November 14, 2025

Mr. Sarwan Signh

Royal Truck and Trailer Sales Ltd
73 Stafford Drive
Brampton, ON L6W 1L3

Re: Proposed Warehouse Development
3027 Cedar Creek Road (RR 97), Township of North Dumfries, Waterloo Region
Transportation Study

CGE Transportation Consulting is pleased to submit this Transportation Study for the proposed warehouse development, located at 3027 Cedar Creek Road (RR 97) in the Township of North Dumfries, Waterloo Region.

The proposal includes a 107,639-square-foot warehouse and logistics facility (truck terminal) featuring 24 docking bays (19 loading, 5 repair). The development will include 33 employee parking spaces, 233 trailer parking spaces, and 39 tractor parking spaces. Two access points from Cedar Creek Road (RR 97) will flank the warehouse. To the immediate west of the proposed warehouse building, a 9300 square metre Stormwater Management Facility is proposed.

The study demonstrates that the development will have minimal impact on the surrounding road network, and the access connections are projected to operate at an acceptable level of service with minimal delays.

Should you have any questions regarding this study, please do not hesitate to contact the undersigned.

Yours truly,

CGE TRANSPORTATION CONSULTING

Casey Ge, P.Eng.
President

Email: casey@cgeconsulting.ca |Phone: 416-602-1885 |

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

TABLE OF APPENDICES

1.0 INTRODUCTION

CGE Transportation Consulting was retained by Royal Truck and Trailer Sales Ltd. to prepare a Transportation Study for a proposed warehouse development located at 3027 Cedar Creek Road (RR 97) in the Town of North Dumfries, Waterloo Region.

Existing Site Description:
The site is bounded by Cedar Creek Road (RR 97) to the north, Highway 401 to the south, industrial developments to the east, and agricultural lands to the west. Currently vacant, the subject site is zoned as "Z.1 – Agricultural". The location of the proposed development is illustrated in **Figure 1**.

Development Proposal Description:
The proposal includes a 107,639-square-foot warehouse and logistics facility with 24 docking bays (19 loading, 5 repair). A stormwater management facility is also proposed. The development will also include 33 employee parking spaces, 233 trailer parking spaces, and 39 tractor parking spaces.

Discussions with the owner have indicated that the trailers will follow a weekly usage pattern. This means trailers will be stationed on-site for extended periods, rather than being subject to daily turnover. Such an operational model is consistent with standard warehousing practices, where the frequency of loading and unloading activities is typically on a weekly basis. Consequently, the high number of trailer parking spaces should not be interpreted as correlating to an equivalent number of daily trips. Instead, the spaces are intended to accommodate the storage requirements inherent in logistical operations. The warehouse is projected to employ approximately 6 staff members, while the office will house between 12 and 16 employees.

The site design includes two access points from Cedar Creek Road (RR 97), located on either side of the proposed warehouse building. The full build-out of this project is targeted for completion in 2029. The Concept Plan of Subdivision is provided in **Figure 2.**

Scope of Work:
Pre-consultation meetings indicate that the Township of North Dumfries requires a Traffic Impact Study for this application.

The study area consists of the following intersections:

- Cedar Creek Road (RR 97) / East Site Access
- Cedar Creek Road (RR 97) / West Site Access

The study analyzed the following scenarios:

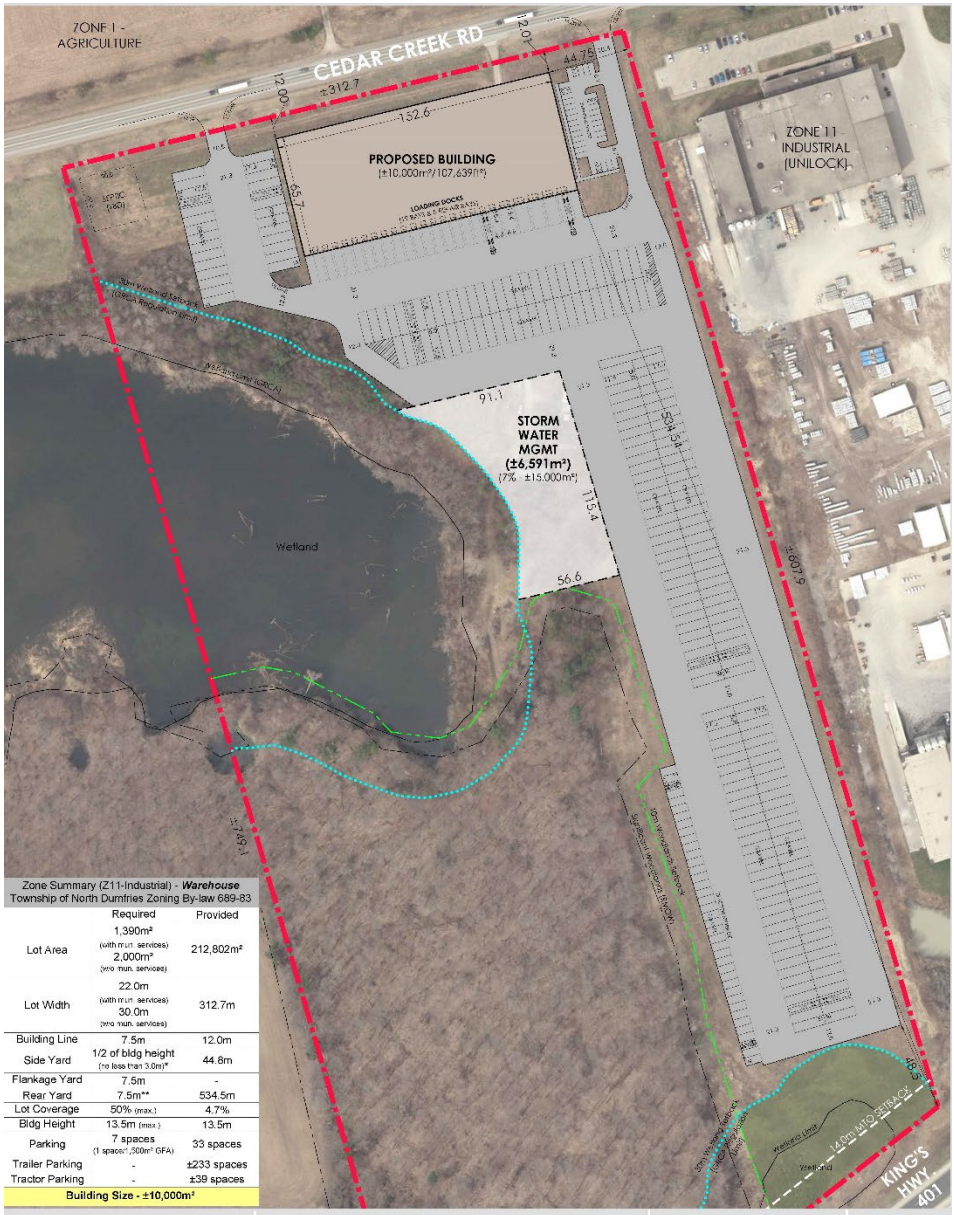
- 2024 Existing Conditions
- Future Background 2029 Conditions
- Full Build 2029 Conditions

The analysis has been conducted for both weekday AM and PM peak hours.

Figure 1 Site Location

Source: Waterloo Region GIS Maps

Figure 2 Proposed Site Plan



2.0 EXISTING CONDITIONS

2.1 Existing Roadway Conditions

Cedar Creek Road (RR 97) is a two-lane, east-west arterial roadway with an 80 km/h speed limit, under the Region's control. It has paved shoulders on both sides but does not provide sidewalks or on-street parking, typical of a rural road cross-section.

A review of the Region's current and future construction area does not show any immediate projects planned along Cedar Creek Road (RR 97) in the vicinity of the subject site.

The proposed development features two full access connections to Cedar Creek Road (RR 97).

2.2 Traffic Volumes

Turning movement counts at the adjacent intersections of Cedar Creek Road (RR 97) & Northumberland Street and Cedar Creek Road (RR 97) & Hwy 401 WB Ramp/Driveway were used to determine the volumes along Cedar Creek Road (RR 97) at the proposed access connections. Traffic data collection for these intersections was performed on June 1, 2022 can be found in **Appendix A**, and is summarized below:

Table 1 2022 Traffic Volumes

Intersection	Time Period	EB (vph)	WB (vph)
Cedar Creek Road (RR 97) & Northumberland Street	AM Peak Hour	466	311
	PM Peak Hour	355	639
Cedar Creek Road (RR 97) & Hwy 401 WB Ramp/Driveway	AM Peak Hour	490	343
	PM Peak Hour	398	617
Highest Observed Volumes	AM Peak Hour	**490**	**343**
	PM Peak Hour	**398**	**639**

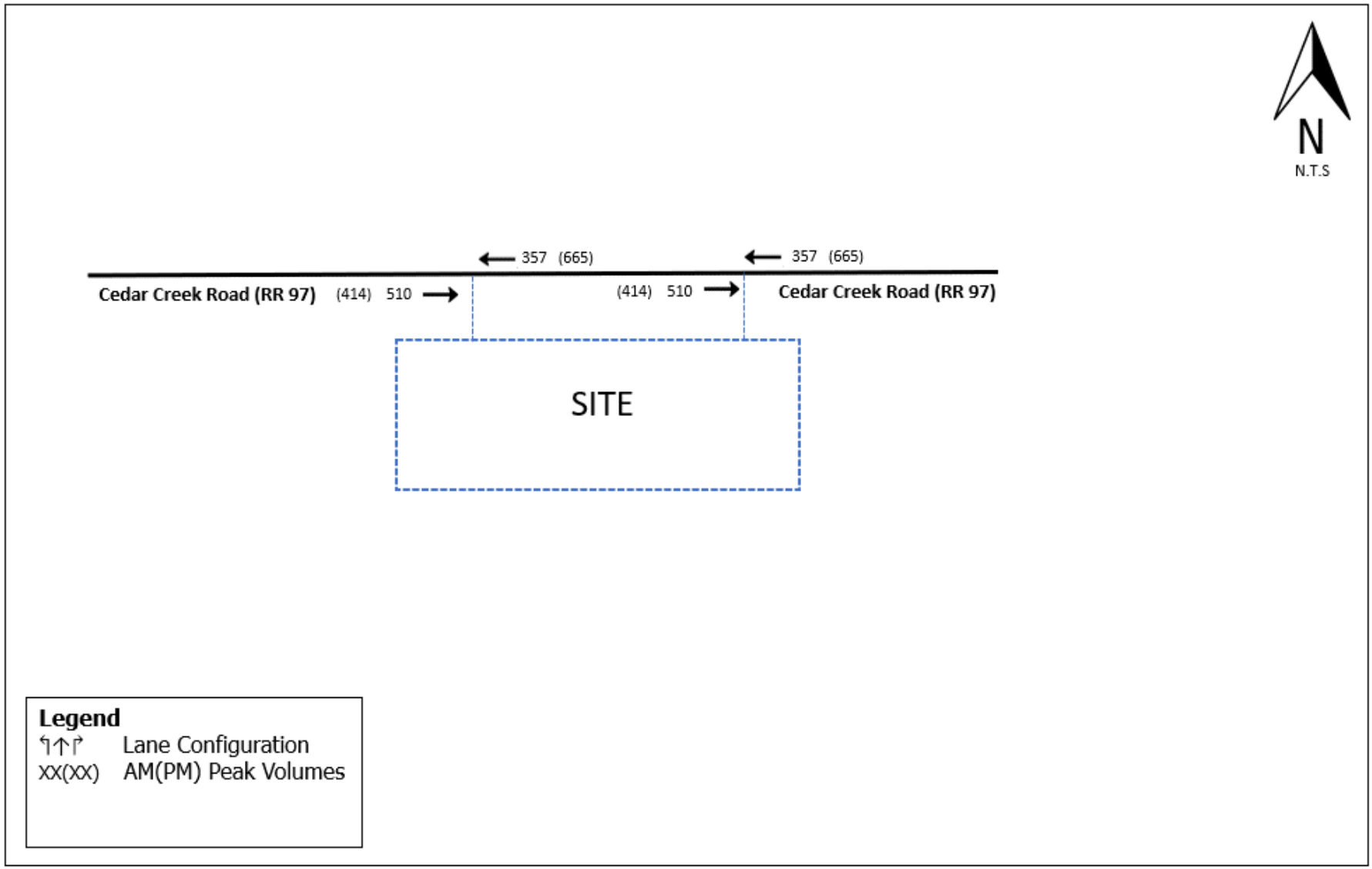
Based on the foregoing, for a conservative analysis, the highest observed eastbound and westbound volumes were used for the study. However, it is noted that the data collection was performed in 2022. Typically, counts that are no more than 3 years old represent existing conditions. However, for a conservative analysis, the volumes were grown by 2% per annum, which is the approximate annual growth rate based on the Waterloo Region forecasts noted in the *Moving Forward – 2018 Transportation Master Plan*. Based on that, the projected volumes for 2024 are:

Table 2 2024 Traffic Volumes

Year	Time Period	Entering EB (vph)	Exiting WB (vph)
2024	AM Peak Hour	510	357
	PM Peak Hour	414	665

Figure 3 displays existing traffic volume.

Figure 3 Existing Traffic Volumes



3.0 METHODOLOGY

3.1 Base Assumptions

Intersection capacity analysis was conducted using Synchro v11.0. Trip generation for the proposed development was calculated using the 11th edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*.

The input parameters for Synchro, used in conducting the intersection capacity analysis, were based on the recommendations contained in the Region's *Transportation Impact Studies (TIS) Requirements for Capacity Analysis, Roundabouts, Signal Warrants.*

Turn lane requirements on Cedar Creek Road (RR 97) were examined using the recommendations in the Regions' *Transportation Impact Study Guidelines.*

3.2 Background Developments

In the site's vicinity, two background developments were identified and included in the study. Detailed site-specific trip information is provided in **Appendix B**. The studies referenced include:

- *2804 Cedar Creek Road Industrial Subdivision* – Traffic Impact Assessment.
- *Regional Roads 97 and 47 Industrial Lands* – Traffic Impact Study.

3.3 Background Growth

Volumes were increased by 2% to estimate background growth for Full Build 2029 conditions. This growth rate is consistent with the background developments reports as well as the approximate annual growth rate based on the Waterloo Region forecasts noted in the *Moving Forward – 2018 Transportation Master Plan*.

3.4 Site Trip Generation

The proposal includes a 107,639-square-foot warehouse and logistics facility with 24 docking bays. The development will also include 33 employee parking spaces, 242 trailer parking spaces, and 39 tractor parking spaces.

The weekly trailer usage pattern, common in the industry, minimizes daily truck movements, underscoring that the high number of trailer spaces is for storage, not daily trips. The facility will staff approximately 6 warehouse personnel and 12-16 office staff (22 employees in total).

The *ITE Trip Generation Man*ual, 11th Edition Land Use Code 150 (Warehousing), was used. This code provides empirically-derived data specific to warehousing activities, accounting for factors such as gross floor area, number of employees, and typical operational patterns. The trip generation was calculated using whichever method yields the greater number of trips:

- **Independent Variable**: Employees (22 employees)
  - Vehicle Trip Generation
  - Truck Trip Generation
- **Independent Variable**: 1,000 Sq. Ft. GFA (107,639 Sq. Ft.)
  - Vehicle Trip Generation
  - Truck Trip Generation

Table 3 contains the summary of the land uses and sizes used for the trip generation estimates. The trip generation graphs, and detailed calculations can be found in **Appendix C**.

Table 3 Estimated Traffic Generation

Land Use					AM Peak Hour			PM Peak Hour		
Land Use	**ITE Code**	**Independent Variable**	**Size**		**Enter**	**Exit**	**Total**	**Enter**	**Exit**	**Total**
Warehousing	150	GFA (Vehicle)	108	1000 Sq. Ft. GFA	28	9	37	11	28	39
		GFA (Truck)			1	1	2	2	1	3
		Total Volume			**29**	**10**	**39**	**13**	**29**	**42**
		Employees (Vehicle)	22	Employees	12	4	16	5	10	15
		Employees (Truck)			1	1	2	1	1	2
		Total Volume			**13**	**5**	**18**	**6**	**11**	**17**

Trip generation estimates indicate that using Gross Floor Area (GFA) as an independent variable correlates with higher vehicle and truck volumes. To account for this, the study conservatively estimated 37 and 39 new two-way vehicle trips, and 2 and 3 new two-way truck trips, to the adjacent network during weekday AM and PM peak hours, respectively.

3.5 Trip Distribution

Trips for this proposed development were assigned to the surrounding roadway network using engineering judgment and existing traffic patterns. The proposed trip distribution for this project is:

AM Peak Hour Inbound:

- 40% to/from east on Cedar Creek Road (RR 97)
- 60% to/from west on Cedar Creek Road (RR 97)

AM Peak Hour Outbound:

- 60% to/from east on Cedar Creek Road (RR 97)
- 40% to/from west on Cedar Creek Road (RR 97)

PM Peak Hour Inbound:

- 50% to/from east on Cedar Creek Road (RR 97)
- 50% to/from west on Cedar Creek Road (RR 97)

PM Peak Hour Outbound:

- 50% to/from east on Cedar Creek Road (RR 97)
- 50% to/from west on Cedar Creek Road (RR 97)

Future Background volumes for 2029 are shown in **Figure 4.** The project site trips are shown in **Figure 5.** Full Build 2029 volumes are shown in **Figure 6.**

Figure 4 Future Background 2029 Volumes

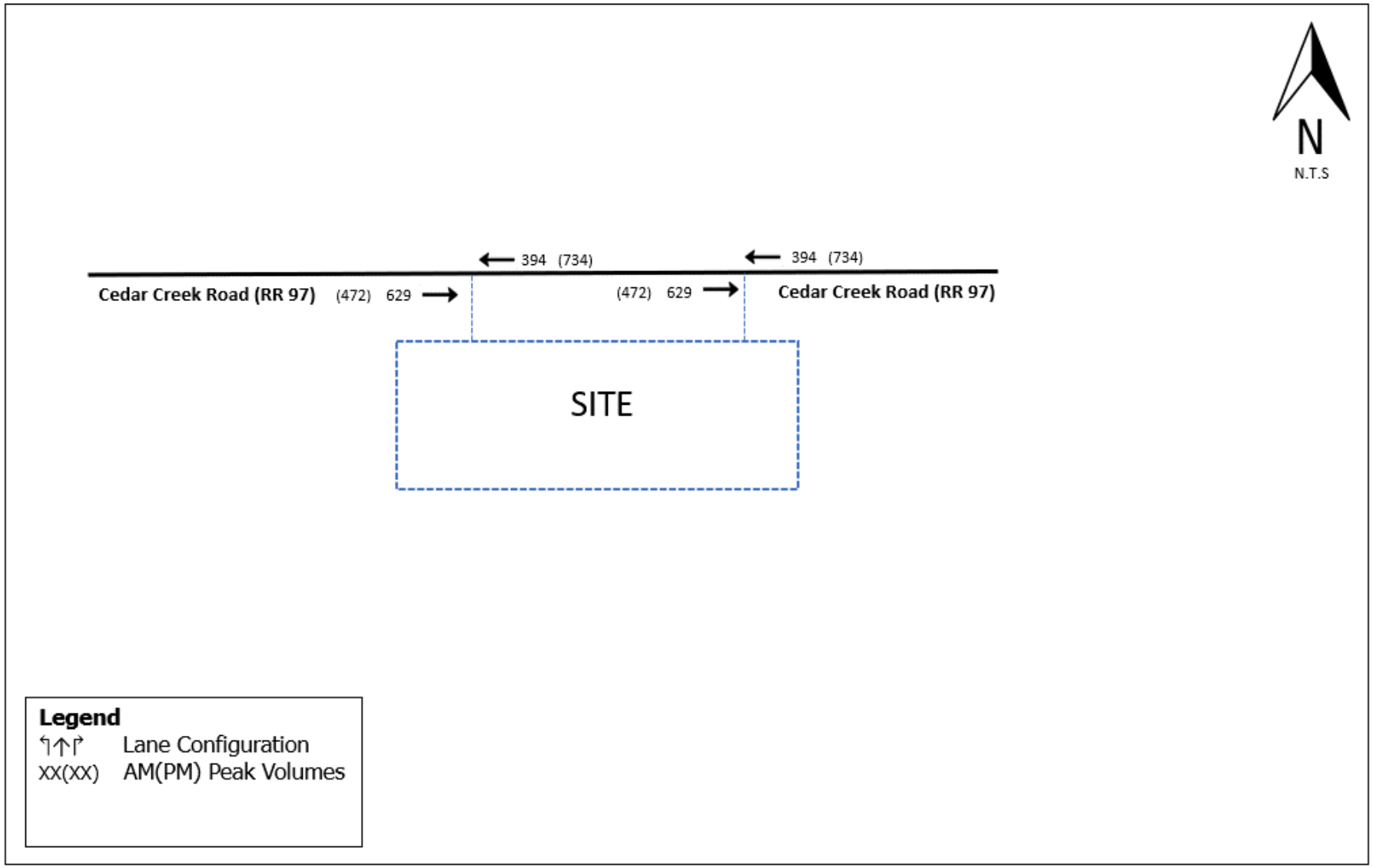


Figure 5 Project Site Trips

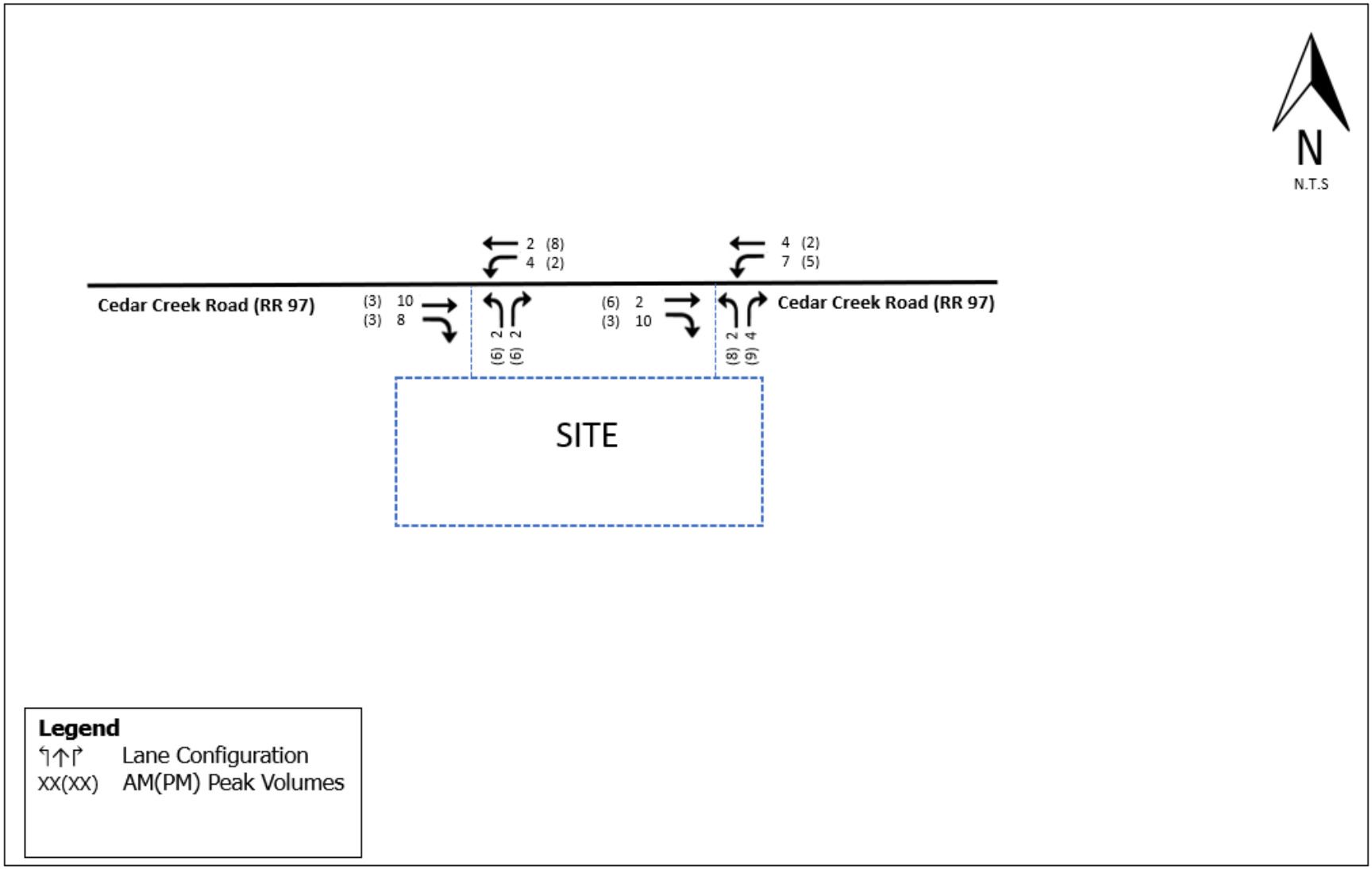
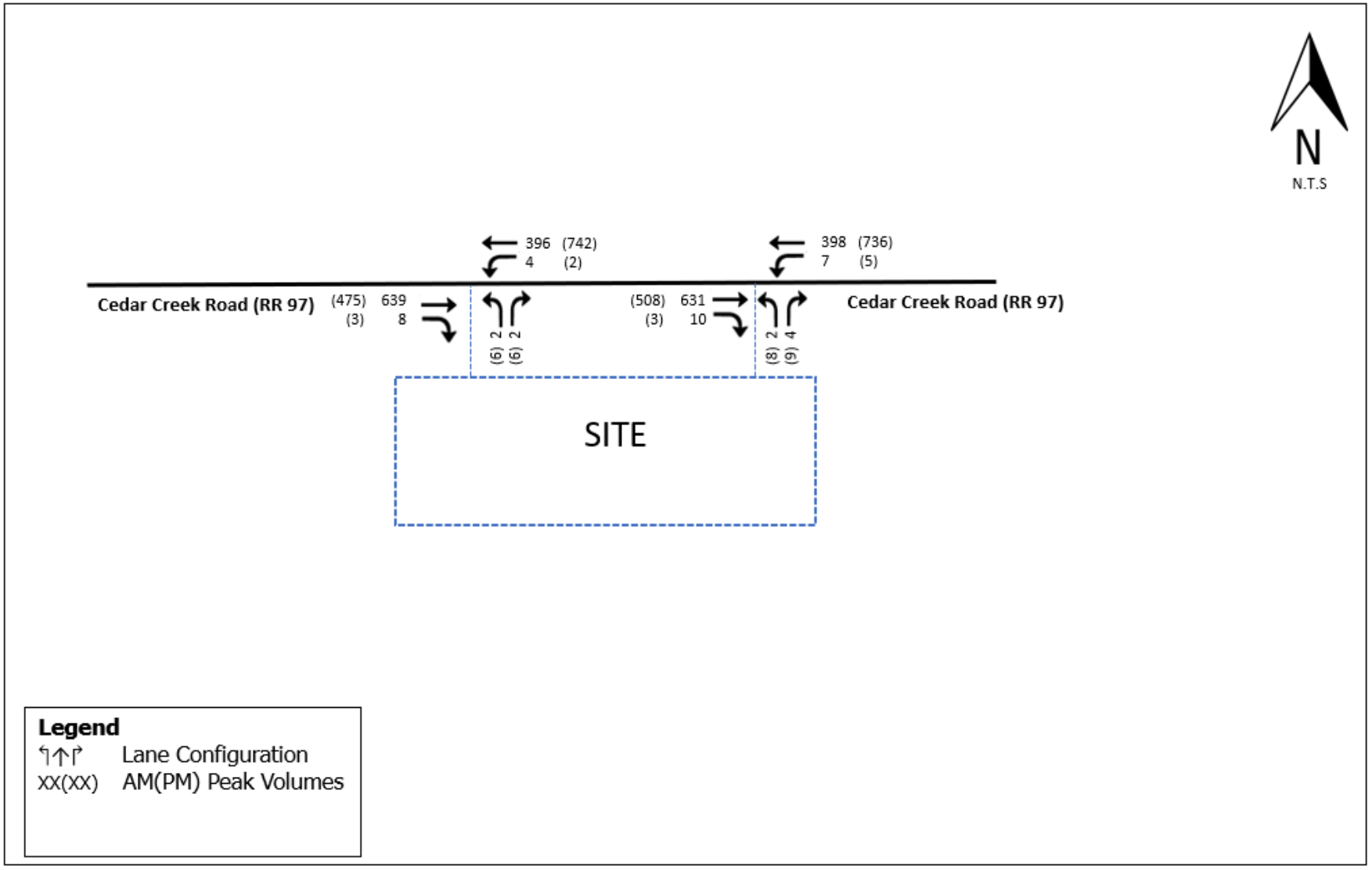


Figure 6 Full Build 2029 Volumes



4.0 TURN LANE/ACCCESS MANAGEMENT

4.1 Left-Turn Lane Cedar Creek Road (RR 97)

The Region's Traffic Impact Study (TIS) guidelines recommend using the Ministry of Transportation (MTO) Geometric Design Guidelines to determine the need for left-turn lanes at unsignalized intersections. These guidelines offer graphical thresholds/warrants based on design speed, advancing traffic, oncoming traffic, and percentage of left turns. **Table 4** presents the Full Build 2029 volumes used in the analysis, with corresponding graphs available in **Appendix D**.

Table 4 Left-Turn Lane Analysis

Driveway	AM/ PM	Approach	Design Speed	Advancing Vol	Opposing Vol	LT Vol	Turn Lane needed?
Cedar Creek Rd (RR 97) & East Site Access	AM	WB	90	405	641	7	Yes
	PM			741	511	5	Yes
Cedar Creek Rd (RR 97) & West Site Access	AM			400	647	4	Yes
	PM			744	478	2	Yes

Based on Full Build 2029 volumes, a westbound left-turn lane from Cedar Creek Road (RR 97) is required for the project accesses. It is **recommended to construct a westbound left-turn lane** at the site access connections to Cedar Creek Road (RR 97).

4.2 Right-Turn Lane on Cedar Creek Road (RR97)

The Region recommends considering right-turn lanes at unsignalized intersections based on level of service (LOS) and operating conditions, as outlined in the Traffic Impact Study (TIS) guidelines. **Table 5** below provides a summary of the LOS at Full Build 2029 Conditions at the access connections to Cedar Creek Road (RR 97).

Table 5 Site Access - Intersection Analysis Summary

Intersection LOS, Delay, and Queue by Movement - 2029 Future Total								
Intersection	Approach	Movement	AM			PM		
			LOS	Delay	Queue	LOS	Delay	Queue
Cedar Creek Rd & East Site Access	EB	TH	Free			Free		
		RT						
	WB	LT	A	8.8	-	A	8.7	-
		TH	Free			Free		
	NB	LT	C	15.4	2 m	C	18.2	3 m
Cedar Creek Rd & West Site Access	EB	TH	Free			Free		
		RT						
	WB	LT	A	8.8	-	A	8.7	-
		TH	Free			Free		
	NB	LT	C	15.4	2 m	C	18.2	3 m

Analysis shows that the access will operate with excellent LOS for all movements, no eastbound right-turn lanes are required.

4.3 Sight Distance

Minimum sight distance requirements were evaluated based on the guidelines provided in the Transportation Association of Canada's *Geometric Design Guide for Canadian Roads, Chapter 9, Intersections (2017)*. The sight distance evaluation was conducted using a design speed of posted speed + 10 km/h.

$$ISD = 0.278\ V_{major}\ t_g \qquad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)

V_{major} = design speed of the major road (km/h)

t_g = time gap for minor road vehicle to enter the major road (s)

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

The calculated intersection sight distance using the above formula and parameters results in the following: Combination Truck (WB 19 and WB 20): 0.278*90*11.5 = 287.73 metres

Table 6 Sightline Distance Review at Cedar Creek Road (RR 97)

Intersection	Design Speed	Decision Sightline		
		Required	East	West
Cedar Creek Rd (RR 97) & East Site Access	90 km/h	288 m	Yes>500m	Yes>500m
Cedar Creek Rd (RR 97) & East Site Access			Yes>500m	Yes>500m

Analysis indicates that decision sight distance requirements on Cedar Creek Road (RR 97) are met looking east and west from the site access connections. Field observations confirm that there are currently no sight distance obstructions at the proposed access points.

Cedar Creek Rd (RR 97) – Looking east

Cedar Creek Rd (RR 97) – Looking west

4.4 Site Circulation Analysis

To confirm the feasibility of the proposed driveway connections and internal loading operations, AutoTURN swept-path analyses were prepared for a **53-ft tractor-trailer**. Two separate turning movement exhibits were generated:

1. Access point maneuvers, and
2. Internal loading space maneuvers.

The AutoTURN diagrams provided in **Appendix E** illustrate that the design can safely accommodate the required vehicle movements.

Access Points

The swept-path analysis for the site access points demonstrates that a 53-ft truck can enter and exit the site without encroaching on opposing lanes or adjacent curb lines. The diagrams show the vehicle completing right-turn and/or left-turn movements with adequate clearance from the driveway edges, indicating that the proposed throat widths and curb radii are sufficient to support heavy-vehicle access.

Internal Loading Spaces

A separate AutoTURN assessment was completed for the selected internal loading areas. The diagrams illustrate the truck performing low-speed maneuvers—approach, alignment, reversing, and pull-out movements—into and out of the designated loading spaces. The analysis confirms that these internal movements can be executed within the available drive aisle width, with no conflicts with parking spaces, landscaping, or building faces.

5.0 CAPACITY ANALYSIS

The Transportation Research Board's Highway Capacity Manual (HCM) utilizes a term "level of service" (LOS) to measure how traffic operates in intersections. There are currently six levels of service ranging from A to F. Level of Service "A" represents the best conditions and Level of Service "F" represents the worst. Synchro software was used to determine the level of service for intersections in the study area. All worksheet reports from the analyses can be found in **Appendix F**.

Table 7 shows the control delay per vehicle associated with LOS A through F for signalized and unsignalized intersections.

Table 7 Highway Capacity Manual Levels of Service and Control Delay

Signalized Intersection		Unsignalized Intersection	
Level of Service	**Control Delay per Vehicle (sec)**	**Level of Service**	**Control Delay per Vehicle (sec)**
A	≤ 10	A	≤ 10
B	> 10 and ≤ 20	B	> 10 and ≤ 15
C	> 20 and ≤ 35	C	> 15 and ≤ 25
D	> 35 and ≤ 55	D	> 25 and ≤ 35
E	> 55 and ≤ 80	E	> 35 and ≤ 50
F	> 80	F	> 50

The following assumptions were made to calibrate Synchro model:

- Ideal saturation flow rate based on the recommendations included in the Regions' Transportation Impact Studies (TIS) *Requirements for Capacity Analysis, Roundabouts, Signal Warrants.*
- 3.5 metres as a standard width for all lanes.
- Truck percentages based on existing volumes and expected truck trip generation

5.1 Cedar Creek Road (RR 97) & East Site Access

Cedar Creek Road (RR 97) & East Site Access is a proposed stop-controlled T-intersection. Future Total 2029 traffic volumes warrant a dedicated left-turn lane for westbound traffic. Consequently, the analysis includes a westbound approach with a left-turn lane and a through lane, while the eastbound and northbound approaches each consist of a single lane.

Table 8 shows the intersection analysis for Future Total (2029) Conditions

Table 8 Cedar Creek Road (RR 97) & East Site Access - Intersection Analysis Summary

Intersection LOS, Delay, and Queue by Movement - 2029 Future Total								
Intersection	Approach	Movement	AM			PM		
			LOS	Delay	Queue	LOS	Delay	Queue
Cedar Creek Rd & East Site Access	EB	TH	Free			Free		
		RT						
	WB	LT	A	8.8	-	A	8.7	-
		TH	Free			Free		
	NB	LT	C	15.4	2 m	C	18.2	3 m
		RT						

Analysis shows that this access connection will experience good levels of service with Full Build 2029 volumes. No critical movements are expected, and minimal queues are anticipated that will not interfere with operations at the adjacent west site access or the adjacent property access.

5.2 Cedar Creek Road (RR 97) & West Site Access

Cedar Creek Road (RR 97) & West Site Access is a proposed stop-controlled T-intersection. Future Total 2029 traffic volumes warrant a dedicated left-turn lane for westbound traffic. Consequently, the analysis includes a westbound approach with a left-turn lane and a through lane, while the eastbound and northbound approaches each consist of a single lane.

Table 9 shows the intersection analysis for Future Total (2029) Conditions

Table 9 Cedar Creek Road (RR 97) & East Site Access - Intersection Analysis Summary

Intersection LOS, Delay, and Queue by Movement - 2029 Future Total								
Intersection	Approach	Movement	AM			PM		
			LOS	Delay	Queue	LOS	Delay	Queue
Cedar Creek Rd & West Site Access	EB	TH	Free			Free		
		RT						
	WB	LT	A	8.8	-	A	8.7	-
		TH	Free			Free		
	NB	LT	C	15.4	2 m	C	18.2	3 m
		RT						

Analysis shows that this access connection will experience good levels of service with Full Build 2029 volumes. No critical movements are expected, and minimal queues are anticipated that will not interfere with operations at the adjacent east site access.

6.0 PARKING REQUIREMENTS

The proposal includes a 107,639-square-foot warehouse and logistics facility with 24 docking bays.

The following table summarizes the Town's Comprehensive Zoning By-law 689-83 parking requirements.

Table 10 Zoning By-law 689-83 Parking Requirements

Type of Use	Size	Zoning By-Law 689-83	
		Rate	Minimum Parking Supply Required
Warehousing	107,639 Sq.Ft. (9,999.99) Sq.m.	1 parking space for each 1,500 square metres of the gross floor area	7 spaces

The development will also include 33 employee parking spaces, 242 trailer parking spaces, and 39 tractor parking spaces. The facility will staff approximately 6 warehouse personnel and 12-16 office staff (22 employees in total). The proposed vehicle parking supply meets the by-law requirements.

7.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

Transportation Demand Management (TDM) refers to a variety of strategies to reduce congestion, minimize the number of single-occupant vehicles, encourage non-auto modes of travel, and reduce vehicle dependency to create a sustainable transportation system. TDM strategies have multiple benefits including the following:

- Reduced auto-related emissions to improve air quality;
- Decreased traffic congestion to reduce travel time;
- Increased travel options for businesses and commuters; and
- Reduced personal transportation costs and energy consumptions.

The combined benefits listed above will assist in creating a more active and livable community through improvements to overall active transportation facilities for local businesses and the surrounding community.

Typical TDM measures that could be incorporated at the site include:

- Carpool ride sharing;
- Parking supply and management strategies;
- Establishment of Transportation Management Associations (TMAs) in employment areas;
- Programs to promote flexible working hours; and,
- Application of incident management systems and Intelligent Transportation System (ITS) innovations.

8.0 SUMMARY AND CONCLUSIONS

This Transportation Study is in support of a proposed warehouse development located at 3027 Cedar Creek Road (RR 97) in the Town of North Dumfries, Waterloo Region.

Proposed Development

The proposal includes a 107,639-square-foot warehouse and logistics facility with 24 docking bays (19 loading, 5 repair) along its southern façade. A stormwater management facility is also proposed to the immediate west. The development will also include 33 employee parking spaces, 233 trailer parking spaces, and 39 tractor parking spaces.

Trip Generation

Trip generation estimates indicate that using Gross Floor Area (GFA) as an independent variable correlates with higher vehicle and truck volumes. To account for this, the study conservatively estimated 37 and 39 new two-way vehicle trips, and 2 and 3 new two-way truck trips, to the adjacent network during weekday AM and PM peak hours, respectively.

Turn Lanes

It is **recommended to construct a westbound left-turn lane** at the Cedar Creek Road (RR 97) & East Site Access intersection.

It is **recommended to construct a westbound left-turn lane** at the Cedar Creek Road (RR 97) & West Site Access intersection.

Traffic Impacts

Analysis shows that this access connection will experience good levels of service with Full Build 2029 volumes. No critical movements are expected, and minimal queues are anticipated that will not interfere with operations at the adjacent site accesses or the adjacent property access.

Appendix A:

Existing Traffic Volumes

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Morning Peak Diagram

Count Period
From: 7:30 AM
To: 10:30 AM

Peak Hour
From: 7:30 AM
To: 8:30 AM

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22

North Leg Total:	19
North Entering:	5
North Peds:	0
Peds Cross:	⋈

% Trks	33%	0%	100%	
Heavys	0	0	2	2
Trucks	1	0	0	1
Cars	2	0	0	2
Total	3	0	2	

Heavys	0
Trucks	1
Cars	13
Total	14

East Leg Total:	895
East Entering:	265
East Peds:	0
Peds Cross:	⧖

Heavys	Trucks	Cars	Total
60	15	268	343

Driveway

Total	Cars	Trucks	Heavys	% Trks
3	3	0	0	0%
154	122	5	27	21%
108	75	3	30	31%
	200	8	57	

Cedar Creek Rd

N
W E
S

% Trks	Heavys	Trucks	Cars	Total
0%	0	0	2	2
16%	55	8	343	406
6%	5	0	77	82
	60	8	422	

Cedar Creek Rd

Cars	Trucks	Heavys	Total
511	17	102	630

Hwy 401 WB Ramp

Total	186	9	222	
Cars	144	8	168	320
Trucks	9	1	9	19
Heavys	33	0	45	78
% Trks	23%	11%	24%	

Peds Cross:	⧖
West Peds:	0
West Entering:	490
West leg Total:	833

Heavys	35
Trucks	3
Cars	152
Total	190

Peds Cross:	⋈
South Peds:	0
South Entering:	417
South leg Total:	607

Comments

To determine total vehicles entering the intersection during morning peak hour, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **1,177**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **490**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Mid-day Peak Diagram

Count Period
From: 12:00 PM
To: 2:00 PM

Peak Hour
From: 12:45 PM
To: 1:45 PM

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22

North Leg Total: 13
North Entering: 6
North Peds: 0
Peds Cross: ⋈

% Trks	0%	0%	33%	
Heavys	0	0	2	2
Trucks	0	0	0	0
Cars	0	0	4	4
Total	0	0	6	

Heavys	2
Trucks	0
Cars	5
Total	7

East Leg Total: 675
East Entering: 232
East Peds: 0
Peds Cross: ⧖

Heavys	Trucks	Cars	Total
61	12	222	295

Driveway

Total	Cars	Trucks	Heavys	% Trks
3	2	0	1	33%
144	110	5	29	24%
85	52	1	32	39%
	164	6	62	

N
W E
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Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
0%	0	0	2	2
27%	60	13	193	266
35%	12	5	32	49
	72	18	227	

Cedar Creek Rd

Cars	Trucks	Heavys	Total
295	20	128	443

Hwy 401 WB Ramp

Total	151	2	171	
Cars	112	1	98	211
Trucks	7	0	7	14
Heavys	32	1	66	99
% Trks	26%	50%	43%	

Peds Cross: ⧖
West Peds: 0
West Entering: 317
West leg Total: 612

Heavys	44
Trucks	6
Cars	84
Total	134

Peds Cross: ⋈
South Peds: 0
South Entering: 324
South leg Total: 458

Comments

To determine total vehicles entering the intersection during mid-day peak hour, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **879**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **317**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Afternoon Peak Diagram

Count Period
From: 3:00 PM
To: 6:00 PM

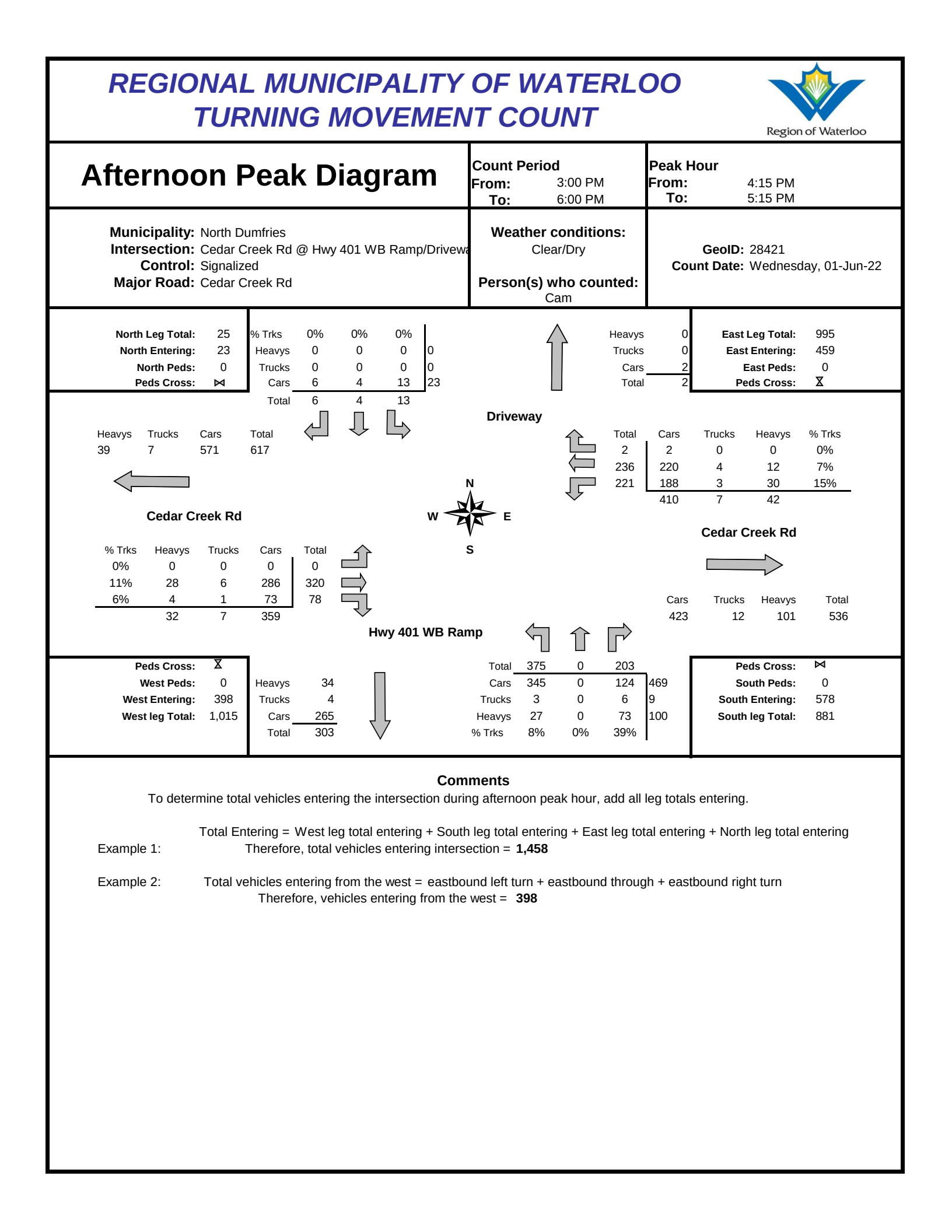
Peak Hour
From: 4:15 PM
To: 5:15 PM

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22



Comments

To determine total vehicles entering the intersection during afternoon peak hour, add all leg totals entering.

Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering

Example 1: Therefore, total vehicles entering intersection = **1,458**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn

Therefore, vehicles entering from the west = **398**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Total Count Diagram

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22

North Leg Total:	141
North Entering:	81
North Peds:	0
Peds Cross:	⋈
Bicycles Entering:	0
Buggies Entering:	0

% Trks	10%	0%	24%	
Heavys	2	0	9	11
Trucks	1	0	2	3
Cars	28	4	35	67
Total	31	4	46	

Heavys	10
Trucks	3
Cars	47
Total	60

East Leg Total:	6,121
East Entering:	2,345
East Peds:	0
Peds Cross:	⧖
Bicycles Entering:	0
Buggies Entering:	0

Heavys	Trucks	Cars	Total
459	81	2,509	3,049

Driveway

Total	Cars	Trucks	Heavys	% Trks
22	14	0	8	36%
1,358	1,089	38	231	20%
965	722	21	222	25%
	1,825	59	461	

Cedar Creek Rd

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Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
9%	1	1	21	23
19%	367	70	1,905	2,342
15%	60	14	434	508
	428	85	2,360	

Cars	Trucks	Heavys	Total
2,802	132	842	3,776

Hwy 401 WB Ramp

Total	1,660	15	1,388	
Cars	1,392	12	862	2,266
Trucks	42	2	60	104
Heavys	226	1	466	693
% Trks	16%	20%	38%	

Peds Cross:	⧖
West Peds:	0
West Entering:	2,873
West leg Total:	5,922
Bicycles Entering:	0
Buggies Entering:	0

Heavys	282
Trucks	35
Cars	1,160
Total	1,477

Peds Cross:	⋈
South Peds:	2
South Entering:	3,063
South leg Total:	4,540
Bicycles Entering:	0
Buggies Entering:	0

Comments

To determine total vehicles entering the intersection, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **8,362**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **2,873**

Notes: None

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Estimated Daily Traffic

Total Factor = Monthly Factor 1 x Daily Factor 1 x 24 Hour Factor 1.74 = 1.740000

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22

North Leg Total: 245
North Entering: 141
North Peds: N/A
Peds Cross: ⋈

% Trks	10%	0%	24%	
Heavys	3	0	16	19
Trucks	2	0	3	5
Cars	49	7	61	117
Total	54	7	80	

Heavys	Trucks	Cars	Total
799	141	4,366	5,305

Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
9%	2	2	37	40
19%	639	122	3,315	4,075
15%	104	24	755	884
	745	148	4,106	

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Driveway

Heavys	17
Trucks	5
Cars	82
Total	104

East Leg Total: 10,651
East Entering: 4,080
East Peds: N/A
Peds Cross: ⧖

Total	Cars	Trucks	Heavys	% Trks
38	24	0	14	36%
2,363	1,895	66	402	20%
1,679	1,256	37	386	25%
	3,176	103	802	

Cedar Creek Rd

Cars	Trucks	Heavys	Total
4,875	230	1,465	6,570

Hwy 401 WB Ramp

Total	2,888	26	2,415	
Cars	2,422	21	1,500	3,943
Trucks	73	3	104	181
Heavys	393	2	811	1,206
% Trks	16%	20%	38%	

Peds Cross: ⧖
West Peds: N/A
West Entering: 4,999
West leg Total: 10,304

Heavys	491
Trucks	61
Cars	2,018
Total	2,570

Peds Cross: ⋈
South Peds: N/A
South Entering: 5,330
South leg Total: 7,900

Comments

To determine the EDT (Estimated Daily Traffic), add all four leg totals and divide by two.
This will give you the approximate number of vehicles entering and exiting the intersection in a 24-hour period

Example: $\frac{\text{(West leg total + South leg total + East leg total + North leg total)}}{2}$ ***EDT =*** ***14,550***

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Peak Hour Factor By Movement

Municipality: North Dumfries
Intersection: Cedar Creek Rd @ Hwy 401 WB Ramp/Driveway
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 28421
Count Date: Wednesday, 01-Jun-22

North Approach PHF

AM Peak:	0.42
Mid-day Peak:	0.50
PM Peak:	0.30

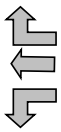
East Approach PHF

AM Peak:	0.95
Mid-day Peak:	0.84
PM Peak:	0.89

AM AM Peak Hour
MID Mid-day Peak Hour
PM PM Peak Hour

	Movement		
PM	0.25	0.33	0.33
MID	0.00	0.00	0.50
AM	0.38	0.00	0.25

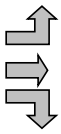
Driveway



AM	MID	PM	Movement
0.38	0.75	0.50	
0.90	0.80	0.88	
0.82	0.85	0.86	

Cedar Creek Rd

Movement	PM	MID	AM
	0.00	0.25	0.50
	0.83	0.83	0.84
	0.89	0.77	0.89



Cedar Creek Rd

Hwy 401 WB Ramp

0.95	0.56	0.80	AM	
0.86	0.50	0.91	MID	
0.85	0.00	0.94	PM	
Movement				

West Approach PHF

AM Peak:	0.85
Mid-day Peak:	0.83
PM Peak:	0.87

South Approach PHF

AM Peak:	0.85
Mid-day Peak:	0.89
PM Peak:	0.89

Comments

Intersection: Cedar Creek Rd @ Hwy 401 WB Ra
GeoID: 28421
Municipality: North Dumfries
Major Road: Cedar Creek Rd

Intersection Control: Signalized
Date: Wednesday, 01-Jun-22
Name: Cam
Weather: Clear/Dry

			EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND			TOTAL	TOTAL HOUR
Approach Control			***Signalized***			***Signalized***			***Signalized***			***Signalized***				
7:30	to	7:45	0	121	23	23	43	2	40	2	55	0	0	0	309	
7:45	to	8:00	1	115	20	33	34	0	49	4	69	2	0	1	328	
8:00	to	8:15	0	81	19	30	39	1	48	2	59	0	0	2	281	
8:15	to	8:30	1	89	20	22	38	0	49	1	39	0	0	0	259	1,177
8:30	to	8:45	0	96	16	28	46	1	28	0	30	0	0	2	247	1,115
8:45	to	9:00	3	82	16	22	42	0	25	2	37	0	0	2	231	1,018
9:00	to	9:15	1	53	12	25	48	4	24	0	38	1	0	1	207	944
9:15	to	9:30	1	57	13	26	41	1	30	0	28	1	0	1	199	884
9:30	to	9:45	2	62	16	24	29	2	23	0	40	4	0	0	202	839
9:45	to	10:00	0	56	21	15	43	0	22	0	35	0	0	1	193	801
10:00	to	10:15	0	67	14	15	33	0	28	0	21	0	0	1	179	773
10:15	to	10:30	0	66	11	33	29	0	35	0	35	2	0	0	211	785
AM Peak Hour																
7:30	**to**	**8:30**	**2**	**406**	**82**	**108**	**154**	**3**	**186**	**9**	**222**	**2**	**0**	**3**	**1,177**	
# of trucks in peak			0	8	0	3	5	0	9	1	9	0	0	1	36	
# of heavies in peak			0	55	5	30	27	0	33	0	45	2	0	0	197	
% heavies (Total)			0%	16%	6%	31%	21%	0%	23%	11%	24%	100%	0%	33%	20%	
12:00	to	12:15	0	60	9	16	36	0	34	0	33	4	0	7	199	
12:15	to	12:30	6	67	8	18	37	2	28	0	49	0	0	3	218	
12:30	to	12:45	4	64	16	19	47	1	29	1	35	0	0	2	218	
12:45	to	13:00	0	58	15	18	35	1	42	1	43	1	0	0	214	849
13:00	to	13:15	0	59	10	25	30	0	32	0	40	0	0	0	196	846
13:15	to	13:30	0	80	16	23	45	1	33	1	41	3	0	0	243	871
13:30	to	13:45	2	69	8	19	34	1	44	0	47	2	0	0	226	879
13:45	to	14:00	0	58	12	22	26	2	29	0	51	1	0	0	201	866
Midday Peak Hour																
12:45	**to**	**13:45**	**2**	**266**	**49**	**85**	**144**	**3**	**151**	**2**	**171**	**6**	**0**	**0**	**879**	
# of trucks in peak			0	13	5	1	5	0	7	0	7	0	0	0	38	
# of heavies in peak			0	60	12	32	29	1	32	1	66	2	0	0	235	
% heavies (Total)			0%	27%	35%	39%	24%	33%	26%	50%	43%	33%	0%	0%	31%	
15:00	to	15:15	2	65	19	26	42	0	45	0	55	0	0	0	254	
15:15	to	15:30	0	48	13	31	40	1	65	0	48	2	0	0	248	
15:30	to	15:45	0	75	16	45	56	0	77	0	49	3	0	1	322	
15:45	to	16:00	0	87	15	33	47	0	92	0	49	1	0	0	324	1,148
16:00	to	16:15	0	81	20	52	48	0	100	0	59	3	0	1	364	1,258
16:15	to	16:30	0	67	17	58	59	0	110	0	52	0	0	0	363	1,373
16:30	to	16:45	0	96	19	53	67	1	106	0	54	2	0	0	398	1,449
16:45	to	17:00	0	75	20	46	45	1	91	0	48	1	1	0	328	1,453
17:00	to	17:15	0	82	22	64	65	0	68	0	49	10	3	6	369	1,458
17:15	to	17:30	0	77	19	38	55	0	89	0	31	2	0	0	311	1,406
17:30	to	17:45	0	73	21	30	45	0	86	1	38	1	0	0	295	1,303
17:45	to	18:00	0	56	12	33	34	0	59	0	31	0	0	0	225	1,200
PM Peak Hour																
16:15	**to**	**17:15**	**0**	**320**	**78**	**221**	**236**	**2**	**375**	**0**	**203**	**13**	**4**	**6**	**1,458**	
# of trucks in peak			0	6	1	3	4	0	3	0	6	0	0	0	23	
# of heavies in peak			0	28	4	30	12	0	27	0	73	0	0	0	174	
% heavies (Total)			0%	11%	6%	15%	7%	0%	8%	0%	39%	0%	0%	0%	14%	

Intersection: Cedar Creek Rd @ Hwy 401 WB Ran
GeoID: 28421
Municipality: North Dumfries
Major Road: Cedar Creek Rd

Intersection Control: Signalized
Date: Wednesday, 01-Jun-22
Name: Cam
Weather: Clear/Dry

PEDESTRIAN CROSSING

Time			Crossing Approach					
			East App.	West App.	North App.	South App.	TOTAL	TOTAL HOUR
7:30	to	7:45	0	0	0	0	0	
7:45	to	8:00	0	0	0	0	0	
8:00	to	8:15	0	0	0	0	0	
8:15	to	8:30	0	0	0	0	0	0
8:30	to	8:45	0	0	0	0	0	0
8:45	to	9:00	0	0	0	0	0	0
9:00	to	9:15	0	0	0	0	0	0
9:15	to	9:30	0	0	0	0	0	0
9:30	to	9:45	0	0	0	1	1	1
9:45	to	10:00	0	0	0	0	0	1
10:00	to	10:15	0	0	0	0	0	1
10:15	to	10:30	0	0	0	0	0	1
AM Peak Hour							**1**	
7:30	**to**	**8:30**	**0**	**0**	**0**	**0**	**0**	
12:00	to	12:15	0	0	0	1	1	
12:15	to	12:30	0	0	0	0	0	
12:30	to	12:45	0	0	0	0	0	
12:45	to	13:00	0	0	0	0	0	1
13:00	to	13:15	0	0	0	0	0	0
13:15	to	13:30	0	0	0	0	0	0
13:30	to	13:45	0	0	0	0	0	0
13:45	to	14:00	0	0	0	0	0	0
Midday Peak Hour							**1**	
12:45	**to**	**13:45**	0	0	0	0	**0**	
15:00	to	15:15	0	0	0	0	0	
15:15	to	15:30	0	0	0	0	0	
15:30	to	15:45	0	0	0	0	0	
15:45	to	16:00	0	0	0	0	0	0
16:00	to	16:15	0	0	0	0	0	0
16:15	to	16:30	0	0	0	0	0	0
16:30	to	16:45	0	0	0	0	0	0
16:45	to	17:00	0	0	0	0	0	0
17:00	to	17:15	0	0	0	0	0	0
17:15	to	17:30	0	0	0	0	0	0
17:30	to	17:45	0	0	0	0	0	0
17:45	to	18:00	0	0	0	0	0	0
PM Peak Hour							**0**	
16:15	**to**	**17:15**	0	0	0	0	**0**	

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Morning Peak Diagram

Count Period
From: 7:30 AM
To: 10:30 AM

Peak Hour
From: 7:30 AM
To: 8:30 AM

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22

North Leg

North Leg Total:	329
North Entering:	144
North Peds:	0
Peds Cross:	⋈

% Trks	14%	12%	7%	
Heavys	0	8	2	10
Trucks	1	3	1	5
Cars	6	83	40	129
Total	7	94	43	

East Leg

Heavys	7
Trucks	1
Cars	177
Total	185

East Leg Total:	777
East Entering:	311
East Peds:	0
Peds Cross:	⧖

Cedar Creek Rd (approach)

Heavys	Trucks	Cars	Total
37	10	241	288

Northumberland St

Total	Cars	Trucks	Heavys	% Trks
11	9	1	1	18%
150	118	5	27	21%
150	125	5	20	17%
	252	11	48	

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Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
0%	0	0	5	5
13%	24	4	183	211
7%	6	0	80	86
	30	4	268	

Cedar Creek Rd (departure)

Cars	Trucks	Heavys	Total
415	7	44	466

Northumberland St

Total	131	169	212	
Cars	117	163	192	472
Trucks	4	0	2	6
Heavys	10	6	18	34
% Trks	11%	4%	9%	

West Leg

Peds Cross:	⧖
West Peds:	0
West Entering:	302
West leg Total:	590

Heavys	34
Trucks	8
Cars	288
Total	330

South Leg

Peds Cross:	⋈
South Peds:	0
South Entering:	512
South leg Total:	842

Comments

To determine total vehicles entering the intersection during morning peak hour, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **1,269**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **302**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Mid-day Peak Diagram

Count Period
From: 12:00 PM
To: 2:00 PM

Peak Hour
From: 12:30 PM
To: 1:30 PM

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22

Northumberland St

North Leg Total:	193
North Entering:	116
North Peds:	0
Peds Cross:	⋈

% Trks	20%	17%	16%	
Heavys	1	9	1	11
Trucks	0	6	3	9
Cars	4	71	21	96
Total	5	86	25	

Heavys	5
Trucks	6
Cars	66
Total	77

East Leg Total:	589
East Entering:	290
East Peds:	0
Peds Cross:	⧖

Cedar Creek Rd

Heavys	Trucks	Cars	Total
34	1	137	172

	Total	Cars	Trucks	Heavys	% Trks
	10	9	0	1	10%
	126	95	1	30	25%
	154	121	10	23	21%
		225	11	54	

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Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
0%	0	0	5	5
30%	34	6	94	134
22%	8	3	38	49
	42	9	137	

Cars	Trucks	Heavys	Total
224	17	58	299

Northumberland St

Peds Cross:	⧖
West Peds:	0
West Entering:	188
West leg Total:	360

Heavys	40
Trucks	19
Cars	230
Total	289

Total	41	62	140	
Cars	38	52	109	199
Trucks	0	6	8	14
Heavys	3	4	23	30
% Trks	7%	16%	22%	

Peds Cross:	⋈
South Peds:	0
South Entering:	243
South leg Total:	532

Comments

To determine total vehicles entering the intersection during mid-day peak hour, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **837**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **188**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Afternoon Peak Diagram

Count Period
From: 3:00 PM
To: 6:00 PM

Peak Hour
From: 4:00 PM
To: 5:00 PM

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22

North Leg Total: 362
North Entering: 207
North Peds: 0
Peds Cross: ⋈

% Trks	25%	3%	0%	
Heavys	1	3	0	4
Trucks	0	3	0	3
Cars	3	166	31	200
Total	4	172	31	

Heavys	Trucks	Cars	Total
24	9	380	413

Heavys	0
Trucks	2
Cars	153
Total	155

East Leg Total: 994
East Entering: 639
East Peds: 0
Peds Cross: ⧖

Northumberland St

Total	Cars	Trucks	Heavys	% Trks
18	18	0	0	0%
293	267	6	20	9%
328	304	1	23	7%
	589	7	43	

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Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
0%	0	0	5	5
13%	16	3	129	148
10%	3	7	87	97
	19	10	221	

Cedar Creek Rd

Cars	Trucks	Heavys	Total
317	8	30	355

Northumberland St

Total	116	132	176	
Cars	110	130	157	397
Trucks	3	2	5	10
Heavys	3	0	14	17
% Trks	5%	2%	11%	

Peds Cross: ⧖
West Peds: 0
West Entering: 250
West leg Total: 663

Heavys	29
Trucks	11
Cars	557
Total	597

Peds Cross: ⋈
South Peds: 0
South Entering: 424
South leg Total: 1,021

Comments

To determine total vehicles entering the intersection during afternoon peak hour, add all leg totals entering.

Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering

Example 1: Therefore, total vehicles entering intersection = **1,520**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn

Therefore, vehicles entering from the west = **250**

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

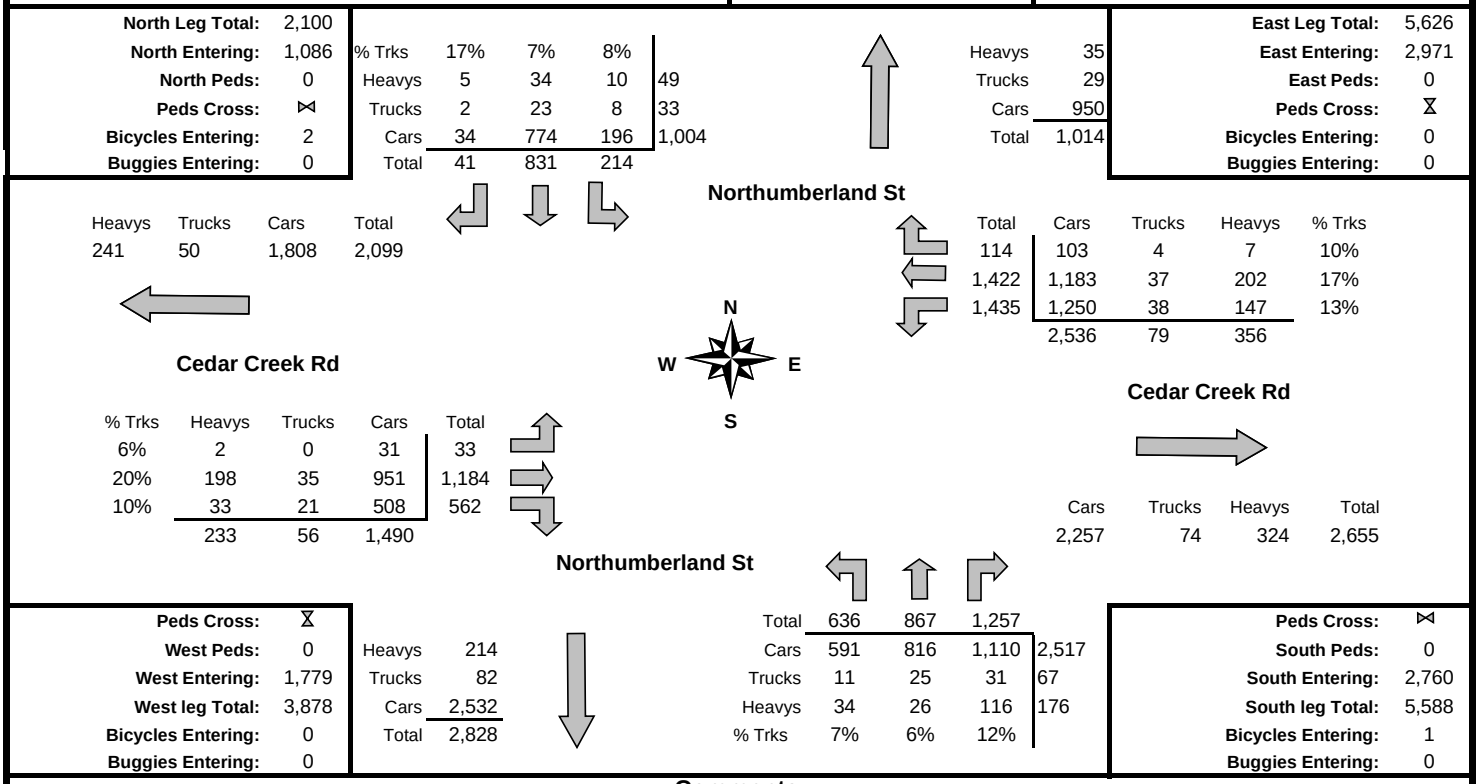
Total Count Diagram

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22



Comments

To determine total vehicles entering the intersection, add all leg totals entering.

Example 1: Total Entering = West leg total entering + South leg total entering + East leg total entering + North leg total entering
Therefore, total vehicles entering intersection = **8,596**

Example 2: Total vehicles entering from the west = eastbound left turn + eastbound through + eastbound right turn
Therefore, vehicles entering from the west = **1,779**

Notes: None

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Estimated Daily Traffic

Total Factor = Monthly Factor 1 x Daily Factor 1 x 24 Hour Factor 1.74 = 1.740000

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22

North Leg Total: 3,654
North Entering: 1,890
North Peds: N/A
Peds Cross: ⋈

	% Trks	17%	7%	8%	
Heavys	9	59	17	85
Trucks	3	40	14	57
Cars	59	1,347	341	1,747
Total	71	1,446	372	

Heavys	61
Trucks	50
Cars	1,653
Total	1764

East Leg Total: 9,789
East Entering: 5,170
East Peds: N/A
Peds Cross: ⧖

Heavys	Trucks	Cars	Total
419	87	3,146	3,652

Northumberland St

	Total	Cars	Trucks	Heavys	% Trks
	198	179	7	12	10%
	2,474	2,058	64	351	17%
	2,497	2,175	66	256	13%
		4,413	137	619	

N
W E
S

Cedar Creek Rd

% Trks	Heavys	Trucks	Cars	Total
6%	3	0	54	57
20%	345	61	1,655	2,060
10%	57	37	884	978
	405	97	2,593	

Cedar Creek Rd

Cars	Trucks	Heavys	Total
3,927	129	564	4,620

Northumberland St

Total	1,107	1,509	2,187
Cars	1,028	1,420	1,931	4,380
Trucks	19	44	54	117
Heavys	59	45	202	306
% Trks	7%	6%	12%	

Peds Cross: ⧖
West Peds: N/A
West Entering: 3,095
West leg Total: 6,748

Heavys	372
Trucks	143
Cars	4,406
Total	4,921

Peds Cross: ⋈
South Peds: N/A
South Entering: 4,802
South leg Total: 9,723

Comments

To determine the EDT (Estimated Daily Traffic), add all four leg totals and divide by two.
This will give you the approximate number of vehicles entering and exiting the intersection in a 24-hour period

Example: $\frac{\text{(West leg total + South leg total + East leg total + North leg total)}}{2}$ ***EDT =*** ***14,957***

REGIONAL MUNICIPALITY OF WATERLOO
TURNING MOVEMENT COUNT

Region of Waterloo

Peak Hour Factor By Movement

Municipality: North Dumfries
Intersection: Northumberland St @ Cedar Creek Rd
Control: Signalized
Major Road: Cedar Creek Rd

Weather conditions: Clear/Dry

Person(s) who counted: Cam

GeoID: 21462
Count Date: Wednesday, 01-Jun-22

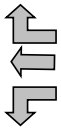
North Approach PHF

AM Peak:	0.82
Mid-day Peak:	0.74
PM Peak:	0.91

	Movement		
PM	0.50	0.90	0.86
MID	0.63	0.74	0.69
AM	0.35	0.73	0.63

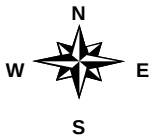
Northumberland St

AM AM Peak Hour
MID Mid-day Peak Hour
PM PM Peak Hour



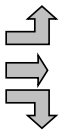
AM	MID	PM	
0.55	0.63	0.75	
0.87	0.95	0.93	Movement
0.87	0.88	0.87	

Cedar Creek Rd



Cedar Creek Rd

Movement	PM	MID	AM
	0.63	0.63	0.42
	0.86	0.70	0.85
	0.84	0.72	0.72



Northumberland St

0.62	0.77	0.68	AM	
0.64	0.78	0.95	MID	
0.91	0.87	0.90	PM	
Movement				

West Approach PHF

AM Peak:	0.82
Mid-day Peak:	0.71
PM Peak:	0.87

South Approach PHF

AM Peak:	0.69
Mid-day Peak:	0.91
PM Peak:	0.93

Comments

Intersection: Northumberland St @ Cedar Creek
GeoID: 21462
Municipality: North Dumfries
Major Road: Cedar Creek Rd

Intersection Control: Signalized
Date: Wednesday, 01-Jun-22
Name: Cam
Weather: Clear/Dry

			EASTBOUND			WESTBOUND			NORTHBOUND			SOUTHBOUND			TOTAL	TOTAL HOUR
Approach Control			***Signalized***			***Signalized***			***Signalized***			***Signalized***				
7:30	to	7:45	3	61	13	41	37	0	53	55	78	17	22	5	385	
7:45	to	8:00	0	62	30	43	30	3	25	35	46	10	32	2	318	
8:00	to	8:15	1	43	28	34	43	5	24	42	46	9	14	0	289	
8:15	to	8:30	1	45	15	32	40	3	29	37	42	7	26	0	277	1,269
8:30	to	8:45	1	48	20	31	39	3	32	30	58	6	23	2	293	1,177
8:45	to	9:00	1	44	23	28	36	5	13	33	38	8	19	1	249	1,108
9:00	to	9:15	2	30	19	24	34	2	16	17	28	3	19	0	194	1,013
9:15	to	9:30	1	25	10	22	37	4	9	23	36	6	9	0	182	918
9:30	to	9:45	0	31	13	18	31	0	19	28	38	7	13	1	199	824
9:45	to	10:00	0	32	12	31	30	0	16	25	35	10	17	0	208	783
10:00	to	10:15	1	32	9	28	27	4	8	18	30	4	9	1	171	760
10:15	to	10:30	1	28	14	18	35	2	9	21	40	9	18	0	195	773
AM Peak Hour																
7:30	**to**	**8:30**	**5**	**211**	**86**	**150**	**150**	**11**	**131**	**169**	**212**	**43**	**94**	**7**	**1,269**	
# of trucks in peak			0	4	0	5	5	1	4	0	2	1	3	1	26	
# of heavies in peak			0	24	6	20	27	1	10	6	18	2	8	0	122	
% heavies (Total)			0%	13%	7%	17%	21%	18%	11%	4%	9%	7%	12%	14%	12%	
12:00	to	12:15	0	29	10	52	20	1	17	21	39	1	22	2	214	
12:15	to	12:30	0	29	15	37	27	3	10	20	36	5	9	1	192	
12:30	to	12:45	1	48	17	36	31	4	9	12	35	4	17	1	215	
12:45	to	13:00	1	18	11	44	33	3	11	17	37	9	29	1	214	835
13:00	to	13:15	2	28	11	32	29	1	16	20	31	8	19	2	199	820
13:15	to	13:30	1	40	10	42	33	2	5	13	37	4	21	1	209	837
13:30	to	13:45	2	32	8	41	33	1	9	20	38	4	17	3	208	830
13:45	to	14:00	0	29	6	22	25	4	17	23	31	6	20	2	185	801
Midday Peak Hour																
12:30	**to**	**13:30**	**5**	**134**	**49**	**154**	**126**	**10**	**41**	**62**	**140**	**25**	**86**	**5**	**837**	
# of trucks in peak			0	6	3	10	1	0	0	6	8	3	6	0	43	
# of heavies in peak			0	34	8	23	30	1	3	4	23	1	9	1	137	
% heavies (Total)			0%	30%	22%	21%	25%	10%	7%	16%	22%	16%	17%	20%	22%	
15:00	to	15:15	1	41	18	40	34	5	12	19	38	5	28	1	242	
15:15	to	15:30	1	21	14	43	51	3	17	24	23	9	33	1	240	
15:30	to	15:45	1	60	25	61	70	8	22	25	28	4	37	3	344	
15:45	to	16:00	1	41	22	57	70	6	19	39	43	5	47	2	352	1,178
16:00	to	16:15	2	43	27	76	74	4	27	38	49	7	37	0	384	1,320
16:15	to	16:30	2	32	17	84	79	4	31	23	42	7	43	1	365	1,445
16:30	to	16:45	0	43	29	94	77	4	26	34	48	9	44	2	410	1,511
16:45	to	17:00	1	30	24	74	63	6	32	37	37	8	48	1	361	1,520
17:00	to	17:15	1	39	22	64	81	8	33	32	48	5	31	1	365	1,501
17:15	to	17:30	2	38	15	71	75	8	27	30	44	5	58	3	376	1,512
17:30	to	17:45	1	33	35	65	61	6	21	36	37	6	24	0	325	1,427
17:45	to	18:00	1	29	20	50	37	2	22	20	21	7	26	1	236	1,302
PM Peak Hour																
16:00	**to**	**17:00**	**5**	**148**	**97**	**328**	**293**	**18**	**116**	**132**	**176**	**31**	**172**	**4**	**1,520**	
# of trucks in peak			0	3	7	1	6	0	3	2	5	0	3	0	30	
# of heavies in peak			0	16	3	23	20	0	3	0	14	0	3	1	83	
% heavies (Total)			0%	13%	10%	7%	9%	0%	5%	2%	11%	0%	3%	25%	7%	

Intersection: Northumberland St @ Cedar Creek R
GeoID: 21462
Municipality: North Dumfries
Major Road: Cedar Creek Rd

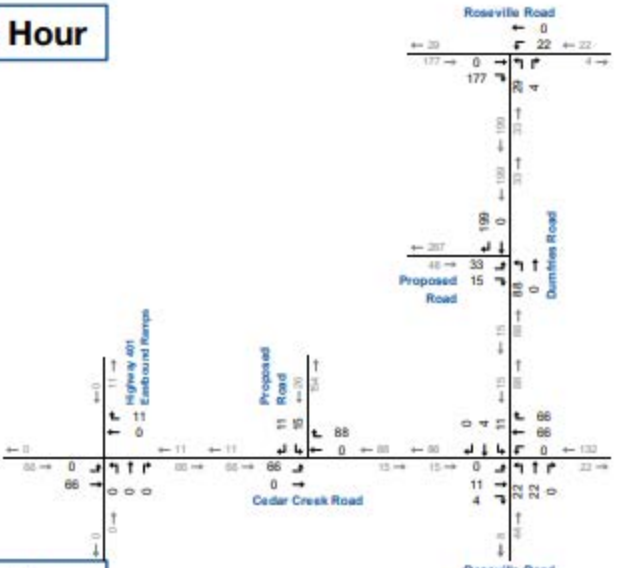
Intersection Control: Signalized
Date: Wednesday, 01-Jun-22
Name: Cam
Weather: Clear/Dry

PEDESTRIAN CROSSING								
Time			Crossing Approach					
			East App.	West App.	North App.	South App.	TOTAL	TOTAL HOUR
7:30	to	7:45	0	0	0	0	0	
7:45	to	8:00	0	0	0	0	0	
8:00	to	8:15	0	0	0	0	0	
8:15	to	8:30	0	0	0	0	0	0
8:30	to	8:45	0	0	0	0	0	0
8:45	to	9:00	0	0	0	0	0	0
9:00	to	9:15	0	0	0	0	0	0
9:15	to	9:30	0	0	0	0	0	0
9:30	to	9:45	0	0	0	0	0	0
9:45	to	10:00	0	0	0	0	0	0
10:00	to	10:15	0	0	0	0	0	0
10:15	to	10:30	0	0	0	0	0	0
AM Peak Hour							**0**	
7:30	**to**	**8:30**	**0**	**0**	**0**	**0**	**0**	
12:00	to	12:15	0	0	0	0	0	
12:15	to	12:30	0	0	0	0	0	
12:30	to	12:45	0	0	0	0	0	
12:45	to	13:00	0	0	0	0	0	0
13:00	to	13:15	0	0	0	0	0	0
13:15	to	13:30	0	0	0	0	0	0
13:30	to	13:45	0	0	0	0	0	0
13:45	to	14:00	0	0	0	0	0	0
Midday Peak Hour							**0**	
12:30	**to**	**13:30**	0	0	0	0	**0**	
15:00	to	15:15	0	0	0	0	0	
15:15	to	15:30	0	0	0	0	0	
15:30	to	15:45	0	0	0	0	0	
15:45	to	16:00	0	0	0	0	0	0
16:00	to	16:15	0	0	0	0	0	0
16:15	to	16:30	0	0	0	0	0	0
16:30	to	16:45	0	0	0	0	0	0
16:45	to	17:00	0	0	0	0	0	0
17:00	to	17:15	0	0	0	0	0	0
17:15	to	17:30	0	0	0	0	0	0
17:30	to	17:45	0	0	0	0	0	0
17:45	to	18:00	0	0	0	0	0	0
PM Peak Hour							**0**	
16:00	**to**	**17:00**	0	0	0	0	**0**	

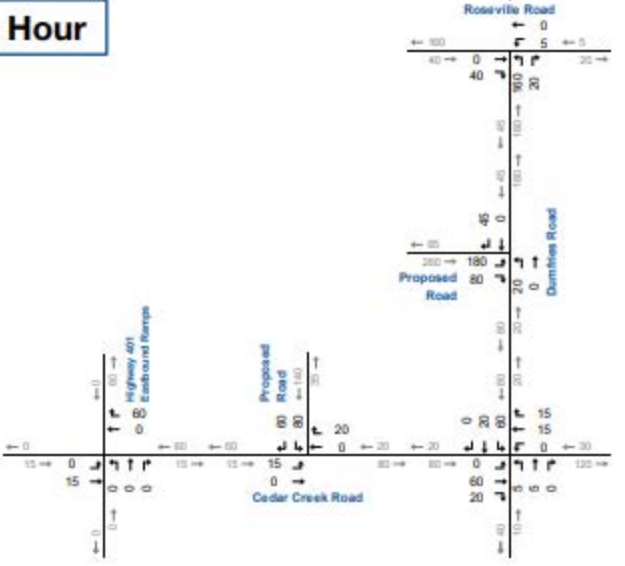
Appendix B:

Background Development Studies - Site Trips

AM Peak Hour

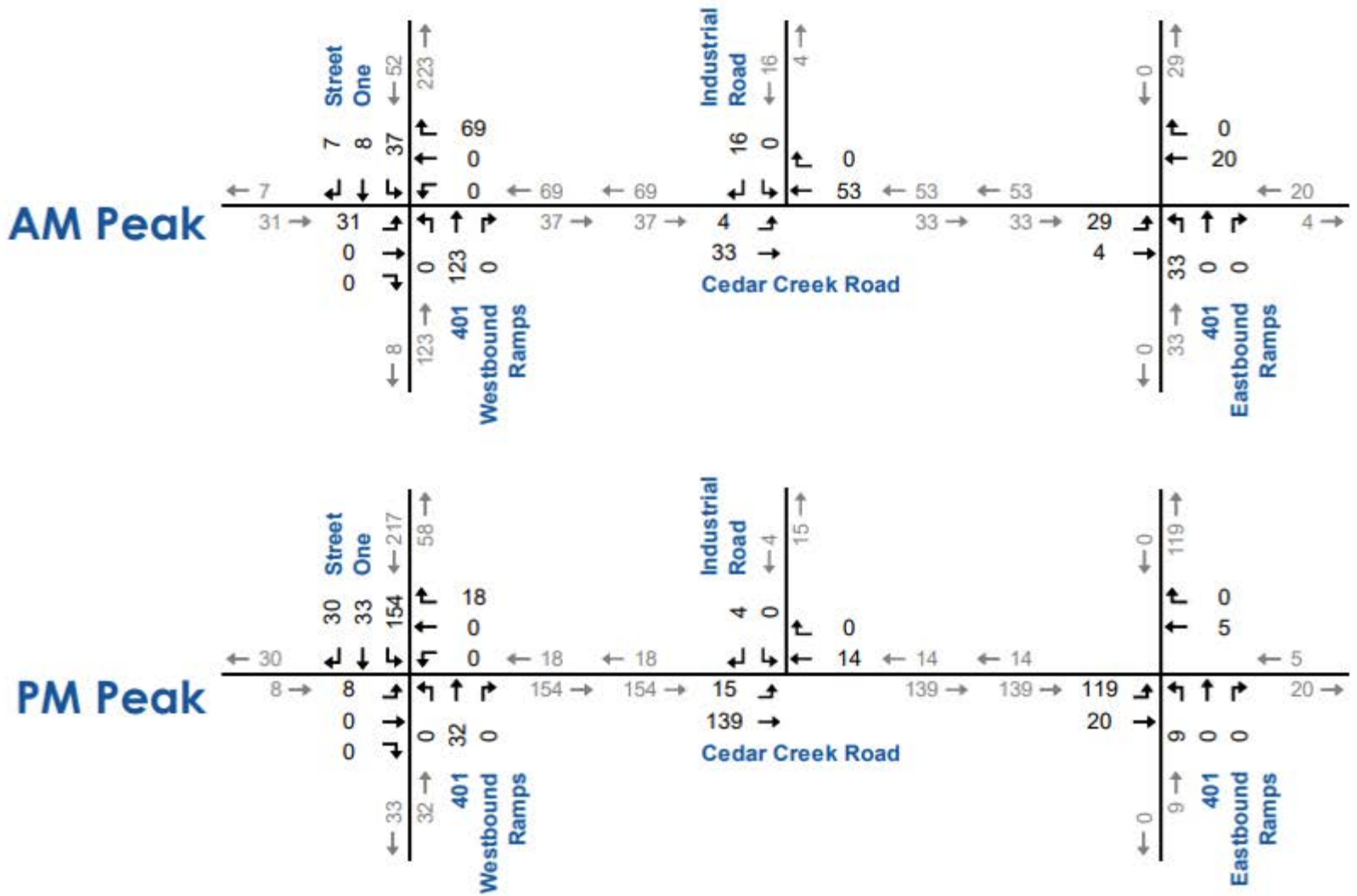


PM Peak Hour



paradigm TRANSPORTATION SOLUTIONS LIMITED

Site-Generated Traffic Forecasts



Site-Generated Traffic Forecasts

2804 Cedar Creek Road, Industrial Subdivision
190641

Figure 3.2

Appendix C:

Trip Generation Graphs

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

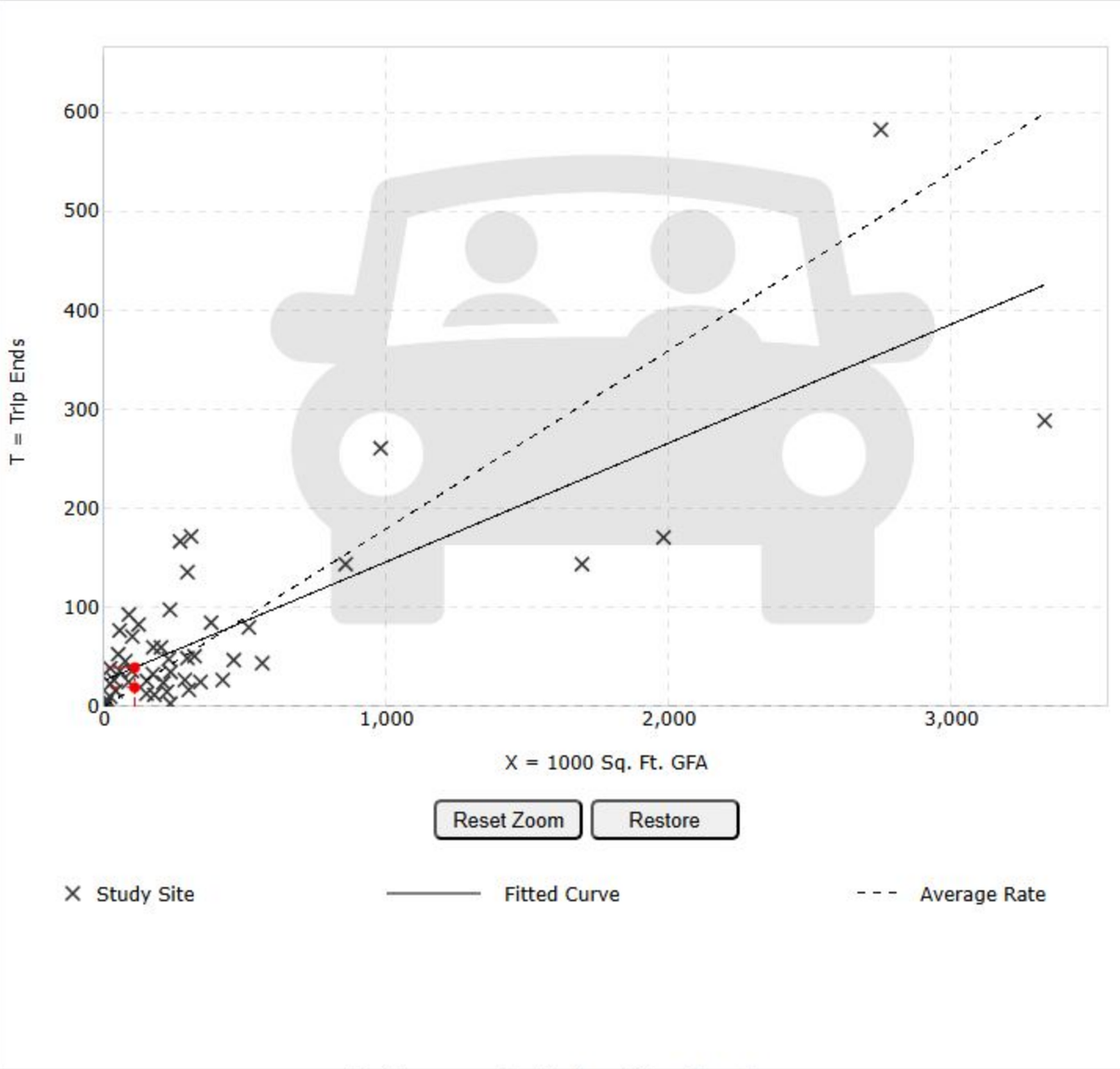
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
108 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
49

Avg. 1000 Sq. Ft. GFA:
400

Average Rate:
0.18

Range of Rates:
0.01 - 1.80

Standard Deviation:
0.18

Fitted Curve Equation:
T = 0.12(X) + 26.48

R^2:
0.65

Directional Distribution:
28% entering, 72% exiting

Calculated Trip Ends:
Average Rate: 19 (Total), 5 (Entry), 14 (Exit)
Fitted Curve: 39 (Total), 11 (Entry), 28 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

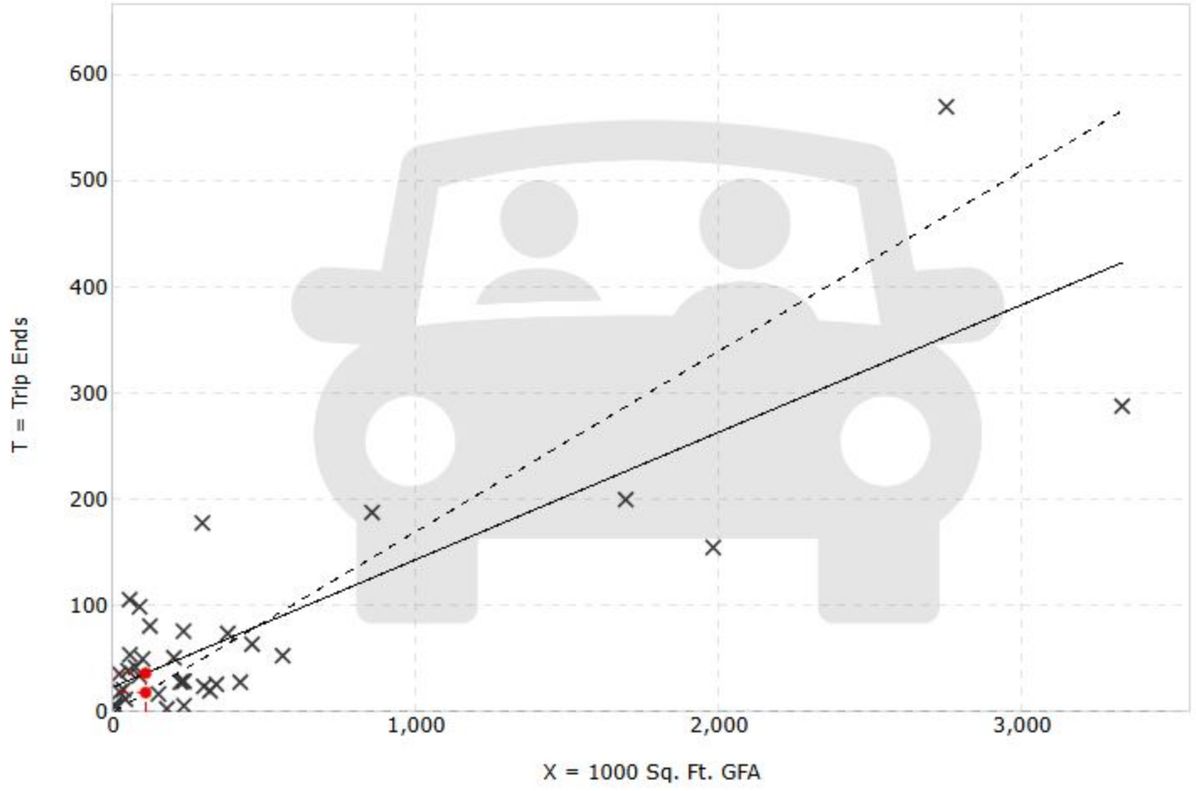
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
108 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
36

Avg. 1000 Sq. Ft. GFA:
448

Average Rate:
0.17

Range of Rates:
0.02 - 1.93

Standard Deviation:
0.19

Fitted Curve Equation:
T = 0.12(X) + 23.62

R^2:
0.69

Directional Distribution:
77% entering, 23% exiting

Calculated Trip Ends:
Average Rate: 18 (Total), 14 (Entry), 4 (Exit)
Fitted Curve: 37 (Total), 28 (Entry), 9 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
108 Calculate

Data Plot and Equation

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
21

Avg. 1000 Sq. Ft. GFA:
309

Average Rate:
0.02

Range of Rates:
0.00 - 0.69

Standard Deviation:
0.05

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 2 (Total), 1 (Entry), 1 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

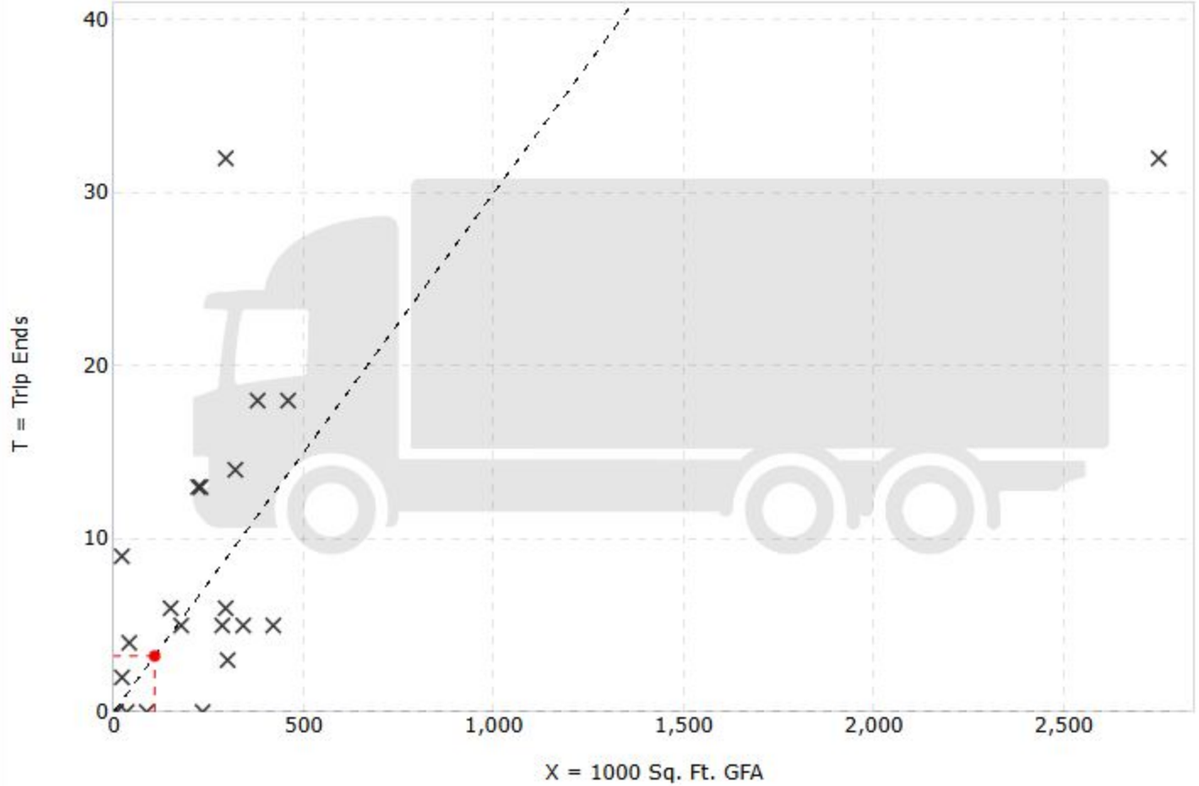
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
108
Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
23

Avg. 1000 Sq. Ft. GFA:
308

Average Rate:
0.03

Range of Rates:
0.00 - 0.42

Standard Deviation:
0.03

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 3 (Total), 2 (Entry), 1 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

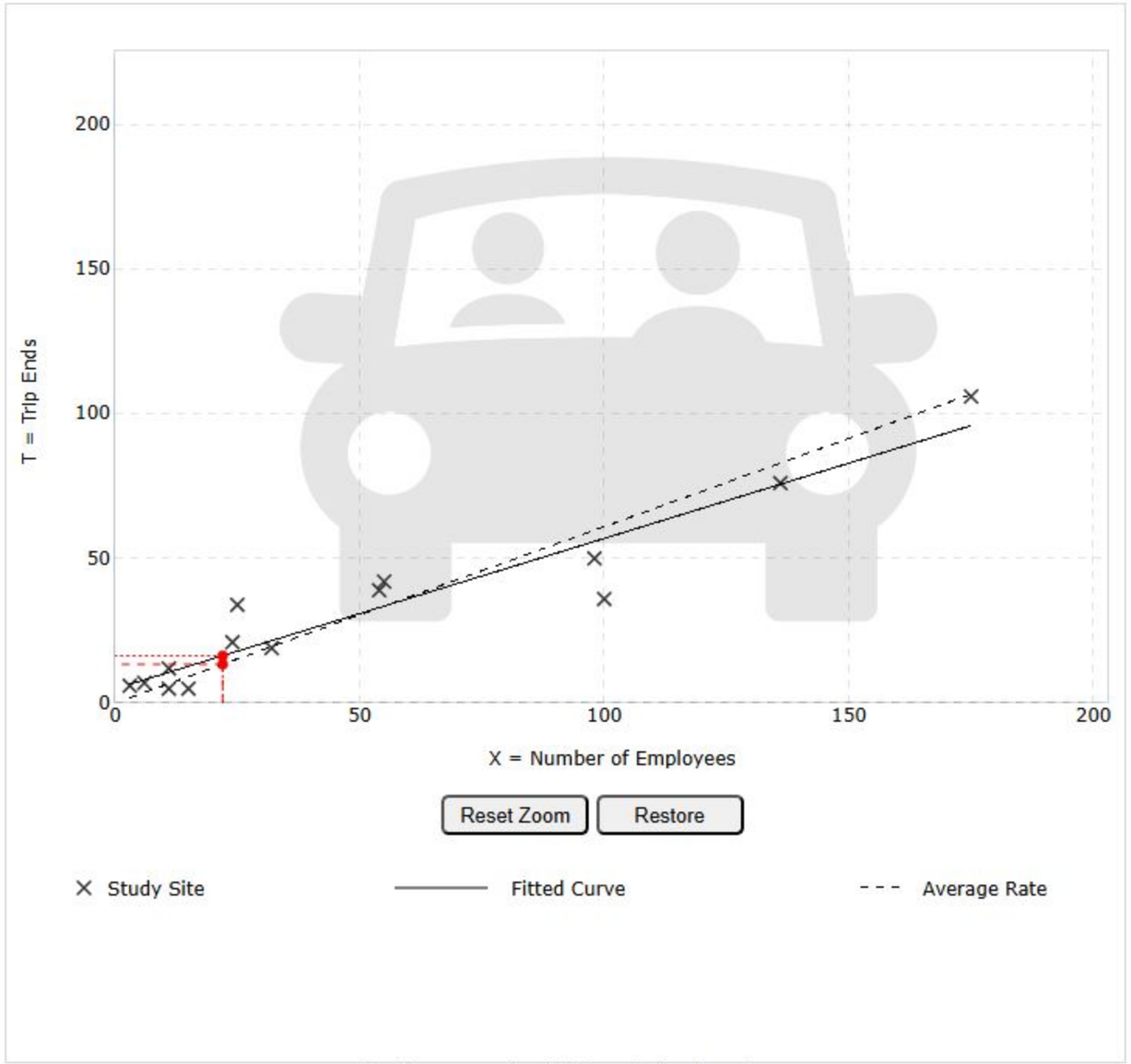
INDEPENDENT VARIABLE (IV):
Employees

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
22 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
Employees

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
14

Avg. Num. of Employees:
53

Average Rate:
0.61

Range of Rates:
0.33 - 2.00

Standard Deviation:
0.23

Fitted Curve Equation:
T = 0.52(X) + 4.93

R^2:
0.91

Directional Distribution:
72% entering, 28% exiting

Calculated Trip Ends:
Average Rate: 13 (Total), 10 (Entry), 3 (Exit)
Fitted Curve: 16 (Total), 12 (Entry), 4 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

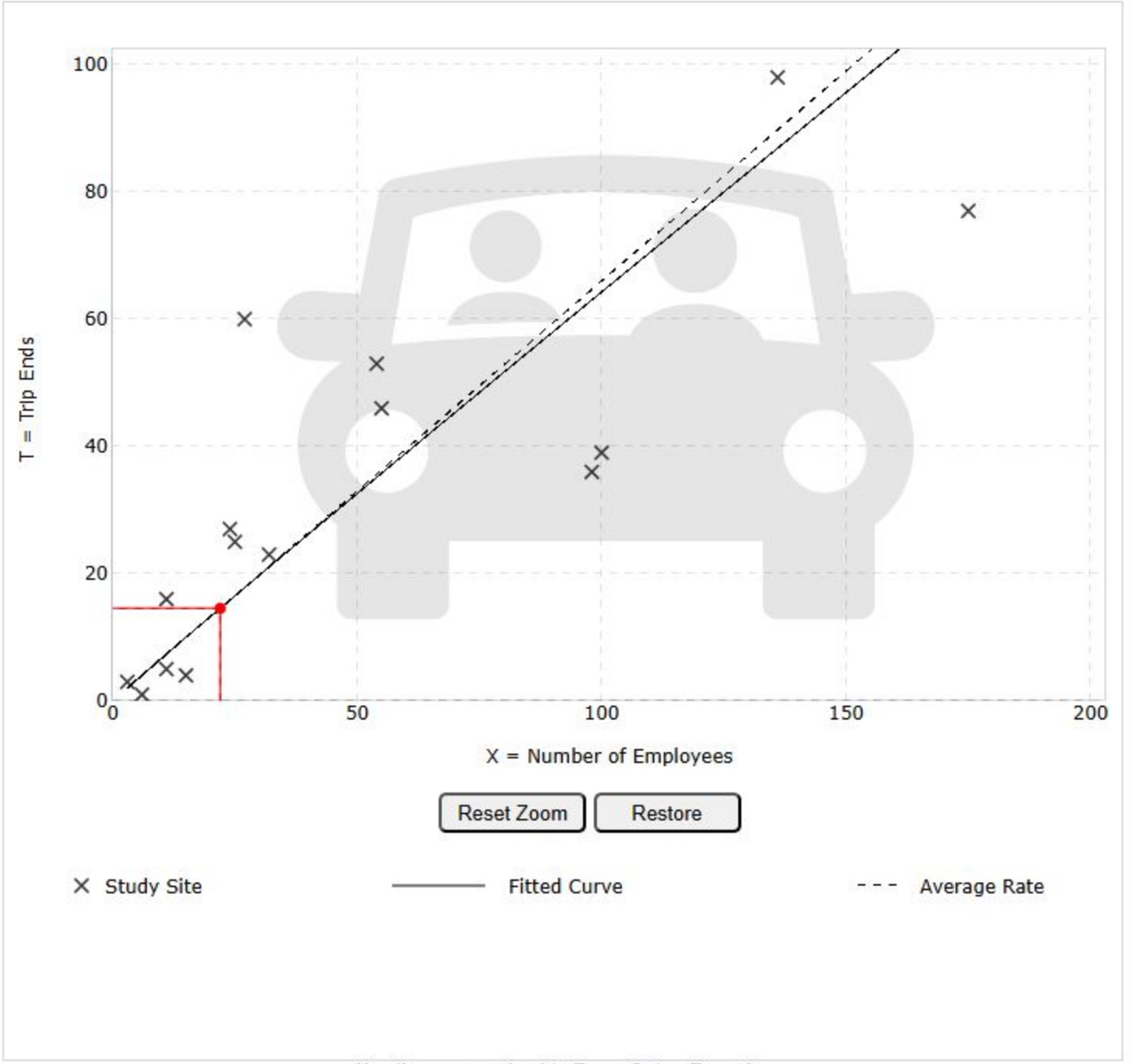
INDEPENDENT VARIABLE (IV):
Employees

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
22 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
Employees

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
15

Avg. Num. of Employees:
51

Average Rate:
0.66

Range of Rates:
0.17 - 2.22

Standard Deviation:
0.40

Fitted Curve Equation:
Ln(T) = 0.98 Ln(X) - 0.35

R^2:
0.74

Directional Distribution:
36% entering, 64% exiting

Calculated Trip Ends:
Average Rate: 15 (Total), 5 (Entry), 10 (Exit)
Fitted Curve: 15 (Total), 5 (Entry), 10 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

INDEPENDENT VARIABLE (IV):
Employees

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
22 Calculate

Data Plot and Equation

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
Employees

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
9

Avg. Num. of Employees:
25

Average Rate:
0.09

Range of Rates:
0.00 - 1.00

Standard Deviation:
0.14

Fitted Curve Equation:
T = 0.14(X) - 1.32

R^2:
0.77

Directional Distribution:
33% entering, 67% exiting

Calculated Trip Ends:
Average Rate: 2 (Total), 1 (Entry), 1 (Exit)
Fitted Curve: 2 (Total), 1 (Entry), 1 (Exit)

Query | Filter

DATA SOURCE:
Trip Generation Manual, 11th Ed

SEARCH BY LAND USE CODE:
150

LAND USE GROUP:
(100-199) Industrial

LAND USE :
150 - Warehousing

LAND USE SUBCATEGORY:
All Sites

SETTING/LOCATION:
General Urban/Suburban

INDEPENDENT VARIABLE (IV):
Employees

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

TRIP TYPE:
Truck

ENTER IV VALUE TO CALCULATE TRIPS:
22 Calculate

Data Plot and Equation

Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for Description and Data Plots

Independent Variable:
Employees

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
9

Avg. Num. of Employees:
25

Average Rate:
0.07

Range of Rates:
0.00 - 0.36

Standard Deviation:
0.08

Fitted Curve Equation:
T = 0.09(X) - 0.60

R^2:
0.74

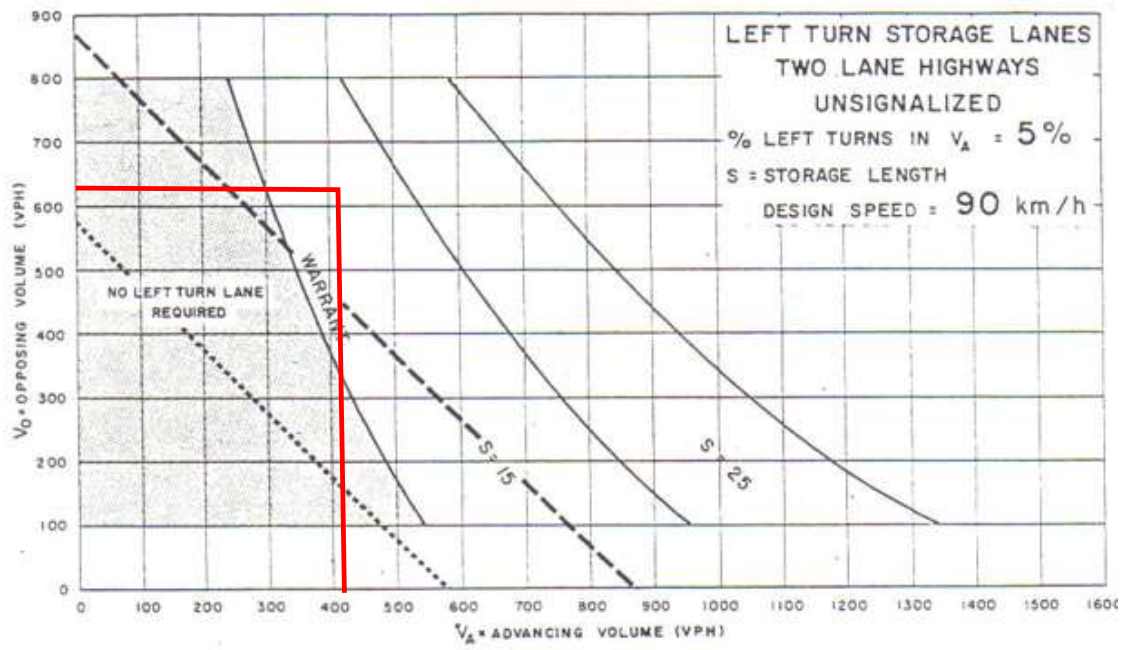
Directional Distribution:
53% entering, 47% exiting

Calculated Trip Ends:
Average Rate: 2 (Total), 1 (Entry), 1 (Exit)
Fitted Curve: 1 (Total), 1 (Entry), 0 (Exit)

Appendix D:

Left-turn Lane Warrants/Graphs

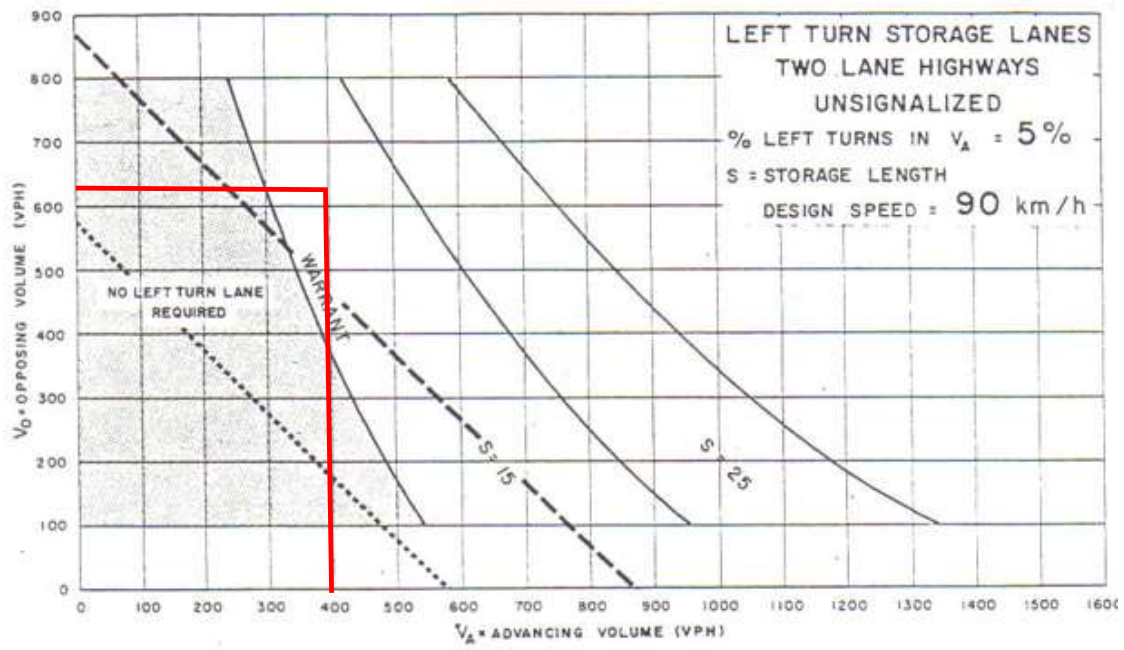
Cedar Creek Rd at East Site Access – AM Peak Hour



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

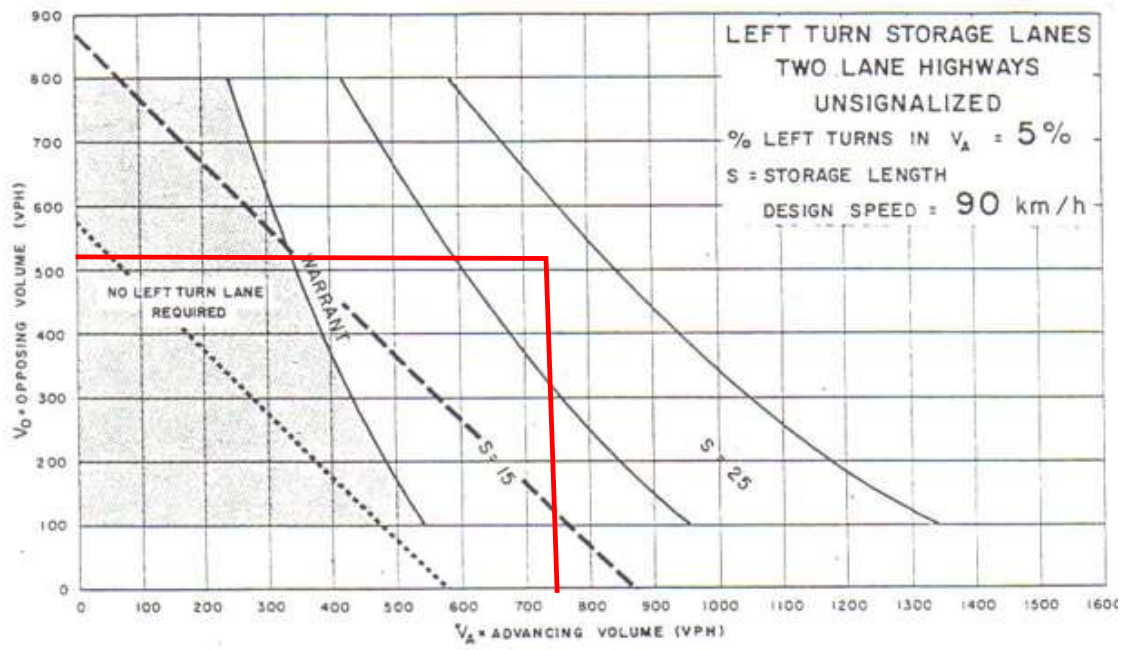
Cedar Creek Rd at West Site Access – AM Peak Hour



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

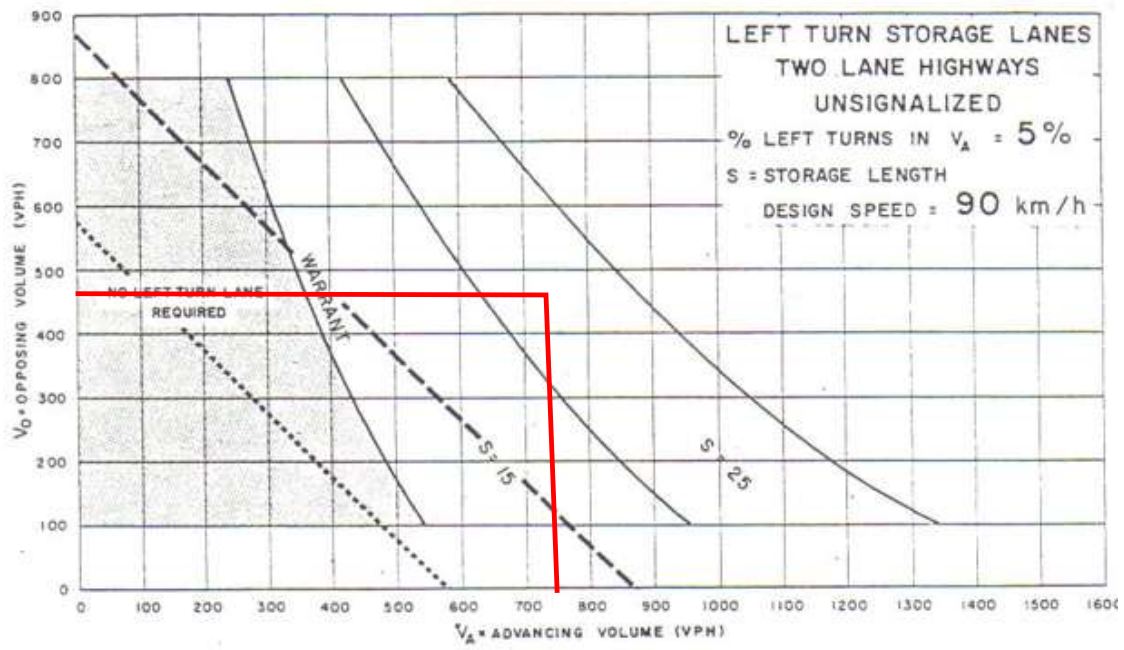
Cedar Creek Rd at East Site Access – PM Peak Hour



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

Cedar Creek Rd at West Site Access – PM Peak Hour

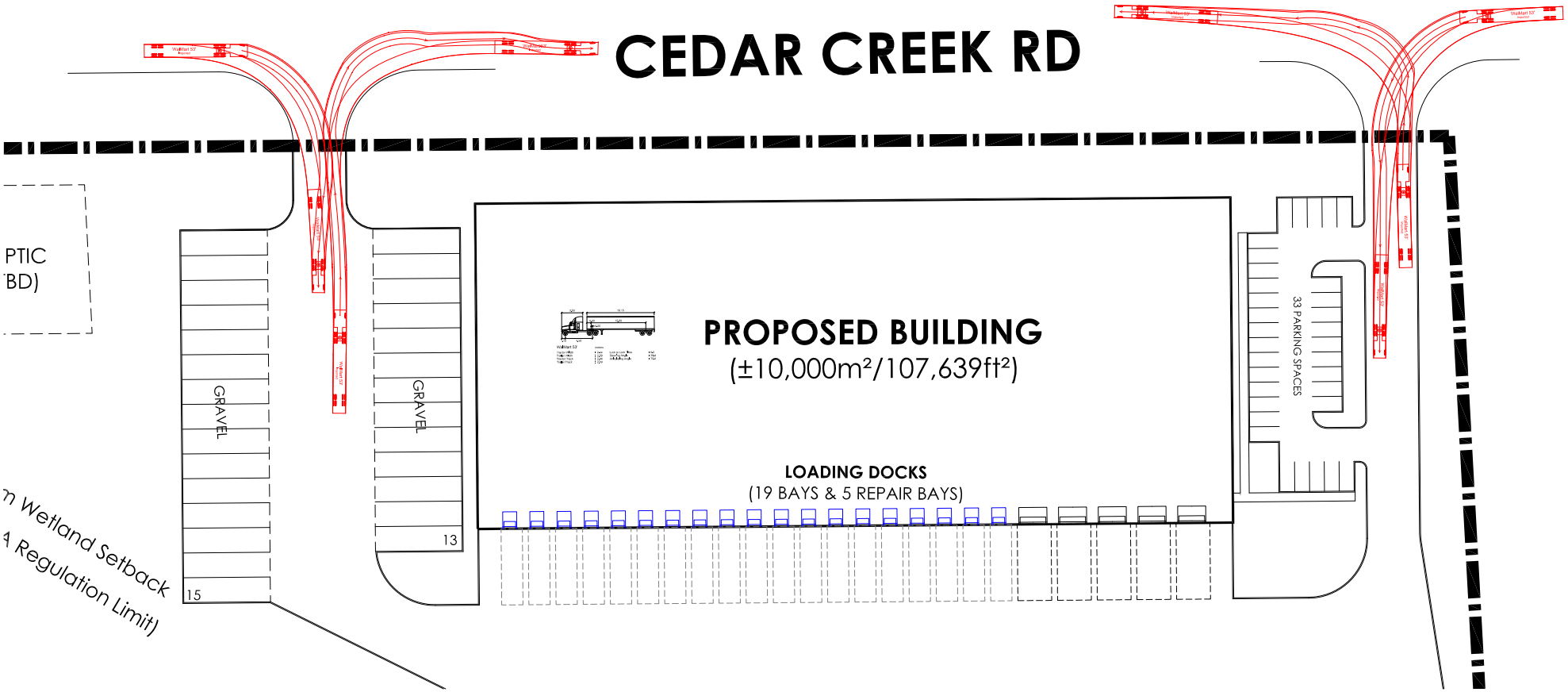


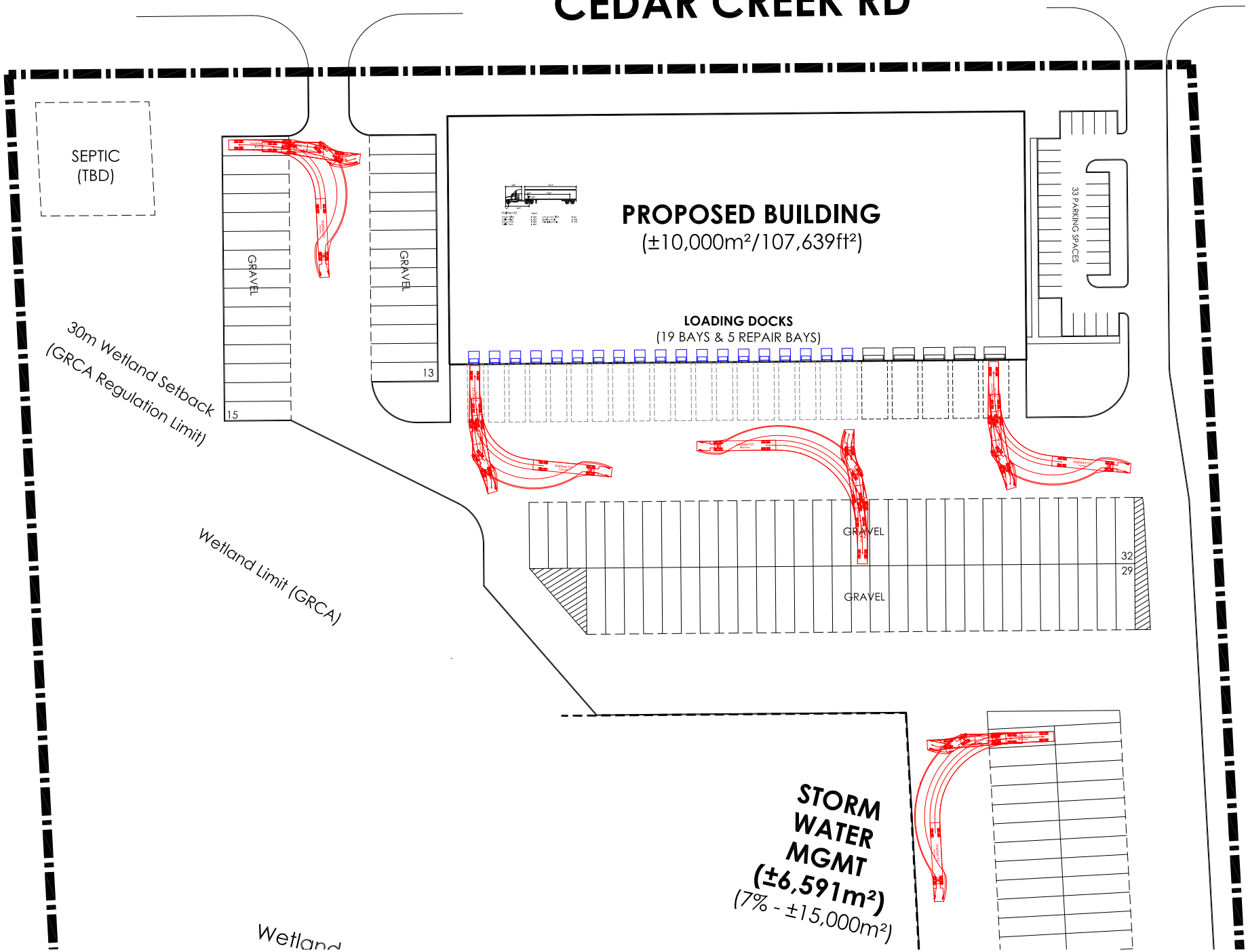
TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

Appendix E:

AutoTurn Analysis


CEDAR CREEK RD
PROPOSED BUILDING
(±10,000m²/107,639ft²)
LOADING DOCKS
(19 BAYS & 5 REPAIR BAYS)
33 PARKING SPACES
GRAVEL
GRAVEL
13
15
PTIC
BD)
n Wetland Setback
A Regulation Limit)


CEDAR CREEK RD
SEPTIC
(TBD)
PROPOSED BUILDING
(±10,000m²/107,639ft²)
33 PARKING SPACES
LOADING DOCKS
(19 BAYS & 5 REPAIR BAYS)
GRAVEL
GRAVEL
15
13
30m Wetland Setback
(GRCA Regulation Limit)
Wetland Limit (GRCA)
GRAVEL
GRAVEL
32
29
STORM
WATER
MGMT
(±6,591m²)
(7% - ±15,000m²)
Wetland

Appendix F:

Synchro Analysis Output

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	631	10	7	395	2	4
Future Vol, veh/h	631	10	7	395	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	0	0	21	0	25
Mvmt Flow	631	10	7	395	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	641	0	1045	636
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	409	-
Critical Hdwy	-	-	4.1	-	6.4	6.45
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.525
Pot Cap-1 Maneuver	-	-	953	-	256	439
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	675	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	953	-	254	439
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	531	-
Stage 2	-	-	-	-	670	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	353	-	-	953	-
HCM Lane V/C Ratio	0.017	-	-	0.007	-
HCM Control Delay (s)	15.4	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	639	8	4	396	2	2
Future Vol, veh/h	639	8	4	396	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	13	13	0	21	0	0
Mvmt Flow	639	8	4	396	2	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	647	0	1047	643
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	404	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	948	-	255	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	948	-	254	477
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	676	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	331	-	-	948	-
HCM Lane V/C Ratio	0.012	-	-	0.004	-
HCM Control Delay (s)	16	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	508	3	5	736	8	9
Future Vol, veh/h	508	3	5	736	8	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	0	20	7	0	11
Mvmt Flow	508	3	5	736	8	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	511	0	1256	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	746	-
Critical Hdwy	-	-	4.3	-	6.4	6.31
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.38	-	3.5	3.399
Pot Cap-1 Maneuver	-	-	968	-	191	546
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	968	-	190	546
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	470	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	290	-	-	968	-
HCM Lane V/C Ratio	0.059	-	-	0.005	-
HCM Control Delay (s)	18.2	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	475	3	2	742	6	6
Future Vol, veh/h	475	3	2	742	6	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	33	0	7	0	0
Mvmt Flow	475	3	2	742	6	6

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	478	0	1223	477
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	746	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1095	-	200	592
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	472	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1095	-	200	592
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	471	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	299	-	-	1095	-
HCM Lane V/C Ratio	0.04	-	-	0.002	-
HCM Control Delay (s)	17.5	-	-	8.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-