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A Division of NextEng Consulting Group Inc.

Transportation Planning
Traffic Impact Assessment
Parking Assessment
Site Access Design & Review
Site Servicing and Grading
Stormwater Management
Municipal Road Design

Traffic Brief & Parking Study

PROPOSED RESIDENTIAL DEVELOPMENT

5219 Upper Middle Road
CITY OF BURLINGTON

March 2017
Project No: NT-17-029

nexTrans Consulting
A Division of NextEng Consulting Group Inc.

March 23, 2017

Bloomfield Developments Inc.
77 Cedar Ridge Road
Gormely, ON L0H 1G0

Attention: Mr. Selva Chelliah

Re: Transportation Study – Traffic Brief
Proposed Residential Development
5219 Upper Middle Road, City of Burlington ON
Our Project No. NT-17-029

NexTrans Consulting (A Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Traffic Brief and Parking Justification Study to support future infill residential development located in the northwest corner of Upper Middle Road and Quinte Street intersection, municipally known as 5219 Upper Middle Road, in the City of Burlington.

The subject site is currently vacant and is bounded by existing residential development to the north and east, vacant lands to the west, and Upper Middle Road to the south. The development proposal consists of 22 residential units (i.e. eight (8) freehold semi detached dwelling units and 14 condominium townhouse units). An overall quantum parking supply of 49 parking spaces are provided to serve the development.

The study concludes that the proposed development can adequately be accommodated by the existing transportation network with minimal traffic impact to the adjacent public roadways and the proposed site access will operate at excellent levels of service.

We trust the enclosed sufficiently addresses your needs. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

NEXTRANS ENGINEERING

Prepared by:
Annosan Srikantha, EIT
Transportation Analyst

Reviewed by:
Richard Pernicky, CET, MITE
Principal

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1.0 INTRODUCTION

NexTrans Consulting (A Division of NextEng Consulting Group Inc.) was retained by Bloomfield Developments Inc. to undertake a Traffic Brief and Parking Justification Study to support future infill residential development located in the northwest corner of Upper Middle Road and Quinte Street intersection, municipally known as 5219 Upper Middle Road, in the City of Burlington.

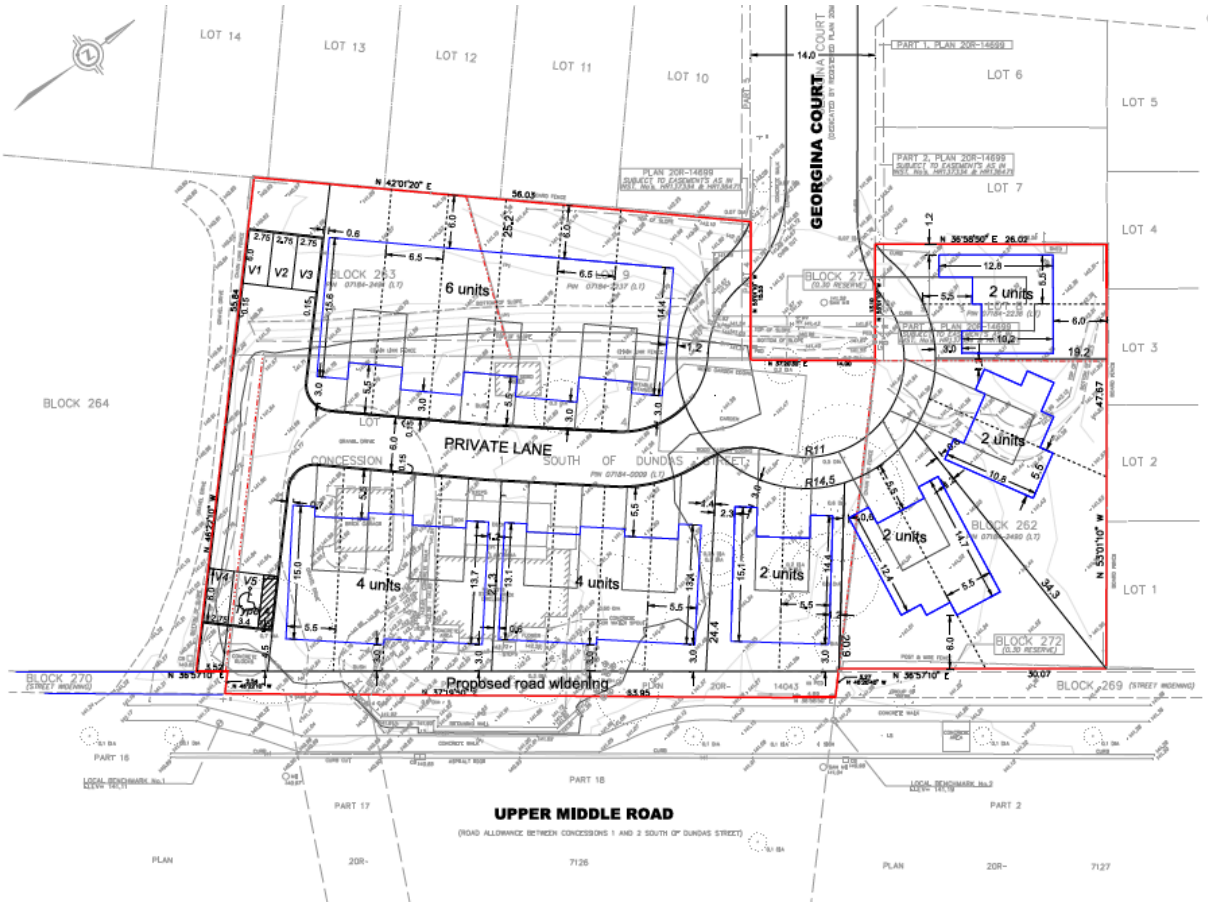
The location of the proposed development is illustrated in **Figure 1-1**.

Figure 1-1: Site Location



The subject site is currently vacant and is bounded by existing residential development to the north and east, vacant lands to the west, and Upper Middle Road to the south. The development proposal consists of 22 residential units (i.e. eight (8) freehold semi detached dwelling units and 14 condominium townhouse units). Based on the site plan provided, a total of 49 vehicle parking spaces will be provided consisting of two vehicle parking spaces per unit (i.e. one in the garage and one in the lead-in portion of the driveway), and 5 visitor parking spaces including one (1) accessible parking spaces to be shared by the 14 condominium townhouse units. Vehicular entrance for the eight (8) freehold semi detached dwelling units will be provided full movement via Georgina Street in a roundabout manner. In addition, the 14 condominium townhouse units will be serviced by a private roadway with direct entrance via Georgina Street. **Figure 1-2** illustrates the proposed site plan, **Appendix A** also provides larger scale version of the proposed site plan.

Figure 1-2: Proposed Site Plan



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The subject property is generally located in the northwest corner of Upper Middle Road and Quinte Street intersection, in the City of Burlington ON. The road network description is as follows:

Quinte Street is a north-south a local road under the jurisdiction of the City of Burlington and maintains a posted speed limit of 40 km/h. Quinte Street in the vicinity of the subject site has a 2-lane cross section.

Rome Crescent is an east-west two-lane local road under the jurisdiction control of City of Burlington and maintains a unposted speed limit of 40 km/h in the vicinity of the site. Rome Crescent meets Quinte Street as a roundabout intersection.

Georgina Court is a north-south two-lane private local road under the jurisdiction control of City of Burlington and maintains a unposted speed limit of 40 km/h in the vicinity of the site. Georgina Court currently services two (2) single detached residential units with a hammer head located south of the units. Quinte Street meets Rome Crescent as an unsignalized intersection.

2.2. Transit and Active Transportation Mode Assessment

The proposed development is situated in a transit supportive neighborhood with bus stops located approximately 60 m (i.e. 1-minute walk) to the subject site and is within comfortable walking distance. The route services in the immediate area are described below:

- **Bus Route 11 Sutton - Alton:** The 11 Sutton - Alton bus route operates every 30 minutes between 407 Carpool and Appleby Go Station. Weekend and holiday service is reduced to every hour. Accessible service is provided on the route. Bike racks are available on this route.

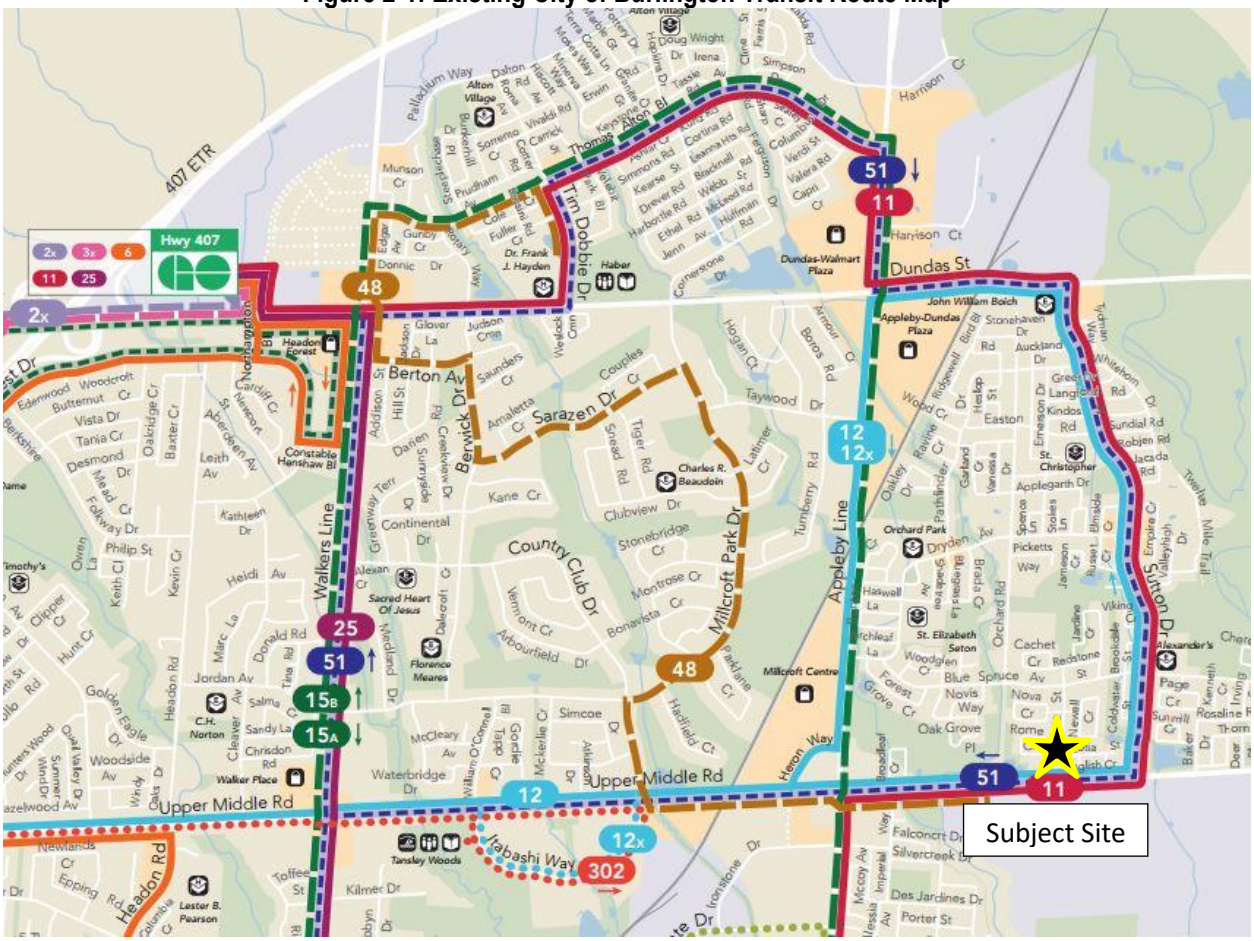
- **Bus Route 12 Upper Middle**: The 12 Upper Middle bus route operates every 30 minutes between Burlington GO Station and Dundas St. & Sutton Dr. Weekend and holiday service is reduced to every hour. Accessible service is provided on the route. Bike racks are available on this route.

- **Bus Route 51 Burlington Northwest:** The 51 Burlington Northwest bus route operates a late-night service every hour from Monday to Saturday. Accessible service is provided on the route. Bike racks are available on this route.

- **Bus Route 48 Millcroft:** The 48 Millcroft bus route operates between Upper Middle & Sutton Dr. and Haber Community Centre. There is a single service operated in the morning and a single service operated in the afternoon. Accessible service is provided on the route. Bike racks are available on this route.

Based on the study prepared by the Ministry of Transportation Ontario entitled: 'Transit Supportive Guidelines', dated January 2012, transit users are generally willing to walk 400 meters to a local stop or 800 meters to a rapid transit station. The Upper Middle Rd at Corpus Christi bus stop is approximately 64 meters from the proposed subject site. To encourage and facilitate transit use, it is recommended that the Owner provide a preloaded (minimum $25) PRESTO card to the residents. Offering the bus pass provides financial incentive to encourage transit use especially for first-time users. An increase in transit use is fundamental to the overall reduction of automobile use and subsequent vehicular parking demand. **Figure 2-1** illustrates the existing City of Burlington transit routes in the study area.

Figure 2-1: Existing City of Burlington Transit Route Map



2.3. Existing Active Transportation Infrastructures

Sidewalks

The area surrounding the proposed development is serviced with dedicated walkways. Currently, sidewalks are available on both sides of Upper Middle Road.

Bicycle Lanes

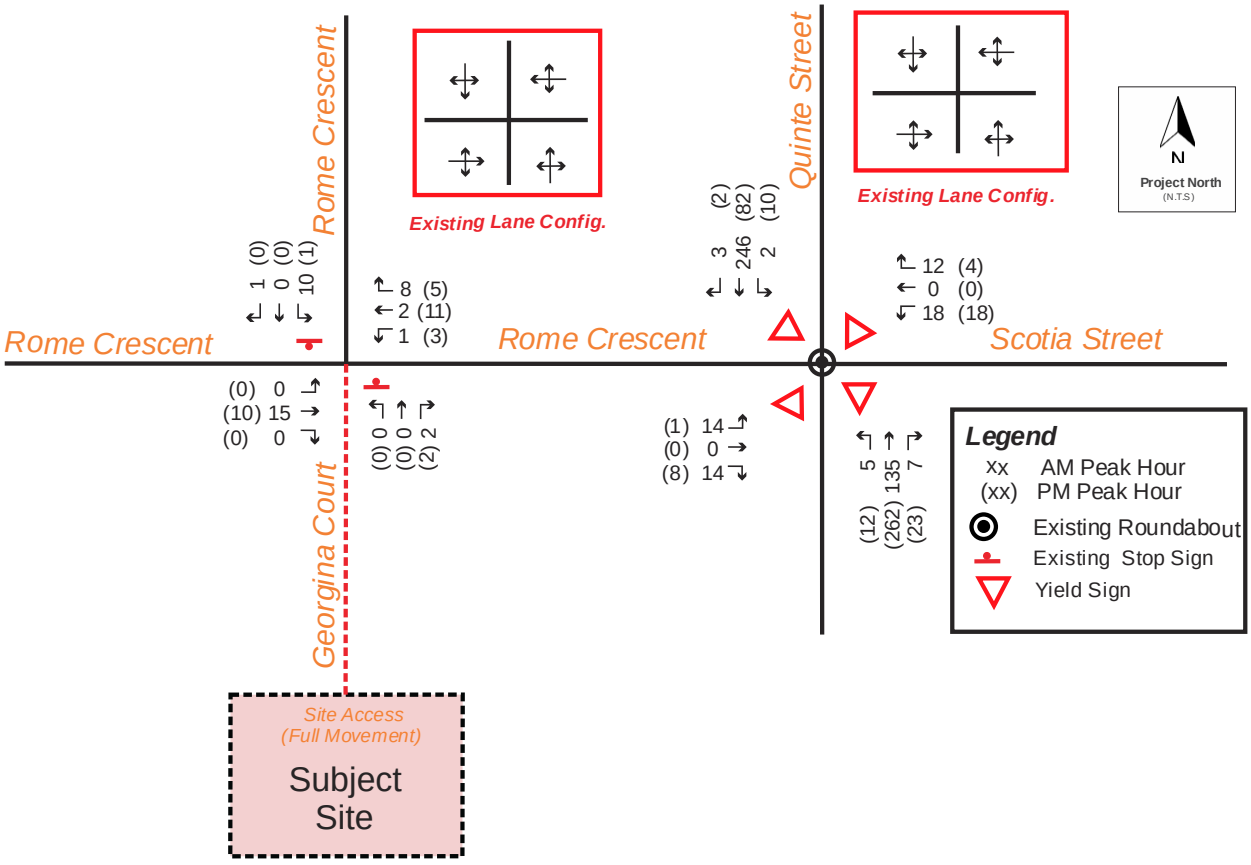
The area surrounding the proposed development is serviced with dedicated bicycle lanes. Currently, bicycle lanes are available on both sides of Upper Middle Road.

2.4. Data Collection

The study area includes the intersection of Georgina Road and Rome Crescent as well as the Rome Crescent and Quinte Street. Spectrum Traffic Data Inc. on behalf of NexTrans Engineering undertook a turning movement count at the subject study area intersection during the weekday AM (7:00-10:00) and PM (4:00-7:00) peak time periods on Thursday, February 23, 2017. The detailed traffic data is provided in **Appendix B**.

The existing road network and existing traffic volumes during the weekday AM and PM peak hours are illustrated in Figure **2-2**:

Figure 2-2: Existing Traffic Volumes / Lane Configurations



2.5. Existing Capacity Analysis

Capacity analysis at the studied area intersections was carried out using Synchro version 8. **Table 2.1** shows the existing levels of service for the given intersection. A detailed capacity analysis is provided in **Appendix C**.

Table 2.1: Existing Traffic Levels of Service

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		v/c ratio	Delay (s)	v/c ratio	Delay (s)
Rome Crescent & Georgina Court (Unsignalized)	WBLTR NBTLR SBLTR	A (0.00) A (0.00) A (0.02)	1.2 8.4 8.8	A (0.01) A (0.00) A (0.00)	2.0 8.4 9.0
Quinte Street & Rome Crescent/Scotia Street (Unsignalized)	EBLTR WBLTR NBTLR SBLTR	A (0.061) A (0.050) A (0.218) A (0.311)	5.2 4.5 5.4 6.4	A (0.029) A (0.048) A (0.309) A (0.111)	3.9 4.8 6.3 4.3

Table 2.1 indicates that the study area intersection is currently operating at excellent levels of service with LOS 'A' or better during peak hour time periods. Furthermore, all individual turning movements are operating below capacity with acceptable LOS and no critical movements identified.

It is important to note, no future background growth factor was applied to through volumes based on the expected low level site generated traffic volumes and the surrounding residential full build nature of the subject property. As such, future total traffic volumes will be determined by adding site generated traffic volumes with existing traffic volumes during the weekday AM and PM peak hours.

3.0 SITE TRAFFIC

In accordance to the site plan, the proposed development comprises of 22 residential units (i.e. eight (8) freehold semi detached dwelling units and 14 condominium townhouse units). Vehicular entrance for the eight (8) freehold semi detached dwelling units will be provided full movement via Georgina Street in a roundabout manner. Furthermore, the 14 condominium townhouse units will be serviced by a private roadway with direct entrance via Georgina Street. Trip generation for the residential units were determined using equations contained in the *Trip Generation Manual*, *9th Edition*, published by the ITE for the *Residential Condominium/Townhouse (Land Use Code 230)*. To remain conservative, no trip reductions were applied to account for transit or other modes of transport. The expected trip generation calculation is provided in **Table 3.1**.

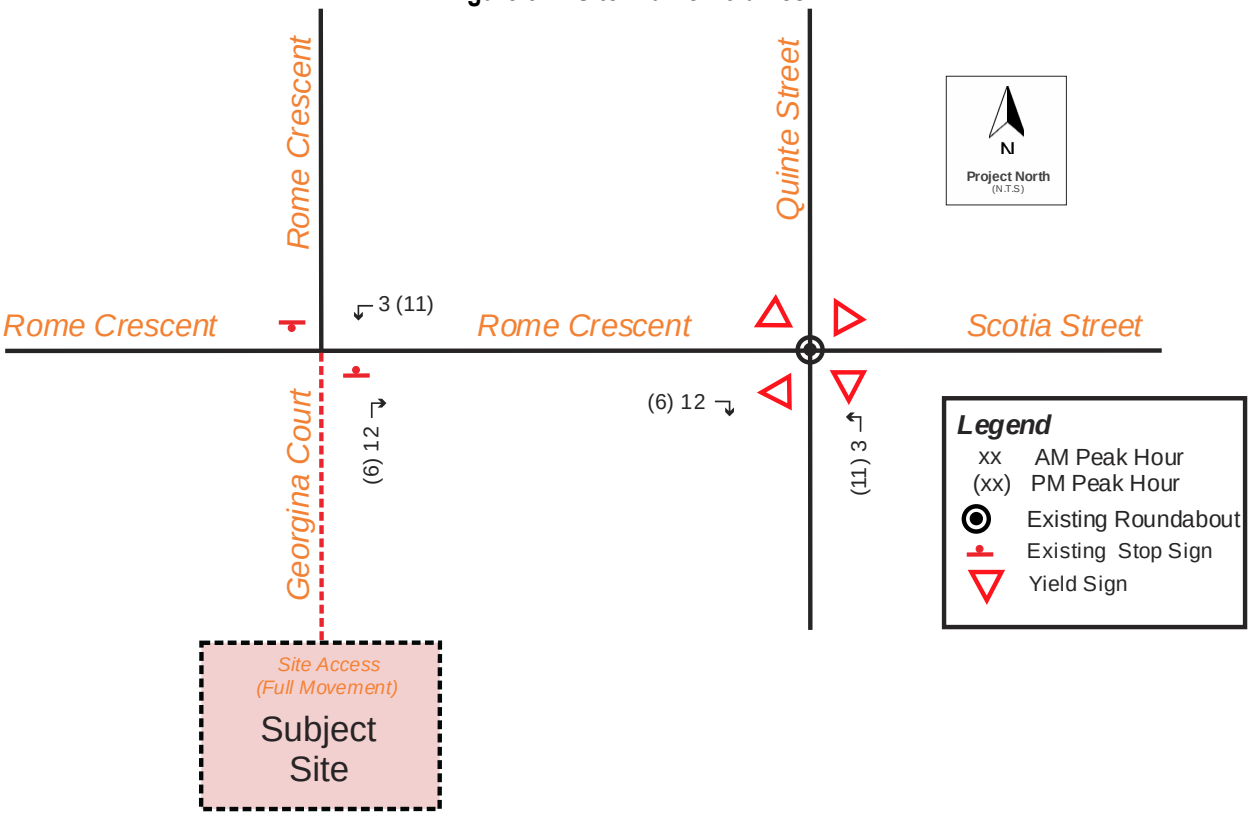
Table 3.1: Site Traffic Trip Generation

Land Use (Size)	Parameter	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
Residential Condominium/Townhouse (22 Units)	Trip Rate	0.14	0.54	0.68	0.50	0.27	0.77
	New Trips	**3**	**12**	**15**	**11**	**6**	**17**

Based on the trip generation calculations, the proposed and future background residential development is expected to generate 15 two-way trips (3 inbound and 12 outbound) during the weekday morning peak hour and 17 two-way trips (11 inbound and 6 outbound) during the afternoon peak hour.

The assumptions for the trip distribution rates are based on the information extracted from the 2011 Transportation Tomorrow Survey (TTS) and the existing road pattern. As such, it is expected all site traffic volumes will ingress and egress via Upper Middle Road from both eastbound (i.e. 60%) and westbound (i.e. 40%) approaches. However, due to the low site traffic trip generation, it is our opinion the traffic is negligible and has no traffic impact to the abutting road network. As mentioned earlier, the study area intersections includes Georgina Road and Rome Crescent as well as the Rome Crescent and Quinte Street. On this basis, the site traffic volumes will travel to and from the southbound approach on Rome Crescent and Quinte Street intersection. The site traffic volumes are illustrated in **Figure 3-1.**

Figure 3-1: Site Traffic Volumes



4.0 FUTURE TOTAL TRAFFIC CONDITIONS

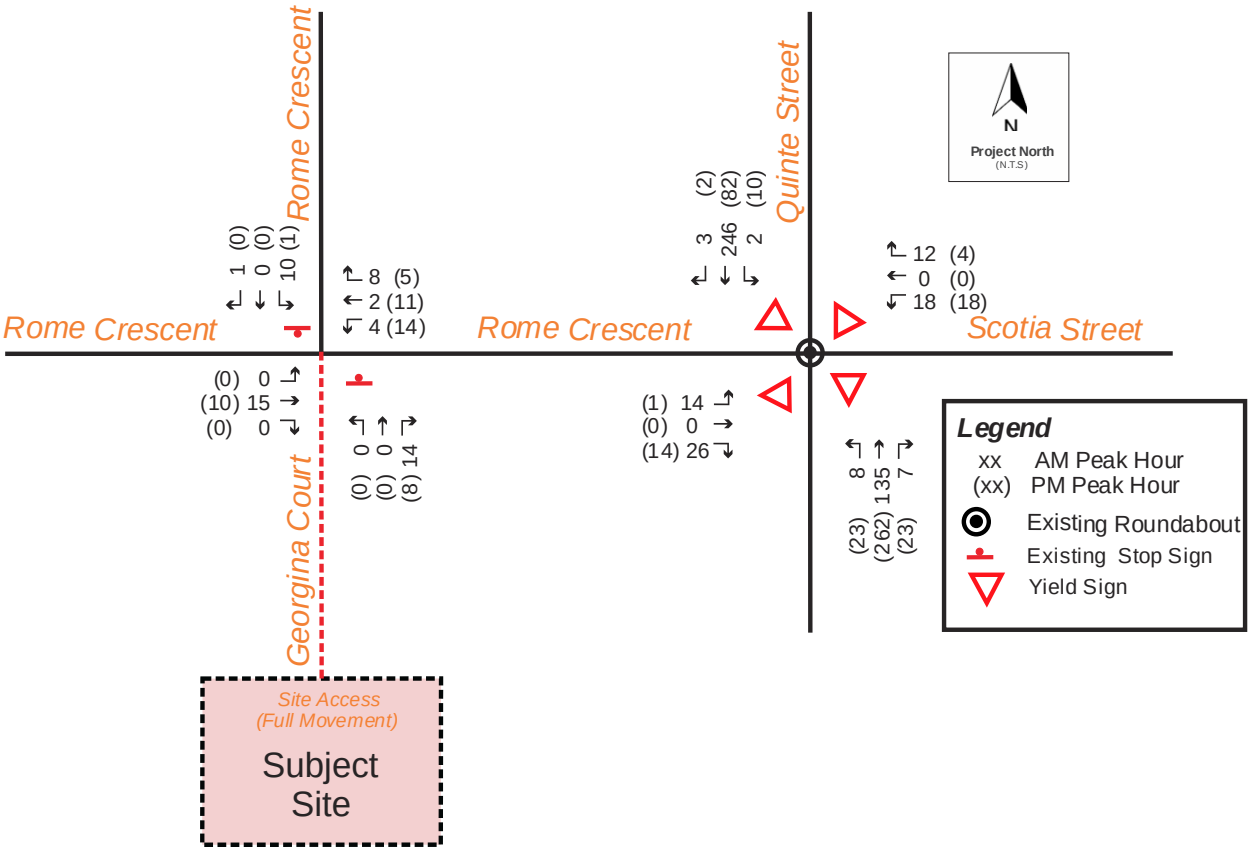
As mentioned earlier, the future total traffic volumes was determined by adding site generated traffic volumes with existing traffic volumes during the weekday AM and PM peak hours and the resulting assignments are illustrated in **Figure 4-1** . **Table 4.1** summarizes the levels of service at the study area intersections under future total traffic conditions. Detailed analysis outputs are provided in **Appendix D**.

Table 4.1: Future (2022) Total Traffic Levels of Service

Intersection	Movement	Weekday AM Peak Hour		Weekday PM Peak Hour	
		v/c ratio	Delay (s)	v/c ratio	Delay (s)
Rome Crescent & Georgina Court (Unsignalized)	WBLTR	A (0.01)	3.3	A (0.03)	4.8
	NBTLR	A (0.03)	8.5	A (0.01)	8.4
	SBLTR	A (0.02)	9.1	A (0.00)	9.8
Quinte Street & Rome Crescent/Scotia Street (Unsignalized)	EBLTR	A (0.088)	5.4	A (0.047)	4.1
	WBLTR	A (0.050)	4.6	A (0.049)	4.9
	NBTLR	A (0.222)	5.4	A (0.325)	6.5
	SBLTR	A (0.313)	6.4	A (0.113)	4.4

As summarized in Table 5.1, it is shown that during future total traffic conditions, the subject study area intersections as well as the future site access will operate at excellent levels of services with only minor changes over future total traffic conditions. The study area intersections continue operating at LOS 'A' or better during the peak hour periods. Based on above, it is our opinion that the location of the proposed site entrance is feasible and with the low level site generated traffic volumes, the subject site will not confer any critical movement within the site development or on to Upper Middle Drive.

Figure 4-1: Future (2022) Total Traffic Volumes



5.0 PARKING

The proposed development is subject to the City of Burlington Zoning By-Law No. 20-20. As mentioned earlier, the proposed development plan is comprised of 22 residential units (i.e. eight (8) freehold semi detached dwelling units and 14 condominium townhouse units). In addition, a total of 49 vehicle parking spaces will be provided consisting of two vehicle parking spaces per unit (i.e. one in the garage and one in the lead-in portion of the driveway), and 5 visitor parking spaces including one (1) accessible parking spaces to be shared by the 14 condominium townhouse units. **Table 5.1** summarizes the parking requirements based on the By-law.

Table 5.1: Vehicular Parking Requirement Zoning By-law No. 20-20

Use	Units	Parking Requirement			
		Parking Rate	Required	Provided	Difference
Freehold Semi-Detached Dwelling	8	2 spaces / unit	16	16	-
Townhouse Dwelling	14	2 spaces / unit	28	28	-
		0.5 visitor spaces/ unit	7	5	-2
Total Required			**51**	**49**	**-2**

The proposed development is required to provide 51 parking spaces and the site plan depicts 49 spaces resulting in a parking deficiency of 2 visitor parking spaces. However, the deficiency of 2 visitor parking spaces can be supported

through comparisons of several municipality parking By-law requirements as well as TDM measures validated in **Section 2.2** and **7.0**.

Table 5.2 summarizes the visitor parking requirements for townhouse dwelling units based on City of Toronto, City of Vaughan, City of Mississauga, City of Hamilton and Town of Richmond Hill's Zoning By-law's.

Table 5.2: Visitor Townhouse Dwelling Zoning By-Law Parking Requirements from other Municipalities

Municipality	Units	Parking Requirement	
		Minimum Parking Rate	Parking Spaces Required
City of Toronto (ZBL 569-2013)	14	0.5 visitor spaces/ unit	7
City of Vaughan (Recommended IBI March 2010 Study Parking Rates) *Other Base Areas	14	0.25 visitor spaces/ unit	4
City of Mississauga (ZBL 0225-2007)	14	0.25 visitor spaces/ unit	4
City of Hamilton (ZBL 6593)	14	0.30 visitor spaces/ unit	4
Town of Richmond Hill (Parking Strategy)	14	0.15 visitor spaces/ unit	2
Average		**0.29 visitor spaces/ unit**	**4**

As detailed in Table 5.2, the average parking requirement for the proposed development from other municipalities indicate a total of 4 visitor parking spaces or 0.29 visitor spaces/unit whereas a total of 5 visitor parking spaces or 0.36 visitor spaces/unit are proposed. The aforementioned subject site is subjected to City of Burlington's Zoning By-law which requires a highly conservative rate for the proposed townhouse dwelling visitor parking requirements. On this basis, it is our opinion the proposed 5 parking spaces can sufficiently meet the peak demands of the townhouse dwelling visitor parking requirements.

6.0 LOADING AND ON-SITE CIRCULATION

The proposed residential development will provide full movement vehicular entrance via Georgina Street in a roundabout manner for the eight (8) freehold semi detached dwelling units. Furthermore, the 14 condominium townhouse units will be serviced by a private roadway with direct entrance via Georgina Street.

Based on the results of the future total Synchro outputs, there will not be any inbound or outbound queuing issues. The site access will operate at excellent levels of services and will not require auxiliary lanes due to the low site related traffic volumes. The subject site will not confer any critical movement within the site development or on to Upper Middle Drive

A truck turning path assessment was conducted to evaluate the expected movements of Garbage/Emergency truck to and from the proposed development site. An AutoTURN analysis was undertaken using a typical 12.0 meter City Garbage Truck (HSUTAC) provided in **Figure 6-1**. The analysis demonstrates that a typical Garbage/Emergency truck can maneuver within the designated route with no conflict. As a result, moving/delivery trucks 12.0 meters or

less can sufficiently access the subject site. It is recommended a Stop Bar (Ra-1) inside the property be provided in accordance to Ontario Traffic Manual (OTM) Book 5.

7.0 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation demand management (TDM) refers to 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.

Based on our experience, excessive parking supply imposes environmental costs, contradicts community development objectives for more livable and walkable communities, and tends to increase driving and discourage the use of alternative mode of travel. It is anticipated that the combination of reduced parking supply and an efficient public transit system will encourage the use of alternative modes of travel.

The aforementioned public transportation services (**see Section 2.2**) operated Burlington Transit provides a reliable, cost effective alternative mode of transportation through the comprehensive and continually growing transit network system. Pedestrian sidewalks are provided on both sides of the roadways, and sidewalk connectivity is provided throughout the proposed municipal road to ensure a complete sidewalk network. Currently, bicycle lanes are available on both sides of Upper Middle Road. Based on the study prepared by the Ministry of Transportation Ontario entitled: 'Transit Supportive Guidelines', dated January 2012, transit users are generally willing to walk 400 meters to a local stop or 800 meters to a rapid transit station. The Upper Middle Rd at Corpus Christi bus stop is approximately 64 meters from the proposed subject site.

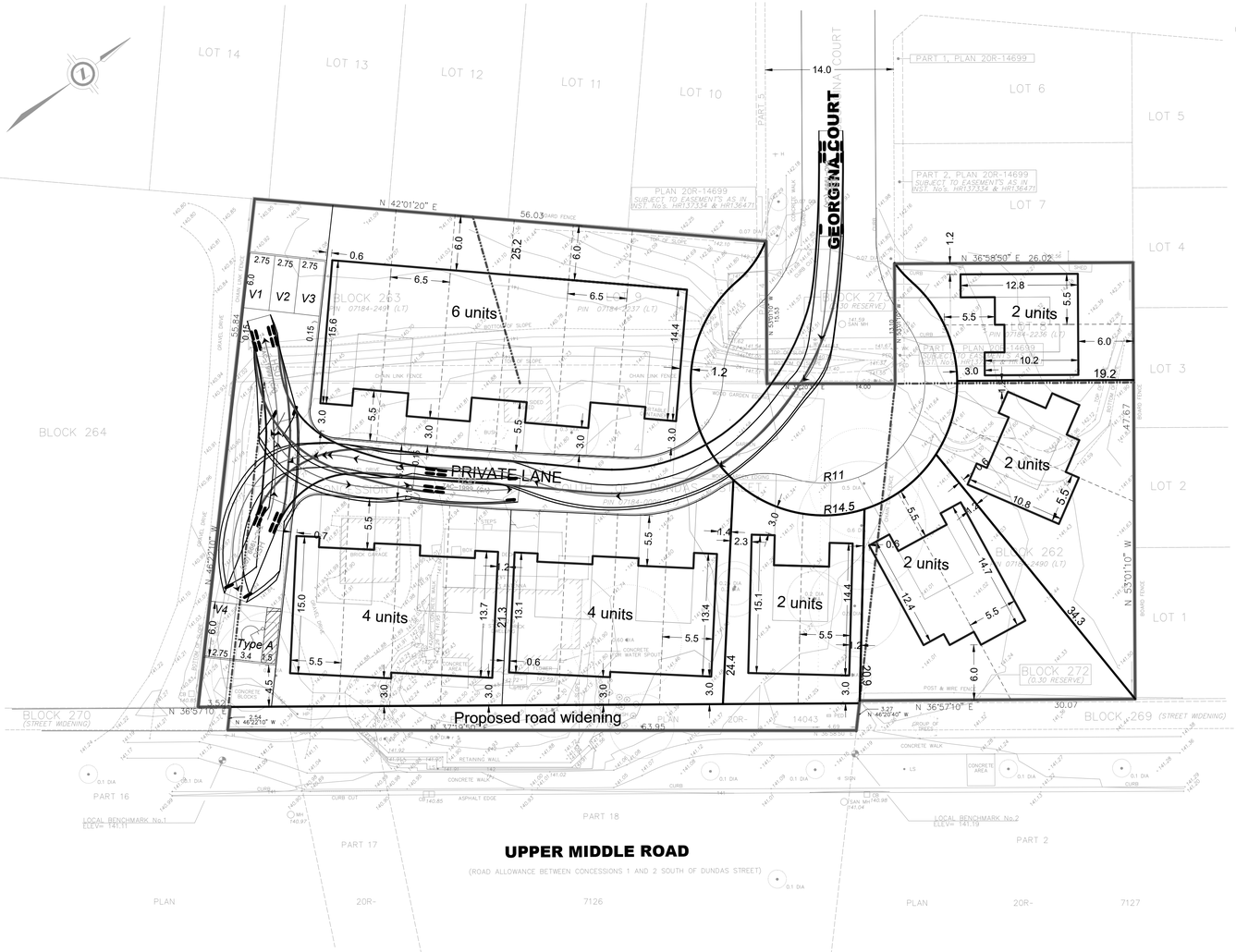
In summary, TDM Implementation actively encourages its tenants to explore and take advantage of the alternative modes of travelling available within their neighbourhood. It is recommended that the City participate with their communities in the monitoring program by distributing travel surveys (provided by the City) to purchasers at the time of the purchase.

8.0 CONCLUSIONS / RECOMMENDATIONS

The findings and conclusions of our analysis are as follows:

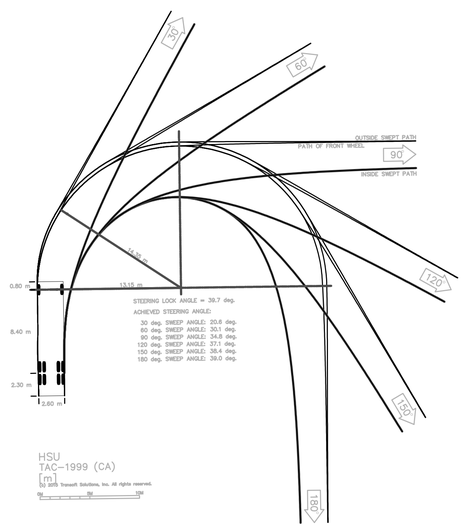
- The subject site is comprised of 22 residential units (i.e. eight (8) freehold semi detached dwelling units and 14 condominium townhouse units).
- According to the context plan, vehicular entrance for the eight (8) freehold semi detached dwelling units will be provided full movement via Georgina Street in a roundabout manner. In addition, the 14 condominium townhouse units will be serviced by a private roadway with direct entrance via Georgina Street.
- A total of 49 vehicle parking spaces will be provided consisting of two vehicle parking spaces per unit (i.e. one in the garage and one in the lead-in portion of the driveway), and 5 visitor parking spaces including one (1) accessible parking spaces to be shared by the 14 condominium townhouse units.
- The proposed development is expected to generate 15 two-way trips (3 inbound and 12 outbound) during the weekday morning peak hour and 17 two-way trips (11 inbound and 6 outbound) during the afternoon peak hour.

- The subject study area intersections as well as the future site access will operate at excellent levels of services with only minor changes over future total traffic conditions.
- It is our opinion that the location of the proposed site entrance is feasible and with the low level site generated traffic volumes, the subject site will not confer any critical movement within the site development or on to Upper Middle Drive.
- The proposed development is required to provide 51 parking spaces and the site plan depicts 49 spaces resulting in a parking deficiency of 2 visitor parking spaces. However, the deficiency of 2 visitor parking spaces can be supported through comparisons of several municipality parking By-law requirements as well as TDM measures validated.
- The average parking requirement for the proposed development from other municipalities indicate a total of 4 visitor parking spaces or 0.29 visitor spaces/unit whereas a total of 5 visitor parking spaces or 0.36 visitor spaces/unit are proposed. The aforementioned subject site is subjected to City of Burlington's Zoning By-law which requires a highly conservative rate for the proposed townhouse dwelling visitor parking requirements. On this basis, it is our opinion the proposed 5 parking spaces can sufficiently meet the peak demands of the townhouse dwelling visitor parking requirements.
- Garbage and emergency vehicles will be able to circulate within the proposed site and exit the site in a cab forward manner.



HSU meters

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



HSU
TAC–1999 (CA)

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KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

STAMP

CIVIL CONSULTANT:

nextrans ENGINEERING
Suite 204, 15260 Yonge Street, Aurora ON L4G 1N4
Tel: 416-274-7036, Fax: 877-957-2929
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PROJECT NAME:

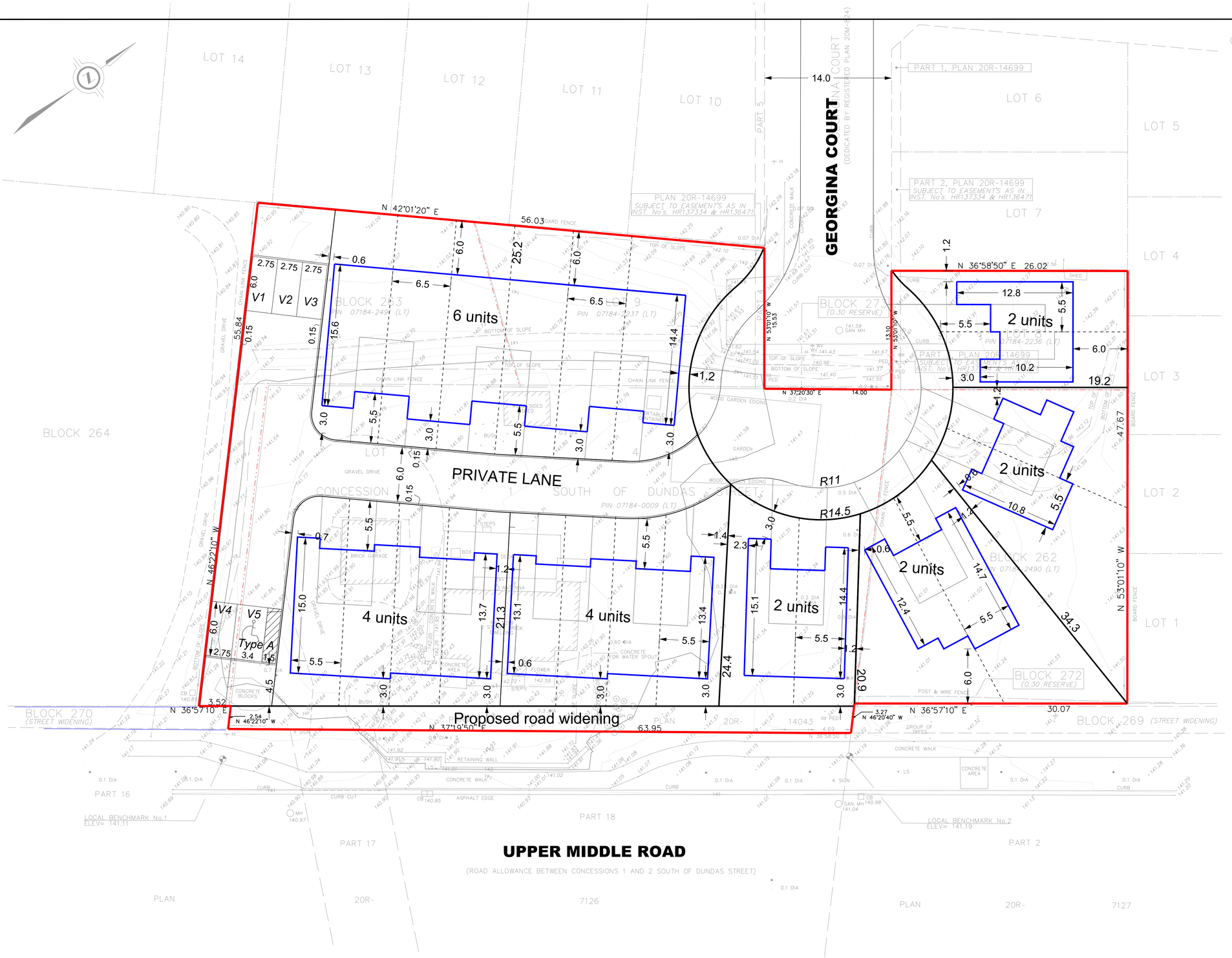
RESIDENTIAL DEVELOPMENT
5219 UPPER MIDDLE ROAD
(BURLILNGTON, ON)

DRAWING TITLE:

AutoTURN Analysis
(HSU TAC–1999)

DESIGN BY: A.S.	DATE: March 23, 2017
CHECKED BY: R.P.	PROJECT NO. NT-17-029
DRAWN BY: A.S.	
SCALE: NTS	DRAWING NO. Figure 6-1

Appendix A - Proposed Site Plan



DEVELOPMENT CONCEPT

NO. 5219
UPPER MIDDLE ROAD
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

WESTON CONSULTING
planning + urban design

DRAFT
FOR DISCUSSION PURPOSES ONLY

DEVELOPMENT STATISTICS:

Gross Site Area:	0.5024 ha
Cul-de-sac right-of-way:	0.0467 ha
Road Widening:	0.0188 ha
Street Residential Blocks (Semis):	0.1509 ha
Condo Residential Blocks (Towns):	0.2111 ha
Condo laneway, parking and landscaped area:	0.0749 ha
Net Site Area (excludes cul-de-sac and road widening):	0.4369 ha
Density (based on net area):	50.35 uph
Freehold Semi-detached lots (6.7m):	8 units
Condominium Townhouses (5.5m):	14 units
Total units:	22 units
Parking Provided:	49 spaces
driveway/garage	44 spaces
visitor(including accessible space)	5 spaces

Notes:

- Property Boundaries based on Topo Survey prepared by J.D. Barnes, dated February 2017.
- Not based on engineering, floodplain or grading analysis.
- Building locations and setbacks are conceptual and subject to approval by the City.
- Cul-de-sac design subject to comments from City where it meets the existing 14m right-of-way.

0 5 10m
SCALE

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planning + urban design
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Toronto: 127 Berkeley St.
Toronto, Ontario M5A 2X1
T. 416.640.9917 F. 905.738.6637

DRAWN / REVISED

14 MAR 2017	Reduction of units to reduce density
13 MAR 2017	Revisions to laneway, parking and townhouses facing Upper Middle Road.
08 MAR 2017	Revisions to townhouse and semis setbacks and visitor parking.
06 MAR 2017	Revisions to townhouse and semis setbacks.
16 FEB 2017	First Draft

Drawing Number: C1

File Number:	7926-1
Drawn By:	SB
Planner:	MQ
Scale:	see scale bar
CAD:	7926-1/concepts/C1.dgn

Appendix B - Existing Traffic Data

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

Turning Movement Count (1 . ROME CRES & QUINTE ST / SCOTIA ST (ROUNDABOUT))

Start Time	N Approach QUINTE ST						E Approach SCOTIA ST						S Approach QUINTE ST						W Approach ROME CRES						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	2	24	0	0	0	26	1	0	3	0	1	4	0	6	0	0	0	6	1	0	0	0	0	1	37	
07:15:00	1	51	0	0	0	52	1	0	6	0	0	7	2	5	1	0	0	8	2	0	1	0	0	3	70	
07:30:00	0	41	0	0	0	41	0	0	5	0	1	5	0	13	1	0	0	14	1	0	0	0	0	1	61	
07:45:00	0	81	1	0	0	82	2	0	6	0	1	8	0	23	0	0	2	23	6	0	2	0	0	8	121	289
08:00:00	2	70	0	0	0	72	4	0	7	0	4	11	4	45	1	3	0	53	2	0	3	0	5	5	141	393
08:15:00	0	44	1	0	0	45	2	0	1	0	0	3	2	52	2	1	0	57	4	0	3	0	1	7	112	435
08:30:00	1	51	0	0	0	52	4	0	4	0	1	8	1	14	2	0	0	17	2	0	6	0	0	8	85	459
08:45:00	1	51	8	0	0	60	7	0	7	0	1	14	1	8	0	0	0	9	2	0	1	0	1	3	86	424
09:00:00	5	26	2	0	0	33	3	0	4	0	3	7	3	16	0	0	0	19	1	0	7	0	0	8	67	350
09:15:00	1	33	0	1	0	35	2	1	1	0	1	4	3	13	2	0	0	18	2	0	1	0	0	3	60	298
09:30:00	1	44	1	0	0	46	2	0	2	0	2	4	0	7	1	0	0	8	5	0	2	0	0	7	65	278
09:45:00	0	19	1	0	0	20	1	0	2	0	0	3	0	11	0	0	0	11	2	0	0	0	1	2	36	228
BREAK																										
16:00:00	1	18	1	0	0	20	0	0	2	0	0	2	3	38	2	0	0	43	2	0	2	0	0	4	69	
16:15:00	2	24	0	0	0	26	2	0	1	0	4	3	6	40	4	0	0	50	1	1	1	0	0	3	82	
16:30:00	0	23	1	0	0	24	0	0	3	0	0	3	2	42	5	0	0	49	2	0	1	0	4	3	79	
16:45:00	0	23	1	0	0	24	1	0	4	0	3	5	3	61	2	0	0	66	1	0	0	0	2	1	96	326
17:00:00	0	22	2	0	0	24	0	0	2	0	3	2	10	70	3	0	0	83	0	0	1	0	2	1	110	367
17:15:00	1	18	6	0	0	25	0	0	7	0	1	7	5	69	5	1	0	80	1	0	0	0	1	1	113	398
17:30:00	1	19	1	1	0	22	3	0	5	0	0	8	5	62	2	0	3	69	6	0	0	0	0	6	105	424
17:45:00	4	22	3	1	1	30	1	0	1	0	1	2	5	51	2	0	0	58	0	1	0	0	2	1	91	419
18:00:00	0	24	3	1	0	28	0	1	0	0	2	1	1	53	3	0	0	57	3	0	0	0	1	3	89	398
18:15:00	2	19	1	0	0	22	1	0	1	0	2	2	7	37	2	0	0	46	0	0	1	0	0	1	71	356
18:30:00	3	26	0	0	0	29	1	0	3	0	2	4	4	46	3	0	0	53	3	1	0	0	1	4	90	341
18:45:00	1	30	1	2	0	34	2	0	3	0	2	5	7	36	4	2	0	49	5	0	0	0	0	5	93	343
Grand Total	29	803	34	6	1	872	40	2	80	0	35	122	74	818	47	7	5	946	54	3	32	0	21	89	**2029**	-
Approach%	3.3%	92.1%	3.9%	0.7%		-	32.8%	1.6%	65.6%	0%		-	7.8%	86.5%	5%	0.7%		-	60.7%	3.4%	36%	0%		-	-	-
Totals %	1.4%	39.6%	1.7%	0.3%		43%	2%	0.1%	3.9%	0%		6%	3.6%	40.3%	2.3%	0.3%		46.6%	2.7%	0.1%	1.6%	0%		4.4%	-	-
Heavy	0	5	0	0		-	0	0	0	0		-	0	12	1	0		-	1	0	0	0		-	-	-
Heavy %	0%	0.6%	0%	0%		-	0%	0%	0%	0%		-	0%	1.5%	2.1%	0%		-	1.9%	0%	0%	0%		-	-	-
Bicycles	0	2	0	0		-	0	0	0	0		-	0	2	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0%	0.2%	0%	0%		-	0%	0%	0%	0%		-	-	-

NexTrans
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Peak Hour: 07:45 AM - 08:45 AM Weather: Unknown (11.7 °C)

Start Time	N Approach QUINTE ST						E Approach SCOTIA ST						S Approach QUINTE ST						W Approach ROME CRES						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	
07:45:00	0	81	1	0	0	82	2	0	6	0	1	8	0	23	0	0	2	23	6	0	2	0	0	8	121
08:00:00	2	70	0	0	0	72	4	0	7	0	4	11	4	45	1	3	0	53	2	0	3	0	5	5	141
08:15:00	0	44	1	0	0	45	2	0	1	0	0	3	2	52	2	1	0	57	4	0	3	0	1	7	112
08:30:00	1	51	0	0	0	52	4	0	4	0	1	8	1	14	2	0	0	17	2	0	6	0	0	8	85
Grand Total	3	246	2	0	0	251	12	0	18	0	6	30	7	134	5	4	2	150	14	0	14	0	6	28	**459**
Approach%	1.2%	98%	0.8%	0%		-	40%	0%	60%	0%		-	4.7%	89.3%	3.3%	2.7%		-	50%	0%	50%	0%		-	**-**
Totals %	0.7%	53.6%	0.4%	0%		54.7%	2.6%	0%	3.9%	0%		6.5%	1.5%	29.2%	1.1%	0.9%		32.7%	3.1%	0%	3.1%	0%		6.1%	**-**
PHF	0.38	0.76	0.5	0		0.77	0.75	0	0.64	0		0.68	0.44	0.64	0.63	0.33		0.66	0.58	0	0.58	0		0.88	**-**
Heavy	0	2	0	0		2	0	0	0	0		0	0	6	1	0		7	0	0	0	0		0	**-**
Heavy %	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	4.5%	20%	0%		4.7%	0%	0%	0%	0%		0%	**-**
Lights	3	244	2	0		249	12	0	18	0		30	7	128	4	4		143	14	0	14	0		28	**-**
Lights %	100%	99.2%	100%	0%		99.2%	100%	0%	100%	0%		100%	100%	95.5%	80%	100%		95.3%	100%	0%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	20%	0%		0.7%	0%	0%	0%	0%		0%	**-**
Buses	0	2	0	0		2	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	**-**
Buses %	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	4.5%	0%	0%		4%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	2	-	-	-	-	-	6	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	42.9%		-	-	-	-	14.3%		-	-	-	-	42.9%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

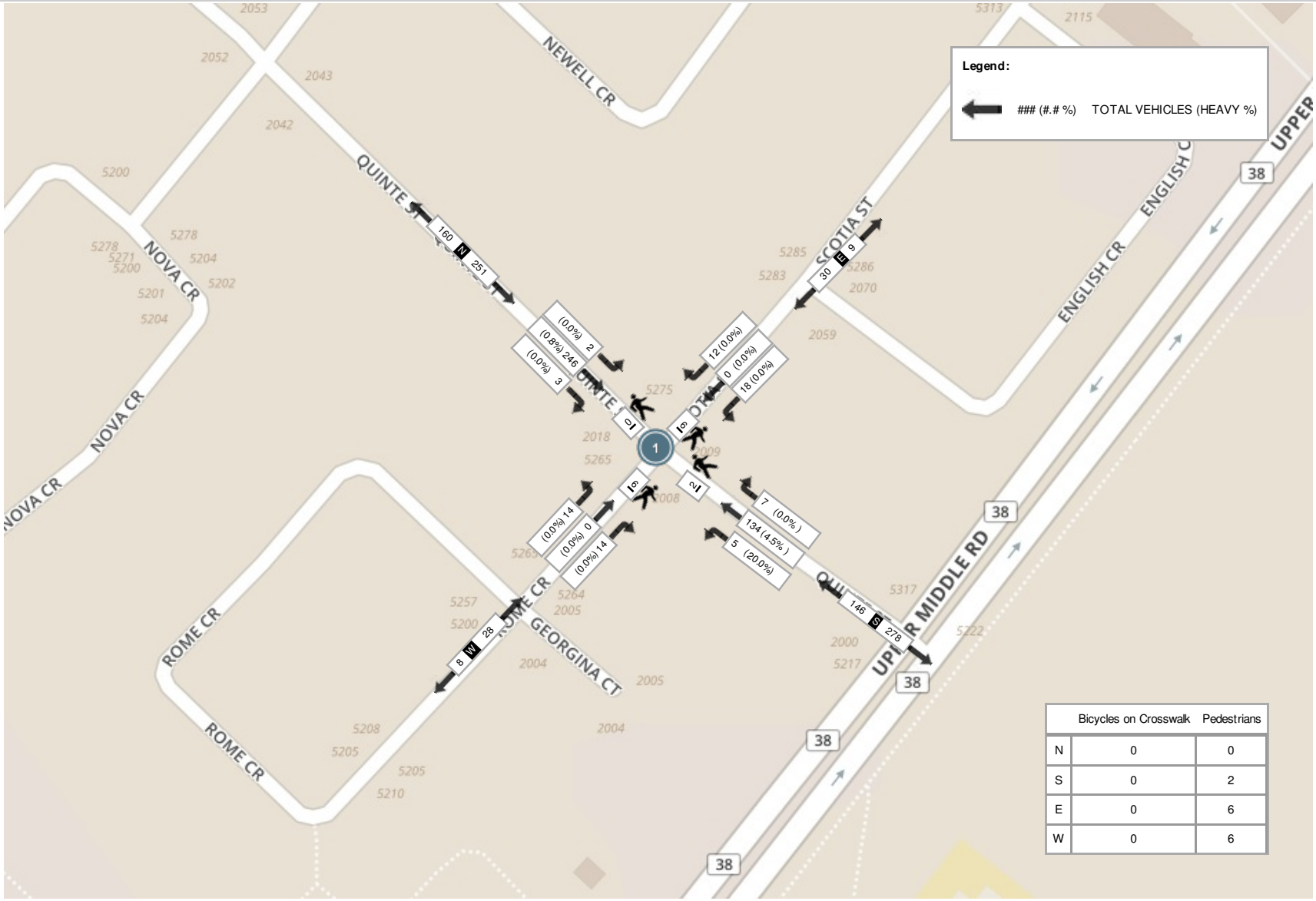
NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

Peak Hour: 04:45 PM - 05:45 PM Weather: Partly Cloudy (18.2 °C)

Start Time	N Approach QUINTE ST						E Approach SCOTIA ST						S Approach QUINTE ST						W Approach ROME CRES						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	0	23	1	0	0	24	1	0	4	0	3	5	3	61	2	0	0	66	1	0	0	0	2	1	96
17:00:00	0	22	2	0	0	24	0	0	2	0	3	2	10	70	3	0	0	83	0	0	1	0	2	1	110
17:15:00	1	18	6	0	0	25	0	0	7	0	1	7	5	69	5	1	0	80	1	0	0	0	1	1	113
17:30:00	1	19	1	1	0	22	3	0	5	0	0	8	5	62	2	0	3	69	6	0	0	0	0	6	105
Grand Total	2	82	10	1	0	95	4	0	18	0	7	22	23	262	12	1	3	298	8	0	1	0	5	9	**424**
Approach%	2.1%	86.3%	10.5%	1.1%		-	18.2%	0%	81.8%	0%		-	7.7%	87.9%	4%	0.3%		-	88.9%	0%	11.1%	0%		-	**-**
Totals %	0.5%	19.3%	2.4%	0.2%		22.4%	0.9%	0%	4.2%	0%		5.2%	5.4%	61.8%	2.8%	0.2%		70.3%	1.9%	0%	0.2%	0%		2.1%	**-**
PHF	0.5	0.89	0.42	0.25		0.95	0.33	0	0.64	0		0.69	0.58	0.94	0.6	0.25		0.9	0.33	0	0.25	0		0.38	**-**
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Lights	2	82	10	1		95	4	0	18	0		22	23	262	12	1		298	8	0	1	0		9	**-**
Lights %	100%	100%	100%	100%		100%	100%	0%	100%	0%		100%	100%	100%	100%	100%		100%	100%	0%	100%	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	**-**
Single-Unit Trucks %	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	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%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	46.7%		-	-	-	-	20%		-	-	-	-	20%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	13.3%		**-**
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

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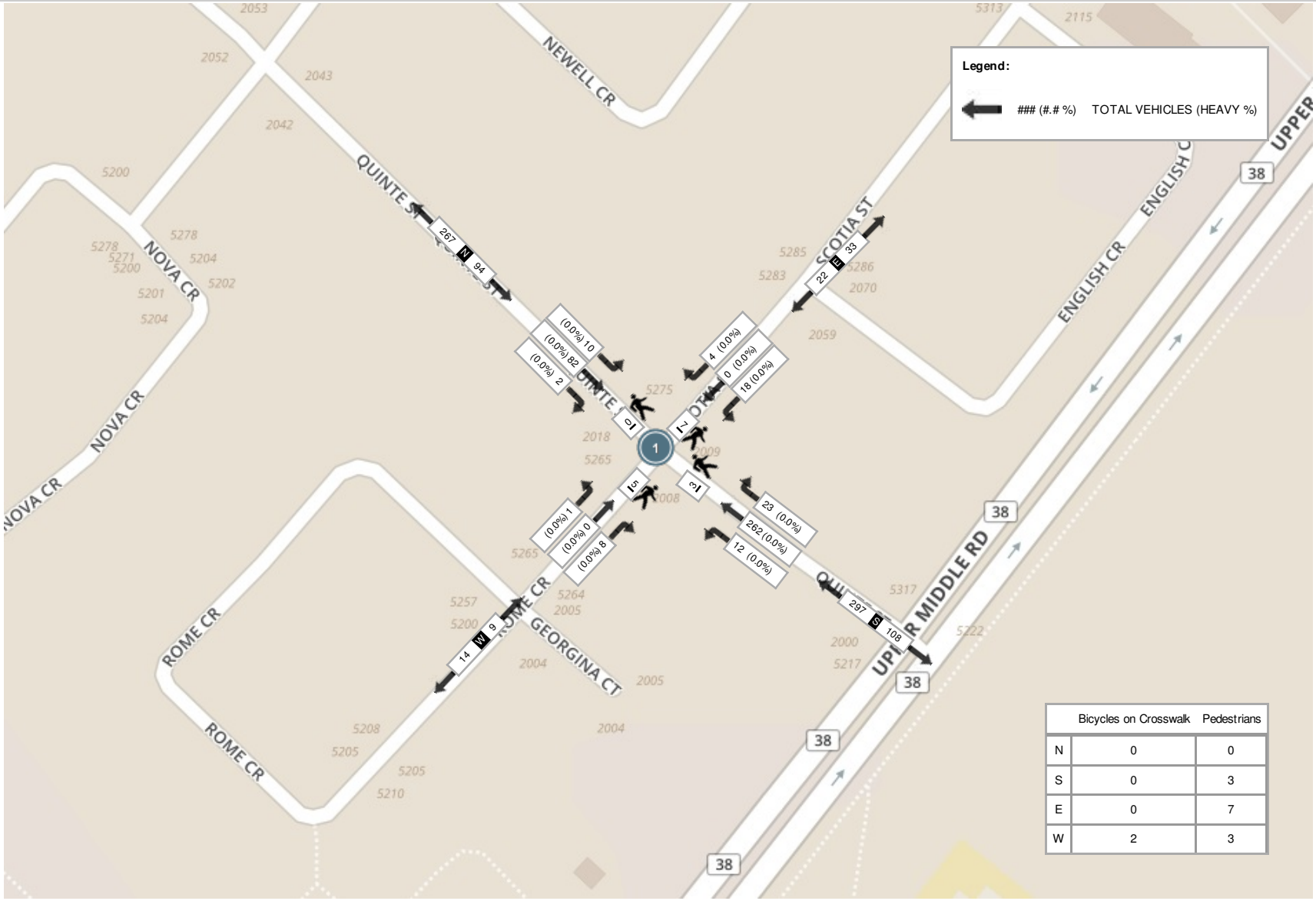
Peak Hour: 07:45 AM - 08:45 AM **Weather: Unknown (11.7 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	2
E	0	6
W	0	6

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

Peak Hour: 04:45 PM - 05:45 PM **Weather: Partly Cloudy (18.2 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	3
E	0	7
W	2	3

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Turning Movement Count (2 . ROME CRES & ROME CRES)

Start Time	N Approach ROME CRES N						E Approach ROME CRES E						S Approach ROME CRES S						W Approach ROME CRES W						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	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	3	
07:15:00	0	0	2	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	4	
07:30:00	0	0	0	0	2	0	1	1	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	3	
07:45:00	0	0	2	0	1	2	0	0	0	0	0	0	0	0	0	0	2	0	0	6	0	0	1	6	8	18
08:00:00	0	0	2	0	1	2	2	1	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	3	8	23
08:15:00	1	0	3	0	1	4	1	0	1	0	0	2	1	0	0	0	0	1	0	3	0	0	0	3	10	29
08:30:00	0	0	3	0	0	3	3	0	0	0	0	3	1	0	0	0	0	1	0	4	0	0	0	4	11	37
08:45:00	0	0	1	0	2	1	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	4	33
09:00:00	0	0	3	0	0	3	4	1	0	0	0	5	0	0	0	0	0	0	0	6	0	0	0	6	14	39
09:15:00	0	0	2	0	0	2	1	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5	34
09:30:00	0	0	1	0	1	1	1	1	0	1	0	3	0	0	0	0	2	0	0	5	0	0	0	5	9	32
09:45:00	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	30
BREAK																										
16:00:00	0	0	2	0	4	2	0	3	0	0	0	3	0	0	0	0	0	0	0	2	0	0	0	2	7	
16:15:00	0	0	1	0	0	1	3	3	0	0	0	6	0	0	0	0	0	0	0	2	0	0	2	2	9	
16:30:00	0	0	0	0	3	0	3	1	1	0	0	5	0	0	0	0	0	0	0	3	0	0	1	3	8	
16:45:00	0	0	1	0	1	1	0	2	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	3	27
17:00:00	0	0	1	0	0	1	2	2	0	0	4	4	0	0	0	0	0	0	0	0	0	0	2	0	5	25
17:15:00	0	0	0	0	0	0	4	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	22
17:30:00	0	0	2	0	0	2	2	1	0	0	0	3	1	0	0	0	2	1	0	3	0	0	1	3	9	23
17:45:00	0	0	0	0	2	0	2	4	0	0	0	6	0	0	0	0	0	0	0	1	0	0	0	1	7	27
18:00:00	0	0	0	0	0	0	2	2	0	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	7	29
18:15:00	0	0	1	0	0	1	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5	28
18:30:00	0	0	0	0	1	0	2	3	1	0	0	6	1	0	0	0	0	1	0	3	0	0	0	3	10	29
18:45:00	0	0	0	0	0	0	1	3	1	0	0	5	1	0	0	0	0	1	0	4	0	0	0	4	10	32
Grand Total	1	0	29	0	19	30	37	36	5	1	4	79	5	0	0	0	8	5	0	53	0	0	7	53	**167**	-
Approach%	3.3%	0%	96.7%	0%		-	46.8%	45.6%	6.3%	1.3%		-	100%	0%	0%	0%		-	0%	100%	0%	0%		-	**-**	-
Totals %	0.6%	0%	17.4%	0%		18%	22.2%	21.6%	3%	0.6%		47.3%	3%	0%	0%	0%		3%	0%	31.7%	0%	0%		31.7%	**-**	-
Heavy	0	0	0	0		-	1	0	0	0		-	0	0	0	0		-	0	1	0	0		-	**-**	-
Heavy %	0%	0%	0%	0%		-	2.7%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	1.9%	0%	0%		-	**-**	-
Bicycles	0	0	0	0		-	0	0	0	0		-	0	1	0	0		-	0	0	0	0		-	**-**	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	**-**	-

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Peak Hour: 08:15 AM - 09:15 AM Weather: Unknown (11.7 °C)

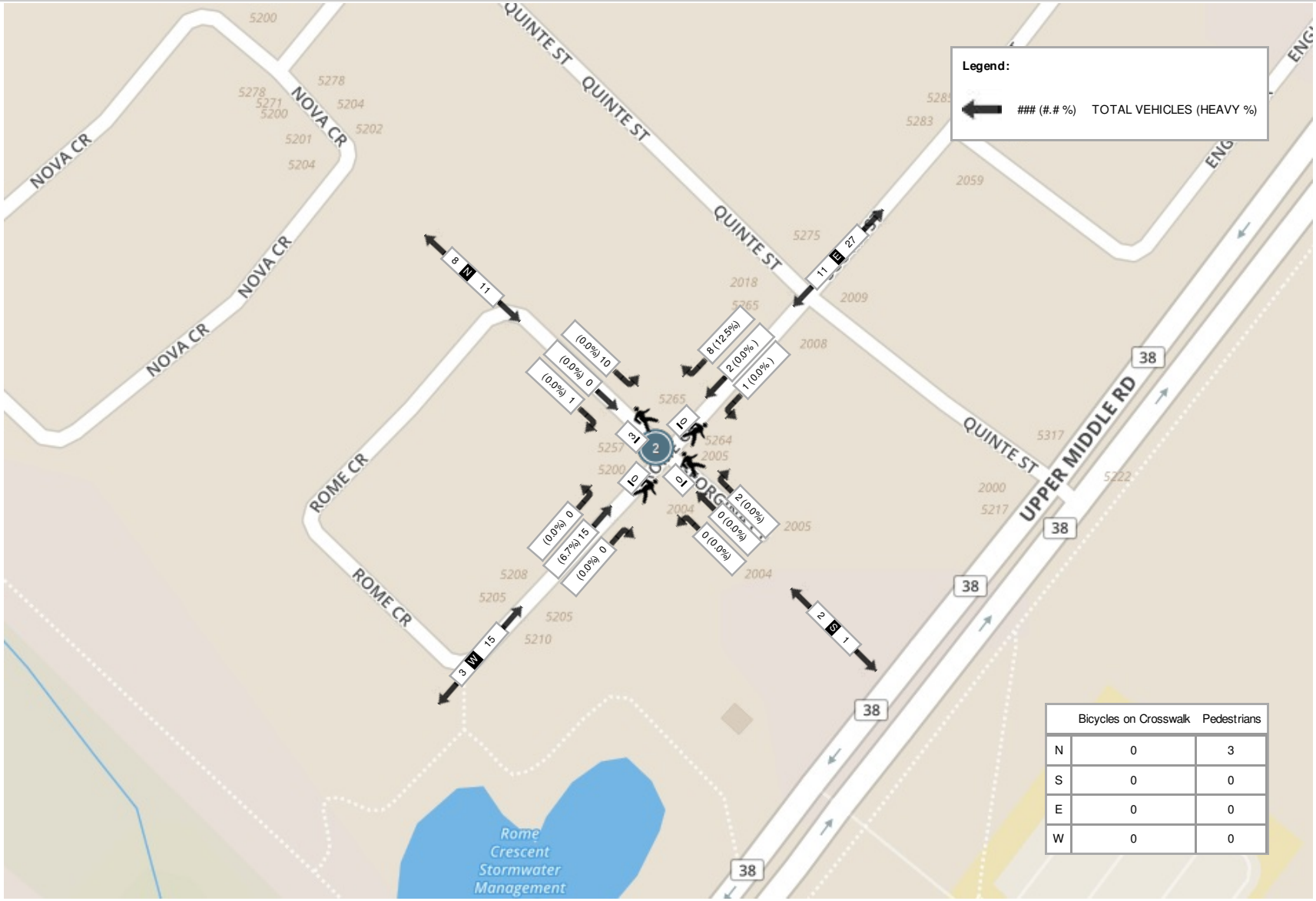
Start Time	N Approach ROME CRES N						E Approach ROME CRES E						S Approach ROME CRES S						W Approach ROME CRES W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:15:00	1	0	3	0	1	4	1	0	1	0	0	2	1	0	0	0	0	1	0	3	0	0	0	3	10
08:30:00	0	0	3	0	0	3	3	0	0	0	0	3	1	0	0	0	0	1	0	4	0	0	0	4	11
08:45:00	0	0	1	0	2	1	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	4
09:00:00	0	0	3	0	0	3	4	1	0	0	0	5	0	0	0	0	0	0	0	6	0	0	0	6	14
Grand Total	1	0	10	0	3	11	8	2	1	0	0	11	2	0	0	0	0	2	0	15	0	0	0	15	**39**
Approach%	9.1%	0%	90.9%	0%		-	72.7%	18.2%	9.1%	0%		-	100%	0%	0%	0%		-	0%	100%	0%	0%		-	**-**
Totals %	2.6%	0%	25.6%	0%		28.2%	20.5%	5.1%	2.6%	0%		28.2%	5.1%	0%	0%	0%		5.1%	0%	38.5%	0%	0%		38.5%	**-**
PHF	0.25	0	0.83	0		0.69	0.5	0.5	0.25	0		0.55	0.5	0	0	0		0.5	0	0.63	0	0		0.63	**-**
Heavy	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	1	0	0		1	**-**
Heavy %	0%	0%	0%	0%		0%	12.5%	0%	0%	0%		9.1%	0%	0%	0%	0%		0%	0%	6.7%	0%	0%		6.7%	**-**
Lights	1	0	10	0		11	7	2	1	0		10	2	0	0	0		2	0	14	0	0		14	**-**
Lights %	100%	0%	100%	0%		100%	87.5%	100%	100%	0%		90.9%	100%	0%	0%	0%		100%	0%	93.3%	0%	0%		93.3%	**-**
Single-Unit Trucks	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	0	1	0	0		1	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	12.5%	0%	0%	0%		9.1%	0%	0%	0%	0%		0%	0%	6.7%	0%	0%		6.7%	**-**
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

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

Peak Hour: 06:00 PM - 07:00 PM Weather: Partly Cloudy (18.2 °C)

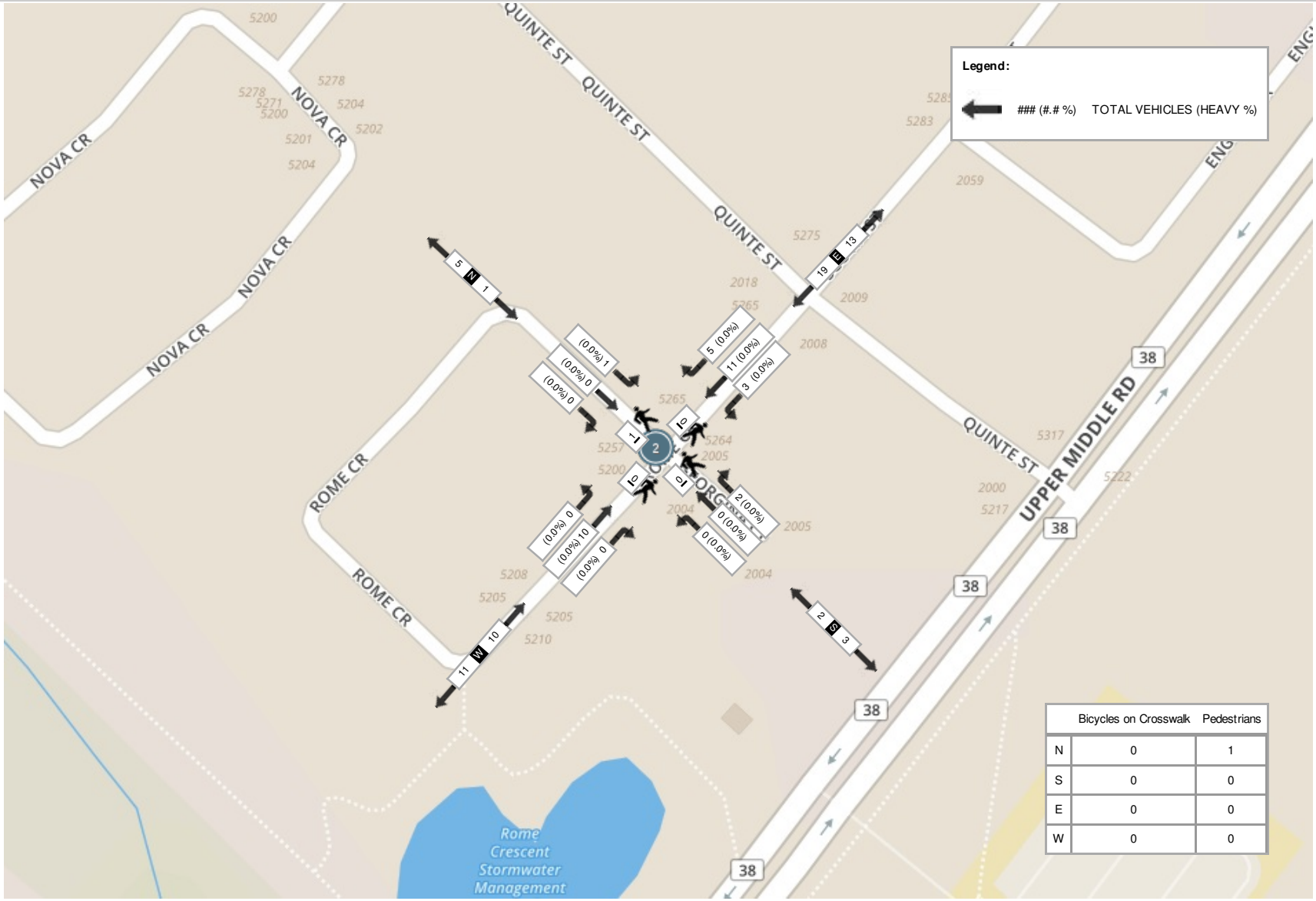
Start Time	N Approach ROME CRES N						E Approach ROME CRES E						S Approach ROME CRES S						W Approach ROME CRES W						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
18:00:00	0	0	0	0	0	0	2	2	0	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	7
18:15:00	0	0	1	0	0	1	0	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	5
18:30:00	0	0	0	0	1	0	2	3	1	0	0	6	1	0	0	0	0	1	0	3	0	0	0	3	10
18:45:00	0	0	0	0	0	0	1	3	1	0	0	5	1	0	0	0	0	1	0	4	0	0	0	4	10
Grand Total	0	0	1	0	1	1	5	11	3	0	0	19	2	0	0	0	0	2	0	10	0	0	0	10	**32**
Approach%	0%	0%	100%	0%		-	26.3%	57.9%	15.8%	0%		-	100%	0%	0%	0%		-	0%	100%	0%	0%		-	**-**
Totals %	0%	0%	3.1%	0%		3.1%	15.6%	34.4%	9.4%	0%		59.4%	6.3%	0%	0%	0%		6.3%	0%	31.3%	0%	0%		31.3%	**-**
PHF	0	0	0.25	0		0.25	0.63	0.92	0.75	0		0.79	0.5	0	0	0		0.5	0	0.63	0	0		0.63	**-**
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Lights	0	0	1	0		1	5	11	3	0		19	2	0	0	0		2	0	10	0	0		10	**-**
Lights %	0%	0%	100%	0%		100%	100%	100%	100%	0%		100%	100%	0%	0%	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	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 08:15 AM - 09:15 AM Weather: Unknown (11.7 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	3
S	0	0
E	0	0
W	0	0

Peak Hour: 06:00 PM - 07:00 PM **Weather: Partly Cloudy (18.2 °C)**



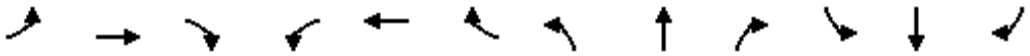
	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	0
E	0	0
W	0	0

Appendix C - Existing Traffic Level of Service Calculations

Intersection	
Intersection Delay, s/veh	5.8
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	48	44	235	336
Demand Flow Rate, veh/h	48	44	239	339
Vehicles Circulating, veh/h	359	247	28	36
Vehicles Exiting, veh/h	16	20	379	255
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	6	6	6	6
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	5.2	4.5	5.4	6.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	48	44	239	339
Cap Entry Lane, veh/h	789	883	1099	1090
Entry HV Adj Factor	1.000	1.000	0.982	0.990
Flow Entry, veh/h	48	44	235	336
Cap Entry, veh/h	788	882	1078	1079
V/C Ratio	0.061	0.050	0.218	0.311
Control Delay, s/veh	5.2	4.5	5.4	6.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	15	0	1	2	8	0	0	2	10	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.63	0.25	0.25	0.50	0.50	0.25	0.25	0.50	0.83	0.25	0.25
Hourly flow rate (vph)	0	24	0	4	4	16	0	0	4	12	0	4
Pedestrians											3	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	23			24			48	55	24	51	47	15
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			24			48	55	24	51	47	15
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	99	100	100
cM capacity (veh/h)	1601			1591			951	836	1059	944	845	1068

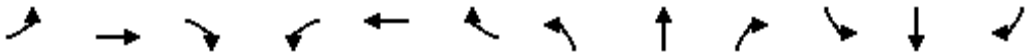
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	24	24	4	16
Volume Left	0	4	0	12
Volume Right	0	16	4	4
cSH	1601	1591	1059	972
Volume to Capacity	0.00	0.00	0.00	0.02
Queue Length 95th (m)	0.0	0.1	0.1	0.4
Control Delay (s)	0.0	1.2	8.4	8.8
Lane LOS		A	A	A
Approach Delay (s)	0.0	1.2	8.4	8.8
Approach LOS			A	A

Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	18.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	5.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	28	40	339	120
Demand Flow Rate, veh/h	28	40	339	120
Vehicles Circulating, veh/h	144	303	28	48
Vehicles Exiting, veh/h	24	64	144	295
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	7	3	0
Ped Cap Adj	0.999	0.999	1.000	1.000
Approach Delay, s/veh	3.9	4.8	6.3	4.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	28	40	339	120
Cap Entry Lane, veh/h	978	835	1099	1077
Entry HV Adj Factor	1.000	1.000	1.000	1.000
Flow Entry, veh/h	28	40	339	120
Cap Entry, veh/h	978	834	1098	1077
V/C Ratio	0.029	0.048	0.309	0.111
Control Delay, s/veh	3.9	4.8	6.3	4.3
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	0	3	11	5	0	0	2	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.63	0.25	0.25	0.50	0.50	0.25	0.25	0.50	0.83	0.25	0.25
Hourly flow rate (vph)	0	16	0	12	22	10	0	0	4	1	0	0
Pedestrians											3	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	35			16			67	75	16	74	70	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			16			67	75	16	74	70	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	100	100	100	100
cM capacity (veh/h)	1585			1602			924	811	1069	909	816	1048

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	44	4	1
Volume Left	0	12	0	1
Volume Right	0	10	4	0
cSH	1585	1602	1069	909
Volume to Capacity	0.00	0.01	0.00	0.00
Queue Length 95th (m)	0.0	0.2	0.1	0.0
Control Delay (s)	0.0	2.0	8.4	9.0
Lane LOS		A	A	A
Approach Delay (s)	0.0	2.0	8.4	9.0
Approach LOS			A	A

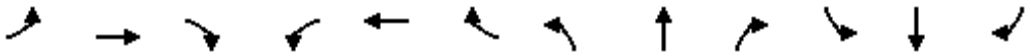
Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	14.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Appendix D - Future (2022) Total Traffic Level of Service Calculations

Intersection	
Intersection Delay, s/veh	5.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	69	44	240	336
Demand Flow Rate, veh/h	69	44	244	339
Vehicles Circulating, veh/h	359	252	28	41
Vehicles Exiting, veh/h	21	20	400	255
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	6	6	6	6
Ped Cap Adj	0.999	0.999	0.999	0.999
Approach Delay, s/veh	5.4	4.6	5.4	6.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	69	44	244	339
Cap Entry Lane, veh/h	789	878	1099	1085
Entry HV Adj Factor	1.000	1.000	0.983	0.990
Flow Entry, veh/h	69	44	240	336
Cap Entry, veh/h	788	878	1079	1073
V/C Ratio	0.088	0.050	0.222	0.313
Control Delay, s/veh	5.4	4.6	5.4	6.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	15	0	4	2	8	0	0	14	10	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.63	0.25	0.25	0.50	0.50	0.25	0.25	0.50	0.83	0.25	0.25
Hourly flow rate (vph)	0	24	0	16	4	16	0	0	28	12	0	4
Pedestrians											3	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	23			24			72	79	24	99	71	15
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			24			72	79	24	99	71	15
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	97	99	100	100
cM capacity (veh/h)	1601			1591			912	805	1059	854	813	1068

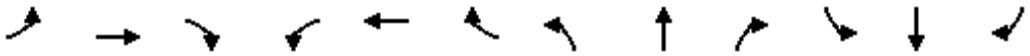
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	24	36	28	16
Volume Left	0	16	0	12
Volume Right	0	16	28	4
cSH	1601	1591	1059	899
Volume to Capacity	0.00	0.01	0.03	0.02
Queue Length 95th (m)	0.0	0.2	0.7	0.4
Control Delay (s)	0.0	3.3	8.5	9.1
Lane LOS		A	A	A
Approach Delay (s)	0.0	3.3	8.5	9.1
Approach LOS			A	A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	5.7
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	46	40	357	120
Demand Flow Rate, veh/h	46	40	357	120
Vehicles Circulating, veh/h	144	321	28	66
Vehicles Exiting, veh/h	42	64	162	295
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	7	3	0
Ped Cap Adj	0.999	0.999	1.000	1.000
Approach Delay, s/veh	4.1	4.9	6.5	4.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Critical Headway, s	5.193	5.193	5.193	5.193
Entry Flow, veh/h	46	40	357	120
Cap Entry Lane, veh/h	978	820	1099	1058
Entry HV Adj Factor	1.000	1.000	1.000	1.000
Flow Entry, veh/h	46	40	357	120
Cap Entry, veh/h	978	819	1098	1058
V/C Ratio	0.047	0.049	0.325	0.113
Control Delay, s/veh	4.1	4.9	6.5	4.4
LOS	A	A	A	A
95th %tile Queue, veh	0	0	1	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	10	0	14	11	5	0	0	8	1	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.63	0.25	0.25	0.50	0.50	0.25	0.25	0.50	0.83	0.25	0.25
Hourly flow rate (vph)	0	16	0	56	22	10	0	0	16	1	0	0
Pedestrians											3	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	35			16			155	163	16	174	158	30
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			16			155	163	16	174	158	30
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			100	100	99	100	100	100
cM capacity (veh/h)	1585			1602			793	706	1069	757	710	1048

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	88	16	1
Volume Left	0	56	0	1
Volume Right	0	10	16	0
cSH	1585	1602	1069	757
Volume to Capacity	0.00	0.03	0.01	0.00
Queue Length 95th (m)	0.0	0.9	0.4	0.0
Control Delay (s)	0.0	4.8	8.4	9.8
Lane LOS		A	A	A
Approach Delay (s)	0.0	4.8	8.4	9.8
Approach LOS			A	A

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	18.9%	ICU Level of Service	A
Analysis Period (min)	15		