	19	85	17	11	3
710	Office Building (S. Office 2)	19	100	19	85	17	11	3
876	Apparel Store	8	0	0	82	7	59	5
925	Piano Bar & Cigar Lounge	52	0	0	100	52	70	37
932	High-Turnover (Sit-Down) Restaurant	32	77	25	100	32	79	26
		364		**259**		**295**		**133**

NOTE: The ITE value of 100% of Peak Parking at Noon seems high based on information from the Piano Bar and Cigar Lounge at the Merrillville, Indiana location.

The largest parking demand of 295 vehicles occurred at noon. Therefore, the 358 parking spaces provided at the site will accommodate the weekday peak parking demand for the development.

A few items should be noted:

- The *ITE Parking Generation Manual* indicated that 100% of the peak parking demand for the piano bar & cigar lounge would occur during the noon hour. The developer for the Karma Bistro and Cigar Lounge indicated that the peak period at their Merrillville location occurs later in the day (between 5 PM and 11 PM).
- The developer has indicated that the office buildings designated as South Office 1 & South Office 2 would feature businesses such as an ophthalmologist, title company, real estate office and a music school (School of Rock).

Conclusion

A new development called Maple Leaf Crossing is being proposed on the west side of Calumet Avenue just north of 45th Street in the Town of Munster, Indiana.

Based on the findings of the study, the parking spaces provided in the Maple Leaf Crossing Proposed Site Plan do not satisfy the parking requirements of the Town of Munster Character Based Code. However, the proposed parking spaces provided do satisfy the parking requirements identified in the *ITE Parking Generation Manual* when accounting for the different peak parking demand times associated with the land uses within the development. Therefore, the parking requirements are satisfied per the guidelines of the *ITE Parking Generation Manual*.

Appendix

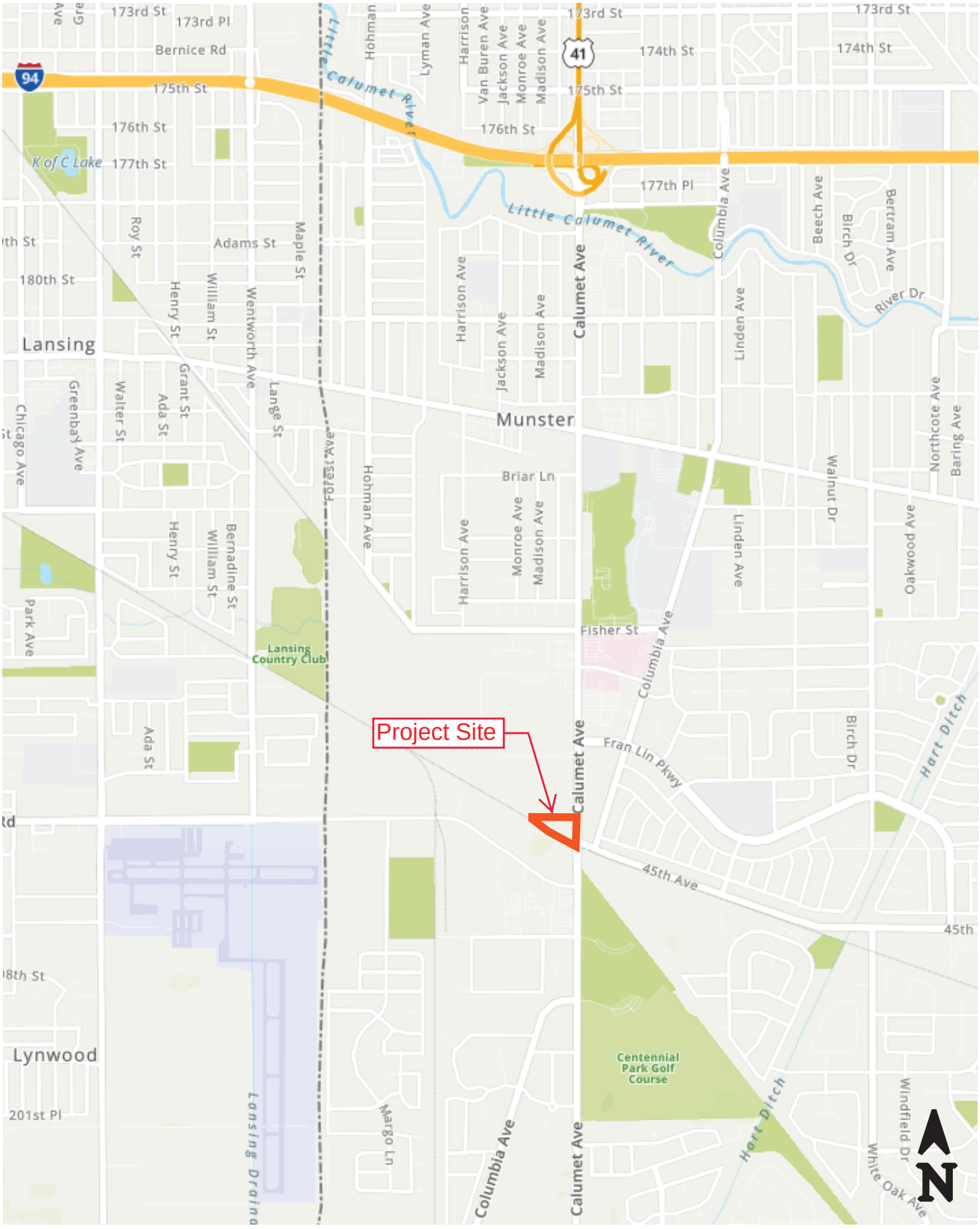
Appendix 1 – Location Map and Proposed Site Plan

Appendix 2 – Site Peak Hour Distribution

Appendix 3 – Site Peak Hour Traffic

APPENDIX A-1

LOCATION MAP AND PROPOSED SITE PLAN



Project Location

Maple Leaf Crossing
Calumet Ave and 45th St
Munster, IN

CiorbaGroup
619 Franklin Street, Suite 205 | Michigan City, IN 46360
P 844.271.5923 | www.ciorba.com

PEPSI-COLA BOTTLERS, INC.

EXISTING BUILDING

5' EASEMENT
ILLINOIS BELL TELEPHONE COMPANY
DOC. NO. 522873

S 89°43'30" E 706.34'

10'-0" BIKE PATH

OVERHEAD LINES

NEW 3 WAY STOPLIGHT

PARKING AREA #10 (18 SPACES)

PARKING AREA #11 (68 SPACES)

PARKING AREA #12 (44 SPACES)

HYATT PLACE
4 STORY HOTEL
17,794 SF
FOOTPRINT
105 ROOMS

PARKING AREA #8 (16 SPACES)

4 STORY OFFICE BLDG
15,375 SF FOOTPRINT

PARKING AREA #9 (15 SPACES)

PARKING AREA #6 (20 SPACES)

PARKING AREA #7 (38 SPACES)

Piano Bar/Cigar Lounge
6,400 SF

CONTAINER ARCHITECTURE

RESTAURANT
3,850 SF

OUTDOOR SEATING

PARKING AREA #5 (15 SPACES)

PARKING AREA #3 (25 SPACES)

PARKING AREA #4 (48 SPACES)

SOUTH OFFICE #2
7,774 SF
(8 UNITS @ 19'-0" WIDE)

MASONRY TRASH ENCL

SOUTH OFFICE #1
7,774 SF
(8 UNITS @ 19'-0" WIDE)

PARKING AREA #1 (31 SPACES)

PARKING AREA #2 (10 SPACES)

52' RETAINING WALL EASEMENT

CANADIAN NATIONAL RAILROAD

N 59°52'07" W ~ 336.24'

20' PUBLIC UTILITY EASEMENT

R=6561.12'
L=111.74'

S 00°26'30" W ~ 625.17'

CALUMET AVENUE

/Users/borderlinedesignllc/Desktop/BORDERLINE DESIGN LLC/ PROJECTS/2019/19015 Jay Lieser/Design/Large Office Building/2020 03 09 - SITE PLANS TO BE VOTED ON/2020 03 09 90 DEGREE.pln

SITE INFO:

LOT AREA: 306,788 SF

IMPERVIOUS SURFACES:

BUILDINGS:

NORTH OFFICE BUILDING:	15,375 SF FOOTPRINT (61,500 SF TOTAL, 4 STORY)
SOUTH OFFICE BUILDING #1:	7,774 SF FOOTPRINT
SOUTH OFFICE BUILDING #2:	7,774 SF FOOTPRINT
RESTAURANT:	4,623 SF FOOTPRINT
HOTEL:	17,794 SF FOOTPRINT (71,176 SF TOTAL, 4 STORY)
PUB:	2,710 SF FOOTPRINT
CONTAINER ARCHITECTURE:	2,802 SF FOOTPRINT
TOTAL:	58,852 SF (19.2%)

SURFACES

SIDEWALKS:	17,391 SF
OUTDOOR SEATING:	1,269 SF
BIKE PATH:	7,585 SF
GARBAGE AREA:	873 SF
ASPHALT PARKING / DRIVE:	173,478 SF
TOTAL:	205,612 SF (67%)

GREENSPACES (PERVIOUS SURFACES)

GREENSPACE:	41,762 SF (13.5%)

LANDSCAPING:

TYPE:	REQUIRED:	PROVIDED:
GREENSPACE:	17,228 SF (10% OF PAVED AREA)	41,762 SF TOTAL

PROPOSED SETBACKS:

F.Y. SETBACK:	7'-6" (PARKING AREA)
S.Y. SETBACK:	1'-9"
REAR SETBACK:	11'-6"

REQUIRED PARKING:

NORTH OFFICE BUILDING (61,500 SF / 1,000) X 3.3 = 202.3	203 SPACES
SOUTH OFFICE BUILDING #1 (7,996 SF / 1,000) X 3.3 = 26.39	27 SPACES
SOUTH OFFICE BUILDING #2 (7,996 SF / 1,000) X 3.3 = 26.39	27 SPACES
RESTAURANT (3,850 / 300) X 5 = 64.2	65 SPACES
Piano Bar/Cigar Lounge: (6,400 / 300) X 5 = 106.67	107 SPACES
HOTEL (1.25 / ROOM X 105 RMS)	132 SPACES
CONTAINER PARK (RETAIL) (2,000 SF / 1,000) X 4.5 = 9	9 SPACES
TOTAL:	570 TOTAL REQUIRED

OFFICES: 3.3 SPACES / 1,000 SF
RETAIL: 4.5 SPACES / 1,000 SF
RESTAURANT: 5 SPACES / 300 SF
HOTEL: 1.25 SPACES / ROOM

PARKING AREA:	NO. STALLS:	ADA STALLS
PARKING #1	31	0
PARKING #2	10	0
PARKING #3	25	0
PARKING #4	48	2 (1 VAN)
PARKING #5	15	0
PARKING #6	20	4 (2 VAN)
PARKING #7	38	4 (2 VAN)
PARKING #8	16	0
PARKING #9	15	0
PARKING #10	18	0
PARKING #11	68	0
PARKING #12	44	0
TOTAL:	348	10 (4 van)

VICINITY MAP
SCALE: N.T.S.

N

PROPOSED SITE PLAN OPT #1
SCALE: 1" = 30'

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CONSULTANTS

MAPLE LEAF CROSSING

9450 Calumet Ave
Munster, IN 46321

PROGRESS PRINTING

NO.	DESCRIPTION:	DATE:
	DESIGN REVIEW	03/09/2020

PROJECT NO: 19015
MODEL FILE:
2020 03 09 90 DEGREE.pln
DRAWN BY: J.A.H.
DATE: 08/01/2019

SHEET TITLE

Partial Site Plan

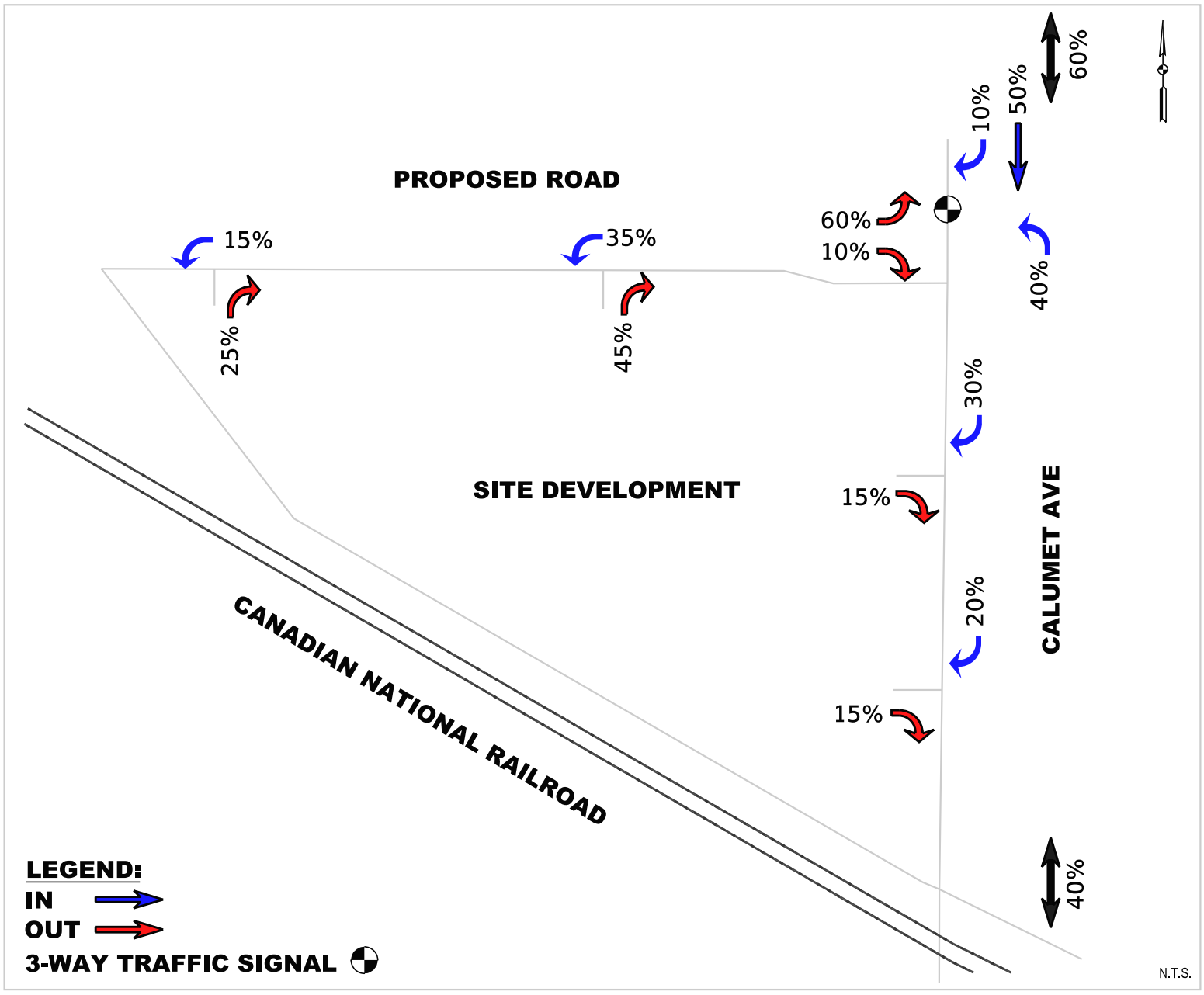
AS-001

SHEET 16 OF 53

APPENDIX A-2

SITE PEAK HOUR DISTRIBUTION

APPENDIX 2 - SITE PEAK HOUR DISTRIBUTION

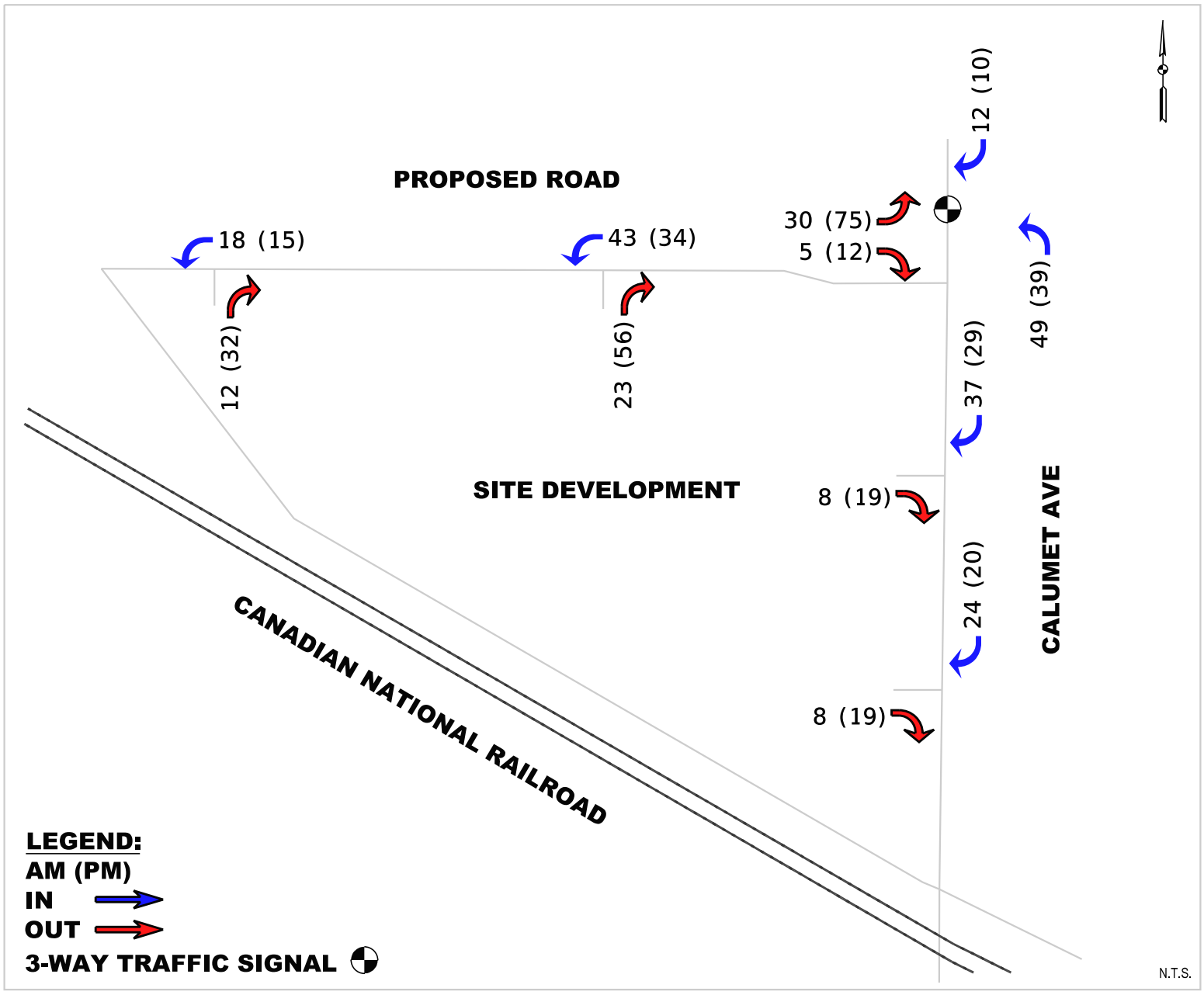


Assumptions:
- The traffic distributions assume 60% of site traffic will be from the north and 40% will be from the south.
- Exiting traffic onto the Proposed Road from the Pepsi-Cola Bottlers Company occurs prior to the AM Peak Hour.

APPENDIX A-3

SITE PEAK HOUR TRAFFIC

APPENDIX 3 - SITE PEAK HOUR TRAFFIC



Assumptions:
- The traffic distributions assume 60% of site traffic will be from the north and 40% will be from the south.
- Exiting traffic onto the Proposed Road from the Pepsi-Cola Bottlers Company occurs prior to the AM Peak Hour.