

Transportation Impact Study

PROPOSED RESIDENTIAL SUBDIVISION DEVELOPMENT

Belfountain
CALEDON, ONTARIO

January 23, 2018
Project No: NT-17-217

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Aurora ON L4G 6W8

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nextrans
CONSULTING ENGINEERS

NextEng Consulting Group Inc.

January 23, 2018

Mr. John Spina

The Manors of Belfountain Corp.
55 Blue Willow Drive
Woodbridge, ON L4L 9E8

**Re: Transportation Impact Study
Belfountain Residential Subdivision
Our Project No. NT-17-217**

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Study for the above noted site in support of a proposed Zoning By-law Amendment and Site Plan Applications.

The subject site is currently vacant. Based on the preliminary Draft Plan of Subdivision prepared by Glen Schnarr & Associates Inc., dated December 2017, the development proposal is to develop the existing subject lands into 67 residential lots at approximately 0.63 ha per lot. Access to the plan is envisioned via two (2) proposed streets 'A' and 'C'. Access within the plan is envisioned via four (4) streets 'A', 'B', 'C' and 'D'.

The study concludes that the development proposal can adequately be accommodated by the existing transportation network with manageable traffic impact to the adjacent public roadways. We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

Nextrans Consulting Engineers

A Division of NextEng Consulting Group Inc.

Prepared by:



Zara Georgis, EIT
Engineer-in-Training

Reviewed by:



Richard Pernicky, CET, MITE
Principal

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1.0 INTRODUCTION

Nextrans Consulting Engineers was retained by The Manors of Belfountain Corp. (the 'Client') to undertake a Traffic Impact Study for a Draft Plan of Subdivision Application in support of a proposed estate residential subdivision development located along Shaws Creek Road, in the Town of Caledon. The location of the proposed development is illustrated in **Figure 1-1**.

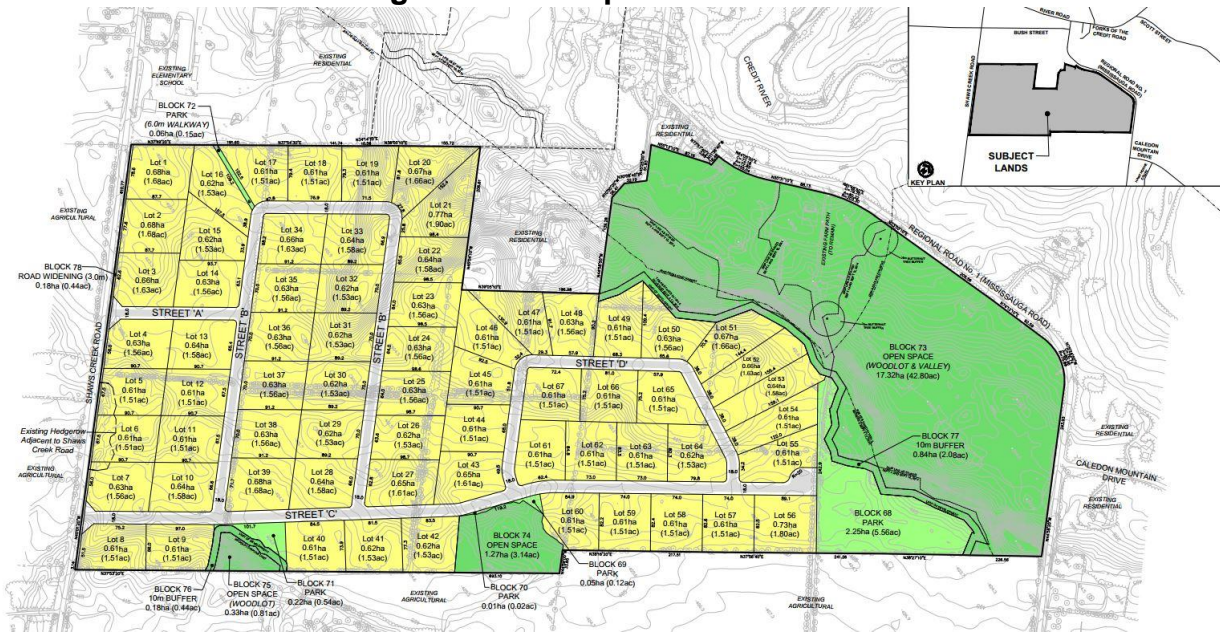
Figure 1-1 – Site Location



The subject site is currently vacant. Based on the preliminary Draft Plan of Subdivision prepared by Glen Schnarr & Associates Inc., dated December 2017, the development proposal is to develop the existing subject lands into 67 residential lots at approximately 0.63 ha per lot. Access to the plan is envisioned via two (2) proposed streets 'A' and 'C'. Access within the plan is envisioned via four (4) streets 'A', 'B', 'C' and 'D'. The preliminary draft plan is provided in **Figure 1-2**; **Appendix A** also provides a larger scale version of the proposed site plan.

Given the residential based nature of the development proposal, the analysis will include the weekday morning and afternoon peak periods for assessment purposes.

Figure 1-2 – Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing subject lands are located east of Shaws Creek Road, in the Town of Caledon. The road network is described as follows:

Shaws Creek Road: is classified as a collector road under the jurisdiction of the Town of Caledon. It has a two-lane cross section and maintains a posted speed limit of 60 km/h in the vicinity of the subject site.

Bush Street: is classified as an arterial road under the jurisdiction of Peel Region. It has a two-lane cross section and maintains a posted speed limit of 50 km/h in the vicinity of the subject site.

The Grange Side Road: is classified as a collector road under the jurisdiction of the Town of Caledon. It has a two-lane cross section and maintains a posted speed limit of 60 km/h.

Currently, Shaws Creek Road is not paved south of Belfountain Public School. It is anticipated that Shaws Creek will be widened to 26 m and paved to the southern limit of the southern access.

2.2. Existing Active Transportation Network

Sidewalks

There are no dedicated sidewalks within the vicinity of the subject site.

Bicycle Lanes

There are dedicated bicycle lanes on both sides of Bush Street, east of Shaws Creek Road.

2.3. Existing Traffic Volumes

Existing traffic volumes at the study area intersections were undertaken by Spectrum Traffic on behalf of NexTrans Consulting Engineers on Wednesday, November 15, 2017 during the morning (7:00 a.m. to 10:00 a.m.) and afternoon (4:00 p.m. to 7:00 p.m.) peak periods. Detailed existing traffic data are provided in **Appendix B**.

2.4. Existing Traffic Assessment

The existing volumes are illustrated in **Figure 2-2**, and were analyzed using Synchro 9 software. The methodology of the software follows the procedures described and outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board. The detailed results are provided in **Appendix C** and summarized in **Table 2.1**.

Figure 2-1 – Existing Traffic Volumes

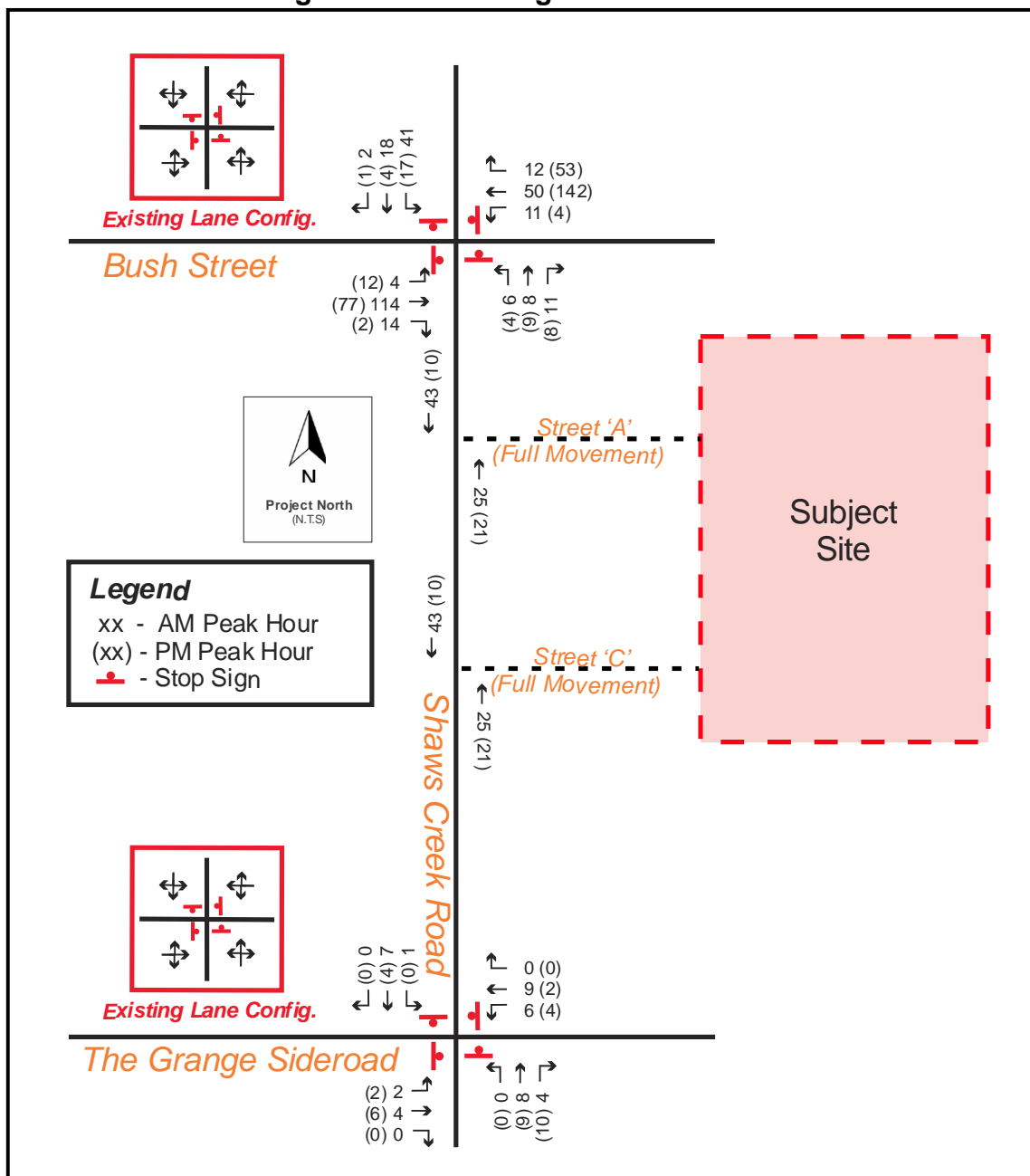


Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Shaws Creek Road & Bush Street	EBLTR	A (0.22)	8.6	A (0.13)	8.0
	WBLTR	A (0.13)	8.1	A (0.28)	8.7
	NBLTR	A (0.08)	7.8	A (0.05)	7.8
	SBLTR	A (0.11)	8.3	A (0.05)	8.1
Shaws Creek Road & The Grange Side Road	EBLTR	A (0.02)	7.2	A (0.02)	7.2
	WBLTR	A (0.04)	7.3	A (0.02)	7.3
	NBLTR	A (0.03)	6.9	A (0.05)	6.8
	SBLTR	A (0.01)	7.2	A (0.01)	7.1

Under existing conditions, the study intersections are currently operating at excellent levels of service during both peak periods with no critical movements. During existing traffic conditions, the Shaws Creek Road & Bush Street and the Shaws Creek Road & The Grange Side Road intersection is operating at overall LOS 'A' during the peak hour periods.

3.0 FUTURE BACKGROUND CONDITIONS

A 5-year (2022) horizon period was selected and assumed in this analysis, which generally coincides with the full build out of the proposed development. For a conservative analysis, in conjunction with discussions from Town and Region staff, a 2% growth rate per annum is assumed for the north-south through traffic on Shaws Creek Road and for the east-west through traffic on Bush Street and The Grange Sideroad.

The future (2022) background traffic volumes are provided in **Figure 3-1**. **Table 3.1** summarizes the level of service at the given intersections under future background traffic conditions. Detailed output analysis can be found in **Appendix D**.

Figure 3-1 – Future (2022) Background Traffic Volumes

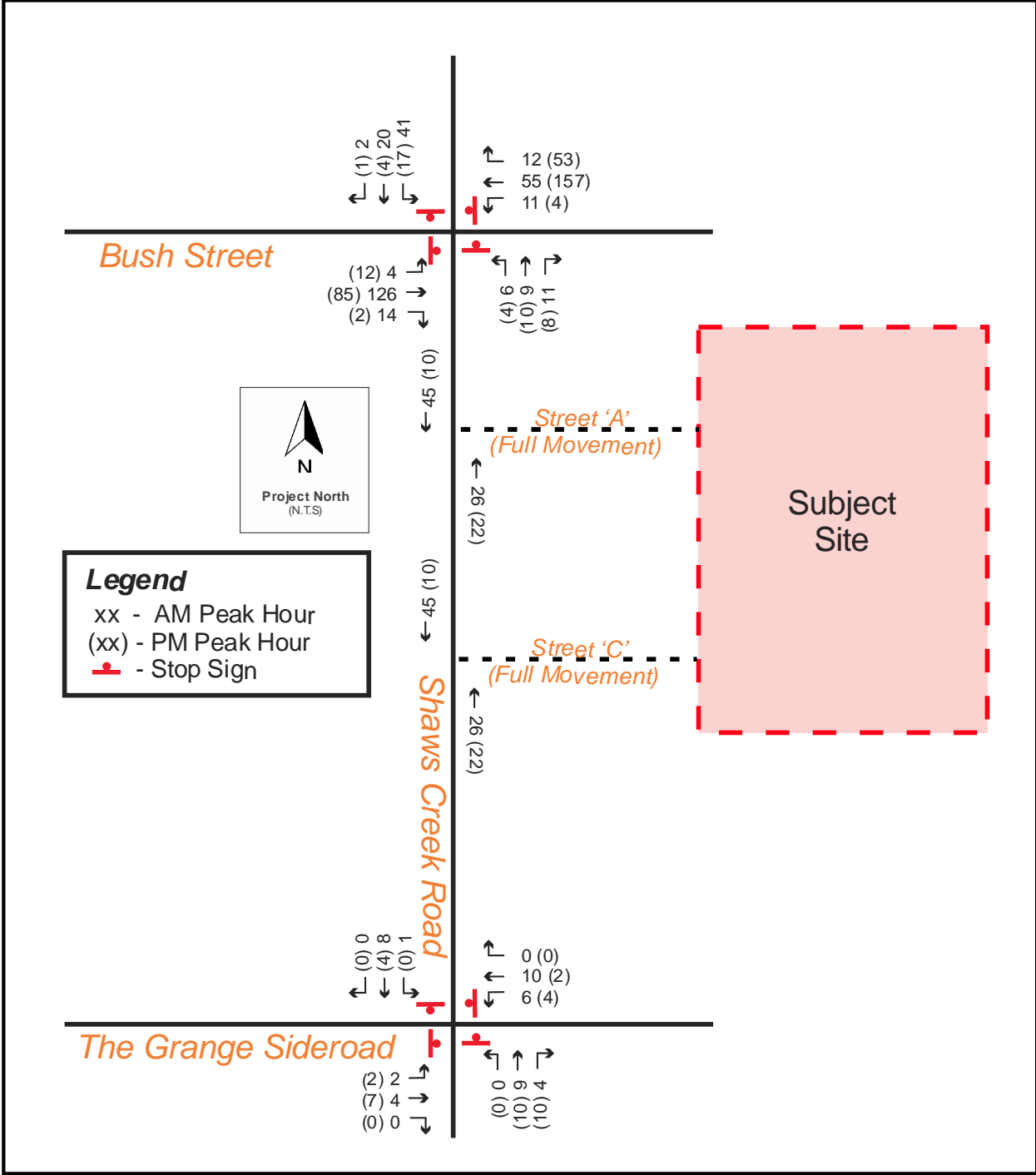


Table 3.1: Future (2022) Background Traffic Levels of Service

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Shaws Creek Road & Bush Street	EBLTR	A (0.24)	8.8	A (0.14)	8.1
	WBLTR	A (0.14)	8.2	A (0.31)	8.9
	NBLTR	A (0.09)	7.9	A (0.05)	7.9
	SBLTR	A (0.11)	8.4	A (0.05)	8.2
Shaws Creek Road & The Grange Side Road	EBLTR	A (0.02)	7.3	A (0.03)	7.3
	WBLTR	A (0.04)	7.4	A (0.02)	7.3
	NBLTR	A (0.04)	6.9	A (0.05)	6.8
	SBLTR	A (0.02)	7.2	A (0.01)	7.1

As summarized in **Table 3.1**, it is shown that during future background traffic conditions the subject study area intersections continue to operate at excellent level of services with no changes to expected operations. During future background traffic conditions, the Shaws Creek Road & Bush Street and the Shaws Creek Road & The Grange Side Road intersection is operating at overall LOS 'A' during the peak hour periods.

4.0 SITE TRAFFIC

The development proposal is to develop the existing subject lands into 67 lots. Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 9th Edition* published by the Institute of Transportation Engineers (ITE) for “Single-Family Detached Housing” (LUC 210). The trip generation summary is shown in **Table 4.1**.

Table 4.1 – Site Traffic Trip Generation (Based on ITE)

ITE Land Use	Parameter	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
Single-Family Detached Housing (67 Lots)	New Trips	14	43	57	46	27	73
	Trip Rate	0.21	0.64	0.85	0.69	0.40	1.09
Total	New Trips	14	43	57	46	27	73

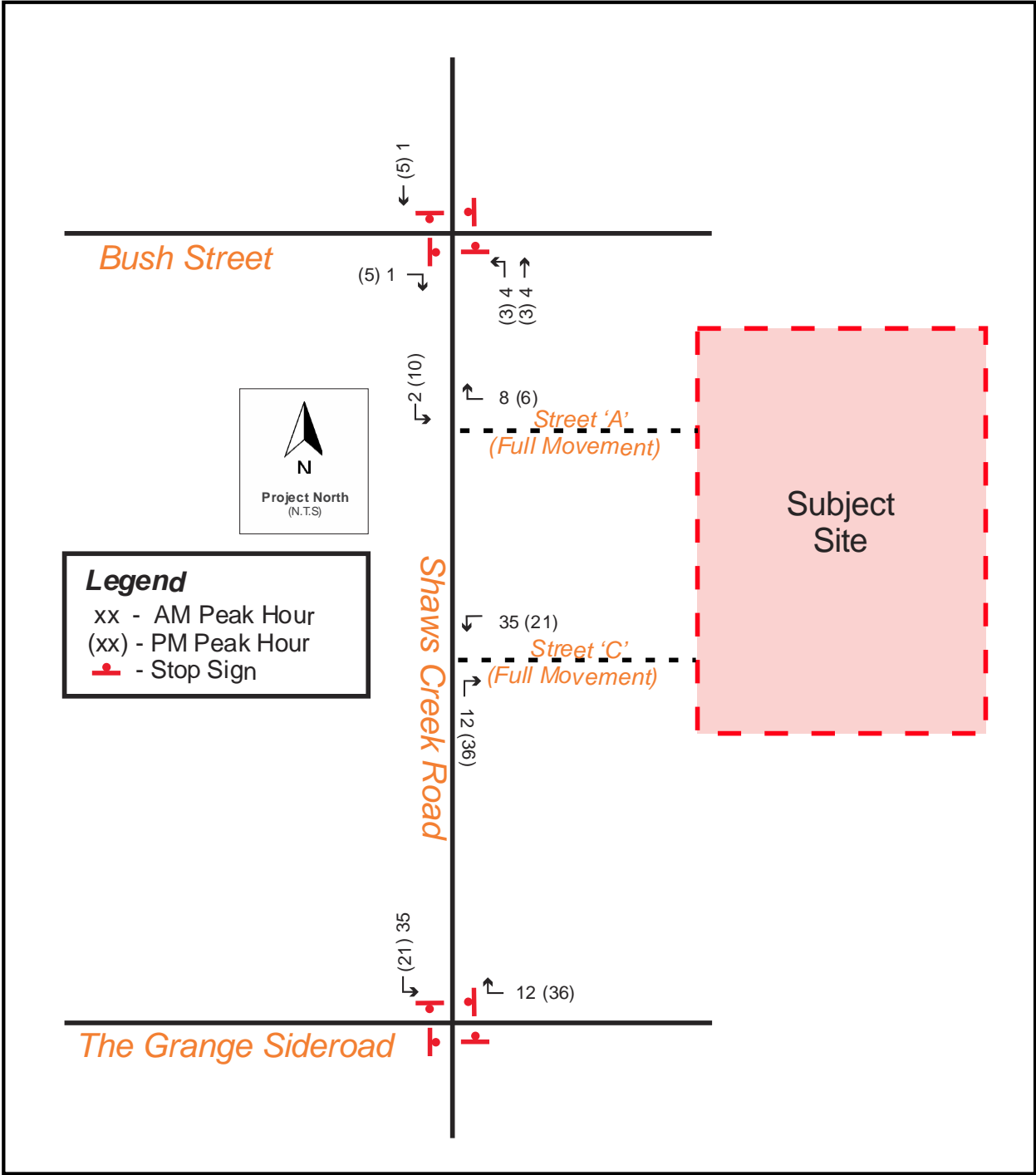
As shown in **Table 4.1**, the proposed development is anticipated to generate 57 two-way auto trips (14 inbound and 43 outbound) during the AM peak hours and 73 two-way auto trips (46 inbound and 27 outbound) during the PM peak hours.

The assumptions for the trip distribution rates are based on the information extracted from the 2011 Transportation Tomorrow Survey (TTS) and existing traffic patterns and routes that drivers would likely take to access the subject site and engineering judgement based on ease of site access. As a result, site trip distribution is summarized for the inbound and outbound site traffic movements during the morning and afternoon peak hours in **Table 4.2** with the trip assignment illustrated in **Figure 4-1**.

Table 4.2 – Site Traffic Trip Distribution

Direction	Via	Inbound	Outbound
North	Shaws Creek Road	10%	10%
East	The Grange Side Road	80%	80%
West	Bush Street	10%	10%
Total		100%	100%

Figure 4-1 – Site Generated Traffic Assignments



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2022 future total traffic volumes (future background volumes plus site generated traffic volumes) are illustrated in **Figure 5-1**, and were analyzed using Synchro 9 software with stopped controlled at the proposed site access. The detailed calculations are provided in **Appendix E** and summarized in **Table 5.1**.

Figure 5-1 – Future (2022) Total Traffic Volumes

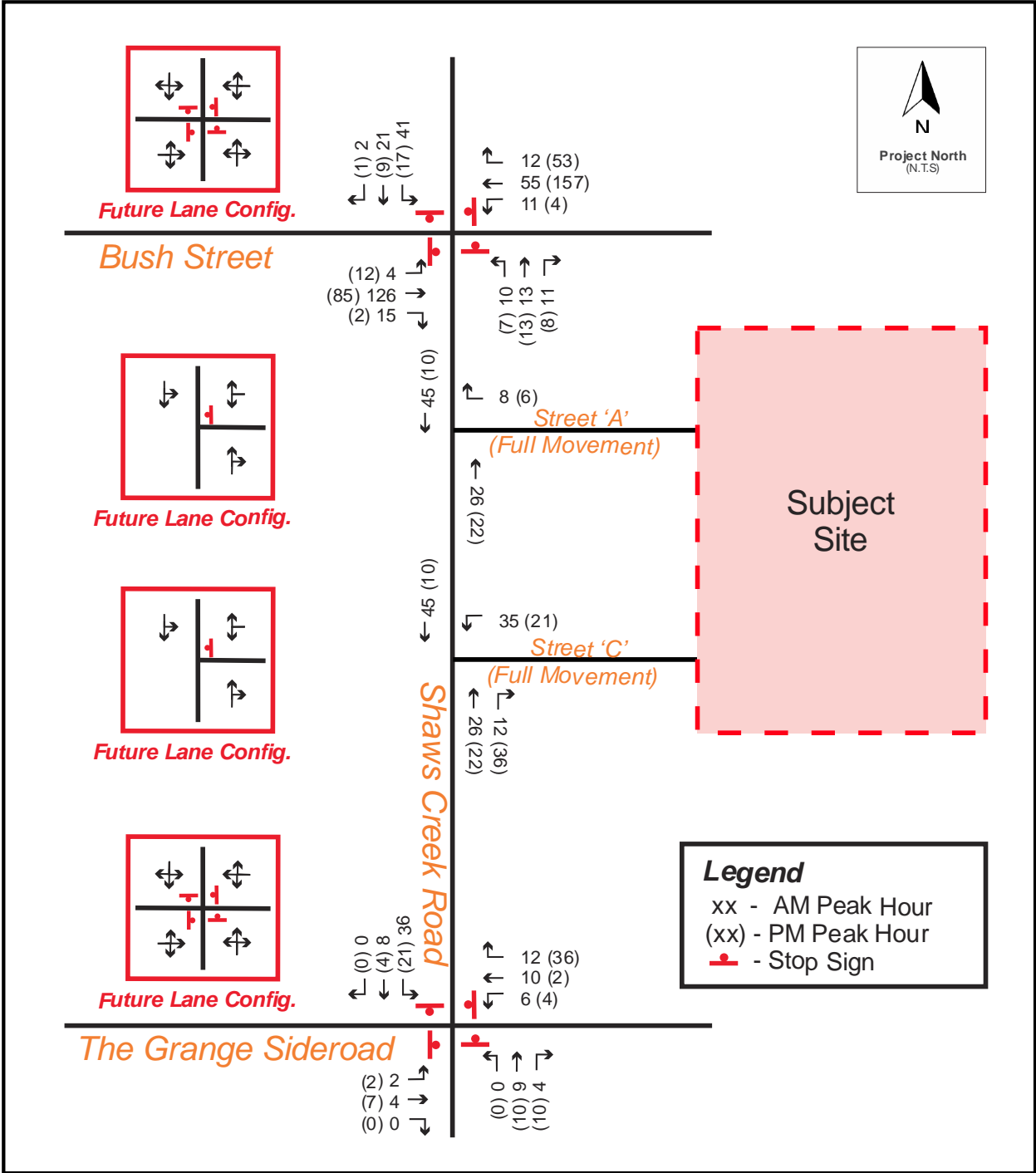


Table 5.1 – Level of Service – Future Total Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		LOS (v/c)	Delay (s)	LOS (v/c)	Delay (s)
Shaws Creek Road & Bush Street	EBLTR	A (0.24)	8.9	A (0.15)	8.2
	WBLTR	A (0.15)	8.3	A (0.31)	9.1
	NBLTR	A (0.11)	8.2	A (0.07)	8.1
	SBLTR	A (0.11)	8.5	A (0.08)	8.3
Shaws Creek Road & The Grange Side Road	EBLTR	A (0.02)	7.5	A (0.03)	7.4
	WBLTR	A (0.07)	7.4	A (0.07)	7.1
	NBLTR	A (0.04)	7.1	A (0.05)	6.9
	SBLTR	A (0.13)	7.9	A (0.06)	7.6
Shaws Creek Road & Street 'A'	WBLR	A (0.01)	8.5	A (0.01)	8.4
	SBTL	A (0.00)	0.3	A (0.01)	3.7
Shaws Creek Road & Street 'C'	WBLR	A (0.04)	9.1	A (0.02)	8.9

Under future total traffic conditions, the study intersection and proposed accesses are expected to continue operating with excellent level of service during both peak periods. On this basis, no external road improvements are necessary to support the development application.

6.0 PARKING ASSESSMENT

Based on Town of Caledon Zoning By-law 2006-50 (Revised March 2016) Section 5 – Parking, Loading and Delivery, a minimum of 134 parking spaces will be required for the proposed development. Parking will be provided in accordance with the By-law requirement. The technical parking requirement for the proposed development is detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements

Use	Units	Rate	Parking Requirement	Parking Provided	Difference
Dwelling, Detached	67 Lots	2 spaces per dwelling unit	134	134	0
Total			134	134	0

7.0 SITE PLAN REVIEW

It is recommended that the proposed site access design be consistent with the Town of Caledon's Site Plan Submission Guidelines.

AutoTURN software was used (HSU TAC – 1999) to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed parking spaces. As illustrated in **Figure 7-1**, the AutoTURN analysis demonstrates that a 11.5 m long Emergency Vehicle (HSU TAC – 1999) can effectively maneuver through the development area.

8.0 SIGHT LINE ASSESSMENT

Shaws Creek Road serves as a two-lane collector road with a speed limit of 60 km/h in the vicinity of the subject site. For the purpose of sight distance assessment, a design speed of 80 km/h under stop control will be utilized (posted speed plus 20 km/h). Sight distance requirements will be considered both for passenger vehicles approaching and departing from the stopped position at the intersection of Shaws Creek Road and Future Street 'A' and Future Street 'C'. The criteria applied for vehicles approaching the intersection is stopping sight distance, while turning departure maneuvers for left and right turns will be the applied criteria where vehicles are required to stop on the intersecting road, refer to TAC Figure 2.3.3.2, Departure Sight Triangles, attached in **Appendix F**. Under the stopping sight distance assessment, the target height applied is 0.38m for vehicle tail lights, and for intersection movements a top of car height of 1.3m is applied. A driver eye height of 1.05m is applied for all scenarios. Required stopping distance, adjusted for effect of grade, is determined using the formula:

$$\text{Stopping Sight Distance} = 0.278tV + d$$

Where:

t = perception / reaction time = 2.5s (TAC 1999, Table 1.2.5.3)

G = the percent grade divided by 100

$d = V^2 / 254(f \pm G)$

V = design speed

f = coefficient of friction (0.30) (TAC 1999, Table 1.2.5.2)

Future Street 'A'

Average G for North approach = 0.9%

Average G for South approach = 2.5%

Minimum sight dist. for North approach = $0.278 \times 2.5 \times 80 + 80^2 / 254(0.309)$
= 137.14 m

Minimum sight dist. for South approach = $0.278 \times 2.5 \times 80 + 80^2 / 254(0.325)$
= 133.13 m

Required turning departure sight distances, as shown on Figure 2.3.3.2 for left and right turns, are taken from TAC Figure 2.3.3.4, Sight Distance for Turning Movements from Stop, attached in **Appendix F**. Sight triangles for the various maneuvers are summarized as follows:

Left-turn movement:	D-1 = 250m (North approach)
	D-2 = 160m (South approach)
Right-turn movement:	D-1 = 250m (South approach)

Future Street 'C'

Average G for North approach = 2.5%

Average G for South approach = 3.5%

Minimum sight dist. for North approach = $0.278 \times 2.5 \times 80 + 80^2 / 254(0.325)$
= 133.13 m

Minimum sight dist. for South approach = $0.278 \times 2.5 \times 80 + 80^2 / 254(0.335)$
= 130.82 m

Required turning departure sight distances, as shown on Figure 2.3.3.2 for left and right turns, are taken from TAC Figure 2.3.3.4, Sight Distance for Turning Movements from Stop, attached in **Appendix F**. Sight triangles for the various maneuvers are summarized as follows:

Left-turn movement:	D-1 = 250m (North approach)
	D-2 = 160m (South approach)
Right-turn movement:	D-1 = 250m (South approach)

Actual sight distances approaching the intersection have been determined through computer modeling, using the existing road topography of Shaws Creek Road and the proposed road grades for Street 'A' and Street 'C'. **Appendix G** illustrates our findings, indicating that for the North and South approach to Street 'A' on Shaws Creek Road a sight distance of 250 m can be obtained. On the North approach to Street 'C' a sight distance of 250 m is achievable and on the South approach to Street 'C' a sight distance of 150 m is achievable.

Based on our review the proposed intersections allow for the design vehicles to safely make all maneuvers that are permitted by the layout without significantly affecting vehicles travelling along Shaws Creek Road with the exception of the South approach to Street 'C'. On this basis, it is recommended to implement an advisory warning sign for speed reduction to 55 km/h in accordance with TAC Figure 2.3.3.4, Sight Distance for Turning Movements from Stop.

9.0 PEDESTRIAN CIRCULATION PLAN

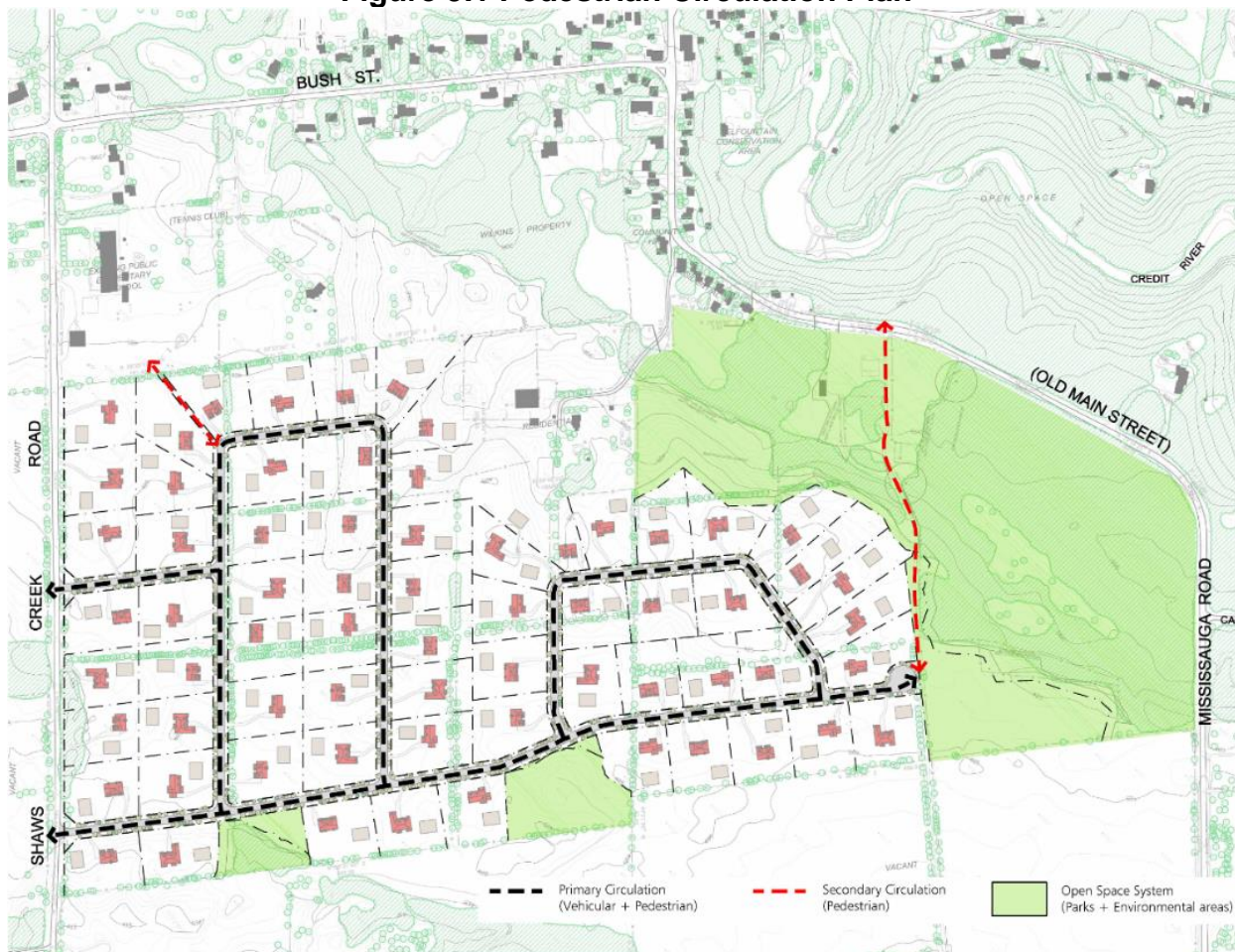
The proposed subdivision will build on the principles of walkability. The pedestrian network will include adequately sized roadways for walking, pathway blocks and walkways/trails within parks that will provide pedestrian connections to residential lots and various destinations within the site and the surrounding area. The pedestrian network will be furnished with street furniture, shading devices and/or other arrangements for the convenience and comfort of pedestrians.

The design of the open space system within the Manors of Belfountain and its components of parks and multi-use trail systems are linked within the broader pedestrian circulation system and provide for a balanced recreational program. The open space system has been designed to take advantage of existing site features and establish a distinct character within the community. Implementation strategies to enhance the Open Space System and complement the built environment include:

- Development of neighbourhood park spaces and gathering nodes.
- Use of the road network for primary pedestrian circulation system; there will be no sidewalks in this development.
- Trail systems will be located within the open spaces to maximize views of the property's natural features and to provide connections with the road network and surrounding land uses.
- Use of pedestrian gateways to define linkages within circulation system.
- The Conceptual Circulation Plan illustrates the both the primary and secondary circulation system as they relate to one another and how they work together to connect all land uses within the development and surrounding areas.

The pedestrian circulation plan is illustrated below in **Figure 9.1**.

Figure 9.1 Pedestrian Circulation Plan



10.0 TRANSPORTATION DEMAND MANAGEMENT

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. Typically, TDM strategies are for residential and office developments where large quantities of people congregate in one origin or destination.

The owner is committed to promote sustainable transportation systems. It actively encourages its residents to explore and take advantage of the primary and secondary circulation network which will include adequately sized roadways for walking, pathway blocks and walkways/trails within parks that will provide pedestrian connections to residential lots and various destinations within the site and the surrounding area.

11.0 CONCLUSION

The findings and conclusions of our analysis are as follows:

- The development proposal is to develop the existing subject lands into 67 residential lots at an average of 0.63 ha per lot.
- The proposed development is anticipated to generate 57 two-way auto trips (14 inbound and 43 outbound) during the AM peak hours and 73 two-way auto trips (46 inbound and 27 outbound) during the PM peak hours.
- The intersection capacity analysis results (based on the methodology and procedures outlined in the Highway Capacity Manual, HCM 2000, published by the Transportation Research Board) indicate that the study intersections and existing accesses are expected to operate with excellent levels of service.
- Based on Town of Caledon Zoning By-law 2006-50, a minimum of 134 parking spaces will be required for the proposed development. Parking will be provided in accordance with the By-law requirement.
- The proposed site plan is accessible from a circulation perspective. The AutoTURN analysis confirms that a 11.5 m long Emergency Vehicle (HSU TAC – 1999) can effectively maneuver through the development area.
- Based on our review the proposed intersections allow for the design vehicles to safely make all maneuvers that are permitted by the layout without significantly affecting vehicles travelling along Shaws Creek Road with the exception of the South approach to Street 'C'. On this basis, it is recommended to implement an advisory warning sign for speed reduction to 55 km/h in accordance with TAC Figure 2.3.3.4, Sight Distance for Turning Movements from Stop.
- No external road improvements are necessary to support the development application.



BENCHMARK

REVISIONS

NO	REVISION	DATE	BY

STAMP

CIVIL CONSULTANT:



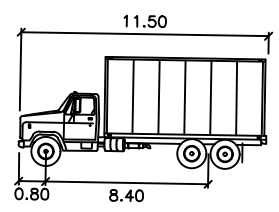
PROJECT NAME:

RESIDENTIAL DEVELOPMENT
Belfountain Subdivision
(TOWN OF CALEDON)

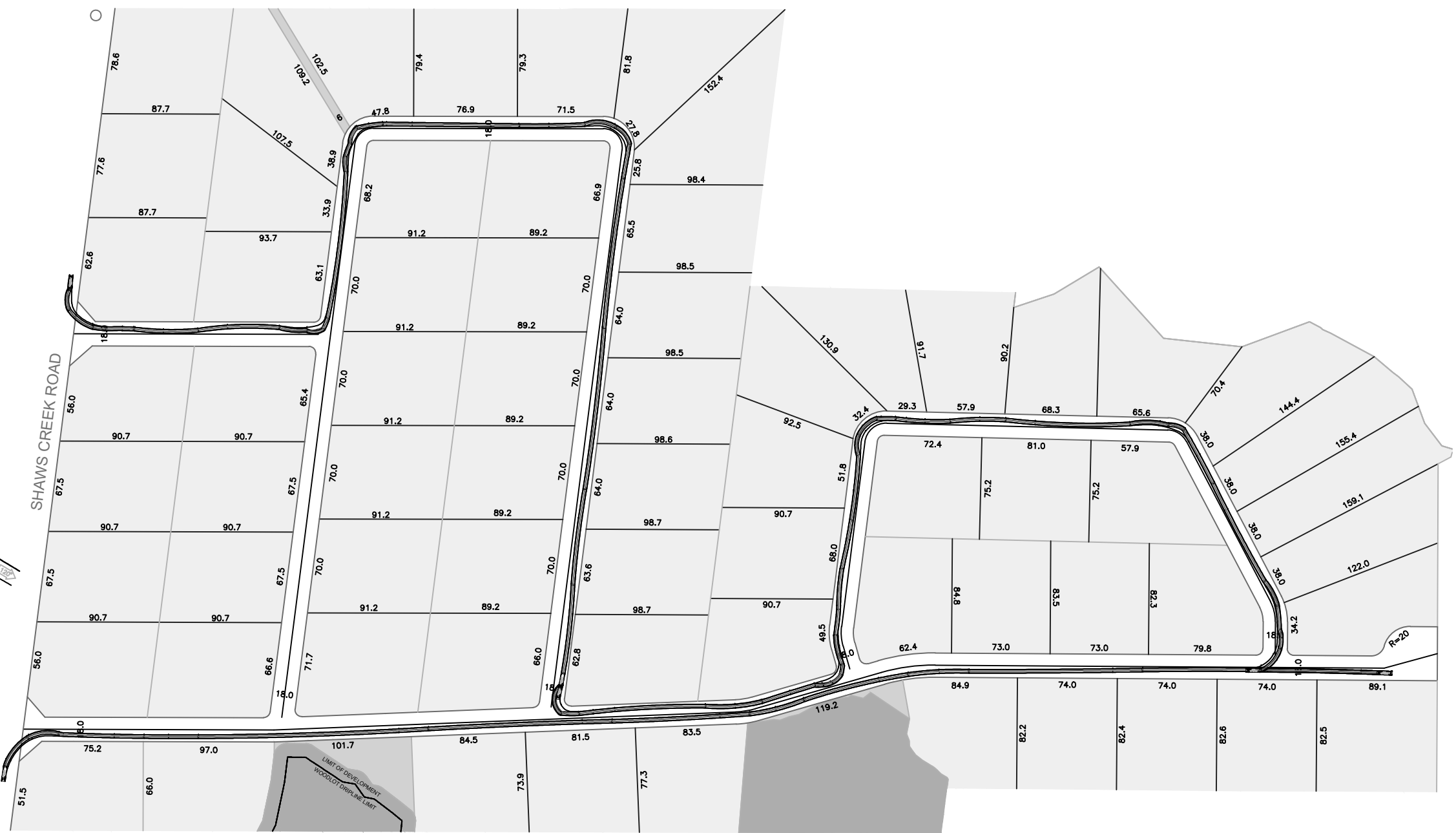
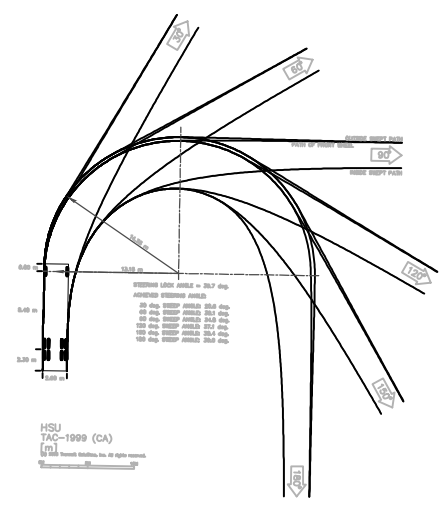
DRAWING TITLE:

AutoTURN Analysis
(HSU TAC-1999)

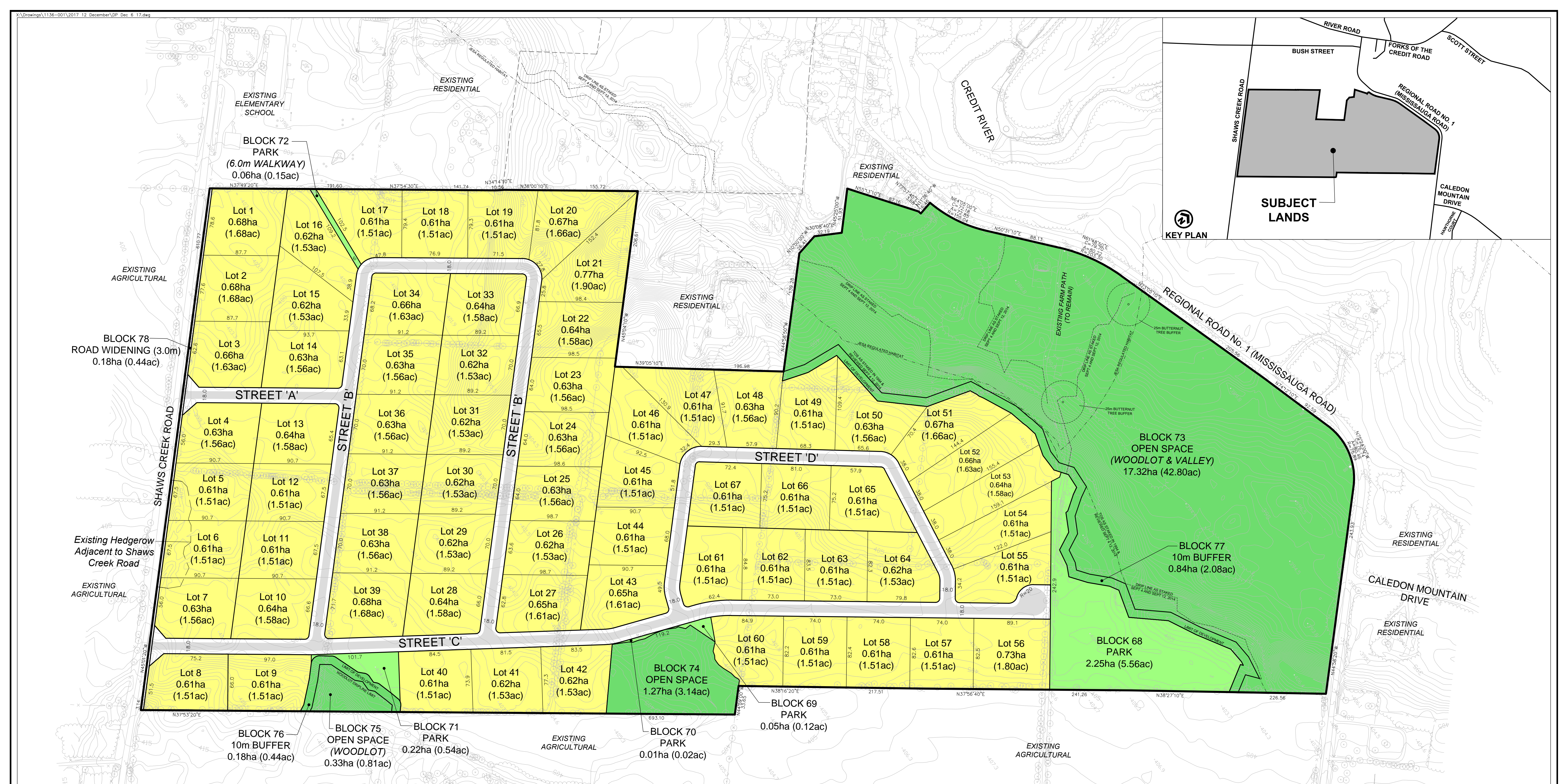
DESIGN BY: A.S.	DATE: December 5, 2017
CHECKED BY: R.P.	PROJECT NO. NT-17-217
DRAWN BY: A.S.	DRAWING NO. Figure 7-1
SCALE: NTS	



HSU meters
Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 39.7



Appendix A - Proposed Site Plan



**DRAFT PLAN OF SUBDIVISION
MANORS OF BELFOUNTAIN CORP.**

FILE # 21T-91015C

PART OF EAST HALF AND WEST HALF LOT 9,
CONCESSION 5, W.H.S.
(HAMLET OF BELFOUNTAIN),
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

OWNERS CERTIFICATE

I HEREBY AUTHORIZE GLEN SCHNARR & ASSOCIATES INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF CALEDON FOR APPROVAL.

SIGNED _____
JOHN SPINA, ASO
MANORS OF BELFOUNTAIN CORP.

DATE: _____

SURVEYORS CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE CORRECTLY AND ACCURATELY SHOWN.

SIGNED _____
ALISTER SANKEY, OLS
DAVID B. SEARLES SURVEYING LTD.
4255 SHERWOODTOWNE BLVD. SUITE 206
MISSISSAUGA, ON, L4Z 1Y5
PHONE: 905-273-6840
EMAIL: info@dbsearles.ca

DATE: _____

ADDITIONAL INFORMATION

(UNDER SECTION 51(17) OF THE PLANNING ACT) INFORMATION REQUIRED BY CLAUSES A,B,C,D,E,F,G, & J ARE SHOWN ON THE DRAFT AND KEY PLANS.

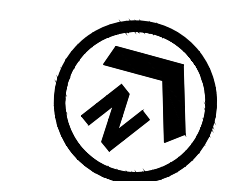
- H) MUNICIPAL AND PIPED WATER TO BE PROVIDED
- I) SANDY LOAM AND CLAY LOAM
- K) SANITARY AND STORM SEWERS TO BE PROVIDED

NOTES

- Local to local radii - 5.0
- Streets 'A' & 'C' to Shaws Creek Rd. daylight triangles - 15.0 x 15.0
- Pavement illustration is diagrammatic only

LAND USE SCHEDULE

LAND USE	LOTS / BLOCKS	AREA (ha)	AREA (ac)	UNITS
ESTATE RESIDENTIAL	1-67	42.24	104.38	67
PARK	68-72	2.60	6.42	
OPEN SPACE	73-75	18.92	46.75	
10m BUFFER	76, 77	1.02	2.52	
ROAD WIDENING	78	0.18	0.44	
18.0m ROW - (2,886m LENGTH)		5.32	13.15	
TOTAL	78	70.28	173.67	67



Scale 1:2000
(24 x 36)
December 5, 2017



Appendix B - Existing Traffic Data



Turning Movement Count (1 . SHAWS CREEK RD & BUSH ST)

Start Time	N Approach SHAWS CREEK RD						E Approach BUSH ST						S Approach SHAWS CREEK RD						W Approach BUSH ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	4	9	0	0	13	3	13	2	0	0	18	1	0	1	0	0	2	3	29	1	0	0	33	66	
07:15:00	2	1	12	0	0	15	0	15	2	0	0	17	2	1	0	0	0	3	1	35	0	0	0	36	71	
07:30:00	0	3	9	0	0	12	3	10	0	0	0	13	2	1	0	0	0	3	4	39	2	0	0	45	73	
07:45:00	1	6	13	0	0	20	4	16	2	0	0	22	0	1	1	0	0	2	3	33	1	0	0	37	81	291
08:00:00	0	5	13	0	0	18	2	10	2	0	0	14	0	2	1	0	0	3	3	20	0	0	0	23	58	283
08:15:00	1	4	6	0	0	11	3	14	7	0	0	24	9	4	4	0	0	17	4	22	1	0	0	27	79	291
08:30:00	0	2	8	0	0	10	3	14	1	0	0	18	1	1	1	0	0	3	1	10	0	0	0	11	42	260
08:45:00	1	0	9	0	0	10	2	7	1	0	0	10	1	0	1	0	0	2	1	14	2	0	0	17	39	218
09:00:00	2	2	6	0	0	10	1	13	2	0	0	16	1	2	0	0	0	3	1	9	0	0	0	10	39	199
09:15:00	0	1	3	0	0	4	3	9	0	0	0	12	0	0	1	0	0	1	1	16	3	0	0	20	37	157
09:30:00	1	0	3	0	0	4	4	10	0	0	0	14	0	3	0	0	0	3	0	15	2	0	0	17	38	153
09:45:00	0	2	4	0	0	6	2	3	0	0	0	5	0	0	1	0	0	1	1	6	1	0	0	8	20	134
BREAK																										
16:00:00	0	3	3	0	1	6	15	39	3	0	0	57	5	2	2	0	0	9	1	11	5	0	0	17	89	
16:15:00	0	1	4	0	0	5	7	29	1	0	0	37	3	0	5	0	0	8	0	11	2	0	0	13	63	
16:30:00	1	1	3	0	0	5	14	39	1	0	0	54	0	1	1	0	0	2	0	11	1	0	0	12	73	
16:45:00	1	1	6	0	0	8	12	44	1	0	0	57	3	4	2	0	0	9	1	16	4	0	0	21	95	320
17:00:00	0	0	3	0	0	3	10	31	2	0	0	43	1	1	0	0	0	2	0	20	4	0	0	24	72	303
17:15:00	0	0	2	0	0	2	17	38	1	0	0	56	1	3	2	0	0	6	1	20	2	0	0	23	87	327
17:30:00	0	3	6	0	0	9	14	29	0	0	0	43	3	1	0	0	0	4	0	21	2	0	0	23	79	333
17:45:00	1	0	1	0	0	2	13	30	1	0	0	44	0	1	1	0	0	2	0	9	1	0	0	10	58	296
18:00:00	2	0	5	0	0	7	7	17	1	0	0	25	1	2	1	0	0	4	0	12	0	0	0	12	48	272
18:15:00	0	1	0	0	0	1	9	19	1	0	0	29	0	0	0	0	0	0	0	10	1	0	0	11	41	226
18:30:00	3	1	3	0	0	7	10	8	0	0	0	18	0	1	1	0	0	2	0	15	3	0	0	18	45	192
18:45:00	0	3	1	0	0	4	3	9	1	0	0	13	0	0	1	0	0	1	0	8	0	0	0	8	26	160
Grand Total	16	44	132	0	1	192	161	466	32	0	0	659	34	31	27	0	0	92	26	412	38	0	0	476	1419	-
Approach %	8.3%	22.9%	68.8%	0%	-	-	24.4%	70.7%	4.9%	0%	-	-	37%	33.7%	29.3%	0%	-	-	5.5%	86.6%	8%	0%	-	-	-	
Totals %	1.1%	3.1%	9.3%	0%	-	13.5%	11.3%	32.8%	2.3%	0%	-	46.4%	2.4%	2.2%	1.9%	0%	-	6.5%	1.8%	29%	2.7%	0%	-	33.5%	-	
Heavy	1	4	5	0	-	-	2	9	6	0	-	-	4	4	2	0	-	-	3	6	1	0	-	-	-	
Heavy %	6.3%	9.1%	3.8%	0%	-	-	1.2%	1.9%	18.8%	0%	-	-	11.8%	12.9%	7.4%	0%	-	-	11.5%	1.5%	2.6%	0%	-	-	-	
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Count
Location Name: SHAWS CREEK RD & BUSH ST
Date: Wed, Nov 15, 2017 Deployment Lead: Theo Daglis

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6



Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (1.6 °C)

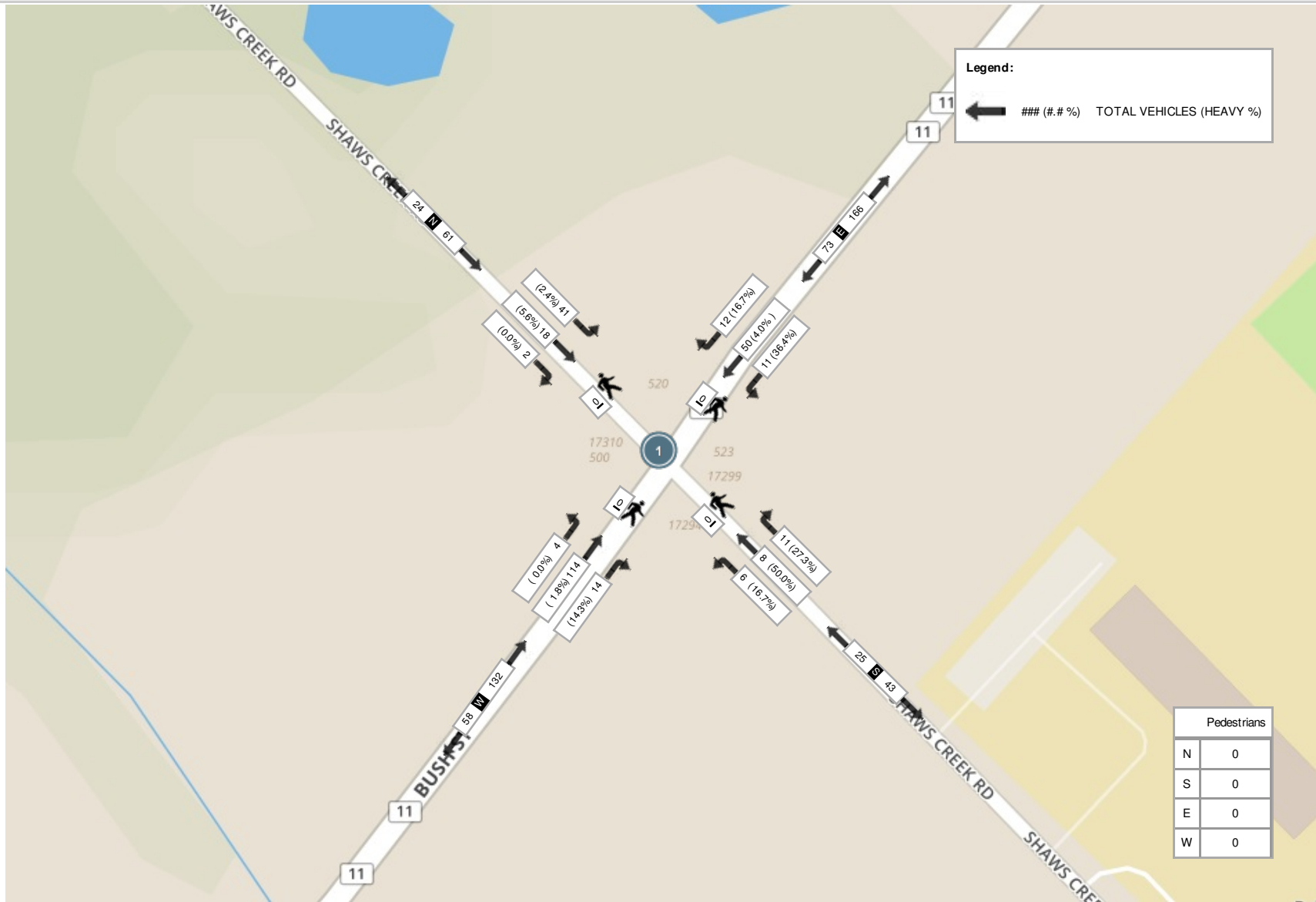
Start Time	N Approach SHAWS CREEK RD						E Approach BUSH ST						S Approach SHAWS CREEK RD						W Approach BUSH ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:30:00	0	3	9	0	0	12	3	10	0	0	0	13	2	1	0	0	0	3	4	39	2	0	0	45	73
07:45:00	1	6	13	0	0	20	4	16	2	0	0	22	0	1	1	0	0	2	3	33	1	0	0	37	81
08:00:00	0	5	13	0	0	18	2	10	2	0	0	14	0	2	1	0	0	3	3	20	0	0	0	23	58
08:15:00	1	4	6	0	0	11	3	14	7	0	0	24	9	4	4	0	0	17	4	22	1	0	0	27	79
Grand Total	2	18	41	0	0	61	12	50	11	0	0	73	11	8	6	0	0	25	14	114	4	0	0	132	291
Approach%	3.3%	29.5%	67.2%	0%	-	-	16.4%	68.5%	15.1%	0%	-	-	44%	32%	24%	0%	-	-	10.6%	86.4%	3%	0%	-	-	-
Totals %	0.7%	6.2%	14.1%	0%	21%	21%	4.1%	17.2%	3.8%	0%	25.1%	25.1%	3.8%	2.7%	2.1%	0%	8.6%	8.6%	4.8%	39.2%	1.4%	0%	45.4%	45.4%	-
PHF	0.5	0.75	0.79	0	0.76	0.76	0.75	0.78	0.39	0	0.76	0.76	0.31	0.5	0.38	0	0.37	0.37	0.88	0.73	0.5	0	0.73	0.73	-
Heavy	0	1	1	0	2	2	2	2	4	0	8	8	3	4	1	0	8	8	2	2	0	0	4	4	-
Heavy %	0%	5.6%	2.4%	0%	3.3%	3.3%	16.7%	4%	36.4%	0%	11%	11%	27.3%	50%	16.7%	0%	32%	32%	14.3%	1.8%	0%	0%	3%	3%	-
Lights	2	17	40	0	59	59	10	48	7	0	65	65	8	4	5	0	17	17	12	112	4	0	128	128	-
Lights %	100%	94.4%	97.6%	0%	96.7%	96.7%	83.3%	96%	63.6%	0%	89%	89%	72.7%	50%	83.3%	0%	68%	68%	85.7%	98.2%	100%	0%	97%	97%	-
Single-Unit Trucks	0	0	0	0	0	0	1	0	0	0	1	1	0	0	1	0	1	1	0	0	0	0	1	1	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	8.3%	0%	0%	0%	1.4%	1.4%	0%	0%	16.7%	0%	4%	4%	7.1%	0%	0%	0%	0.8%	0.8%	-
Buses	0	1	1	0	2	2	1	2	4	0	7	7	2	4	0	0	6	6	0	2	0	0	2	2	-
Buses %	0%	5.6%	2.4%	0%	3.3%	3.3%	8.3%	4%	36.4%	0%	9.6%	9.6%	18.2%	50%	0%	0%	24%	24%	0%	1.8%	0%	0%	1.5%	1.5%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	1	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9.1%	0%	0%	0%	4%	4%	7.1%	0%	0%	0%	0.8%	0.8%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



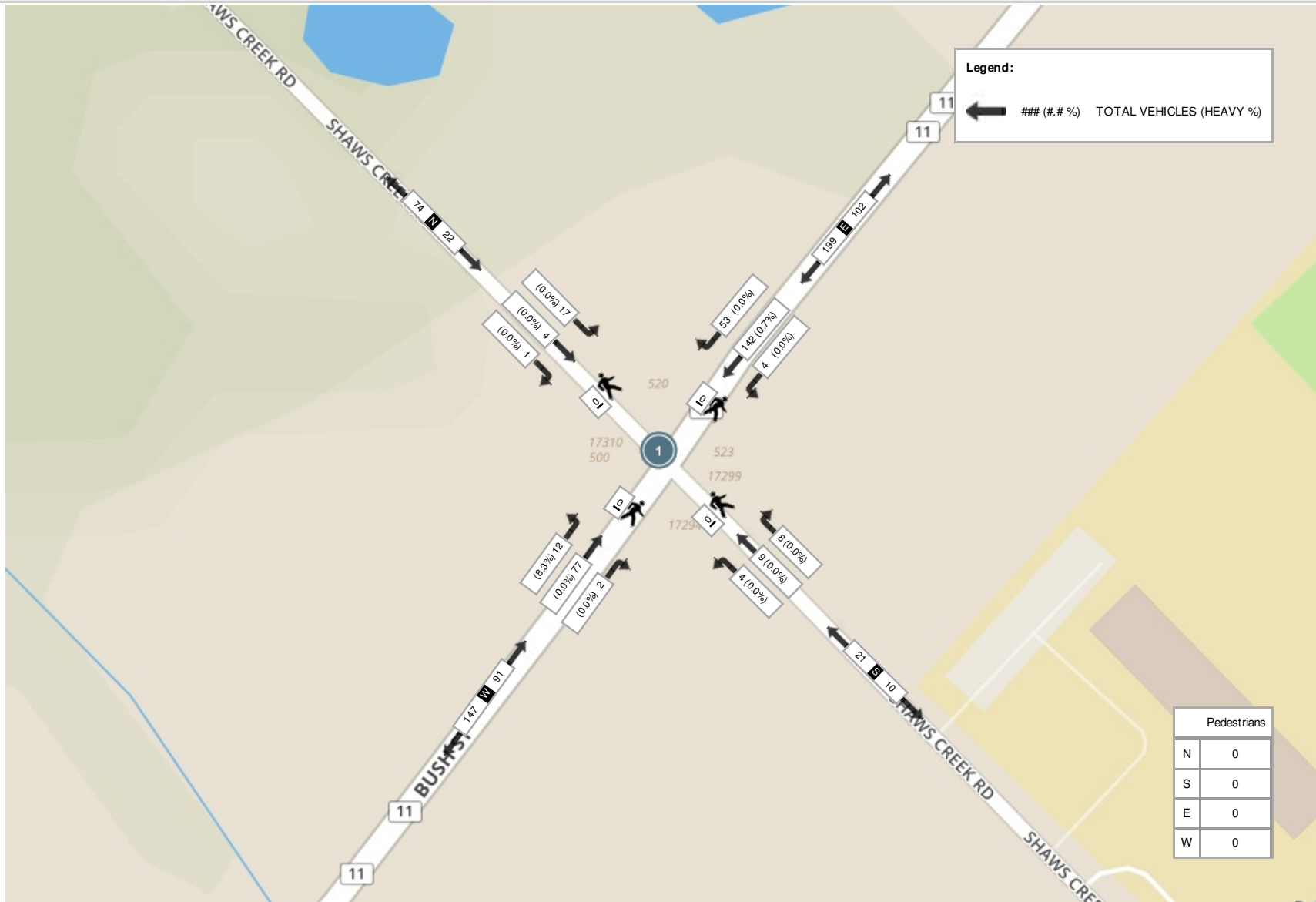
Peak Hour: 04:45 PM - 05:45 PM Weather: Rain (2.8 °C)

Start Time	N Approach SHAWS CREEK RD						E Approach BUSH ST						S Approach SHAWS CREEK RD						W Approach BUSH ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	1	1	6	0	0	8	12	44	1	0	0	57	3	4	2	0	0	9	1	16	4	0	0	21	95
17:00:00	0	0	3	0	0	3	10	31	2	0	0	43	1	1	0	0	0	2	0	20	4	0	0	24	72
17:15:00	0	0	2	0	0	2	17	38	1	0	0	56	1	3	2	0	0	6	1	20	2	0	0	23	87
17:30:00	0	3	6	0	0	9	14	29	0	0	0	43	3	1	0	0	0	4	0	21	2	0	0	23	79
Grand Total	1	4	17	0	0	22	53	142	4	0	0	199	8	9	4	0	0	21	2	77	12	0	0	91	333
Approach%	4.5%	18.2%	77.3%	0%	-	-	26.6%	71.4%	2%	0%	-	38.1%	42.9%	19%	0%	-	2.2%	84.6%	13.2%	0%	-	-	-	-	
Totals %	0.3%	1.2%	5.1%	0%	6.6%	15.9%	42.6%	1.2%	0%	59.8%	2.4%	2.7%	1.2%	0%	6.3%	0.6%	23.1%	3.6%	0%	27.3%	-	-	-	-	
PHF	0.25	0.33	0.71	0	0.61	0.78	0.81	0.5	0	0.87	0.67	0.56	0.5	0	0.58	0.5	0.92	0.75	0	0.95	-	-	-	-	
Heavy	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	
Heavy %	0%	0%	0%	0%	0%	0%	0%	0.7%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	8.3%	0%	1.1%	-	-	-	-	
Lights	1	4	17	0	22	53	141	4	0	198	8	9	4	0	21	2	77	11	0	90	-	-	-	-	
Lights %	100%	100%	100%	0%	100%	100%	99.3%	100%	0%	99.5%	100%	100%	100%	0%	100%	100%	100%	91.7%	0%	98.9%	-	-	-	-	
Single-Unit Trucks	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0.7%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	-	-	-	-	
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8.3%	0%	1.1%	-	-	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	

Peak Hour: 07:30 AM - 08:30 AM Weather: Mostly Cloudy (1.6 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Rain (2.8 °C)





Turning Movement Count (2 . SHAWS CREEK RD & THE GRANGE SIDE RD)

Start Time	N Approach SHAWS CREEK RD						E Approach THE GRANGE SIDE RD						S Approach SHAWS CREEK RD						W Approach THE GRANGE SIDE RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	1	2	2	0	0	5	0	1	1	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	8	
07:15:00	0	1	0	0	0	1	2	2	0	0	0	4	0	0	2	0	0	2	0	2	0	0	0	2	9	
07:30:00	0	3	1	0	0	4	0	2	0	0	0	2	0	2	0	0	0	2	0	1	0	0	0	1	9	
07:45:00	0	3	4	0	0	7	0	2	0	0	0	2	0	1	0	0	0	1	0	2	0	0	0	2	12	38
08:00:00	0	2	1	0	0	3	2	2	0	0	0	4	0	1	0	0	0	1	0	2	1	0	0	3	11	41
08:15:00	0	2	0	0	0	2	1	2	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	6	38
08:30:00	1	2	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	5	34
08:45:00	0	0	2	0	0	2	2	3	0	0	0	5	0	0	1	0	0	1	0	2	0	0	0	2	10	32
09:00:00	1	1	3	0	0	5	0	1	0	0	0	1	0	0	0	0	1	0	0	1	1	0	0	2	8	29
09:15:00	0	1	1	0	0	2	1	0	0	0	0	1	1	0	1	0	0	2	0	0	0	0	0	0	5	28
09:30:00	0	1	1	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	6	29
09:45:00	0	0	2	0	0	2	0	2	0	0	0	2	0	1	0	0	0	1	1	1	0	0	0	2	7	26
BREAK																										
16:00:00	0	1	0	0	0	1	1	1	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	5	
16:15:00	0	0	3	0	0	3	0	3	0	0	0	3	0	1	0	0	0	1	0	1	0	0	0	1	8	
16:30:00	0	1	1	0	0	2	3	1	0	0	0	4	0	0	1	0	0	1	0	2	0	0	0	2	9	
16:45:00	0	1	2	0	0	3	3	2	0	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	10	32
17:00:00	0	0	1	0	0	1	1	2	0	0	0	3	0	2	0	0	0	2	0	2	0	0	0	2	8	35
17:15:00	0	0	0	0	0	0	3	4	0	0	0	7	0	2	1	0	0	3	0	0	0	0	0	0	10	37
17:30:00	0	2	0	0	0	2	1	1	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	5	33
17:45:00	0	0	1	0	0	1	1	1	0	0	0	2	0	1	1	0	0	2	0	0	0	0	0	0	5	28
18:00:00	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	0	2	0	2	0	0	0	2	5	25
18:15:00	0	1	1	0	0	2	1	0	0	0	0	1	0	1	0	0	0	1	0	2	1	0	0	3	7	22
18:30:00	0	1	1	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	2	0	0	0	2	6	23
18:45:00	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	3	21
Grand Total	3	26	27	0	0	56	24	33	1	0	0	58	1	22	7	0	1	30	1	29	3	0	0	33	177	-
Approach %	5.4%	46.4%	48.2%	0%	-	-	41.4%	56.9%	1.7%	0%	-	-	3.3%	73.3%	23.3%	0%	-	-	3%	87.9%	9.1%	0%	-	-	-	-
Totals %	1.7%	14.7%	15.3%	0%	31.6%	31.6%	13.6%	18.6%	0.6%	0%	32.8%	0.6%	12.4%	4%	0%	16.9%	0.6%	16.4%	1.7%	0%	18.6%	-	-	-	-	
Heavy	1	6	2	0	-	-	2	2	1	0	-	-	0	3	0	0	-	-	0	2	1	0	-	-	-	-
Heavy %	33.3%	23.1%	7.4%	0%	-	-	8.3%	6.1%	100%	0%	-	-	0%	13.6%	0%	0%	-	-	0%	6.9%	33.3%	0%	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Turning Movement Count
Location Name: SHAWS CREEK RD & THE GRANGE SIDE RD
Date: Wed, Nov 15, 2017 Deployment Lead: Theo Daglis

NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6



Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (1.6 °C)

Start Time	N Approach SHAWS CREEK RD						E Approach THE GRANGE SIDE RD						S Approach SHAWS CREEK RD						W Approach THE GRANGE SIDE RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	0	1	0	0	0	1	2	2	0	0	0	4	0	0	2	0	0	2	0	2	0	0	0	2	9
07:30:00	0	3	1	0	0	4	0	2	0	0	0	2	0	2	0	0	0	2	0	1	0	0	0	1	9
07:45:00	0	3	4	0	0	7	0	2	0	0	0	2	0	1	0	0	0	1	0	2	0	0	0	2	12
08:00:00	0	2	1	0	0	3	2	2	0	0	0	4	0	1	0	0	0	1	0	2	1	0	0	3	11
Grand Total	0	9	6	0	0	15	4	8	0	0	0	12	0	4	2	0	0	6	0	7	1	0	0	8	41
Approach%	0%	60%	40%	0%	-	-	33.3%	66.7%	0%	0%	-	-	0%	66.7%	33.3%	0%	-	0%	87.5%	12.5%	0%	-	-	-	-
Totals %	0%	22%	14.6%	0%	36.6%	36.6%	9.8%	19.5%	0%	0%	29.3%	29.3%	0%	9.8%	4.9%	0%	14.6%	0%	17.1%	2.4%	0%	19.5%	19.5%	-	
PHF	0	0.75	0.38	0	0.54	0.54	0.5	1	0	0	0.75	0.75	0	0.5	0.25	0	0.75	0	0.88	0.25	0	0.67	0.67	-	
Heavy	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	1	1	0	2	2	-	
Heavy %	0%	0%	0%	0%	0%	0%	0%	12.5%	0%	0%	8.3%	8.3%	0%	25%	0%	0%	16.7%	0%	14.3%	100%	0%	25%	25%	-	
Lights	0	9	6	0	15	15	4	7	0	0	11	11	0	3	2	0	5	0	6	0	0	6	6	-	
Lights %	0%	100%	100%	0%	100%	100%	100%	87.5%	0%	0%	91.7%	91.7%	0%	75%	100%	0%	83.3%	0%	85.7%	0%	0%	75%	75%	-	
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	1	1	0	2	2	-	
Buses %	0%	0%	0%	0%	0%	0%	0%	12.5%	0%	0%	8.3%	8.3%	0%	25%	0%	0%	16.7%	0%	14.3%	100%	0%	25%	25%	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	0	-	-	
Pedestrians %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	0%	-	-	



Peak Hour: 04:30 PM - 05:30 PM Weather: Rain (2.8 °C)

Start Time	N Approach SHAWS CREEK RD						E Approach THE GRANGE SIDE RD						S Approach SHAWS CREEK RD						W Approach THE GRANGE SIDE RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	0	1	1	0	0	2	3	1	0	0	0	4	0	0	1	0	0	1	0	2	0	0	0	2	9
16:45:00	0	1	2	0	0	3	3	2	0	0	0	5	0	2	0	0	0	2	0	0	0	0	0	0	10
17:00:00	0	0	1	0	0	1	1	2	0	0	0	3	0	2	0	0	0	2	0	2	0	0	0	2	8
17:15:00	0	0	0	0	0	0	3	4	0	0	0	7	0	2	1	0	0	3	0	0	0	0	0	0	10
Grand Total	0	2	4	0	0	6	10	9	0	0	0	19	0	6	2	0	0	8	0	4	0	0	0	4	37
Approach%	0%	33.3%	66.7%	0%	-	-	52.6%	47.4%	0%	0%	-	0%	75%	25%	0%	-	0%	100%	0%	0%	-	-	-	-	-
Totals %	0%	5.4%	10.8%	0%	16.2%	27%	24.3%	0%	0%	51.4%	0%	16.2%	5.4%	0%	21.6%	0%	10.8%	0%	0%	10.8%	-	-	-	-	-
PHF	0	0.5	0.5	0	0.5	0.83	0.56	0	0	0.68	0	0.75	0.5	0	0.67	0	0.5	0	0	0.5	-	-	-	-	-
Heavy	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Heavy %	0%	0%	25%	0%	16.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Lights	0	2	3	0	5	10	9	0	0	19	0	6	2	0	8	0	4	0	0	4	-	-	-	-	-
Lights %	0%	100%	75%	0%	83.3%	100%	100%	0%	0%	100%	0%	100%	100%	0%	100%	0%	100%	0%	0%	100%	-	-	-	-	-
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Buses	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Buses %	0%	0%	25%	0%	16.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Mostly Cloudy (1.6 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Rain (2.8 °C)



Appendix C - Existing Traffic Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis

3: Shaws Creek Road & Bush Street

12/6/2017



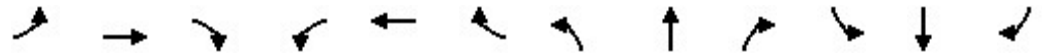
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	114	14	11	50	12	6	8	11	41	18	2
Future Volume (vph)	4	114	14	11	50	12	6	8	11	41	18	2
Peak Hour Factor	0.50	0.73	0.88	0.39	0.78	0.75	0.38	0.50	0.31	0.79	0.75	0.50
Hourly flow rate (vph)	8	156	16	28	64	16	16	16	35	52	24	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	180	108	67	80
Volume Left (vph)	8	28	16	52
Volume Right (vph)	16	16	35	4
Hadj (s)	-0.01	0.00	-0.23	0.13
Departure Headway (s)	4.4	4.5	4.4	4.8
Degree Utilization, x	0.22	0.13	0.08	0.11
Capacity (veh/h)	794	765	753	700
Control Delay (s)	8.6	8.1	7.8	8.3
Approach Delay (s)	8.6	8.1	7.8	8.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.3	
Level of Service		A	
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: Shaws Creek Road & The Grange Side Road

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	4	0	6	9	0	0	8	4	1	7	0
Future Volume (vph)	2	4	0	6	9	0	0	8	4	1	7	0
Peak Hour Factor	0.25	0.88	0.25	0.25	1.00	0.50	0.25	0.50	0.25	0.38	0.75	0.25
Hourly flow rate (vph)	8	5	0	24	9	0	0	16	16	3	9	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	33	32	12
Volume Left (vph)	8	24	0	3
Volume Right (vph)	0	0	16	0
Hadj (s)	0.16	0.18	-0.27	0.08
Departure Headway (s)	4.2	4.2	3.7	4.1
Degree Utilization, x	0.02	0.04	0.03	0.01
Capacity (veh/h)	845	847	936	859
Control Delay (s)	7.2	7.3	6.9	7.2
Approach Delay (s)	7.2	7.3	6.9	7.2
Approach LOS	A	A	A	A

Intersection Summary

Delay	7.1
Level of Service	A
Intersection Capacity Utilization	13.3%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

3: Shaws Creek Road & Bush Street

12/6/2017



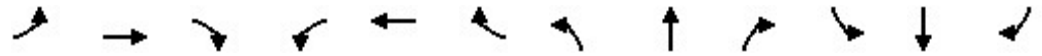
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	77	2	4	142	53	4	9	8	17	4	1
Future Volume (vph)	12	77	2	4	142	53	4	9	8	17	4	1
Peak Hour Factor	0.75	0.92	0.50	0.50	0.81	0.78	0.50	0.56	0.67	0.71	0.33	0.25
Hourly flow rate (vph)	16	84	4	8	175	68	8	16	12	24	12	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	104	251	36	40
Volume Left (vph)	16	8	8	24
Volume Right (vph)	4	68	12	4
Hadj (s)	0.04	-0.12	-0.12	0.09
Departure Headway (s)	4.4	4.1	4.6	4.8
Degree Utilization, x	0.13	0.28	0.05	0.05
Capacity (veh/h)	795	864	719	686
Control Delay (s)	8.0	8.7	7.8	8.1
Approach Delay (s)	8.0	8.7	7.8	8.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.4	
Level of Service		A	
Intersection Capacity Utilization	21.9%		ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis
 6: Shaws Creek Road & The Grange Side Road

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	6	0	4	2	0	0	9	10	0	4	0
Future Volume (vph)	2	6	0	4	2	0	0	9	10	0	4	0
Peak Hour Factor	0.25	0.50	0.25	0.25	0.56	0.83	0.50	0.75	0.25	0.50	0.50	0.25
Hourly flow rate (vph)	8	12	0	16	4	0	0	12	40	0	8	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	20	20	52	8
Volume Left (vph)	8	16	0	0
Volume Right (vph)	0	0	40	0
Hadj (s)	0.11	0.19	-0.43	0.03
Departure Headway (s)	4.2	4.2	3.6	4.1
Degree Utilization, x	0.02	0.02	0.05	0.01
Capacity (veh/h)	849	834	994	870
Control Delay (s)	7.2	7.3	6.8	7.1
Approach Delay (s)	7.2	7.3	6.8	7.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		7.0	
Level of Service		A	
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D – Future Background Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis

3: Shaws Creek Road & Bush Street

12/6/2017



















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	126	14	11	55	12	6	9	11	41	20	2
Future Volume (vph)	4	126	14	11	55	12	6	9	11	41	20	2
Peak Hour Factor	0.50	0.73	0.88	0.39	0.78	0.75	0.38	0.50	0.31	0.79	0.75	0.50
Hourly flow rate (vph)	8	173	16	28	71	16	16	18	35	52	27	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	197	115	69	83
Volume Left (vph)	8	28	16	52
Volume Right (vph)	16	16	35	4
Hadj (s)	-0.01	0.00	-0.22	0.13
Departure Headway (s)	4.4	4.5	4.5	4.8
Degree Utilization, x	0.24	0.14	0.09	0.11
Capacity (veh/h)	788	757	738	689
Control Delay (s)	8.8	8.2	7.9	8.4
Approach Delay (s)	8.8	8.2	7.9	8.4
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.5	
Level of Service		A	
Intersection Capacity Utilization	24.0%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: Shaws Creek Road & The Grange Side Road

12/6/2017

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	4	0	6	10	0	0	9	4	1	8	0
Future Volume (vph)	2	4	0	6	10	0	0	9	4	1	8	0
Peak Hour Factor	0.25	0.88	0.25	0.25	1.00	0.50	0.25	0.50	0.25	0.38	0.75	0.25
Hourly flow rate (vph)	8	5	0	24	10	0	0	18	16	3	11	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	13	34	34	14								
Volume Left (vph)	8	24	0	3								
Volume Right (vph)	0	0	16	0								
Hadj (s)	0.16	0.18	-0.25	0.08								
Departure Headway (s)	4.2	4.2	3.8	4.1								
Degree Utilization, x	0.02	0.04	0.04	0.02								
Capacity (veh/h)	842	845	930	860								
Control Delay (s)	7.3	7.4	6.9	7.2								
Approach Delay (s)	7.3	7.4	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.2									
Level of Service			A									
Intersection Capacity Utilization			13.3%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Shaws Creek Road & Bush Street

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	85	2	4	157	53	4	10	8	17	4	1
Future Volume (vph)	12	85	2	4	157	53	4	10	8	17	4	1
Peak Hour Factor	0.75	0.92	0.50	0.50	0.81	0.78	0.50	0.56	0.67	0.71	0.33	0.25
Hourly flow rate (vph)	16	92	4	8	194	68	8	18	12	24	12	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	112	270	38	40
Volume Left (vph)	16	8	8	24
Volume Right (vph)	4	68	12	4
Hadj (s)	0.04	-0.11	-0.11	0.09
Departure Headway (s)	4.4	4.1	4.7	4.9
Degree Utilization, x	0.14	0.31	0.05	0.05
Capacity (veh/h)	790	859	705	674
Control Delay (s)	8.1	8.9	7.9	8.2
Approach Delay (s)	8.1	8.9	7.9	8.2
Approach LOS	A	A	A	A

Intersection Summary

Delay	8.6
Level of Service	A
Intersection Capacity Utilization	22.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
 6: Shaws Creek Road & The Grange Side Road

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	7	0	4	2	0	0	10	10	0	4	0
Future Volume (vph)	2	7	0	4	2	0	0	10	10	0	4	0
Peak Hour Factor	0.25	0.50	0.25	0.25	0.56	0.83	0.50	0.75	0.25	0.50	0.50	0.25
Hourly flow rate (vph)	8	14	0	16	4	0	0	13	40	0	8	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	22	20	53	8
Volume Left (vph)	8	16	0	0
Volume Right (vph)	0	0	40	0
Hadj (s)	0.11	0.19	-0.42	0.03
Departure Headway (s)	4.1	4.2	3.6	4.1
Degree Utilization, x	0.03	0.02	0.05	0.01
Capacity (veh/h)	849	833	980	868
Control Delay (s)	7.3	7.3	6.8	7.1
Approach Delay (s)	7.3	7.3	6.8	7.1
Approach LOS	A	A	A	A

Intersection Summary			
Delay		7.0	
Level of Service		A	
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E – Future Total Level of Service Calculations

HCM Unsignalized Intersection Capacity Analysis
 3: Shaws Creek Road & Bush Street

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	126	15	11	55	12	10	13	11	41	21	2
Future Volume (vph)	4	126	15	11	55	12	10	13	11	41	21	2
Peak Hour Factor	0.50	0.73	0.88	0.39	0.78	0.75	0.38	0.50	0.31	0.79	0.75	0.50
Hourly flow rate (vph)	8	173	17	28	71	16	26	26	35	52	28	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	198	115	87	84
Volume Left (vph)	8	28	26	52
Volume Right (vph)	17	16	35	4
Hadj (s)	-0.01	0.00	-0.15	0.13
Departure Headway (s)	4.5	4.6	4.6	4.9
Degree Utilization, x	0.24	0.15	0.11	0.11
Capacity (veh/h)	777	745	726	683
Control Delay (s)	8.9	8.3	8.2	8.5
Approach Delay (s)	8.9	8.3	8.2	8.5
Approach LOS	A	A	A	A

Intersection Summary

Delay	8.6
Level of Service	A
Intersection Capacity Utilization	22.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

6: Shaws Creek Road & The Grange Side Road

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	4	0	6	10	12	0	9	4	36	8	0
Future Volume (vph)	2	4	0	6	10	12	0	9	4	36	8	0
Peak Hour Factor	0.25	0.88	0.25	0.25	1.00	0.50	0.25	0.50	0.25	0.38	0.75	0.25
Hourly flow rate (vph)	8	5	0	24	10	24	0	18	16	95	11	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	13	58	34	106
Volume Left (vph)	8	24	0	95
Volume Right (vph)	0	24	16	0
Hadj (s)	0.16	-0.13	-0.25	0.21
Departure Headway (s)	4.4	4.1	3.9	4.3
Degree Utilization, x	0.02	0.07	0.04	0.13
Capacity (veh/h)	781	848	887	820
Control Delay (s)	7.5	7.4	7.1	7.9
Approach Delay (s)	7.5	7.4	7.1	7.9
Approach LOS	A	A	A	A

Intersection Summary

Delay	7.6
Level of Service	A
Intersection Capacity Utilization	19.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

9: Shaws Creek Road & Street 'A'

12/6/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	8	26	0	2	45
Future Volume (Veh/h)	0	8	26	0	2	45
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)	0	9	28	0	2	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
			None			
Median storage veh						
Upstream signal (m)						
			311			
pX, platoon unblocked						
vC, conflicting volume	81	28				28
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81	28				28
tC, single (s)	6.4	6.2				4.1
tC, 2 stage (s)						
tF (s)	3.5	3.3				2.2
p0 queue free %	100	99				100
cM capacity (veh/h)	920	1047				1585
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	28	51			
Volume Left	0	0	2			
Volume Right	9	0	0			
cSH	1047	1700	1585			
Volume to Capacity	0.01	0.02	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.5	0.0	0.3			
Lane LOS	A		A			
Approach Delay (s)	8.5	0.0	0.3			
Approach LOS	A					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			14.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

11: Shaws Creek Road & Street 'C'

12/6/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	0	26	12	0	45
Future Volume (Veh/h)	35	0	26	12	0	45
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)	38	0	28	13	0	49
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	84	34			41	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	84	34			41	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	918	1039			1568	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	38	41	49			
Volume Left	38	0	0			
Volume Right	0	13	0			
cSH	918	1700	1568			
Volume to Capacity	0.04	0.02	0.00			
Queue Length 95th (m)	1.0	0.0	0.0			
Control Delay (s)	9.1	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.1	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.7			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Shaws Creek Road & Bush Street

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	85	7	4	157	53	7	13	8	17	9	1
Future Volume (vph)	12	85	7	4	157	53	7	13	8	17	9	1
Peak Hour Factor	0.75	0.92	0.50	0.50	0.81	0.78	0.50	0.56	0.67	0.71	0.33	0.25
Hourly flow rate (vph)	16	92	14	8	194	68	14	23	12	24	27	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	122	270	49	55
Volume Left (vph)	16	8	14	24
Volume Right (vph)	14	68	12	4
Hadj (s)	-0.01	-0.11	-0.06	0.08
Departure Headway (s)	4.4	4.2	4.8	4.9
Degree Utilization, x	0.15	0.31	0.07	0.08
Capacity (veh/h)	780	829	688	669
Control Delay (s)	8.2	9.1	8.1	8.3
Approach Delay (s)	8.2	9.1	8.1	8.3
Approach LOS	A	A	A	A

Intersection Summary			
Delay		8.7	
Level of Service		A	
Intersection Capacity Utilization	22.2%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
 6: Shaws Creek Road & The Grange Side Road

12/6/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	7	0	4	2	36	0	10	10	21	4	0
Future Volume (vph)	2	7	0	4	2	36	0	10	10	21	4	0
Peak Hour Factor	0.25	0.50	0.25	0.25	0.56	0.83	0.50	0.75	0.25	0.50	0.50	0.25
Hourly flow rate (vph)	8	14	0	16	4	43	0	13	40	42	8	0

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	22	63	53	50
Volume Left (vph)	8	16	0	42
Volume Right (vph)	0	43	40	0
Hadj (s)	0.11	-0.32	-0.42	0.20
Departure Headway (s)	4.3	3.8	3.7	4.3
Degree Utilization, x	0.03	0.07	0.05	0.06
Capacity (veh/h)	813	915	936	811
Control Delay (s)	7.4	7.1	6.9	7.6
Approach Delay (s)	7.4	7.1	6.9	7.6
Approach LOS	A	A	A	A

Intersection Summary			
Delay		7.2	
Level of Service		A	
Intersection Capacity Utilization	18.0%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

9: Shaws Creek Road & Street 'A'

12/6/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	6	22	0	10	10
Future Volume (Veh/h)	0	6	22	0	10	10
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)	0	7	24	0	11	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (m)			299			
pX, platoon unblocked						
vC, conflicting volume	57	24			24	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	57	24			24	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	944	1052			1591	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	7	24	22			
Volume Left	0	0	11			
Volume Right	7	0	0			
cSH	1052	1700	1591			
Volume to Capacity	0.01	0.01	0.01			
Queue Length 95th (m)	0.2	0.0	0.2			
Control Delay (s)	8.4	0.0	3.7			
Lane LOS	A		A			
Approach Delay (s)	8.4	0.0	3.7			
Approach LOS	A					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			17.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

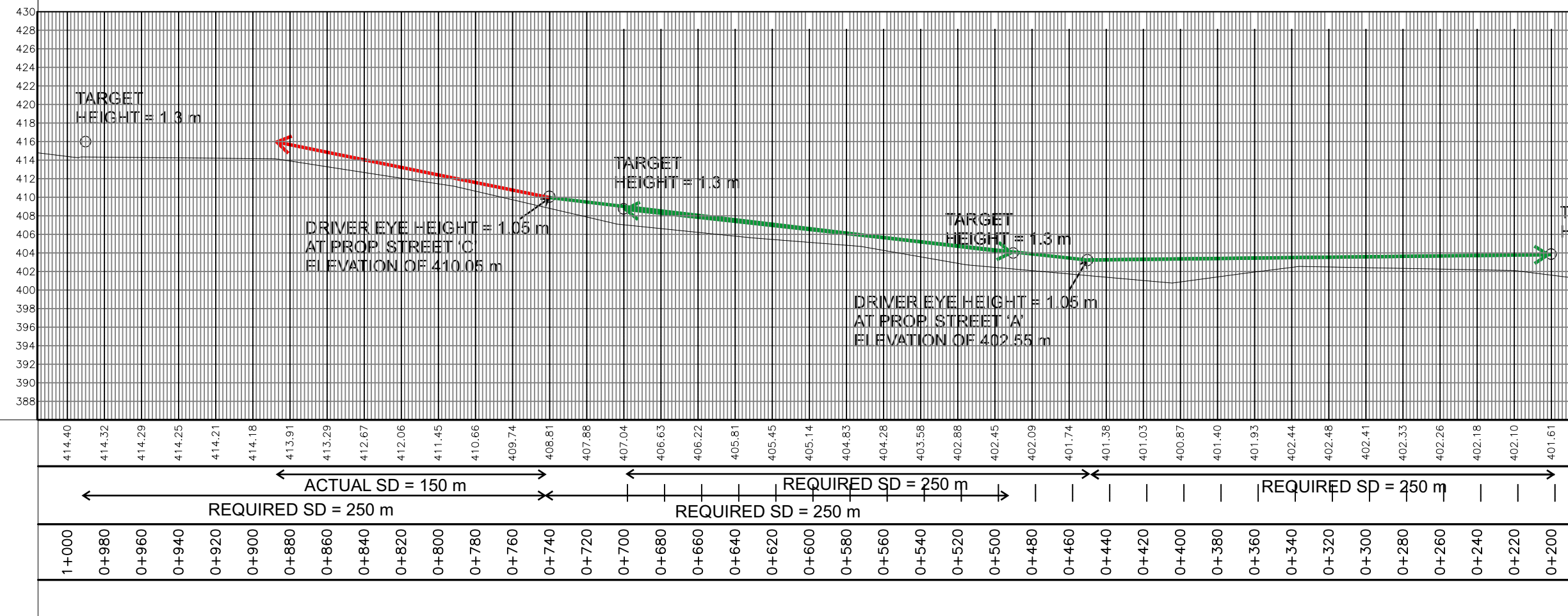
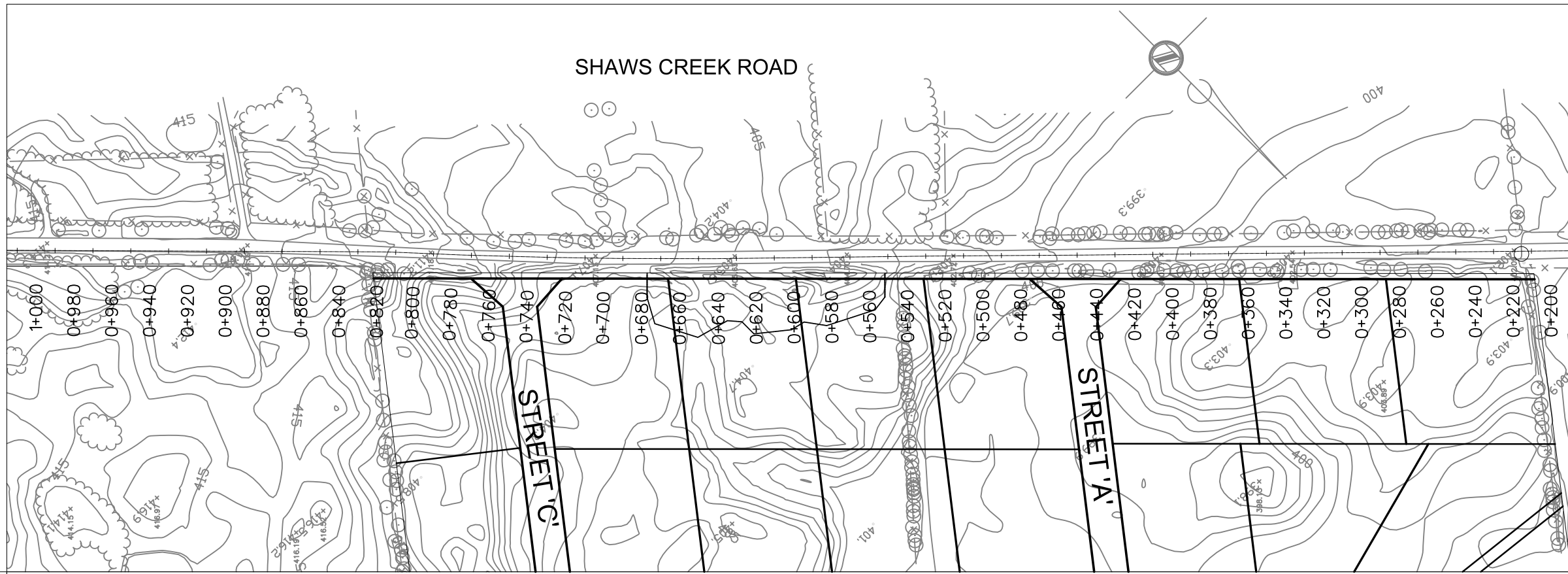
11: Shaws Creek Road & Street 'C'

12/6/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	0	22	36	0	10
Future Volume (Veh/h)	21	0	22	36	0	10
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)	23	0	24	39	0	11
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	54	44			63	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	54	44			63	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	953	1027			1540	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	23	63	11			
Volume Left	23	0	0			
Volume Right	0	39	0			
cSH	953	1700	1540			
Volume to Capacity	0.02	0.04	0.00			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			13.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Appendix G – Site Distance Analysis




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DRAWING TITLE:
SIGHT DISTANCES

DESIGN BY: Z.G.	DATE: DE 2017
CHECKED BY: B.M.	PROJECT NO. NT-17-217
DRAWN BY: J.K.	DRAWING NO. SD-1
SCALE: H: 1:2500 V: 1:500	