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Transportation Engineering and Planning

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July 4, 2023

Doug Taylor
2396584 Ontario Inc.
10310 6th Line
Georgetown, ON · L7G 4S6

Re: Transportation Brief – Proposed Industrial Subdivision
6739 Wellington Road 109, Teviotdale

Dear Doug,

This Transportation Brief has been prepared in support of a proposed industrial subdivision at 6739 Wellington Road 109 in Teviotdale. The site is located on the west side of Wellington Road 109 just north of the roundabout intersection with Wellington Road 7 and Wellington Road 9 and south of the Ontario Provincial Police site as illustrated in the attached Site Location Plan.

The proposal includes a new industrial subdivision with 12 developable lots and supporting infrastructure for development. Transportation access would be provided via a new road (Street A) connecting to Wellington Road 109 at the north edge of the Wellington Road 109 frontage. The entire site is about 8.26 hectares in size and the developable lots make up about 6.12 hectares. The proposed Draft Plan of Subdivision is attached for reference.

The traffic volumes generated by the proposal are not high enough to require a full Transportation Impact Study, however, the County of Wellington and the Town of Minto have requested that a Transportation Brief be submitted with the application to provide information about the estimated traffic generation of the proposal and an assessment of the proposed new intersection at Wellington Road 109 and Street A.

Wellington Road 109 Traffic Volumes

Wellington Road 109 is a two-lane rural road in the vicinity of the site. The posted speed limit is 70 kph south of the new road connection and 80 kph north of the new road connection. Existing traffic data was collected on Wellington Road 109 in the vicinity of the proposed new road connection on Tuesday, January 31, 2023. The data was collected during the weekday morning and afternoon peak periods to capture traffic volumes on Wellington Road 109 when both Wellington 109 traffic and site traffic will be highest. The existing traffic data is attached to this letter and is illustrated for the morning and afternoon peak hours in the attached traffic volume figures.

A future 10-year horizon year of 2033 was chosen for assessment based on discussion with staff. Future background traffic volumes on Wellington Road 109 were estimated by growing traffic on Wellington Road 109 by two (2) percent per year. The resulting future background traffic volumes are illustrated in the attached figures.

The Proposal and Site Traffic

The proposal is for an industrial subdivision that allows for a range of industrial uses on individual lots. The permitted uses are those included in the rural industrial zone and will be dry uses.

Site traffic was estimated based on information in the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). The Industrial Park land use (land use code 130) was chosen to best represent the mix of permitted uses in the proposed subdivision. Gross floor area for the various industrial uses was estimated based on a maximum coverage of 30 percent of the developable blocks. Given that the developable blocks account for about 6.12 hectares (or about 660,000 s.f.), 30 percent coverage would result in about 200,000 s.f. of gross industrial floor area.

The estimated site traffic is summarized in the table below and excerpts from the ITE manual are attached for reference.

Table 1: Traffic Generation Estimates

Description		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Trip Rate (trips/1,000 sf) ITE Land Use code 130 – Industrial Park		0.28	0.06	0.34	0.07	0.27	0.34
Trips	200,000 s.f.	55	13	68	13	55	68

The proposal is expected to generate 68 trips measured in both directions in each of the weekday morning and afternoon peak hours. The site traffic, assigned according to local traffic patterns on Wellington Road 109, is illustrated in the attached figures.

Future Total Traffic Conditions – WR 109 and Street A Intersection

Future total traffic in 2033 was calculated by adding the increased site traffic to the future background traffic and is illustrated in the attached figures.

Sight Line Review

A site visit was conducted on June 14, 2023, to review the available sight distance in the vicinity of the proposed new road connection to Wellington Road 109 at Street A.

Wellington County has an access policy that requires that a minimum of 180 metres of sight distance be available in both directions along a County road for a posted speed limit of 70 kph. For a posted speed limit of 80 kph, the minimum sight distance requirement is 200 metres.

There is good sight distance available in both directions along Wellington Road 109 from the where the new road connection is proposed. To the south, the roundabout is visible about 325 metres away and to the north the sight distance is more than the required 200 metres.

Northbound Left Turn Lane Warrant Analysis

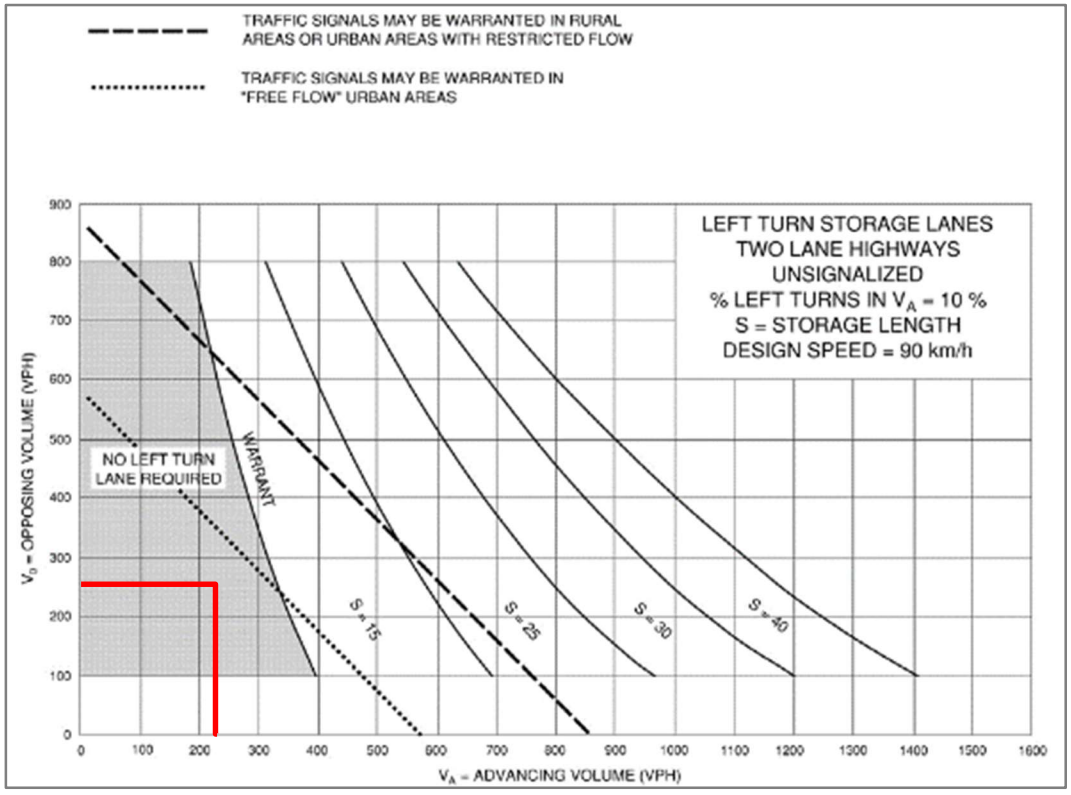
The MTO Design Supplement for the TAC (Transportation Association of Canada) Geometric Design Guide for Canadian Roads provides a methodology for assessing whether or not a left turn lane is warranted at an intersection on a two-lane road based on the percentage of left turns in the approaching stream of traffic, the design speed and the volumes at the intersection. The methodology applies when the percentage of left turns in the approaching stream of traffic is 2.5 percent or greater. When the percentage of left turns in the approaching stream of traffic is less than 2.5 percent, the left turn lane is not warranted.

Under future total traffic conditions, the percentage of left turns in the northbound approaching stream of traffic to the site driveway is expected to be eleven percent in the morning peak hour and three (3) percent in the weekday afternoon peak hour.

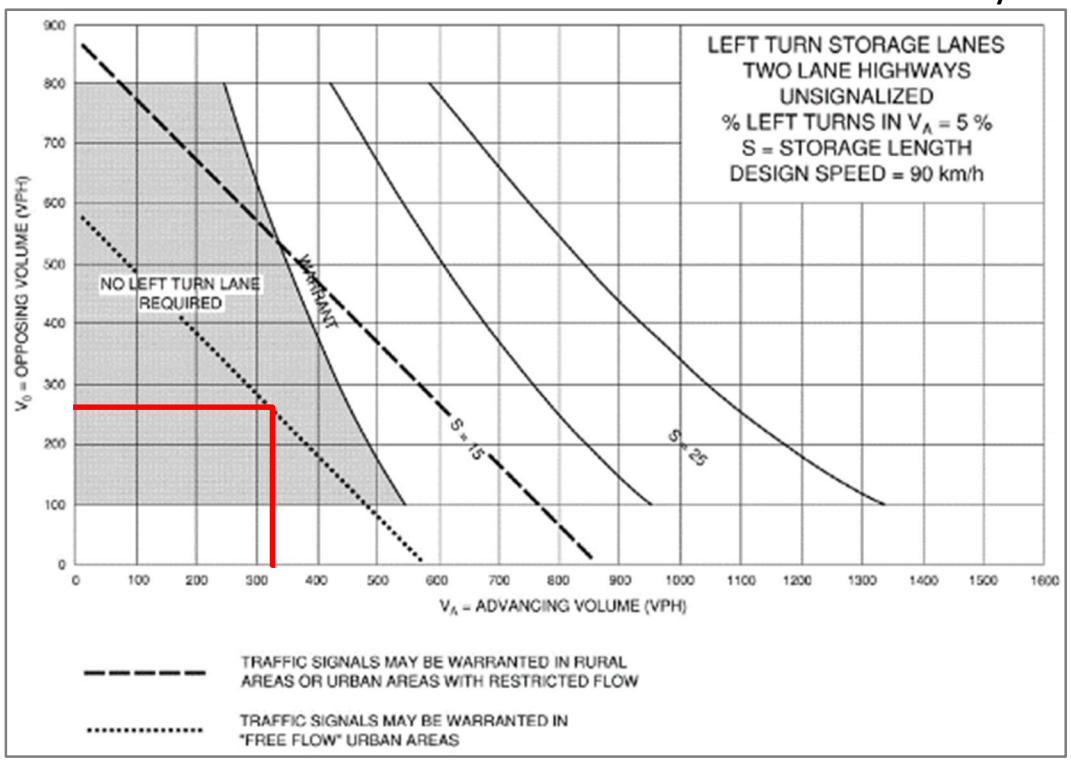
The appropriate nomograph was consulted for the morning and afternoon peak hours and the forecast traffic volumes at the driveway were plotted to determine if a left turn lane is warranted. A design speed of 90 kph was chosen given that the posted speed is transitioning from 70 kph south of the new road connection to 80 kph north of the new road connection.

The assessment is illustrated in the two figures below for the morning and afternoon peak hours.

AM Peak Hour NB Left Turn Lane Warrant Assessment – WR 109 and Site Driveway



PM Peak Hour NB Left Turn Lane Warrant Assessment – WR 109 and Site Driveway



A left turn lane is not warranted at the proposed new road connection to WR 109.

Traffic Operations Assessment

An assessment of the traffic operations at the proposed new road connection to WR 109 at Street A was undertaken to estimate the traffic operations parameters in the weekday peak hours. The assessment was undertaken using Synchro 11 software. The proposed geometry with shared turning lanes was used as an input along with forecast future total traffic volumes and existing truck percentages on Wellington Road 109. For other inputs, default Synchro parameters were used.

The assessment is summarized in the table below and the Synchro worksheets are attached.

Table 2: Future Total Traffic Operations Assessment - WR 109/Street A

Measure of Effectiveness	Approach Direction/Lane			
	AM Peak Hour		PM Peak Hour	
	EB	NB	EB	NB
Level of Service	B	A	B	A
Delay (s)	11.1	1.0	12.6	0.3
Volume/Capacity	0.02	0.02	0.11	0.01
95th Percentile Queue (m)	0.6	0.5	2.8	0.2

The Street A intersection with Wellington Road 109 is expected to operate at acceptable levels under future total traffic conditions in both weekday peak hours.

Summary and Conclusions

This Transportation Brief provides an overview of the transportation considerations for a proposed industrial subdivision on Wellington Road 109 in Teviotdale and includes the following information:

- The proposal is expected to generate 68 trips measured in both directions in both the weekday morning and afternoon peak hours.
- The sight distance at the proposed Street A connection to Wellington Road 109 meets the County's criteria in their Entrance Policy.
- A northbound left turn lane on Wellington Road 109 at Street A is not warranted.
- The Street A intersection with Wellington Road 109 is expected to operate at acceptable levels under future total traffic conditions in both weekday peak hours.

If you have any questions about the analysis presented in this letter, please contact me to discuss.

Sincerely,

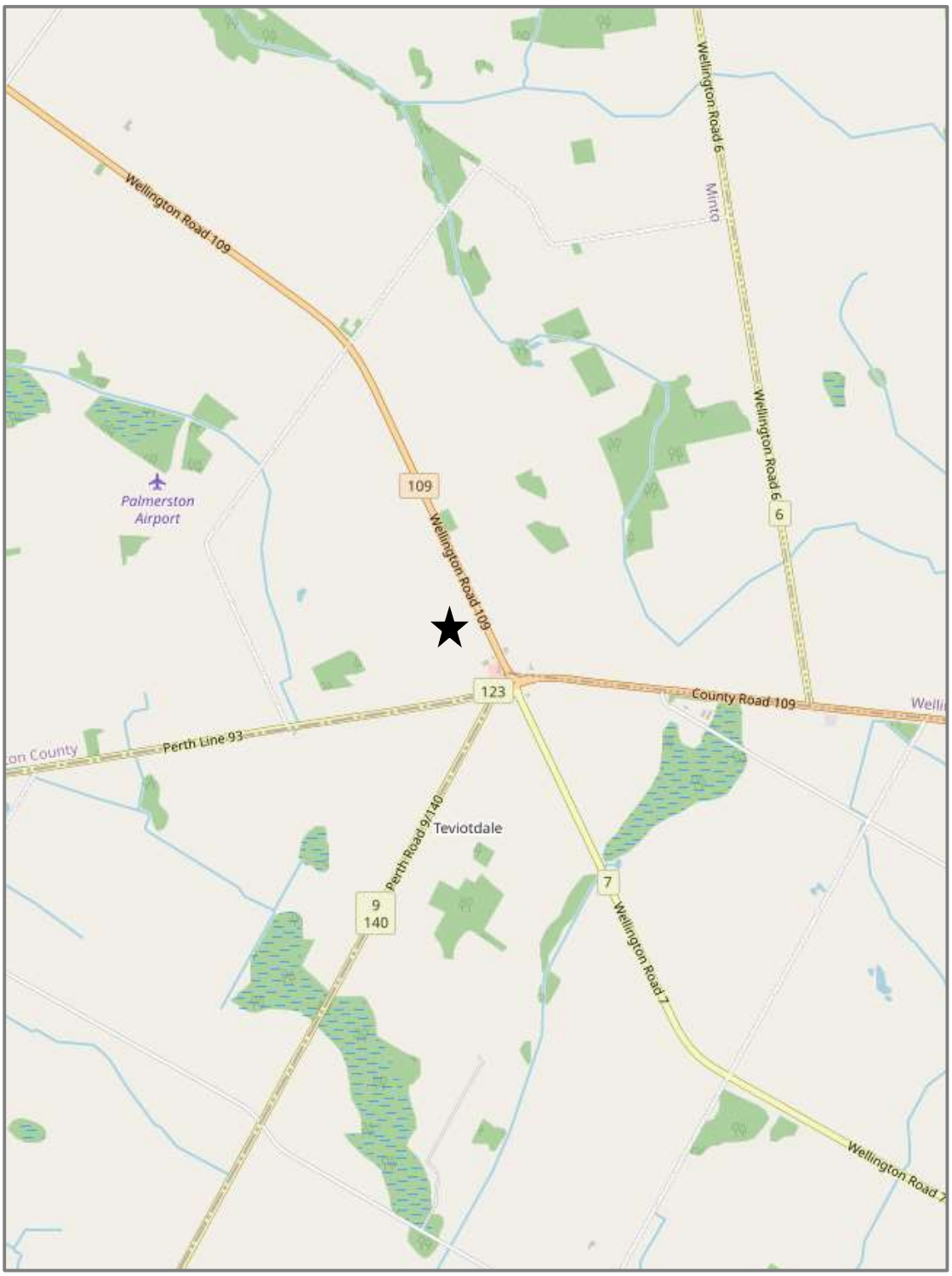
Julia Salvini

Julia Salvini, MEng, PEng
President

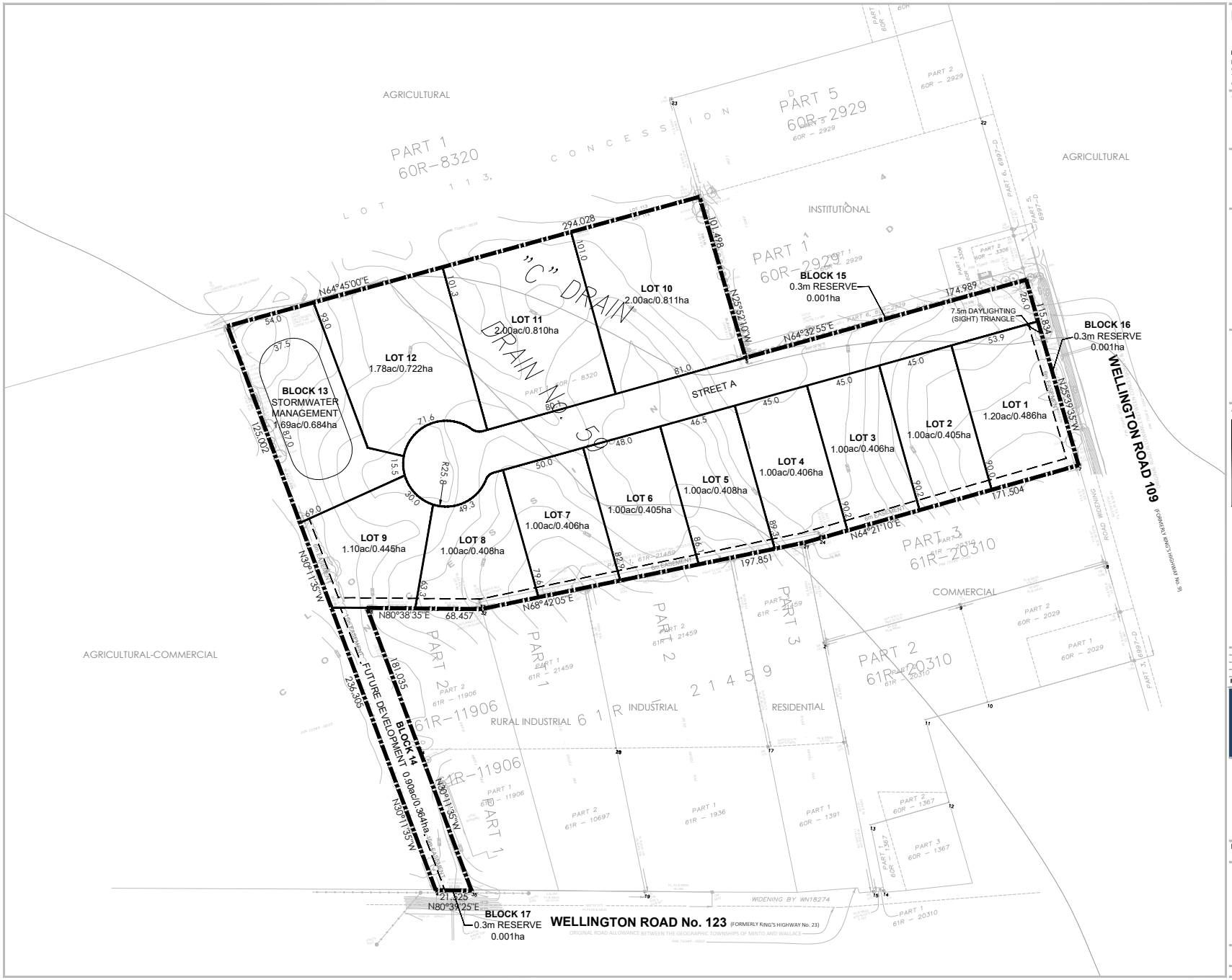
Cc: Meghan Lippert, MHBC Planning

Attach: Site Location Plan
Draft Plan of Subdivision
Traffic Count Data on Wellington Road 109
Traffic Volume Diagrams
Excerpts from the ITE Trip Generation Manual
Synchro Worksheets – Street A/WR 109 Intersection

Attachments



Site Location Plan



DRAFT PLAN OF SUBDIVISION

LEGAL DESCRIPTION
PART OF LOT 114
CONCESSION D
TOWN OF MINTO
COUNTY OF WELLINGTON

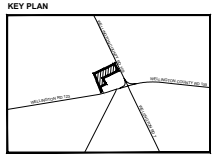
OWNER'S CERTIFICATE
I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: MAY 2ND 2023
DOUG TAYLOR
2396584 ONTARIO INC.

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: APRIL 21, 2023
JOHN S. SCOTT, OLS
VAN HARTEN SURVEYING INC.

KEY PLAN



Subject Lands

SCALE: NTS

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. AS SHOWN
B. AS SHOWN
C. AS SHOWN
D. RURAL INDUSTRIAL, STORMWATER MANAGEMENT, FUTURE DEVELOPMENT
E. AS SHOWN
F. AS SHOWN
G. AS SHOWN
H. NOT APPLICABLE
I. LOAM/ CLAY LOAM
J. AS SHOWN
K. ALL SERVICES AS REQUIRED

AREA SCHEDULE

	LOTS/BLOCKS	AREA (ha.)	AREA (ac.)
RURAL INDUSTRIAL	1-12	6.118	15.12
STORM WATER MANAGEMENT	13	0.684	1.69
FUTURE DEVELOPMENT	14	0.364	0.90
0.3m RESERVE	15-17	0.003	0.00
ROADS		1.091	2.70
TOTAL	**15**	**8.260**	**20.41**

Notes
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN

Revision No.	Date	Issued / Revision	By

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P. 519.576.3650 F. 519.576.0121 | WWW.MHBCPLAN.COM

Approval Stamp	**Date** April 20, 2023
	File No. 22343A
	Plan Scale 1: 1,000 (Arch D)
	Drawn By LC
Project TEVIOTDALE	**Checked By** PC
Applicant 2396584 ONTARIO INC.	**Other**
File Name DRAFT PLAN OF SUBDIVISION	**Dwg No.** 1 of 1

K:\22343A - TEVIOTDALE, WELLINGTON\DP\DP_20APRIL2023.DWG

Wellington Rd 109 (2 way count)

Municipality: Teviotdale
Major Road: Wellington Road 109
Minor Road: near #6739

Date: January 31, 2023

	North Approach				South Approach				North Approach		South Approach		NS
	Car	Truck	Heavy	Peds	Car	Truck	Heavy	Peds	Total	Hourly	Total	Hourly	Total
7:15	51	1	5	0	24	1	5	0	57		30		
7:30	42	2	4	0	23	2	4	0	48		29		
7:45	54	2	11	0	37	0	4	0	67		41		
8:00	32	1	2	0	36	0	4	0	35	207	40	140	347
8:15	34	1	3	0	35	2	8	0	38	188	45	155	343
8:30	46	0	5	0	33	2	2	0	51	191	37	163	354
8:45	25	0	1	0	17	2	5	0	26	150	24	146	296
9:00	38	1	3	0	25	0	10	0	42	157	35	141	298
16:15	55	2	7	0	59	1	4	0	64		64		
16:30	52	0	3	0	69	0	8	0	55		77		
16:45	52	3	2	0	61	1	1	0	57		63		
17:00	36	2	2	0	52	2	1	0	40	216	55	259	475
17:15	41	0	1	0	67	1	1	0	42	194	69	264	458
17:30	40	0	4	0	55	0	4	0	44	183	59	246	429
17:45	36	1	3	0	59	0	4	0	40	166	63	246	412
18:00	31	2	6	0	43	0	0	0	39	165	43	234	399

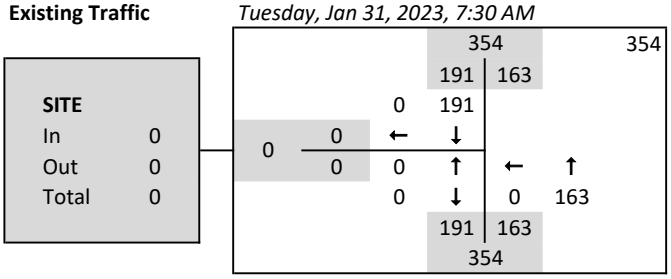
% trucks		
AM	13%	13%
PM	10%	7%

Teviotdale Industrial Subdivision

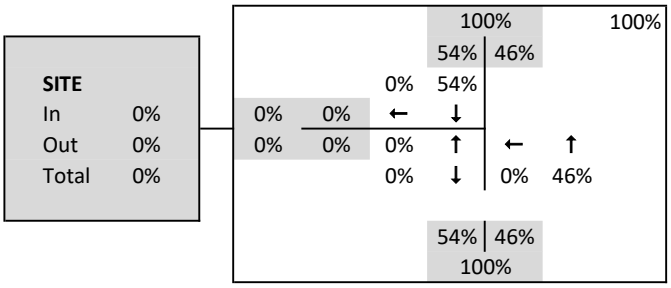
6739 Wellington Road 109, Traffic Volumes

AM Peak Hour

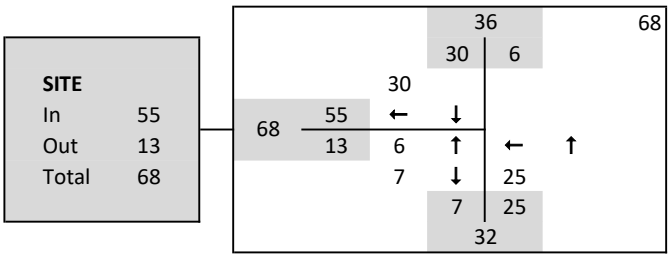
Existing Traffic *Tuesday, Jan 31, 2023, 7:30 AM*



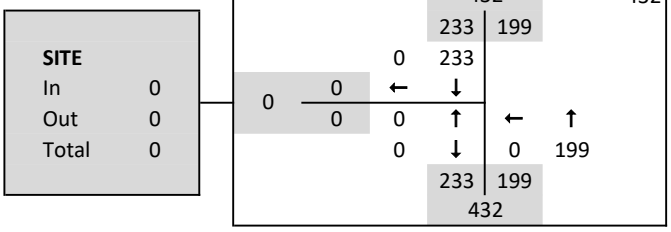
Distribution



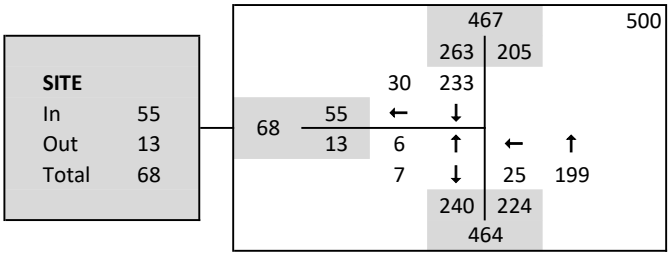
Site Traffic



Future Background Traffic 2033

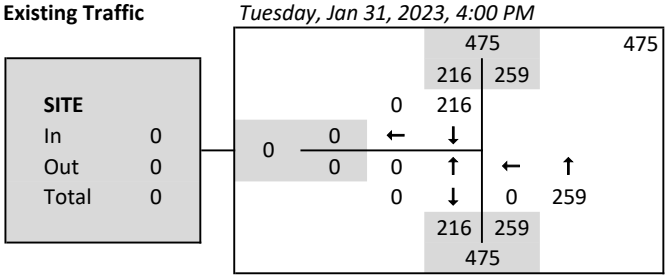


Future Total Traffic 2033

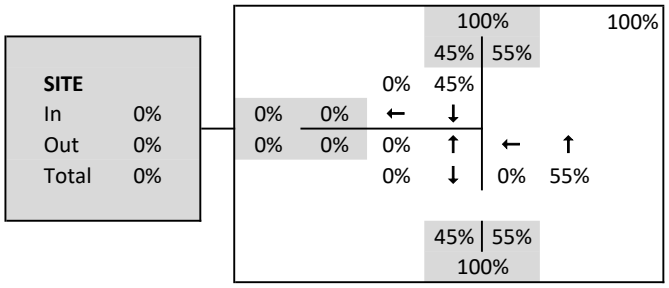


PM Peak Hour

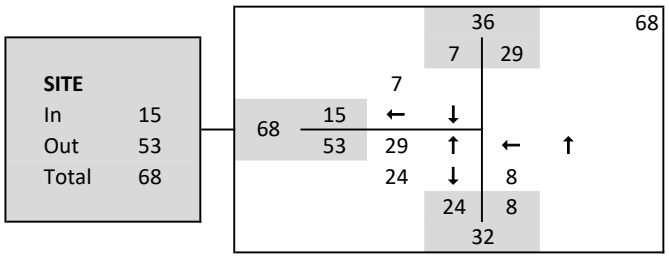
Existing Traffic *Tuesday, Jan 31, 2023, 4:00 PM*



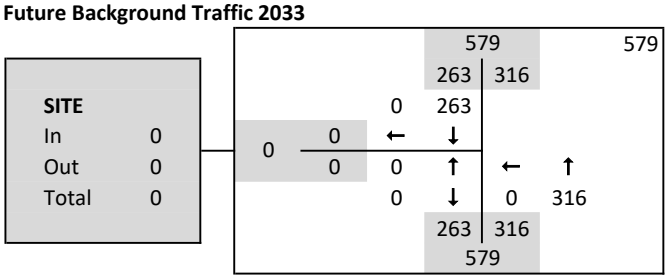
Distribution



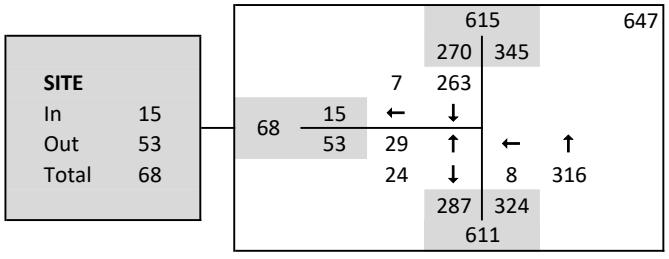
Site Traffic



Future Background Traffic 2033



Future Total Traffic 2033



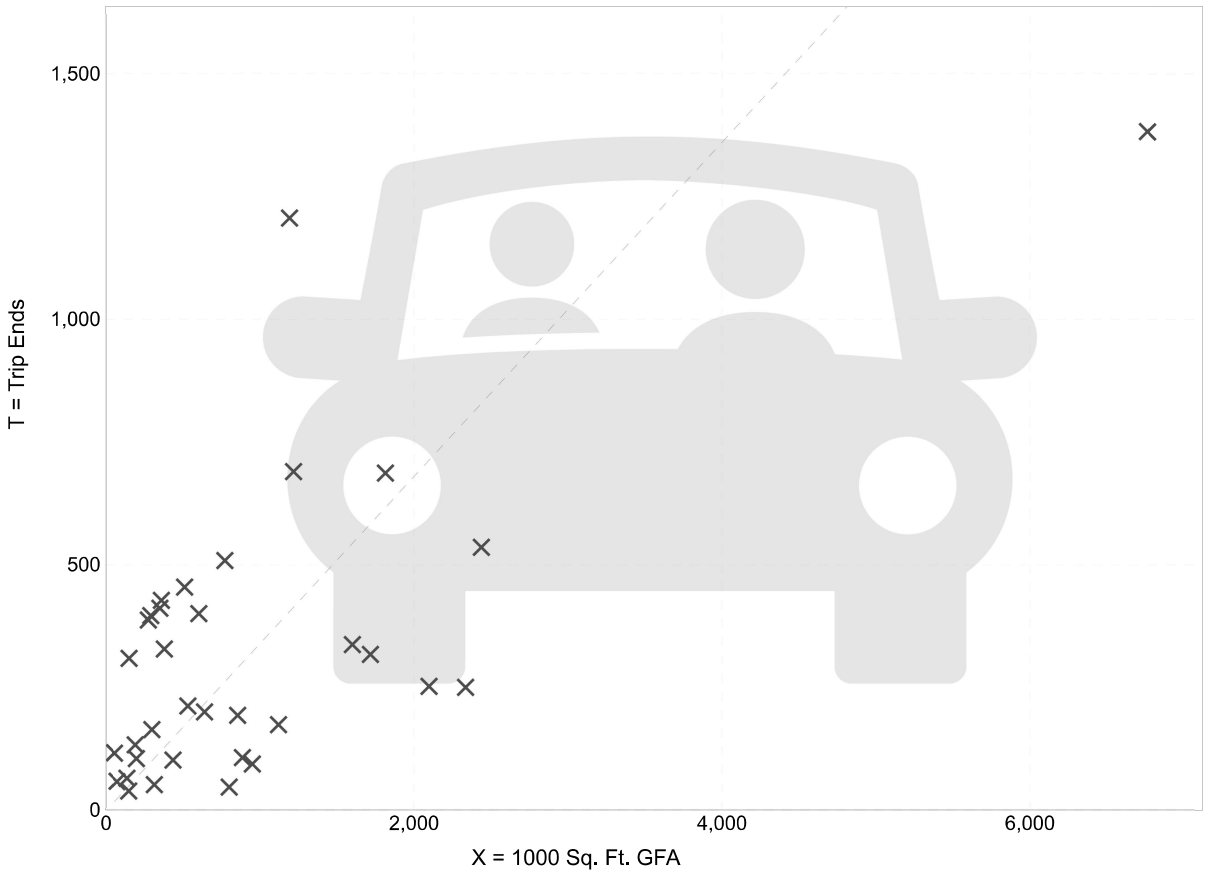
Industrial Park
(130)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	34
Avg. 1000 Sq. Ft. GFA:	956
Directional Distribution:	81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.06 - 2.13	0.33

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

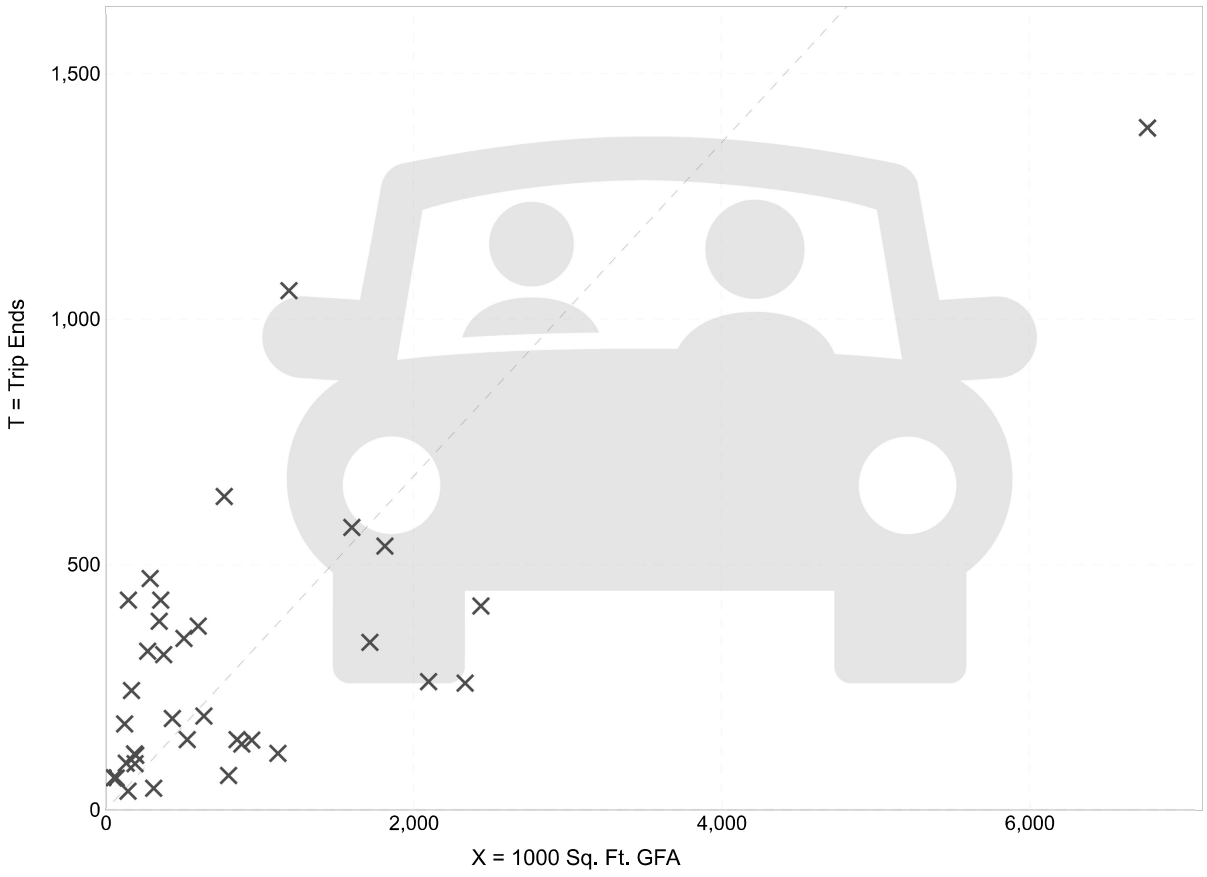
Industrial Park
(130)

Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	35
Avg. 1000 Sq. Ft. GFA:	899
Directional Distribution:	22% entering, 78% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.09 - 2.85	0.36

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ****

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	7	25	199	233	30
Future Volume (Veh/h)	6	7	25	199	233	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	8	27	216	253	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	540	270	286			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	540	270	286			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	98			
cM capacity (veh/h)	492	769	1276			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	15	243	286
Volume Left	7	27	0
Volume Right	8	0	33
cSH	609	1276	1700
Volume to Capacity	0.02	0.02	0.17
Queue Length 95th (m)	0.6	0.5	0.0
Control Delay (s)	11.1	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	1.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	24	8	316	263	7
Future Volume (Veh/h)	29	24	8	316	263	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	26	9	343	286	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	651	290	294			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	651	290	294			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	97	99			
cM capacity (veh/h)	430	749	1268			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	58	352	294
Volume Left	32	9	0
Volume Right	26	0	8
cSH	532	1268	1700
Volume to Capacity	0.11	0.01	0.17
Queue Length 95th (m)	2.8	0.2	0.0
Control Delay (s)	12.6	0.3	0.0
Lane LOS	B	A	
Approach Delay (s)	12.6	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		