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Transportation Study

PROPOSED MIXED-USE RESIDENTIAL AND COMMERCIAL DEVELOPMENT

Brock Street East
Township of Uxbridge, Durham Region, ONTARIO

December 4, 2020
Project No: NT-17-207

520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Phone: 905-503-2563
www.nextrans.ca

nexTrans CONSULTING ENGINEERS

NextEng Consulting Group Inc.

December 4, 2020

Re: Transportation Impact Study
Brock Street East
Township of Uxbridge, Durham Region
Our Project No. NT-17-207

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 an Official Plan Amendment and Zoning By-law Amendment application(s).

The subject property is currently vacant. Based on the proposed site plan prepared by ICR Associates Incorporated, dated August 2017, and Keith Loffler McAlpine Architects, dated October 14, 2020, the development proposal is to redevelop the existing land of 49,714.57 m^2 site area to include 70 townhouses, 12 semi-bungalow residential units and a commercial building with GFA of 449.82 m^2 with five (5) apartment units above. A future development block with 86 apartment units is also proposed. Vehicular access to the site is proposed through a full movement entrance via an extension of Low Boulevard, a full movement driveway via an extension of Herrema Boulevard to Brock Street East, and a right-out driveway via Brock Street East.

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:	Reviewed by:	Approved by:
Andy Bilawejian		
Andy Bilawejian, B.Eng., EIT Transportation Analyst	Annosan Srikantha, P.Eng. Project Engineer – Transportation	Richard Pernicky, MITE Principal

EXECUTIVE SUMMARY

NexTrans Consulting Engineers was retained by David Sud (the 'Client') to undertake a Transportation Impact Study for an Official Plan Amendment and Zoning By-law Amendment applications in support of a proposed mixed-use residential and commercial development, in the Township of Uxbridge, Ontario. The subject property is located north of Brock Street East and east of Donland Lane intersection.

Development Proposal

The development proposal is to redevelop the existing land of 49,714.57 m^2 site area to include 70 townhouses, 12 semi-bungalow residential units and a commercial building with GFA of 449.82 m^2 with five (5) apartment units above. A future development block with 86 apartment units is also proposed. Vehicular access to the site is proposed through a full movement entrance via an extension of Low Boulevard, a full movement driveway via an extension of Herrema Boulevard to Brock Street East, and a right-out driveway via Brock Street East.

Traffic Analysis

The proposed development is anticipated to generate 74 two-way trips (20 inbound and 54 outbound) during the AM peak hours and 105 two-way trips (63 inbound and 42 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 area intersections and proposed access are expected to operate with acceptable levels of service.

Access/Parking Review

In accordance with Ontario Traffic Manual (OTM) Book 5, we recommend appropriate signage consisting of STOP signs (Ra-1) and STOP bars throughout the internal road network as exhibited in **Figures 7-1** and **7-2**.

Based on Township of Uxbridge Zoning By-law 81-19 and as amended By-law 2017-061, a total of 360 parking spaces will be required for the proposed mixed-use development. **The preliminary site plan provides for a total of 362 parking spaces, which results in a surplus of two (2) spaces.**

Site Area Review

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed loading space and parking spaces. As illustrated in **Figure 7-3** and **Figure 7-4,** the AutoTURN analysis demonstrates that a passenger vehicle (P TAC-2017) and 12-metre Garbage/Emergency vehicle (HSU TAC-2017), can effectively maneuver through the parking spaces and loading area.

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1.0 INTRODUCTION

NexTrans Consulting Engineers was retained by David Sud (the 'Client') to undertake a Transportation Impact Study for an Official Plan Amendment and Zoning By-law Amendment applications in support of a proposed mixed-use residential and commercial development, in the Township of Uxbridge, Ontario. The subject property is located north of Brock Street East and east of Donland Lane, inclusive. This transportation impact study conforms to the Region of Durham guidelines, see **Appendix A** for the established terms of reference.

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

Figure 1-1 – Site Location

The subject property is currently vacant. Based on the proposed site plan prepared by ICR Associates Incorporated, dated August 2017, and Keith Loffler McAlpine Architects, dated October 14, 2020, the development proposal is to redevelop the existing land of 49,714.57 m^2 site area to include 70 townhouses, 12 semi-bungalow residential units and a commercial building with GFA of 449.82 m^2 with five (5) apartment units above. A future development block with 86 apartment units is also proposed. Vehicular access to the site is proposed through a full movement entrance via an extension of Low Boulevard, a full movement driveway via an extension of Herrema Boulevard to Brock Street East, and a right-out driveway via Brock Street East. The site plan is provided in **Figure 1-2**; **Appendix B** also provides a larger scale version of the proposed site plan.

The site plan provides for a total of 362 parking spaces.

Given the mixed-use commercial and residential nature of the development proposal, the analysis will include the weekday morning and afternoon peak periods for traffic assessment purposes.

Figure 1-2 – Proposed Site Plan

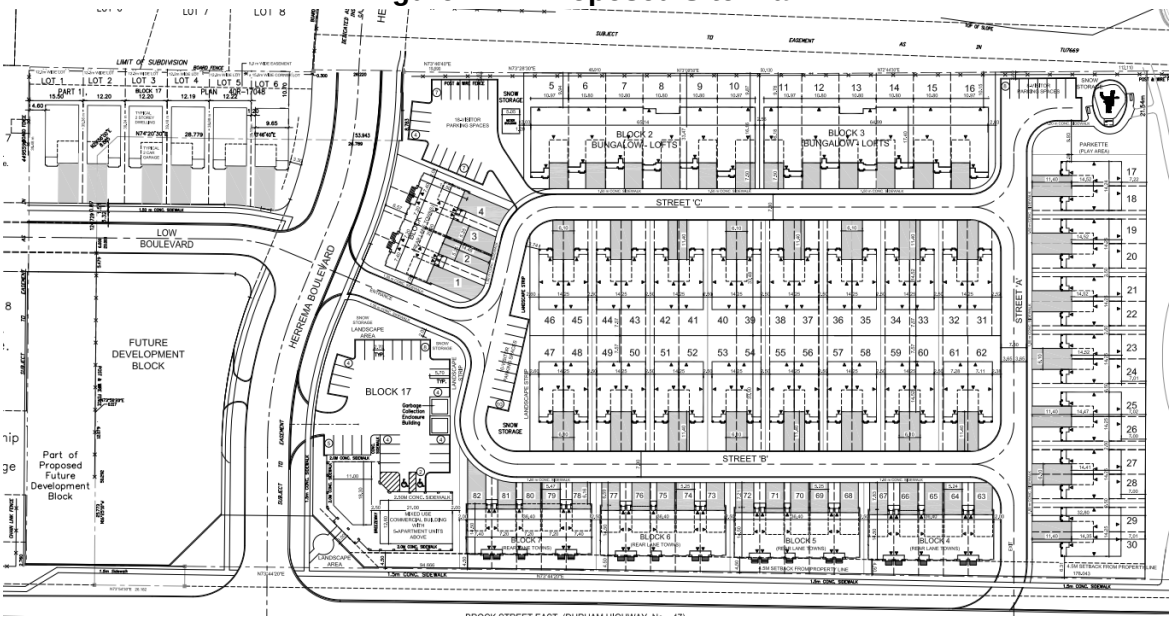
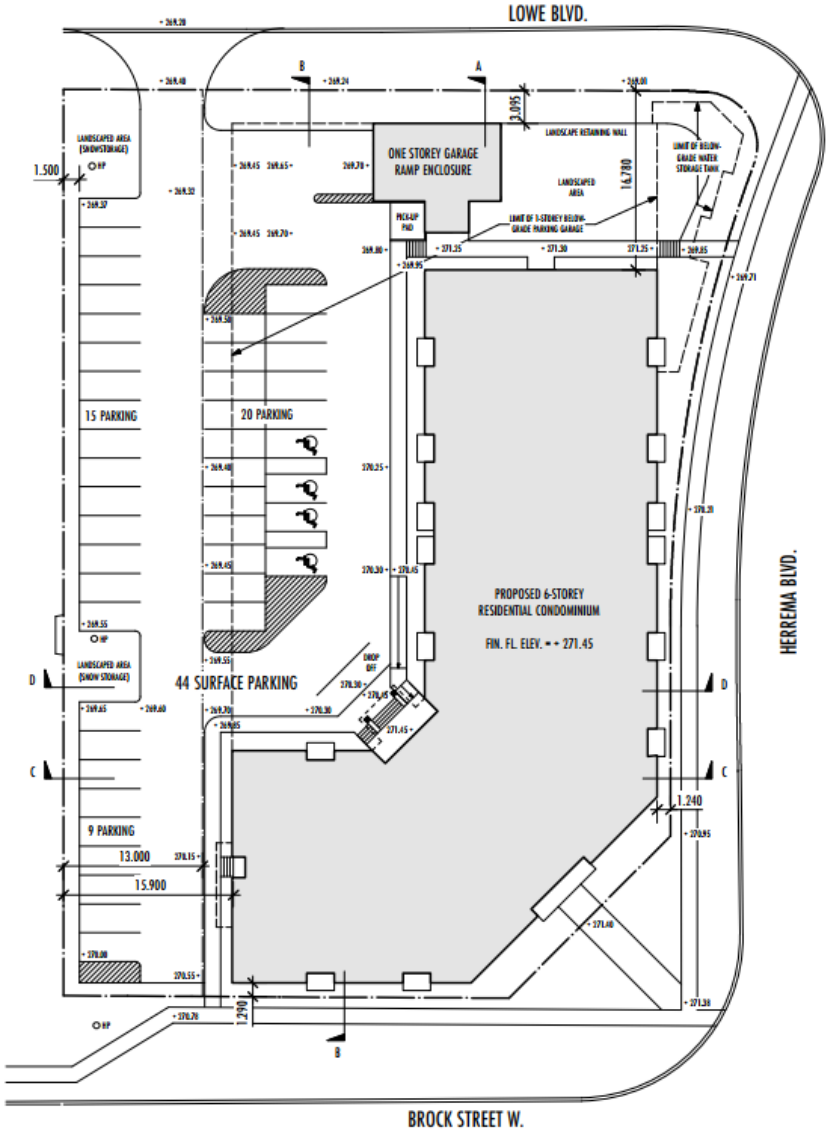


Figure 1-3 – Proposed Site Plan (Future Development Block)



2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing subject lands are located north of Brock Street East and east of Donland Lane, inclusive, in the Town of Uxbridge. The existing road network is described as follows:

Brock Street East: is classified as an east-west arterial road under the jurisdiction of the Region of Durham. In the study area, it has an existing two-lane cross section and posted speed limit of 50 km/h. Brock Street East is unsignalized at Donland Lane and Nelkydd Lane with a warranted right-turn lane on approach to Nelkydd Lane.

Herrema Boulevard: is classified as a north-south local road under the jurisdiction of the Township of Uxbridge. In the study area, it has an existing two-lane cross section and posted speed limit of 50 km/h. Herrema Boulevard is a continuation of Donland Lane into the existing residential neighbourhood. With the development, Herrema Boulevard will be realigned southerly to connect with Nelkydd Lane.

Donland Lane: is classified as a north-south local road under the jurisdiction of the Township of Uxbridge. In the study area, it has an existing two-lane cross section and posted speed limit of 50 km/h. Donland Lane is STOP controlled on approach to Brock Street East. Donland Lane also becomes Herrema Boulevard just north of Low Boulevard. With this development application, Donland Lane will be closed, with the municipal road allowance conveyed to the subject property owner. As a result, the existing 'T' intersection of Brock Street East and Nelkydd Lane will become a four-legged (future signalized) intersection. The existing Donland Lane connection to Brock Street East will be eliminated.

2.2. Existing Active Transportation Network

Sidewalks

The area surrounding the proposed development is serviced with dedicated sidewalks on the south side of Brock Street East and on the east side of Herrema Boulevard.

Bicycle Lanes

There are no dedicated bicycle lanes within the vicinity of the subject site.

2.3. Active Transportation Mode and Assessment

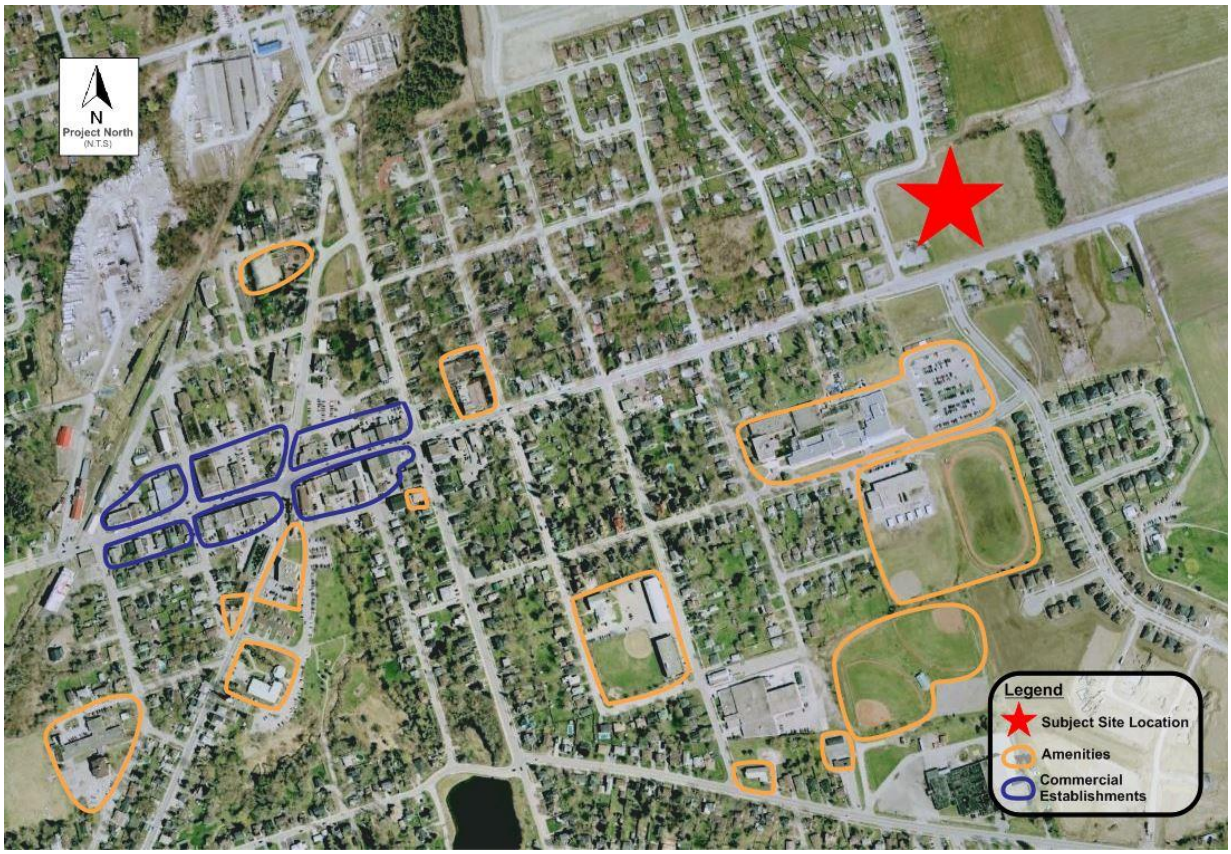
Existing Amenities

The review of the area surrounding the proposed development indicates numerous recreational facilities, houses of worship, and schools, many of which can be easily reached by pedestrian traffic and non-auto options. **Figure 2-1** illustrates the location of the existing amenities which include Uxbridge Secondary School, Uxbridge & Area Swimming Pool, Trinity United Church etc.

Existing Commercial Establishments

The review of the area surrounding the proposed development indicates numerous retail, food, and service establishments, many of which can be easily reached by pedestrian traffic and non-auto options. The Uxbridge Shopping Centre is located approximately 2.8 km (about an 11-minute bike ride) from the site. **Figure 2-1** illustrates the location of existing retail, food and service establishments from the proposed development. Amenities include TD Canada Trust, Pizza Pizza, Mac's, etc.

Figure 2-1 – Existing Amenities and Commercial Establishments



2.4. Existing Traffic Volumes

Existing traffic volumes at the study area intersections of Brock Street East with Donland Lane, Brock Street East with Nelkydd Lane, and Low Boulevard and Donland Lane were undertaken by Spectrum Traffic on behalf of NexTrans Consulting Engineers on Tuesday October 24th, 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 traffic data sheets are provided in **Appendix C**.

2.5. Existing Traffic Assessment

The existing volumes are illustrated in **Figure 2-2**, and were analyzed using Synchro 10 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 D** and summarized in **Table 2.1**.

Table 2.1 – Level of Service – Existing Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Brock Street East & Nelkydd Lane *(Unsignalized)*	WBLT NBLR	A (0.08) C (0.26)	2.5 15.7	2.0 8.1	A (0.01) B (0.17)	0.6 13.2	0.3 4.8
Brock Street East & Donland Lane *(Unsignalized)*	EBLT SBLR	A (0.04) C (0.21)	1.3 13.9	0.9 5.1	A (0.04) B (0.09)	1.3 13.0	1.1 2.3
Donland Lane & Low Boulevard *(Unsignalized)*	EBLR NBLT	A (0.01) A (<0.01)	8.8 0.8	0.2 0.1	A (0.01) -	8.5 -	0.2 -

As summarized in **Table 2.1**, under existing conditions the study area intersections are operating at excellent levels of service with no critical movements identified. The intersections are operating at overall 'LOS C' or better during the peak hour time periods.

3.0 FUTURE BACKGROUND CONDITIONS

The future background 2021 full build out traffic volumes and the future background 2026 horizon year traffic volumes are provided in **Figure 3-1** and **Figure 3-2**, respectively**. Table 3.1** and **Table 3.2** summarizes the levels of service at the given intersections under future background full build out, and horizon year traffic conditions, respectively. Using the Region of Durham historic AADT statistics available between the years of 2007-2015 for ATR station 7402, a conservative background growth rate of 1% was applied to the traffic assessment. It is important to note, AADT statistics fluctuate between increasing and decreasing growth, thus a 1% growth rate is representative since the traffic is relatively steady and within similar range throughout the years. Detailed output analysis can be found in **Appendix E**.

In accordance to the Terms of Reference received, the Region of Durham required future background developments in the vicinity of the subject site to be incorporated in the traffic analysis. However, the Township of Uxbridge confirmed no future background developments are proposed at this time, see **Appendix F**.

Table 3.1: Future Background 2021 Full Build Out Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Brock Street East & Nelkydd Lane *(Unsignalized)*	WBLT NBLR	A (0.08) C (0.26)	2.4 16.1	14.1 19.4	A (0.01) B (0.18)	0.6 13.8	13.1 11.9
Brock Street East & Donland Lane *(Unsignalized)*	EBLT SBLR	A (0.04) C (0.22)	1.2 16.2	15.6 14.9	A (0.04) B (0.09)	1.3 13.6	10.1 16.0
Donland Lane & Low Boulevard *(Unsignalized)*	EBLR NBLT	A (0.01) A (<0.01)	8.8 0.7	2.7 0.1	A (<0.01) -	0 -	0 -

Table 3.2: Future Background 2026 Horizon Year Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Brock Street East & Nelkydd Lane *(Unsignalized)*	WBLT NBLR	A (0.08) C (0.27)	2.4 16.5	14.4 20.5	A (0.01) B (0.18)	0.5 14.2	13.8 11.5
Brock Street East & Donland Lane *(Unsignalized)*	EBLT SBLR	A (0.04) C (0.23)	1.2 16.9	18.9 14.1	A (0.04) B (0.09)	1.3 13.6	12.7 16.5
Donland Lane & Low Boulevard *(Unsignalized)*	EBLR NBLT	A (0.01) A (<0.01)	8.8 0.7	5.3 0.1	A (<0.01) -	0 -	0 -

As summarized in **Table 3.1** and **Table 3.2**, it is shown that during future background 2021 and 2026 traffic conditions the subject study area intersections continue to operate at acceptable levels of service with no changes to expected operations. During future background traffic conditions, the intersections are operating at overall LOS 'C' during the peak hour periods.

4.0 SITE TRAFFIC

The development proposal is to construct 70 townhouses, 12 semi-bungalow residential units and a commercial building with GFA of 449.82 m^2 with five (5) apartment units above. A future development block with 86 apartment units is also proposed. Trip rates and site generated trips were derived from the information contained in the *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) for “Multifamily Housing (Low-Rise)” (LUC 220), “Multifamily Housing (Mid-Rise)” (LUC 221), and “Shopping Center” (LUC 820). The trip generation summary is shown in **Table 4.1**. No transit reductions were applied, for a conservative approach.

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
Multifamily Housing (Low-Rise) (LUC 220) 58 units	Gross New Trips	6	22	28	23	13	36
	Trip Rate	0.10	0.38	0.48	0.40	0.22	0.62
Multifamily Housing (Mid-Rise) (LUC 232) 115 units	Gross New Trip	11	30	41	31	20	51
	Trip Rate	0.10	0.26	0.36	0.27	0.17	0.44
Shopping Center (LUC 820) 4,841.82 ft^2	Gross New Trip	16	9	25	39	42	81
	Trip Rate	3.17	1.78	4.95	7.72	8.31	16.03
Total	**New Trips**	**20**	**54**	**74**	**63**	**42**	**105**

The proposed development is anticipated to generate 74 two-way trips (20 inbound and 54 outbound) during the AM peak hours and 105 two-way trips (63 inbound and 42 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), see **Appendix G**, 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	AM Peak Hour		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
East	Brock Street East	18%	18%	21%	21%
West	Brock Street East	79%	79%	76%	76%
South	Nelkydd Lane	3%	3%	3%	3%
Total		**100%**	**100%**	**100%**	**100%**

5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2021 and 2026 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 5-1** and **Figure 5-2** and were analyzed using Synchro 10 software and SimTraffic simulation. The detailed calculations are provided in **Appendix H** and summarized in **Table 5.1** and **Table 5.2**.

It is important to note, under future total horizon periods (2021 and 2026), the Herrema Boulevard extension was assumed to be aligned with Nelkydd Lane. The existing Low Boulevard traffic volumes were reassigned to this new road network as a result.

Table 5.1 – Level of Service – Future Total 2021 Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Brock Street East & Nelkydd Lane/Herrema Boulevard *(Unsignalized)*	EBL WBL NBL NBTR SBL SBTR	A (0.03) A (0.08) D (0.37) A (0.04) C (0.18) B (0.13)	8.0 8.3 29.5 9.9 21.2 12.0	10.5 12.5 18.1 13.5 13.5 15.1	A (0.07) A (0.01) D (0.25) B (0.05) D (0.10) B (0.09)	8.0 8.4 26.4 11.7 20.7 11.1	12.8 5.0 19.9 11.8 11.7 12.6
Brock Street East & Site Access *(Unsignalized)*	SBR	B (0.01)	10.3	-	A (<0.01)	0.0	0.0
Herrema Boulevard & Low Boulevard *(Unsignalized)*	EBLTR WBLTR NBLTR	A (0.03) A (0.04) A (0.01)	8.7 9.7 1.5	13.2 14.3 2.2	A (0.02) A (0.03) A (0.02)	8.5 9.9 1.5	10.4 11.6 1.6
Herrema Boulevard & Internal Driveway *(Unsignalized)*	WBLTR	A (<0.01)	9.4	4.2	A (0.01)	9.6	7.9
Low Boulevard & Internal Driveway *(Unsignalized)*	WBLT NBLR	A (0.01) A (0.02)	6.5 8.4	- 12.0	A (0.02) A (0.01)	7.3 8.4	- 11.2

Table 5.2 – Level of Service – Future Total 2026 Traffic Assessments

Intersection	Movement	Weekday AM Peak Hour			Weekday PM Peak Hour		
		LOS (v/c)	Delay (s)	Queue (95th m)	LOS (v/c)	Delay (s)	Queue (95th m)
Brock Street East & Nelkydd Lane/Herrema Boulevard *(Unsignalized)*	EBL WBL NBL NBTR SBL SBTR	A (0.03) A (0.08) D (0.38) A (0.04) C (0.19) B (0.13)	8.1 8.4 31.2 10.0 22.1 12.2	10.0 13.2 18.8 13.1 13.4 14.0	A (0.08) A (0.01) D (0.26) B (0.05) D (0.10) B (0.10)	8.0 8.4 27.8 11.9 21.6 11.2	12.6 5.1 21.1 12.5 11.2 12.7
Brock Street East & Site Access *(Unsignalized)*	SBR	B (0.01)	10.4	-	A (<0.01)	0.0	-
Herrema Boulevard & Low Boulevard *(Unsignalized)*	EBLTR WBLTR NBLTR	A (0.03) A (0.04) A (0.01)	8.7 9.7 1.5	12.2 14.7 2.1	A (0.02) A (0.03) A (0.02)	8.5 10.0 1.5	10.7 11.2 0.9
Herrema Boulevard & Internal Driveway *(Unsignalized)*	WBLTR	A (<0.01)	9.4	4.2	A (0.01)	9.7	7.5
Low Boulevard & Internal Driveway *(Unsignalized)*	WBLT NBLR	A (0.01) A (0.02)	6.5 8.4	- 11.8	- A (0.01)	- 8.4	11.1

Under future total traffic conditions, the study area intersections and proposed entrances are expected to operate at acceptable levels of service during both peak periods, with no critical movements identified. On this basis, it is NexTrans opinion the proposed development site traffic generated volumes will have negligible impacts to the adjacent road networks.

6.0 PARKING ASSESSMENT

The Township of Uxbridge Zoning By-law No. 81-19 has been adopted by the Council of the Corporation of the Township of Uxbridge and has been updated in December 2016. It is a comprehensive By-law covering the entire amalgamated Township of Uxbridge. Based on the information contained in the Zoning By-law, the subject site is located in zone 'C6 – Brock Street East Mixed Use'. The technical parking requirement for the proposed development is detailed in **Table 6.1**.

Table 6.1 – Vehicle Parking Requirements (ZBL 81-19)

Use	GFA / Units	Rate	Parking Requirement	Parking Provided	Difference
Commercial	449.82 m^2	4 spaces per 100 m^2	18	31	+5
Apartment (above commercial)	5	1.5 spaces/unit	8		
Apartment (Future Development)	86	1.5 spaces/unit	129	130	+1
Residential	12 Bungalow Lofts 24 3-Storey Townhouses 46 2-Storey Townhouses	2 spaces/unit	164	164	0
Residential Visitor	82	0.5 spaces/unit	41	37	-4
Total			**360**	**362**	**+2**

Based on Township of Uxbridge Zoning By-law 81-19 and as amended By-law 2017-061, a total of 360 parking spaces will be required for the proposed mixed-use development. **The preliminary site plan provides for a total of 362 parking spaces, which results in a surplus of two (2) spaces.**

7.0 SITE PLAN REVIEW

7.1. Site Access

According to the proposed site plan, access to the site is provided through an extension of Herrema Boulevard, eliminating Donland Lane. Low Boulevard will also be extended to the east to intersect with Herrema Boulevard, this provides two (2) full movement driveways to access the proposed future development building. The semi-bungalow units will be accessed via Low Boulevard, and both the commercial and townhouse blocks will be accessed via the extension of Herrema Boulevard. In addition, there will be a right-out site exit at the east end of the site via Brock Street East which also provides a secondary ease of access for emergency vehicles.

In accordance with Ontario Traffic Manual (OTM) Book 5, we recommend appropriate signage consisting of STOP signs (Ra-1) and STOP bars throughout the internal road network as exhibited in **Figures 7-1** and **7-2**.

7.2. Loading Requirement and Assessment

AutoTURN software was used to generate a vehicular turning template to confirm and demonstrate the accessibility of the proposed loading space and parking spaces. As illustrated in **Figure 7-3** and **Figure 7-4,** the AutoTURN analysis demonstrates that a passenger vehicle (P TAC-2017) and 12-metre Garbage/Emergency vehicle (HSU TAC-2017), can effectively maneuver through the parking spaces and loading area.

7.3. Right Lane Warrant Analysis

In accordance to the Region of Durham TIS guidelines, the consideration for right turn lanes on Brock Street East were analysed. The intersection right turn lane design at the Herrema Boulevard / Nelkydd Lane intersection is exhibited in the “Brock Street Pavement Markings Plan” designed by Sernas Associates, dated August 2007, see **Appendix I.**

7.4. Left Lane Warrant Analysis

A left-turn lane warrant analysis was made based on the review and application of the Ministry of Transportation Ontario's (MTO) Geometric Design Standards for Ontario Highways and the applicable nomographs. Due to the volume of left turning vehicles on Brock Street East at the Herrema Boulevard/Nelkydd Lane new intersection into the site.

The traffic volumes projected in **Figure 5-2** at the proposed vehicular entrance of Brock Street East and Herrema Boulevard/Nelkydd Lane intersection, indicate the site access may experience high left turning traffic volumes during the weekday peak hour periods. As a result, the 2026 future total traffic volumes during the afternoon peak hour in the westbound left-turn lane and the afternoon peak hour in the eastbound left-turn lane will be assessed as the worst-case scenarios.

The projected traffic volumes intersect above the warrant line area of the nomograph (see **Appendix J**) and on this basis, an eastbound and westbound left turn lane are warranted thus, the proposed intersection lane configuration is acceptable. The intersection left turn lane design is exhibited in the “Brock Street Pavement Markings Plan” designed by Sernas Associates, dated August 2007, see **Appendix I**. The use of a two-way left turn lane as exhibited in Appendix I, was not considered in the traffic analysis as it will contradict the right out only egress driveway on the east side of the site.

8.0 TRANSPORTATION DEMAND MANAGEMENT

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.

Pedestrian sidewalks will be provided on both sides of the roadways, and sidewalk connectivity is provided throughout the proposed municipal road to ensure a complete sidewalk network.

8.1. Transit and Active Transportation Mode Assessment

The proposed development is situated in a transit supportive neighbourhood with bus stops located approximately 10-minutes to the subject site within comfortable walking distance. The route services are illustrated in **Appendix K**. The route services in the immediate area are described below:

- **950 Reach – Simcoe North:** The 950 Reach – Simcoe North bus route operates approximately every hour apart from only one stop between 11:00am and 3:00pm between the Welwood Plaza and UOIT/DC North Campus, generally in a north-south direction. The 950 Reach – Simcoe North bus route provides service 6 days a week. Weekend service is offered only on Saturdays and operates approximately every two (2) hours. Accessible service and bike racks are provided on the route. The nearest bus stop is a 9-minute walk from the subject site to Brock Street East and Franklin Street.

- **601 Brock – Uxbridge**: The 601 Brock – Uxbridge bus route operates three to four times per day from 4:00pm to 7:00pm, between 9 Mile Road at Lakeview Mannor and the Welwood Plaza, generally in a north-south direction. The 601 Brock – Uxbridge bus route provides service from Monday to Friday. Accessible service and bike racks are provided on this route. The nearest bus stop is a 10-minute walk from the subject site to Brock Street East and 1st Avenue.

The Region of Durham Transportation Management Plan (TMP), published December 2017, shows that the primary mode of travel is by car. In 2011, 80% of morning peak hour trips are auto, and 8%, 7%, and 5% are by transit, active modes, and other, respectively. Since implementing the Durham Region Transit in 2006, there has been an increase in ridership from 6.94 to 10.26 million trips in 2016 between the area municipalities. Moving forward, the key strategic directions the Region of Durham has agreed upon in the TMP is to strengthen the bond between land use and transportation and integrate more public transit including rapid transit.

9.0 CONCLUSION

The findings and conclusions of our analysis are as follows:

- The development proposal is to redevelop the existing land of 49,714.57 m^2 site area to include 70 townhouses, 12 semi-bungalow residential units and a commercial building with GFA of 449.82 m^2 with five (5) apartment units above. A future development block with 86 apartment units is also proposed. Vehicular access to the site is proposed through a full movement entrance via an extension of Low Boulevard, a full movement driveway via an extension of Herrema Boulevard to Brock Street East, and a right-out driveway via Brock Street East.
- The proposed development is anticipated to generate 74 two-way trips (20 inbound and 54 outbound) during the AM peak hours and 105 two-way trips (63 inbound and 42 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 intersection and access are expected to continue to operate with acceptable levels of service.
- Based on Township of Uxbridge Zoning By-law 81-19 and as amended By-law 2017-061, a total of 360 parking spaces will be required for the proposed mixed-use development. **The preliminary site plan provides for a total of 362 parking spaces, which results in a surplus of two (2) spaces.**
- To ensure safe traffic operation in the area, we recommend appropriate signage consisting of STOP signs (Ra-1) and STOP bars throughout the internal road network as exhibited in **Figures 7-1** and **7-2**.
- Left and right turn lanes are warranted on Brock Street East at the intersection with Herrema Boulevard/Nelkydd Lane.
- Through AutoTURN analysis, passenger and heavy vehicles can maneuver throughout the study area.

Figure 2-2 - Existing Traffic Volumes

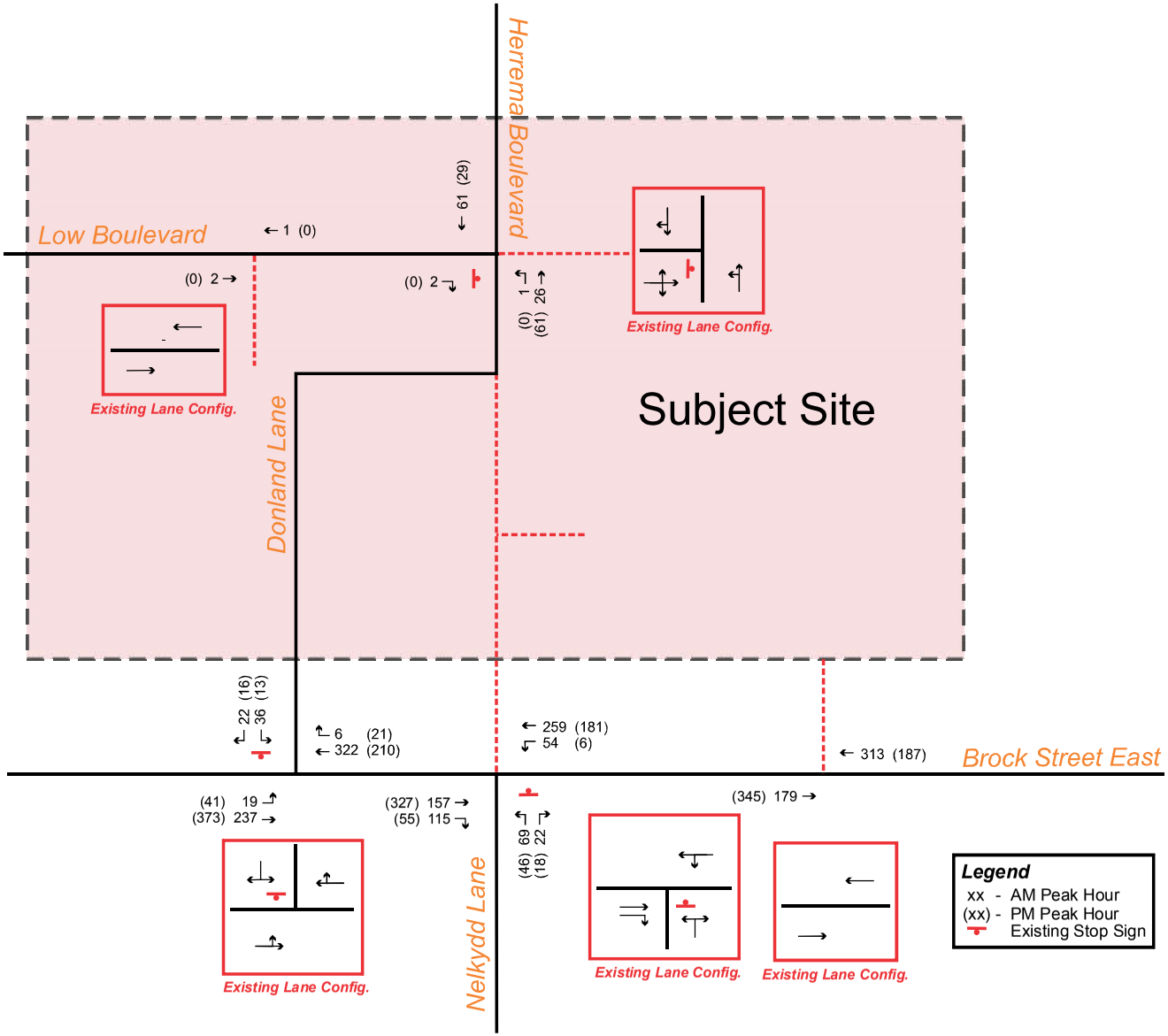


Figure 3-1 - Future (2021) Background Traffic Volumes

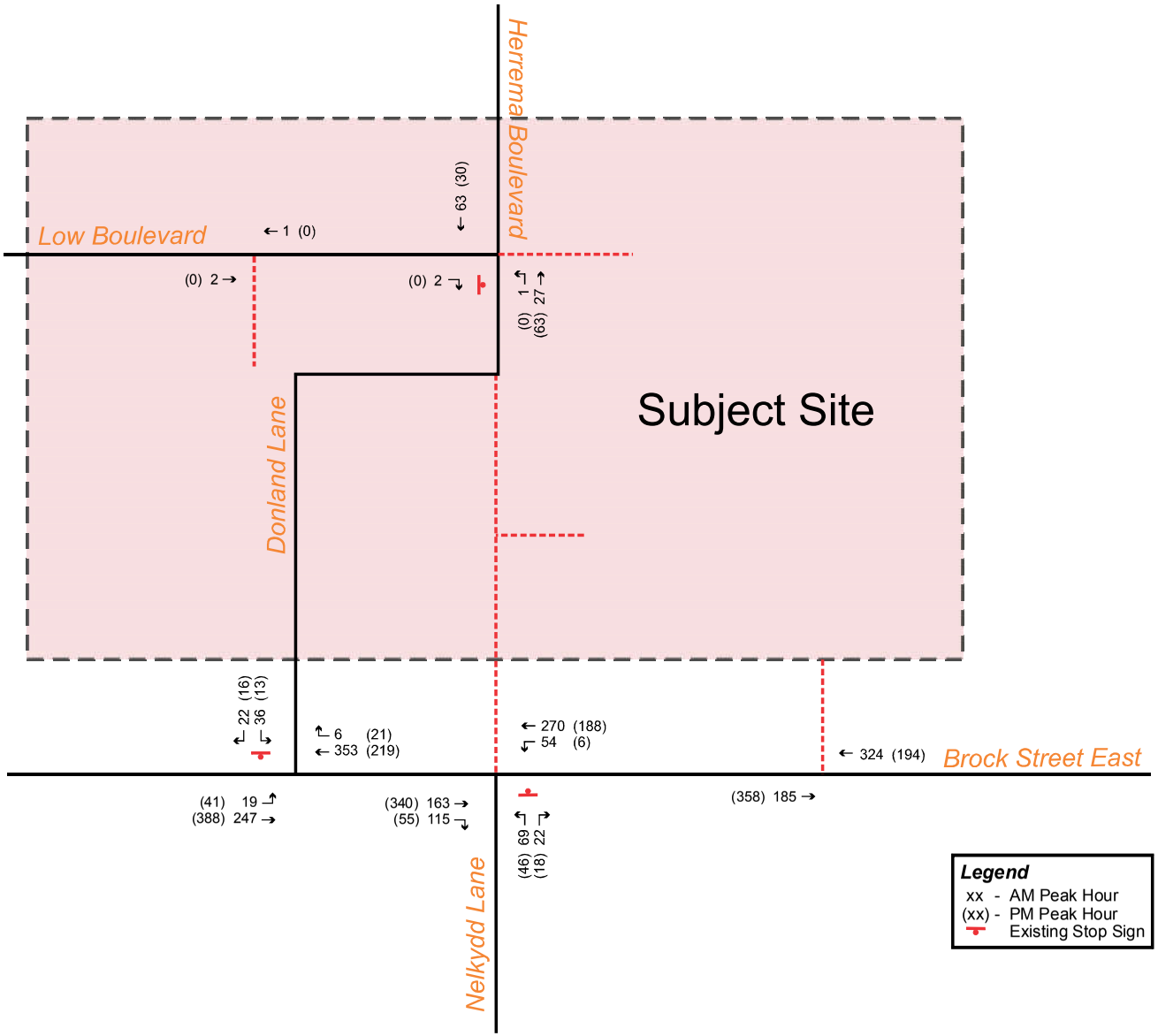


Figure 3-2 - Future (2026) Background Traffic Volumes

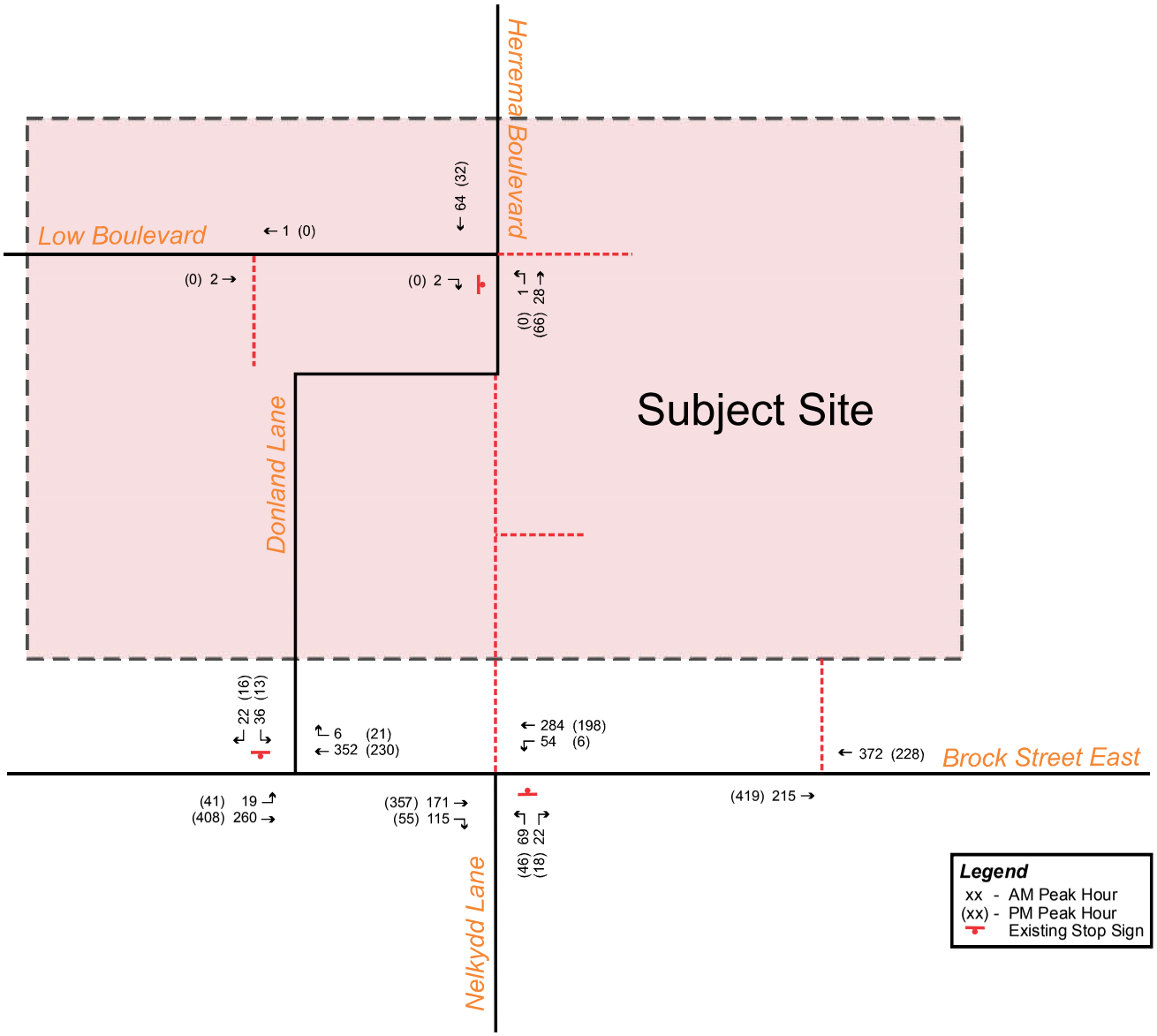


Figure 4-1 - Site Generated Traffic Volumes

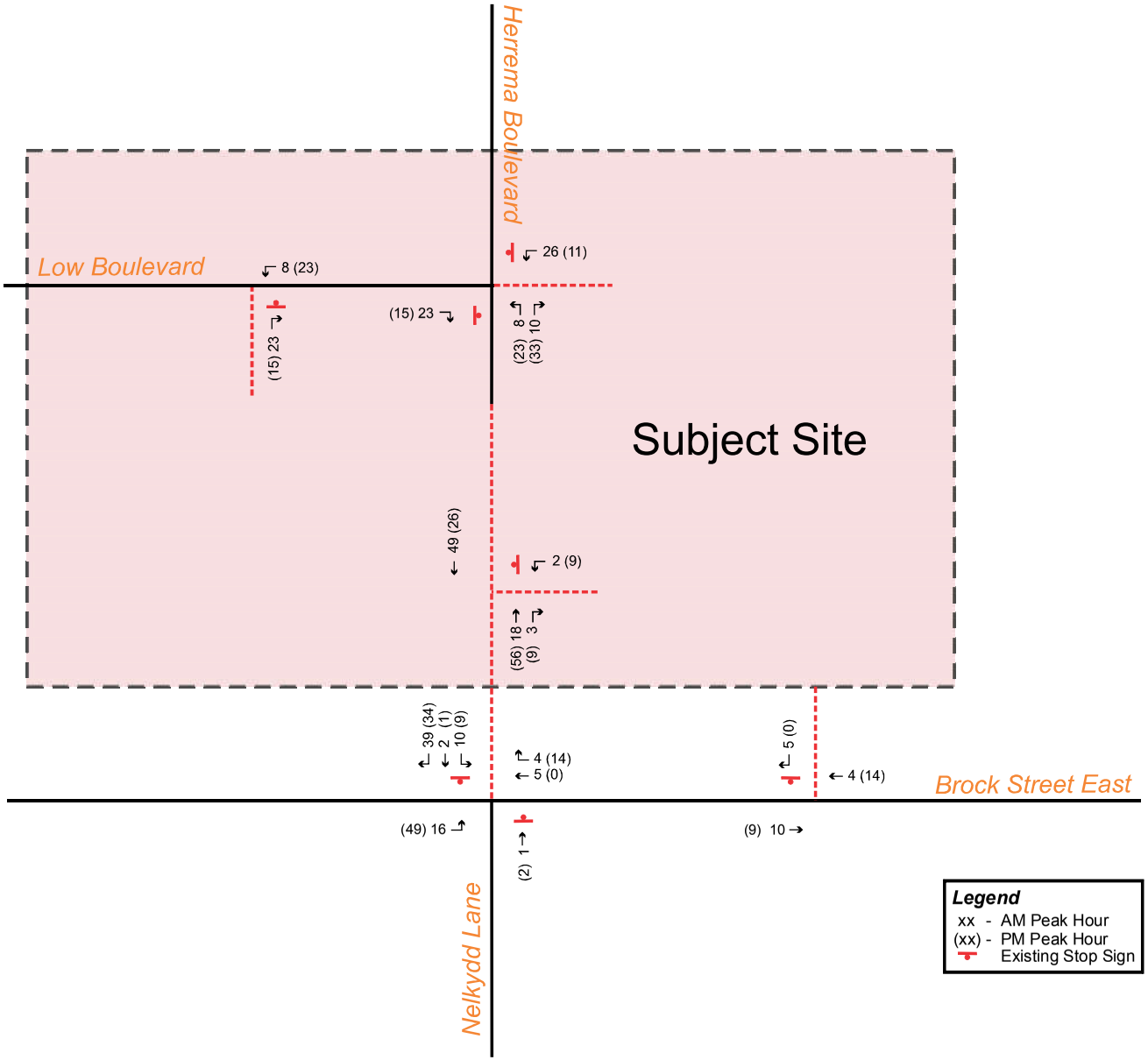


Figure 5-1 - Future (2021) Total Traffic Volumes

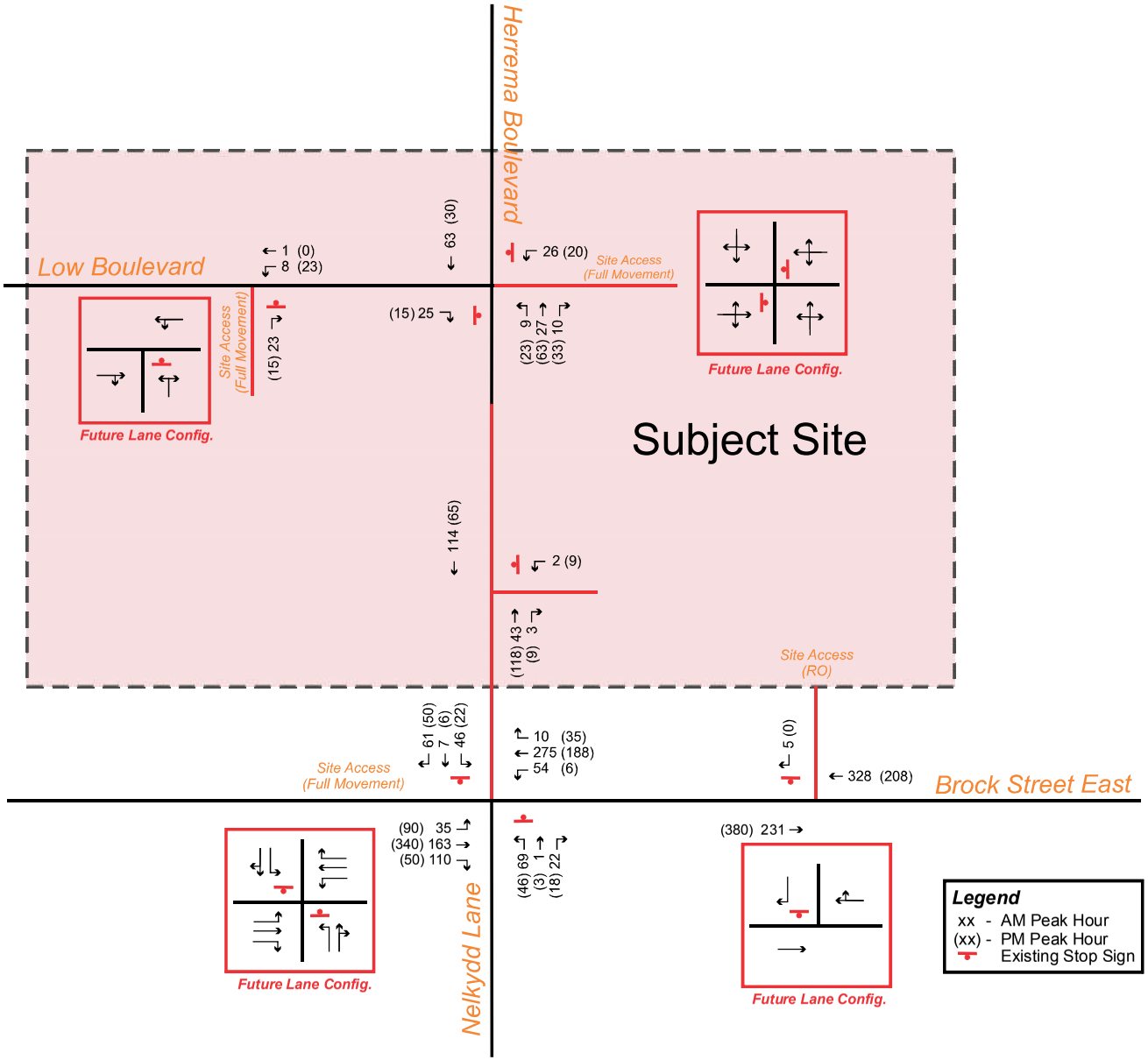


Figure 5-2 - Future (2026) Total Traffic Volumes

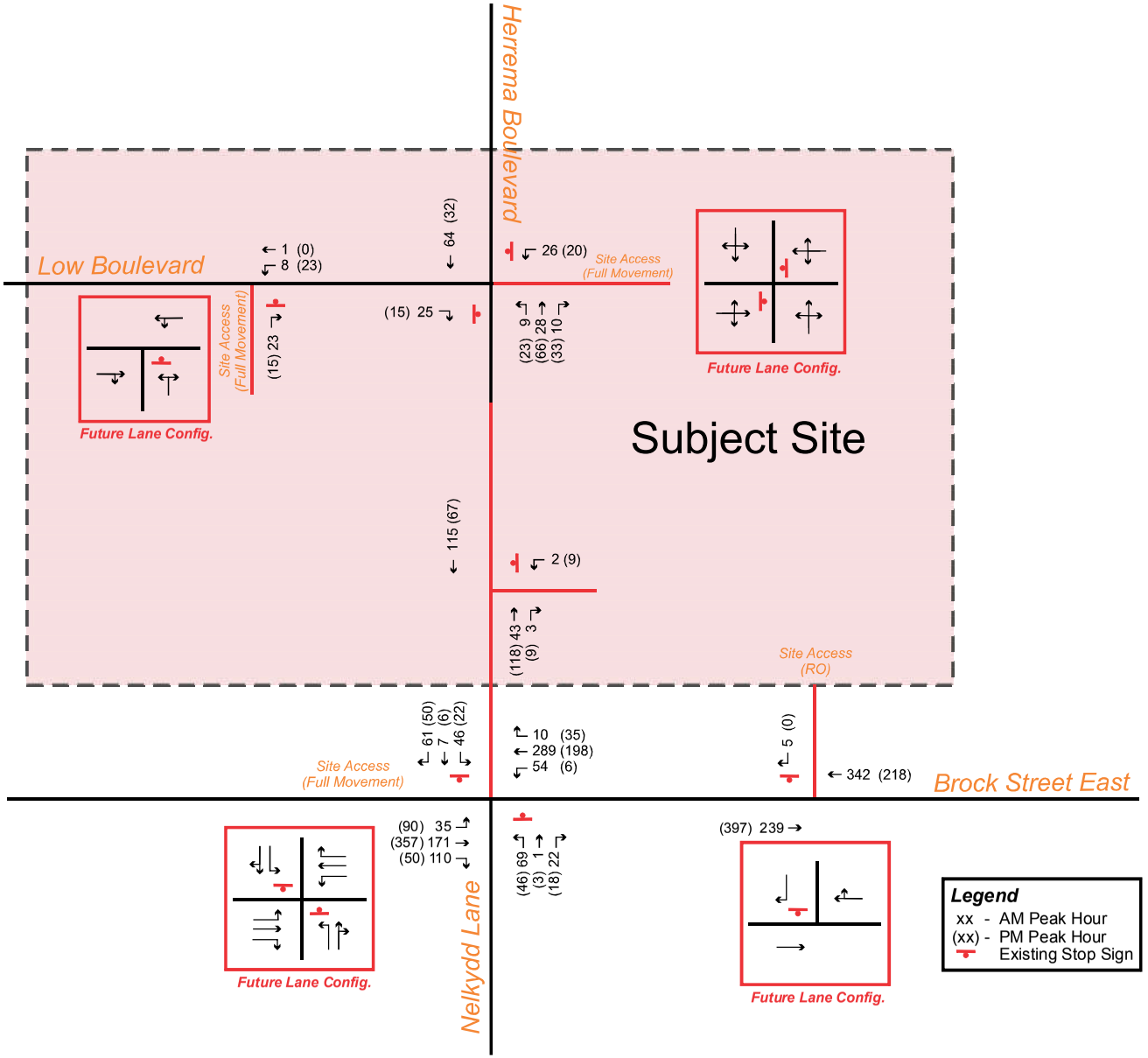


Figure 7-1 - Signage Plan

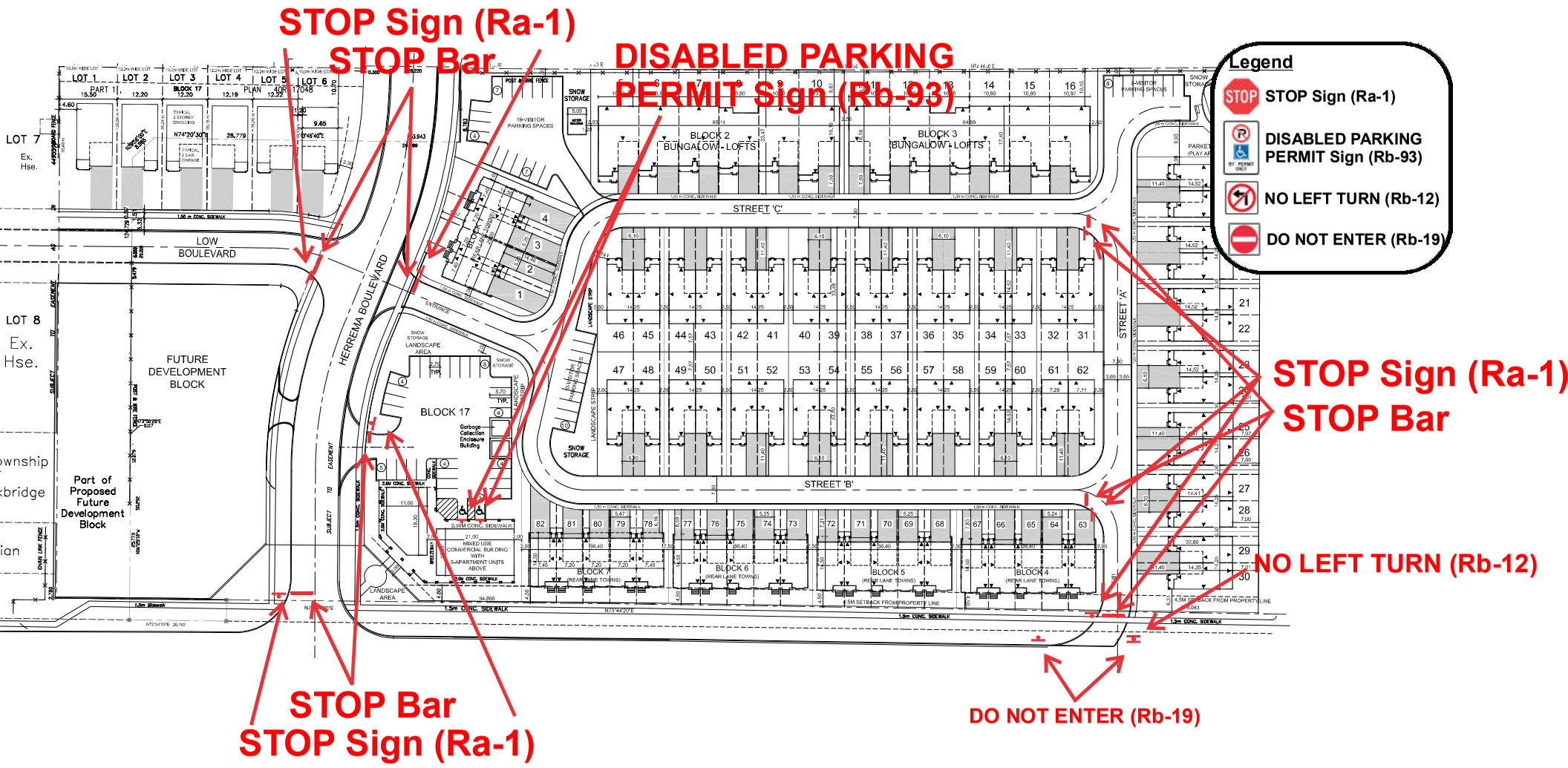
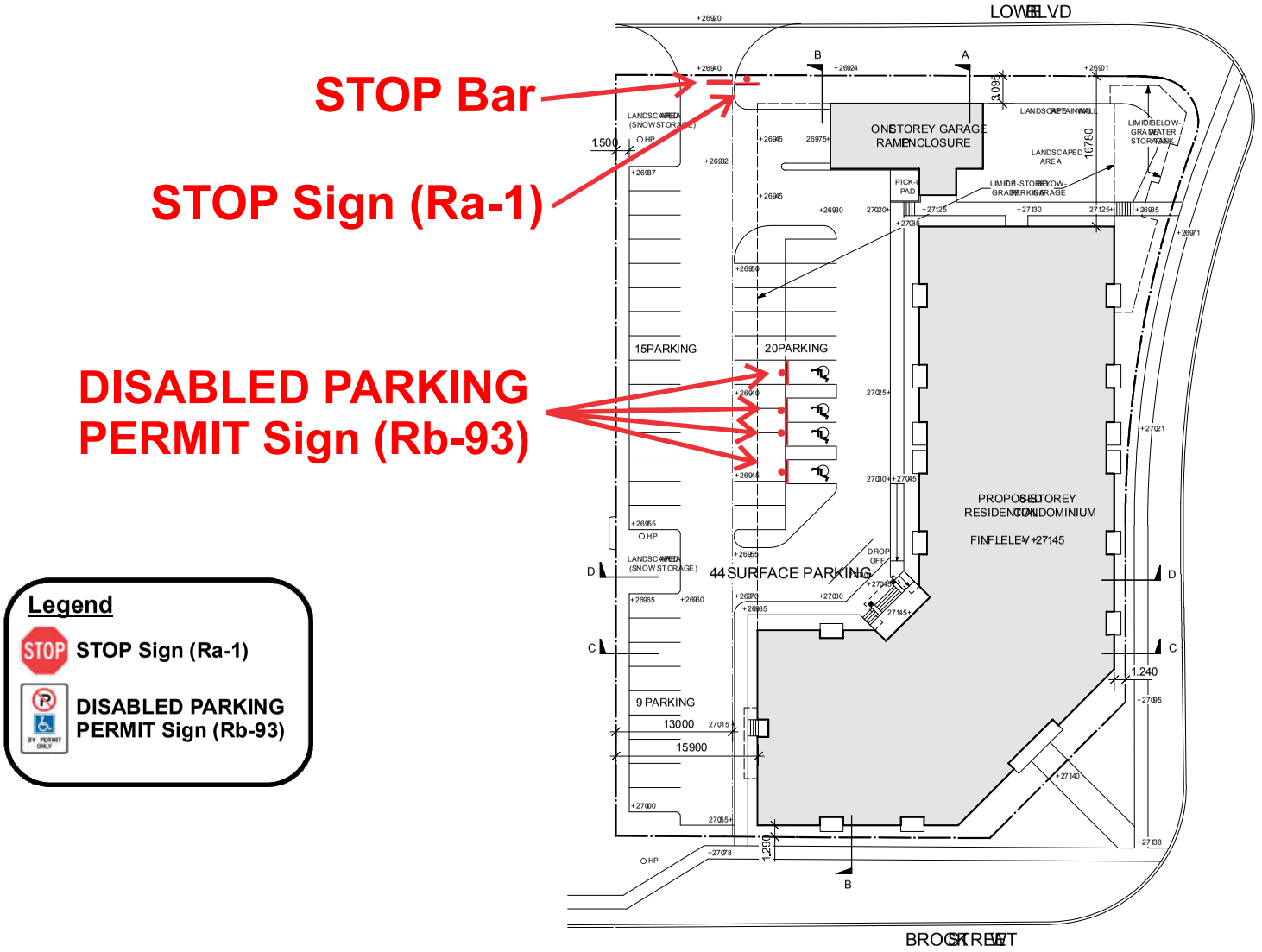
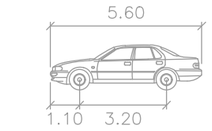


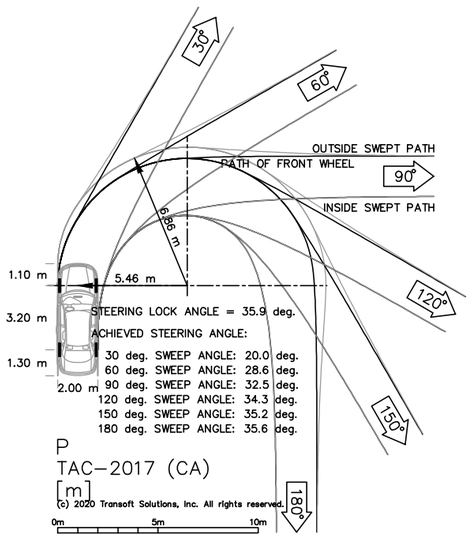
Figure 7-2 - Signage Plan (Future Development Block)

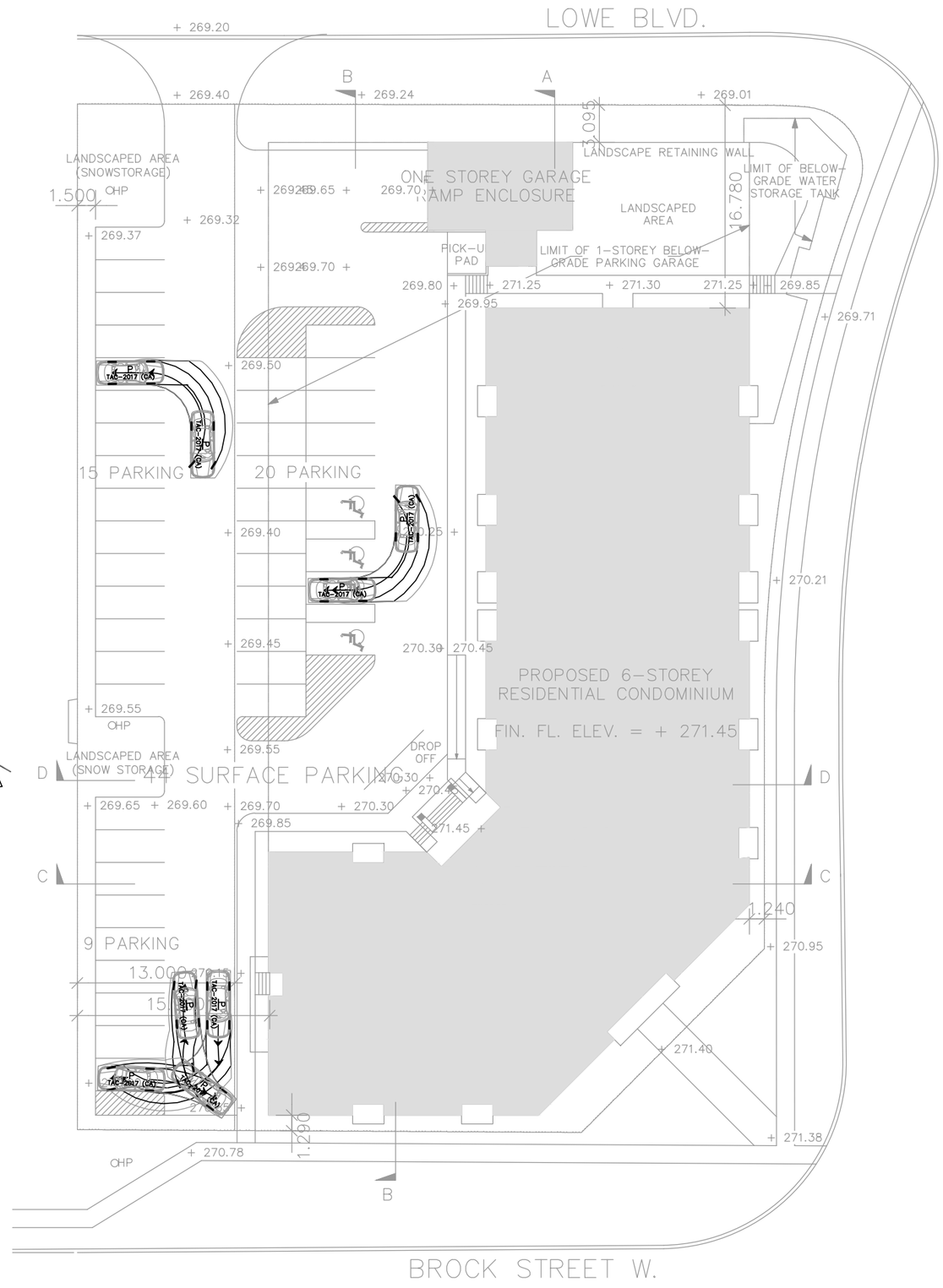




P

	meters
Width	: 2.00
Track	: 2.00
Lock to Lock Time	: 6.0
Steering Angle	: 35.9





KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

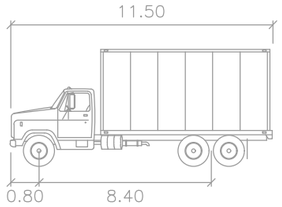
STAMP

nexTrans
CONSULTING ENGINEERS
520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8
Tel: 905-503-2563
www.nextrans.ca

PROJECT NAME:
MID-RISE APARTMENT
Brock Street
(TOWN OF UXBRIDGE)

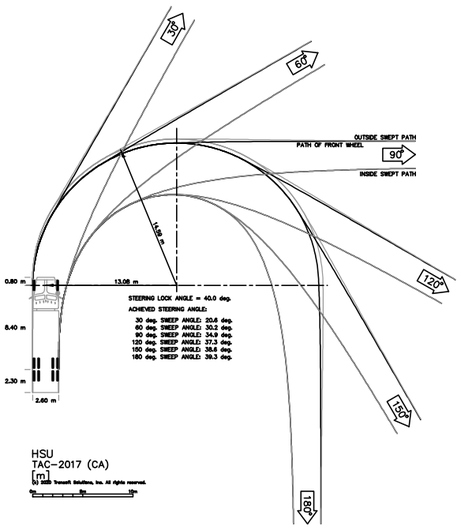
DRAWING TITLE:
AutoTURN Analysis
(P TAC-2017)

DESIGN BY: A.S.	DATE: November 26, 2020
CHECKED BY: R.P.	PROJECT NO.: NT-17-207
DRAWN BY: A.S.	
SCALE: NTS	DRAWING NO.: Figure 7-3

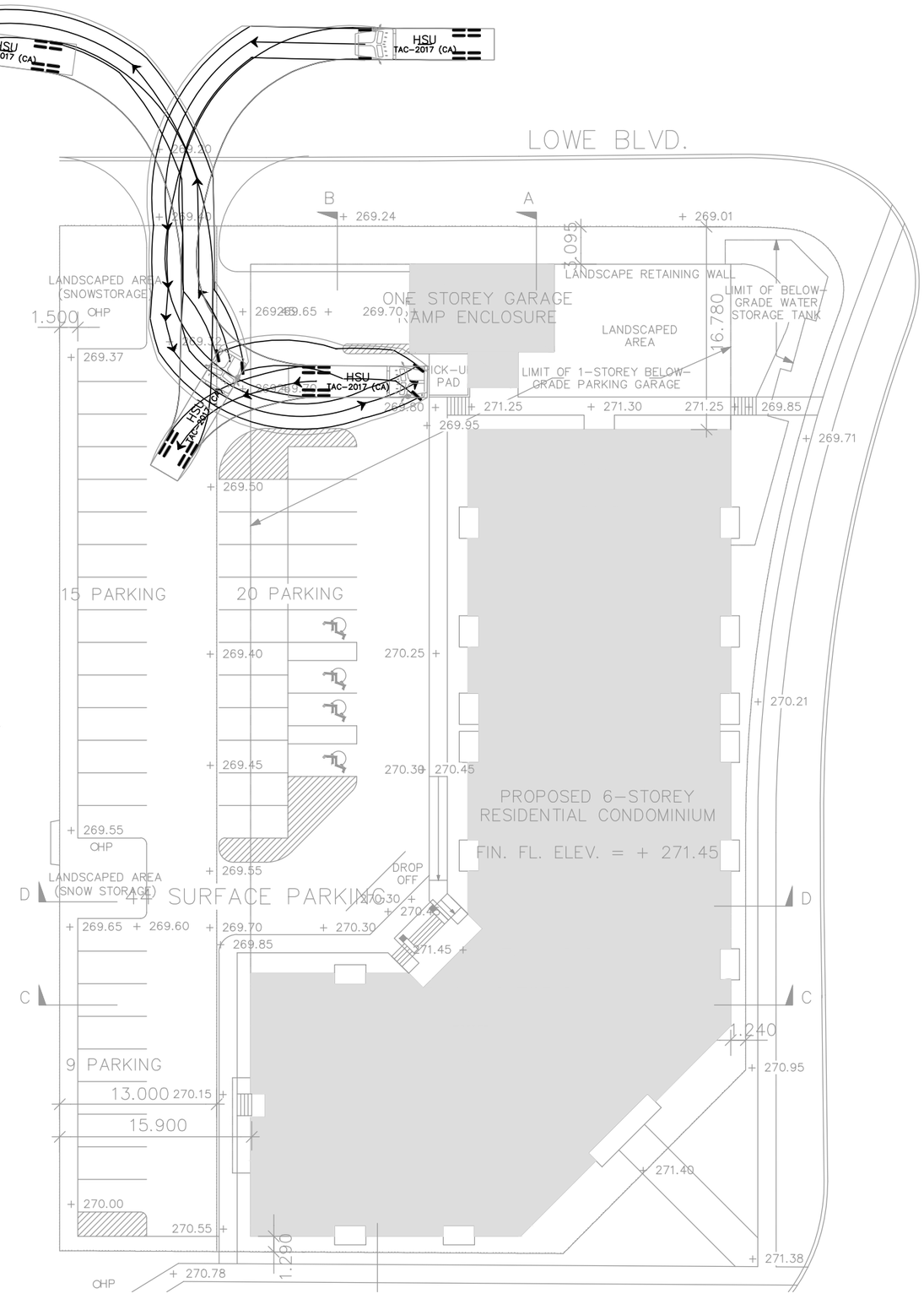


HSU

	meters
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.0



HSU
TAC-2017 (CA)
[m]



KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

STAMP

nexTrans
CONSULTING ENGINEERS
520 Industrial Parkway South, Suite 201
Aurora, Ontario L4G 6W8
Tel: 905-503-2563
www.nextrans.ca

PROJECT NAME:
MID-RISE APARTMENT
Brock Street
(TOWN OF UXBRIDGE)

DRAWING TITLE:
AutoTURN Analysis
(HSU TAC-2017)

DESIGN BY: A.S.	DATE: November 26, 2020
CHECKED BY: R.P.	PROJECT NO. NT-17-207
DRAWN BY: A.S.	
SCALE: NTS	DRAWING NO. Figure 7-4

Appendix A – Terms of Reference

520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Phone: 905-503-2563
www.nextrans.ca

nexTrans
CONSULTING ENGINEERS

NextEng Consulting Group Inc.

Terms of Reference

To: Jeff Almeida, Development Approvals Division, Region of Durham

From: Madeleine Catz, B.Eng., E.I.T., Transportation Analyst, Nextrans Consulting Engineers

cc: David Sud

Date: October 17, 2017

Re: Brock Street, Proposed Mixed-use Residential and Commercial Development – TOR for Transportation Impact Study and Transportation Demand Management Options

---

This memo has been prepared to outline (for the Region's review and approval) the intended scope of work for a transportation impact study and transportation demand management (TDM) options report for the proposed mixed-use development located northeast of Brock Street East and Donland Lane in the Township of Uxbridge, Durham Region.

The following text outlines the intended scope for a transportation impact study and TDM options for the Brock Street East mixed-use development. Our transportation impact study will conform to the Regional Municipality of Durham "Traffic Impact Study Guidelines" which will include the following study parameters:

- Definition of the Study Area
- Necessary Data Requirements
- Background Traffic Forecast
- Site Trip Generation and Modal Split Assumptions
- Site Trip Distribution
- Site Trip Assignment and Total Traffic Forecasts
- Traffic Analysis
- Community Impact Analysis
- Findings and Recommendations

Introduction

The report introduction will include:

1. Description of the study area
2. Description of nature of application
3. Description of proposed development and land use

Access to the site is envisioned through three locations. First, via an extension of Low Boulevard, second is through an extension of Herrema Boulevard via Brock Street East, and third is through a proposed Right-In/Right-Out driveway via Brock Street East which may act as a secondary emergency entrance.

Existing Traffic Assessment

The existing conditions within the study area will be summarized and documented. This will include, but not limited to:

- Description of existing conditions
- A description of key roads and intersections (lanes, speed limits)
- Identifying forms of traffic control, lane configurations, turning restrictions
- Identifying pedestrian and cycling facilities
- Noting the location of adjacent driveways and access points
- Identifying other traffic generators in the vicinity of the site

Turning movement counts will be collected during weekday AM (7am-10am), weekday PM (4pm-7pm) peak periods at the following study area intersections:

- Brock Street East / Nelkydd Lane;
- Brock Street East / Donland Lane; and
- Low Boulevard / Donland Lane

Once existing traffic volumes have been collected, we will prepare a baseline model of existing traffic operations at the study area intersections using Synchro v.10 for the identified critical time periods (weekday AM and PM peak hours). The existing analysis will include levels of service, volume to capacity ratios, and queuing at the key study intersections.

Future Background Traffic Assessment

Future Background consists of background growth and other background development traffic. We will obtain historic AADT records and estimate a background growth rate for the assumed 5-year time horizon period.

We do understand that there is and may be further redevelopment applications, as such traffic generation associated with those developments will be included in our analysis to reflect our horizon year assessment of 2022.

Operational deficiencies as a result of future forecasted traffic volumes will be identified and mitigative measures will be proposed and documented in the final report.

Site Traffic Assessment

The weekday AM and PM peak hour traffic to be generated by the proposed development will be estimated based on information published in the *Trip Generation, 9th Edition,* by the Institute of Transportation Engineers (ITE).

The directional trip distribution and assignment for traffic approaching and departing the site will be determined based upon existing traffic patterns and Transportation Tomorrow Survey (TTS) data.

Future Total Traffic Assessment

Future total traffic consists of future background plus site traffic. Operational deficiencies as a result of site traffic will be identified and mitigative measures will be proposed and documented in the final report. We will develop and recommend appropriate intersection controls and geometric improvements for all key intersections as well as determine the appropriateness of the proposed site access location(s) and the lane requirements at these new locations.

Transit and Transportation Demand Management (TDM) Plan

A review of the existing and future transit availability in the area and recommendations shall be made in relation to the Region's TDM requirements to ensure acceptable walking distances are proposed to the subject lands. Additionally, a review of whether additional STOP locations would be of benefit. Also required is a transit pedestrian study to ensure sufficient capacity is available along the existing routes and that appropriate pedestrian connectivity is provided. We will obtain all necessary data from the Region's Planning Department and apply it accordingly in our analysis and final recommendation in this regard.

Parking Justification / On Site Circulation and Site Access Review

- Review the available parking to determine whether the proposed parking supply is sufficient to accommodate the parking demand of the proposed site and meets current Township of Uxbridge by-law requirements.
- Provide a recommended minimum parking rate for all end uses, based on shared parking rationale (if appropriate).
- We will review and provide comment on the most recent site plan with respect to the functionality of the internal vehicular circulation to facilitate vehicle maneuvering, loading, servicing, parking and pick-up / drop-off activities.
- Using Auto TURN, we will confirm the turning radius requirements and site circulation for passenger and heavy vehicles.
- Determine the appropriateness of access location and ensure adequate connections to main corridors are provided.
- Determine if the site access locations confirm to City standards vis-a-vis spacing, clear throat, sight lines and setback minimum criteria.
- Prepare an internal signage plan depicting location of all regulatory signage as well as location of all convex mirror and pavement markings.

Madeleine Catz

From: Jeff Almeida <Jeff.Almeida@Durham.ca>
Sent: October-25-17 2:42 PM
To: Madeleine Catz
Cc: davidsud@rogers.com; Richard Pernicky
Subject: RE: Terms of Reference - Brock Street Proposed Mixed-use Development

Hi Madeleine,

Our comments on your proposed Terms of Reference (Nextrans October 17,2017) are as follows:

1. We agree generally with the scope and methodology being proposed. The Township of Uxbridge will advise if they have additional requirements.

2. Your study must comply with the Region's Traffic Impact Study Guidelines, including the requirements for Synchro analysis (Chapter 9 in the Design Specifications for Traffic Control Devices, Pavement Marking, Signage and Roadside Protection). The most current intersection turning movement counts available from the Region can be downloaded from our web site through the interactive traffic counts map. Historical daily traffic volumes for all Regional roads are also available through the Traffic Data page of our web site. Other traffic data, including signal timings, are available for purchase from our Traffic Engineering & Operations Division (traffic@durham.ca 905-666-8116).

3. The Horizon year needs to be 5 years after build out. 2022 is 5 years from 2017, and this is unrealistic. A reasonable assumption of full build out needs to be made, and then a 5-year horizon included.

4. Using historic AADT counts to predict background growth is acceptable. Please contact the Township of Uxbridge for any additional developments that need to be taken account of within the 5-year horizon. 226 Brock Street East (opposite the site on the south side of Brock Street (54 Units) should be included.

5. We agree with the scope and methodology for site traffic generation, distribution and assignment.

6. We agree with including transit, active transportation and TDM discussions in the TIS.as per the Region's TIS Guidelines.

7. Any proposed access to Brock St. will need to be reviewed against Regional Standards and justification provided. The TIS scoping discusses a RI/RO only entrance to Brock St and the TIS will need to include a functional design to show how this would be controlled. A median would be difficult given Brock St. is a 2-lane roadway, and a median may restrict access to future development at 226 Brock St. Any access onto Brock St. should include an assessment of the need for an auxiliary right-turn lane as per Regional guidelines.

Jeff Almeida
Development Approvals Division
Works Department
Regional Municipality of Durham
605 Rossland Road East
Whitby, ON L1R 1W8
Phone: (905) 668-7711 ext. 3721
Fax: (905) 668-2051

From: Madeleine Catz [mailto:madeleine@nextrans.ca]
Sent: October-17-17 4:38 PM
To: Jeff Almeida
Cc: davidsud@rogers.com; Richard Pernicky
Subject: Terms of Reference - Brock Street Proposed Mixed-use Development

Good afternoon Mr. Almeida,

I would like to establish a terms of reference regarding a proposed mixed-use development northeast of Brock Street East and Donland Lane in Uxbridge. Please see attached terms of reference, along with the preliminary site plan.

Sincerely,

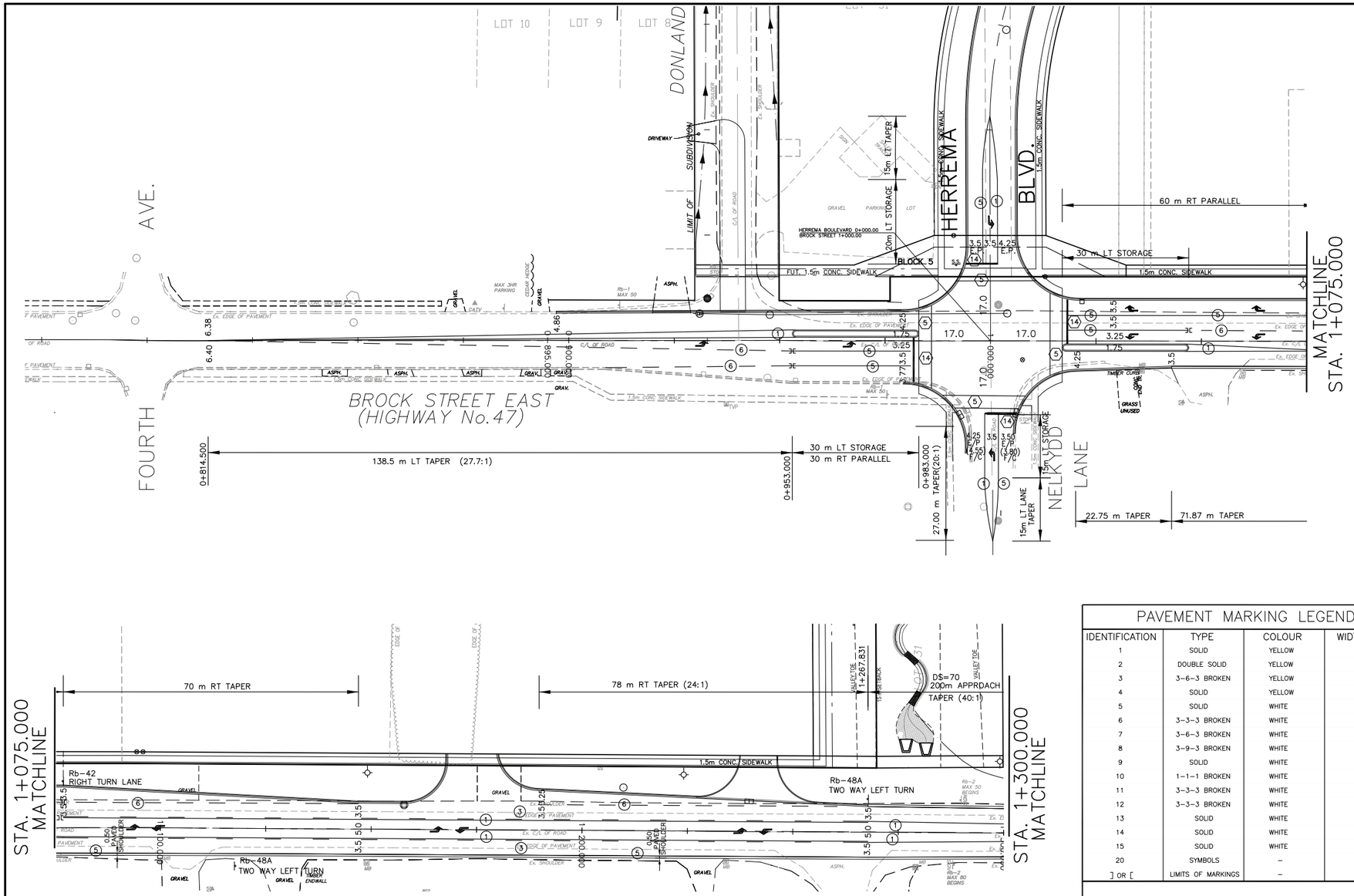
Madeleine Catz, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext. 207
c: 647-893-1640
e: madeleine@nextrans.ca
w: www.nextrans.ca

NOTE: NEW ADDRESS BELOW – EMAIL AND PHONES REMAIN SAME

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Appendix B – Proposed Site Plan



BROCK STREET EAST (HIGHWAY No.47)

REMOVE EXIST. PAVEMENT MARKINGS WITHIN PROJECT LIMITS

NOTE

1) FOR GENERAL NOTES AND LEGEND SEE DWG. G–101.
2) MEASUREMENTS IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN.

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXIST. U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

PAVEMENT MARKING LEGEND

IDENTIFICATION	TYPE	COLOUR	WIDTH (cm)
1	SOLID	YELLOW	10
2	DOUBLE SOLID	YELLOW	10
3	3–6–3 BROKEN	YELLOW	10
4	SOLID	YELLOW	20
5	SOLID	WHITE	10
6	3–3–3 BROKEN	WHITE	10
7	3–6–3 BROKEN	WHITE	10
8	3–9–3 BROKEN	WHITE	10
9	SOLID	WHITE	20
10	1–1–1 BROKEN	WHITE	20
11	3–3–3 BROKEN	WHITE	20
12	3–3–3 BROKEN	WHITE	30
13	SOLID	WHITE	30
14	SOLID	WHITE	45
15	SOLID	WHITE	60
20	SYMBOLS	–	–
] OR [	LIMITS OF MARKINGS	–	–

3–3–3, 3–6–3, 3–9–3 LINE – GAP – LINE SPACING IN METRES

(1) PERMANENT

[1] TEMPORARY

▽ TEMPORARY – REMOVABLE

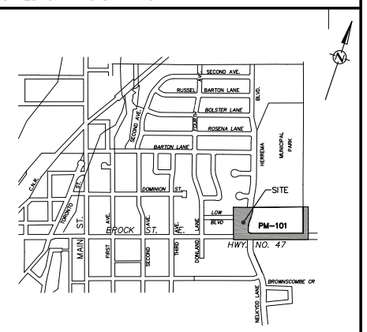
(1) TEMPORARY – REMOVABLE

◇ EXISTING MARKING TO BE REMOVED OR (TREATED?)

NOTES

1. ALL MARKINGS AND SIGNS SHALL CONFORM WITH THE ONTARIO TRAFFIC MANUAL(OTM), BOOK 11.
2. PROPOSED MARKINGS TO MATCH EXIST. AT ALL WORK AND/OR ROAD RECONSTRUCTION LIMITS

→ TRAFFIC SIGN



KEY PLAN
N.T.S.

ACCEPTED TO BE IN GENERAL CONFORMANCE WITH THE TOWNSHIP OF UXBRIDGE STANDARDS THIS ACCEPTANCE IS NOT TO BE CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT

Totten Sims Hubicki Associates (1997) Limited

Date: _____

APPROVED

_____ P. Eng.
Department Of Works
Region Of Durham
Date: _____

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED

CORPORATION OF THE TOWNSHIP OF UXBRIDGE
Engineering Department

GOLDMANCO SUBDIVISION
S–U–2005–02

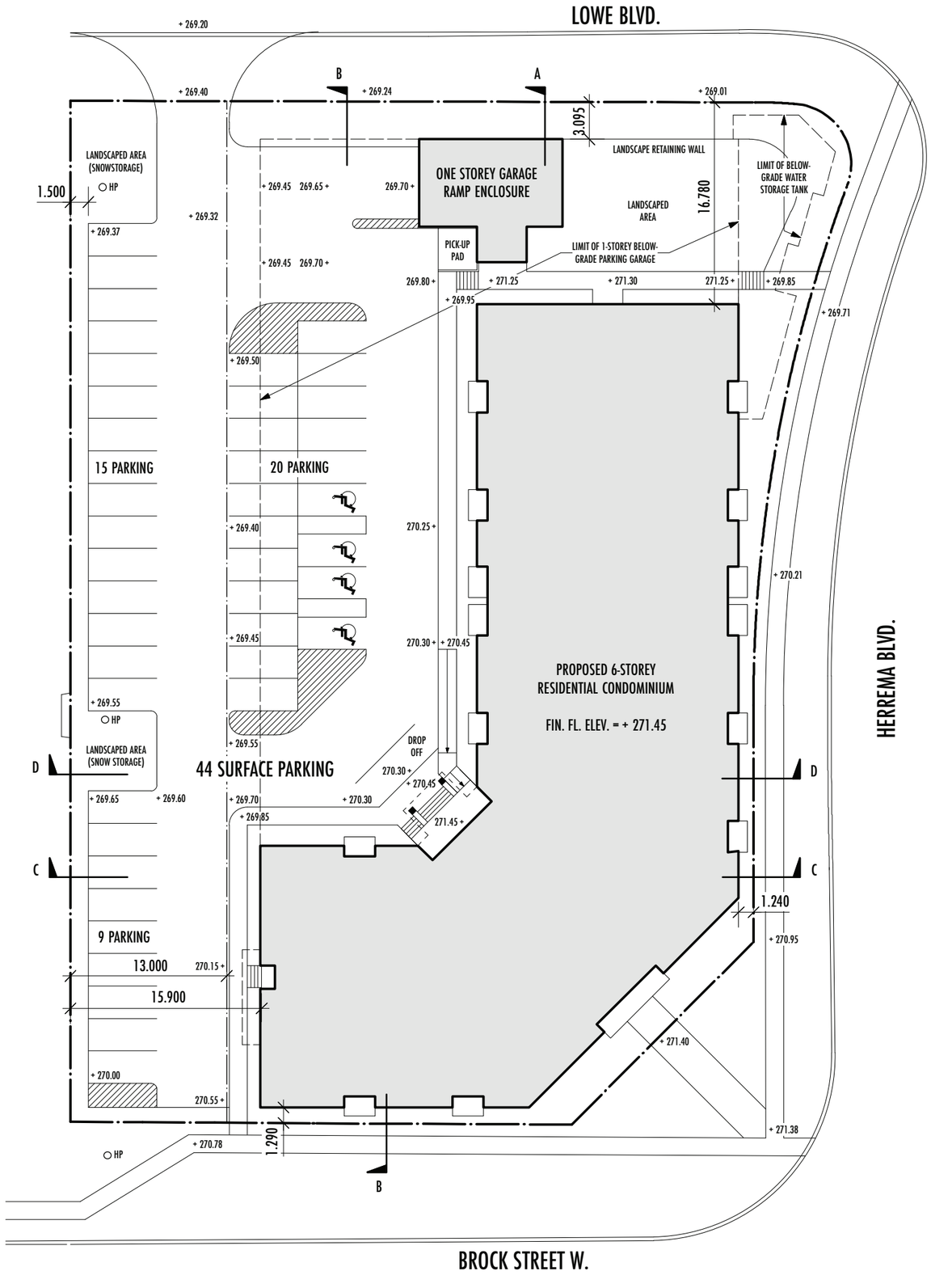
BROCK STREET PAVEMENT MARKINGS PLAN

LICENSED PROFESSIONAL ENGINEER
A.J. CHRISTIE
PROVINCE OF ONTARIO

SERNAS ASSOCIATES
(A Member of The Sernas Group Inc.)
110 Scotia Court
Unit 41
Whby, ON
L1N 8Y7
T 905.686.6402
F 905.432.7877
sernas.com

DATE : AUGUST, 2007	DRAWN BY : L.O.	PROJECT No. 04440
SCALE : 1 : 500	DESIGNED BY : L.R.D.	DRAWING No. PM–101
	CHECKED BY :	

R/P Date - MAR. 27, 2008 File: 04440-PM-101.DWG



KEITH LOFFLER MCALPINE ARCHITECTS
10 ST. MARY STREET
SUITE #402
TORONTO, ONTARIO
M4Y 1P9

ONTARIO ASSOCIATION OF ARCHITECTS
JOHN WILLIAM McALPINE
LICENCE
4397

SITE AREA:	4,870.34 M2
COVERAGE:	1,858.93 M2
% COVERAGE:	38.17
G.F.A:	9,738.86 M2
F.S.I:	2.0
RES. UNITS:	86
NET SALEABLE:	1,410.37 X 5 + 932.89 M2 = 7,984.47 M2

6 STOREYS
15 UNITS PER FLOOR
(15 X 5 = 75 + 11 = 86 UNITS)

PARKING:

SURFACE:	44 SPACES
BELOW GRADE:	86 SPACES
TOTAL PARKING:	130 SPACES

klma
A PARTNERSHIP OF CORPORATIONS
KEITH LOFFLER DESIGN INC
MCALPINE ARCHITECT INC

PROPOSED RESIDENTIAL DEVELOPMENT
BROCK STREET EAST
UXBRIDGE, ONTARIO
EVENDALE DEVELOPMENTS

SITE PLAN

A1

SCALE: 1 : 400
NOVEMBER 26, 2020

Appendix C – Existing Traffic Data

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

Turning Movement Count (1 . BROCK ST E & DONLAND LN)

Start Time	N Approach DONLAND LN					E Approach BROCK ST E					W Approach BROCK ST E					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	4	7	0	0	11	1	68	0	0	69	23	0	0	0	23	103	
07:15:00	4	4	0	0	8	0	64	0	0	64	31	3	0	0	34	106	
07:30:00	6	6	0	0	12	0	64	0	0	64	33	1	0	0	34	110	
07:45:00	9	2	0	0	11	0	83	0	0	83	34	1	0	0	35	129	448
08:00:00	4	5	0	0	9	3	74	0	0	77	54	4	0	0	58	144	489
08:15:00	8	14	0	0	22	2	82	0	0	84	79	3	0	1	82	188	571
08:30:00	6	9	0	0	15	0	75	0	0	75	59	10	0	2	69	159	620
08:45:00	4	8	0	0	12	1	91	0	0	92	45	2	0	7	47	151	642
09:00:00	5	7	0	0	12	8	74	0	2	82	45	2	0	0	47	141	639
09:15:00	2	4	0	0	6	1	60	0	0	61	27	2	0	3	29	96	547
09:30:00	4	2	0	0	6	2	48	0	0	50	29	2	0	0	31	87	475
09:45:00	4	3	0	0	7	3	61	0	0	64	31	1	0	0	32	103	427
BREAK																	
16:00:00	4	2	0	2	6	5	57	0	0	62	75	5	0	0	80	148	
16:15:00	3	2	0	0	5	5	59	0	0	64	94	7	0	0	101	170	
16:30:00	3	5	0	0	8	6	48	0	0	54	97	10	0	1	107	169	
16:45:00	6	1	0	2	7	7	47	0	2	54	81	6	0	0	87	148	635
17:00:00	5	4	0	0	9	2	55	0	0	57	104	11	0	0	115	181	668
17:15:00	2	3	0	0	5	6	60	0	2	66	91	14	0	0	105	176	674
17:30:00	3	3	0	0	6	3	42	0	0	45	89	7	0	0	96	147	652
17:45:00	5	2	0	0	7	4	50	0	0	54	75	4	0	2	79	140	644
18:00:00	8	4	0	0	12	5	35	0	0	40	68	9	0	0	77	129	592
18:15:00	2	2	0	0	4	3	43	0	0	46	66	5	0	0	71	121	537
18:30:00	6	4	0	0	10	3	46	0	0	49	54	6	0	0	60	119	509

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

18:45:00	5	1	0	0	6	5	48	0	0	53	52	7	0	0	59	118	487
Grand Total	112	104	0	4	216	75	1434	0	6	1509	1436	122	0	16	1558	**3283**	-
Approach%	51.9%	48.1%	0%		-	5%	95%	0%		-	92.2%	7.8%	0%		-	**-**	-
Totals %	3.4%	3.2%	0%		6.6%	2.3%	43.7%	0%		46%	43.7%	3.7%	0%		47.5%	**-**	-
Heavy	4	0	0		-	1	93	0		-	90	4	0		-	**-**	-
Heavy %	3.6%	0%	0%		-	1.3%	6.5%	0%		-	6.3%	3.3%	0%		-	**-**	-
Bicycles	1	0	0		-	0	0	0		-	0	0	0		-	**-**	-
Bicycle %	0.9%	0%	0%		-	0%	0%	0%		-	0%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Mostly Cloudy (13.4 °C)

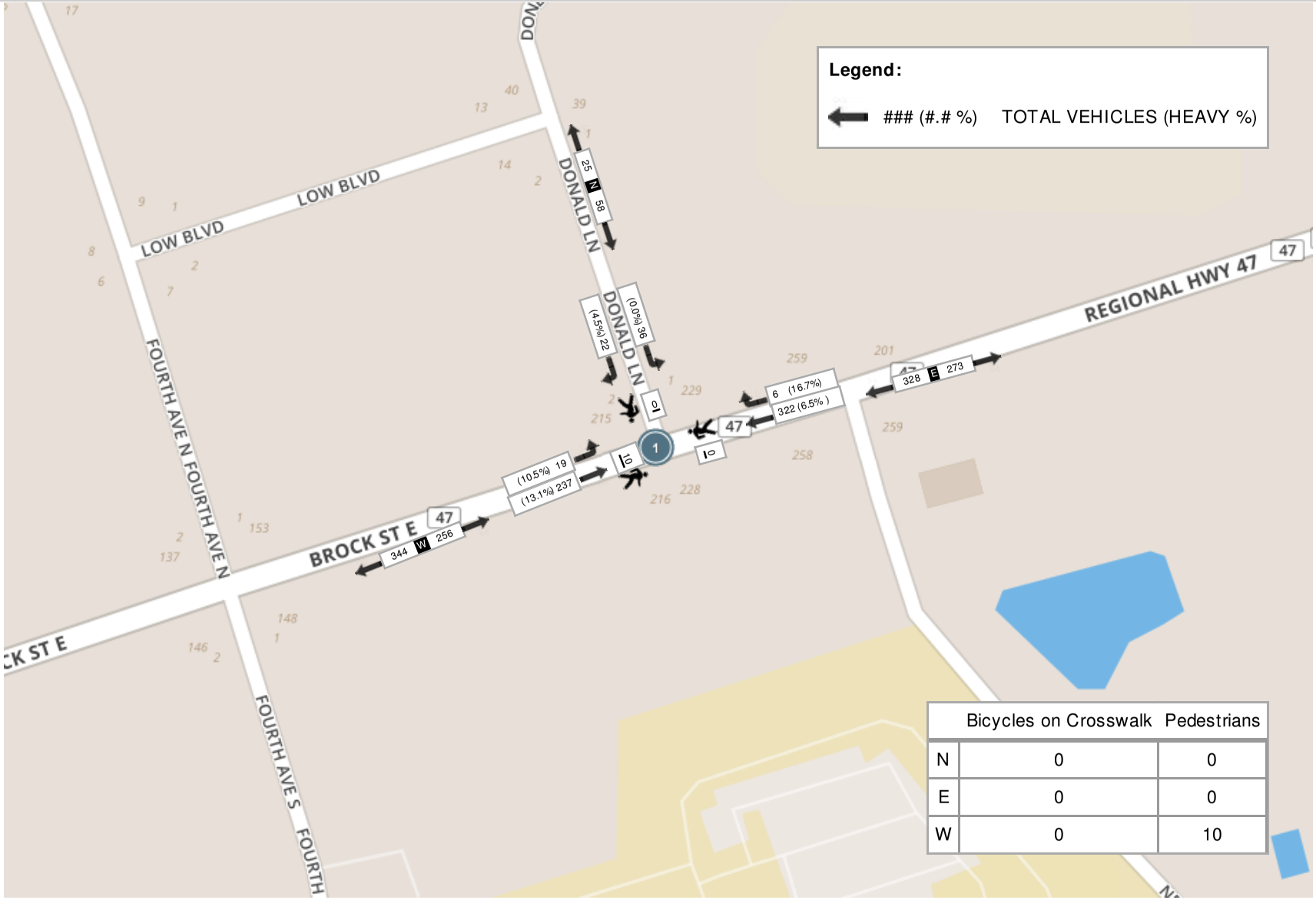
Start Time	N Approach DONLAND LN					E Approach BROCK ST E					W Approach BROCK ST E					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	4	5	0	0	9	3	74	0	0	77	54	4	0	0	58	144
08:15:00	8	14	0	0	22	2	82	0	0	84	79	3	0	1	82	188
08:30:00	6	9	0	0	15	0	75	0	0	75	59	10	0	2	69	159
08:45:00	4	8	0	0	12	1	91	0	0	92	45	2	0	7	47	151
Grand Total	22	36	0	0	58	6	322	0	0	328	237	19	0	10	256	**642**
Approach%	37.9%	62.1%	0%		-	1.8%	98.2%	0%		-	92.6%	7.4%	0%		-	-
Totals %	3.4%	5.6%	0%		9%	0.9%	50.2%	0%		51.1%	36.9%	3%	0%		39.9%	-
PHF	0.69	0.64	0		0.66	0.5	0.88	0		0.89	0.75	0.48	0		0.78	-
Heavy	1	0	0		1	1	21	0		22	31	2	0		33	-
Heavy %	4.5%	0%	0%		1.7%	16.7%	6.5%	0%		6.7%	13.1%	10.5%	0%		12.9%	-
Lights	21	36	0		57	5	301	0		306	206	17	0		223	-
Lights %	95.5%	100%	0%		98.3%	83.3%	93.5%	0%		93.3%	86.9%	89.5%	0%		87.1%	-
Single-Unit Trucks	0	0	0		0	1	6	0		7	11	1	0		12	-
Single-Unit Trucks %	0%	0%	0%		0%	16.7%	1.9%	0%		2.1%	4.6%	5.3%	0%		4.7%	-
Buses	1	0	0		1	0	9	0		9	16	1	0		17	-
Buses %	4.5%	0%	0%		1.7%	0%	2.8%	0%		2.7%	6.8%	5.3%	0%		6.6%	-
Articulated Trucks	0	0	0		0	0	6	0		6	4	0	0		4	-
Articulated Trucks %	0%	0%	0%		0%	0%	1.9%	0%		1.8%	1.7%	0%	0%		1.6%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	10	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (12.7 °C)

Start Time	N Approach DONLAND LN					E Approach BROCK ST E					W Approach BROCK ST E					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	3	5	0	0	8	6	48	0	0	54	97	10	0	1	107	169
16:45:00	6	1	0	2	7	7	47	0	2	54	81	6	0	0	87	148
17:00:00	5	4	0	0	9	2	55	0	0	57	104	11	0	0	115	181
17:15:00	2	3	0	0	5	6	60	0	2	66	91	14	0	0	105	176
Grand Total	16	13	0	2	29	21	210	0	4	231	373	41	0	1	414	**674**
Approach%	55.2%	44.8%	0%		-	9.1%	90.9%	0%		-	90.1%	9.9%	0%		-	-
Totals %	2.4%	1.9%	0%		4.3%	3.1%	31.2%	0%		34.3%	55.3%	6.1%	0%		61.4%	-
PHF	0.67	0.65	0		0.81	0.75	0.88	0		0.88	0.9	0.73	0		0.9	-
Heavy	1	0	0		1	0	14	0		14	12	1	0		13	-
Heavy %	6.3%	0%	0%		3.4%	0%	6.7%	0%		6.1%	3.2%	2.4%	0%		3.1%	-
Lights	15	13	0		28	21	196	0		217	361	40	0		401	-
Lights %	93.8%	100%	0%		96.6%	100%	93.3%	0%		93.9%	96.8%	97.6%	0%		96.9%	-
Single-Unit Trucks	1	0	0		1	0	10	0		10	8	1	0		9	-
Single-Unit Trucks %	6.3%	0%	0%		3.4%	0%	4.8%	0%		4.3%	2.1%	2.4%	0%		2.2%	-
Buses	0	0	0		0	0	0	0		0	1	0	0		1	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0.3%	0%	0%		0.2%	-
Articulated Trucks	0	0	0		0	0	4	0		4	3	0	0		3	-
Articulated Trucks %	0%	0%	0%		0%	0%	1.9%	0%		1.7%	0.8%	0%	0%		0.7%	-
Pedestrians	-	-	-	2	-	-	-	-	4	-	-	-	-	1	-	-
Pedestrians%	-	-	-	28.6%		-	-	-	57.1%		-	-	-	14.3%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	1	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

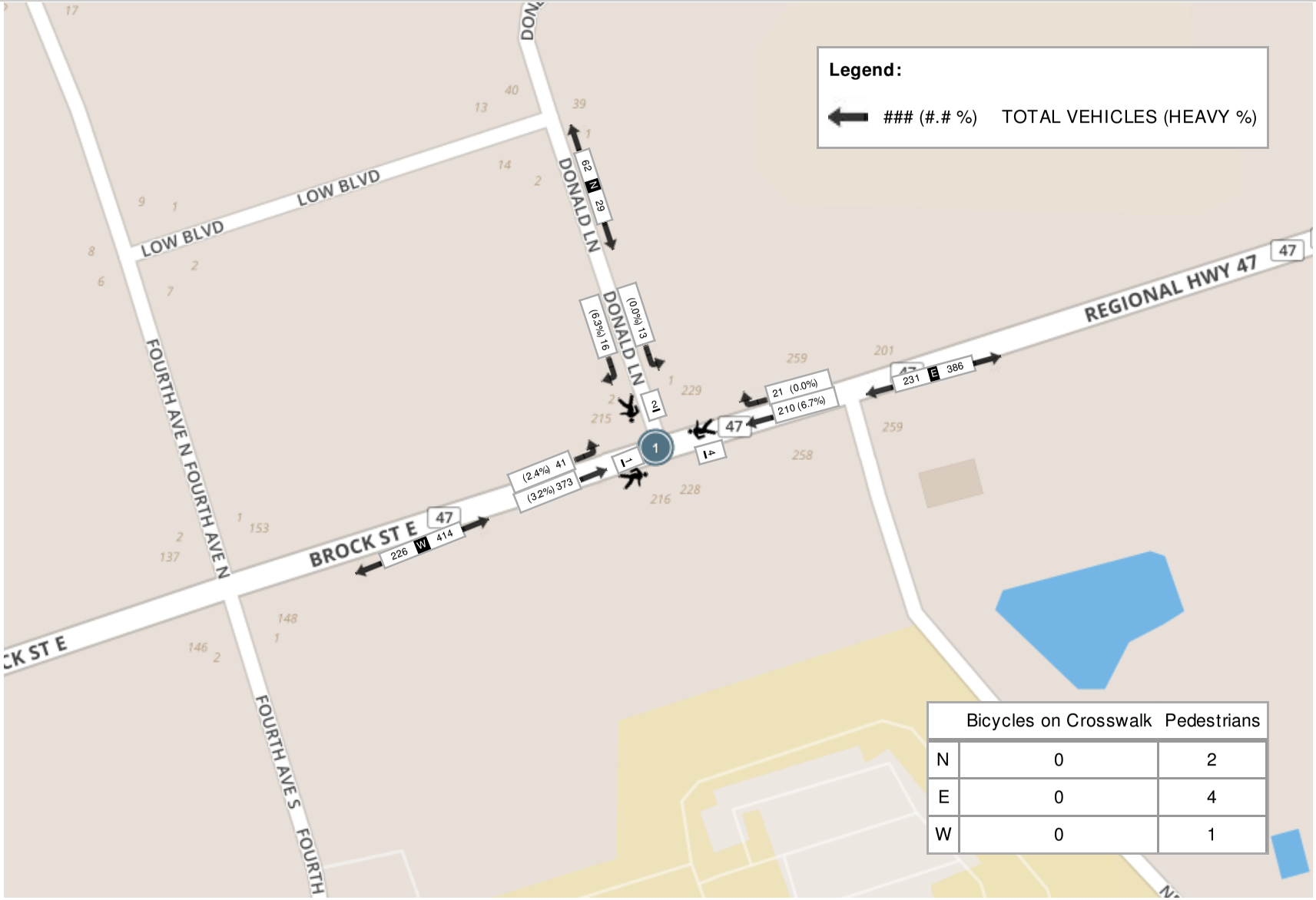
NexTrans
4261-A14 Highway 7 East
Suite 489
Markham ON, CANADA, L3R 9W6

Peak Hour: 08:00 AM - 09:00 AM Weather: Mostly Cloudy (13.4 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
E	0	0
W	0	10

Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (12.7 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	2
E	0	4
W	0	1

Turning Movement Count (2 . BROCK ST E & NELKYDD LN)

Start Time	E Approach BROCK ST E					S Approach NELKYDD LN					W Approach BROCK ST E					Int. Total (15 min)	Int. Total (1 hr)
	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	U-Turn W:W	Peds W:	Approach Total		
07:00:00	57	4	0	0	61	2	12	0	0	14	8	22	0	0	30	105	
07:15:00	54	3	0	0	57	3	10	0	0	13	6	29	0	0	35	105	
07:30:00	57	2	0	0	59	1	7	0	0	8	8	31	0	0	39	106	
07:45:00	70	10	0	0	80	2	12	0	0	14	6	29	0	0	35	129	445
08:00:00	62	16	0	0	78	6	14	0	0	20	28	31	0	0	59	157	497
08:15:00	67	22	0	0	89	8	17	0	0	25	50	42	0	0	92	206	598
08:30:00	55	12	0	0	67	4	21	0	0	25	25	44	0	0	69	161	653
08:45:00	75	4	0	0	79	4	17	0	0	21	12	40	0	0	52	152	676
09:00:00	47	3	0	0	50	9	35	0	2	44	14	39	0	0	53	147	666
09:15:00	48	0	0	0	48	5	13	0	0	18	7	25	0	0	32	98	558
09:30:00	45	2	0	0	47	0	6	0	2	6	6	25	0	0	31	84	481
09:45:00	53	7	0	0	60	4	10	0	0	14	7	27	0	0	34	108	437
BREAK																	
16:00:00	46	4	0	0	50	14	15	0	0	29	6	73	0	0	79	158	
16:15:00	49	3	0	0	52	7	15	0	0	22	15	79	0	0	94	168	
16:30:00	44	0	0	0	44	6	10	0	0	16	16	84	0	0	100	160	
16:45:00	45	2	0	0	47	1	9	0	0	10	13	69	1	0	83	140	626
17:00:00	43	1	0	0	44	4	12	0	0	16	11	95	0	0	106	166	634
17:15:00	59	3	0	0	62	0	8	0	4	8	15	79	0	2	94	164	630
17:30:00	37	1	0	0	38	4	8	0	0	12	17	74	0	0	91	141	611
17:45:00	37	1	0	0	38	1	17	0	1	18	14	66	0	0	80	136	607
18:00:00	31	5	0	0	36	2	9	0	0	11	12	61	0	0	73	120	561
18:15:00	40	8	0	0	48	0	6	0	0	6	12	56	0	0	68	122	519
18:30:00	39	5	0	0	44	0	10	0	2	10	11	48	0	0	59	113	491

18:45:00	43	1	0	0	44	0	10	0	0	10	12	41	0	0	53	107	462
Grand Total	1203	119	0	0	1322	87	303	0	11	390	331	1209	1	2	1541	**3253**	-
Approach%	91%	9%	0%		-	22.3%	77.7%	0%		-	21.5%	78.5%	0.1%		-	**-**	-
Totals %	37%	3.7%	0%		40.6%	2.7%	9.3%	0%		12%	10.2%	37.2%	0%		47.4%	**-**	-
Heavy	80	4	0		-	8	13	0		-	14	79	0		-	**-**	-
Heavy %	6.7%	3.4%	0%		-	9.2%	4.3%	0%		-	4.2%	6.5%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Mostly Cloudy (13.4 °C)

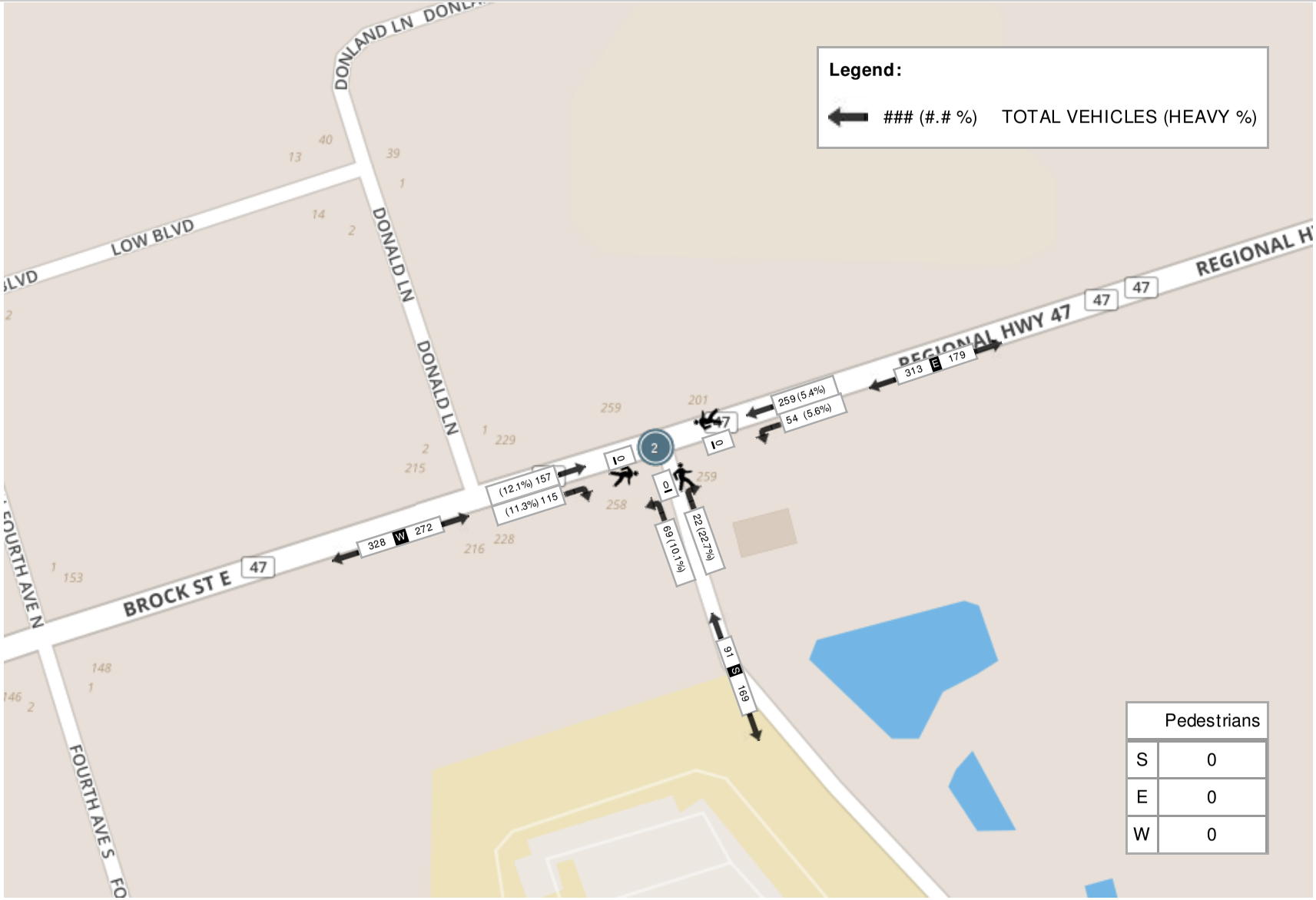
Start Time	E Approach BROCK ST E					S Approach NELKYDD LN					W Approach BROCK ST E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
08:00:00	62	16	0	0	78	6	14	0	0	20	28	31	0	0	59	157
08:15:00	67	22	0	0	89	8	17	0	0	25	50	42	0	0	92	206
08:30:00	55	12	0	0	67	4	21	0	0	25	25	44	0	0	69	161
08:45:00	75	4	0	0	79	4	17	0	0	21	12	40	0	0	52	152
Grand Total	259	54	0	0	313	22	69	0	0	91	115	157	0	0	272	**676**
Approach%	82.7%	17.3%	0%		-	24.2%	75.8%	0%		-	42.3%	57.7%	0%		-	-
Totals %	38.3%	8%	0%		46.3%	3.3%	10.2%	0%		13.5%	17%	23.2%	0%		40.2%	-
PHF	0.86	0.61	0		0.88	0.69	0.82	0		0.91	0.58	0.89	0		0.74	-
Heavy	14	3	0		17	5	7	0		12	13	19	0		32	-
Heavy %	5.4%	5.6%	0%		5.4%	22.7%	10.1%	0%		13.2%	11.3%	12.1%	0%		11.8%	-
Lights	245	51	0		296	17	62	0		79	102	138	0		240	-
Lights %	94.6%	94.4%	0%		94.6%	77.3%	89.9%	0%		86.8%	88.7%	87.9%	0%		88.2%	-
Single-Unit Trucks	6	0	0		6	0	1	0		1	0	9	0		9	-
Single-Unit Trucks %	2.3%	0%	0%		1.9%	0%	1.4%	0%		1.1%	0%	5.7%	0%		3.3%	-
Buses	2	3	0		5	5	6	0		11	13	3	0		16	-
Buses %	0.8%	5.6%	0%		1.6%	22.7%	8.7%	0%		12.1%	11.3%	1.9%	0%		5.9%	-
Articulated Trucks	6	0	0		6	0	0	0		0	0	7	0		7	-
Articulated Trucks %	2.3%	0%	0%		1.9%	0%	0%	0%		0%	0%	4.5%	0%		2.6%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

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

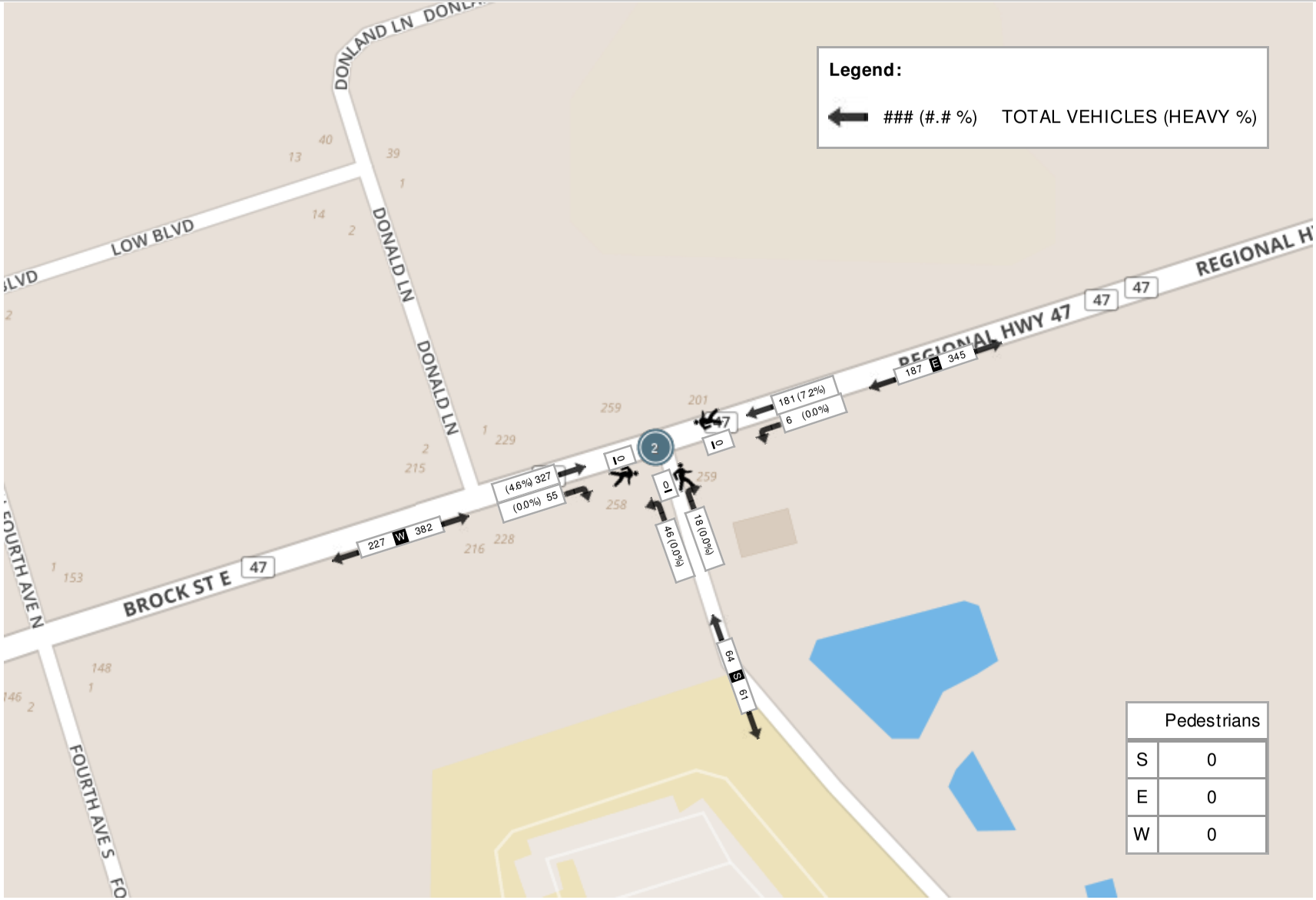
Peak Hour: 04:15 PM - 05:15 PM Weather: Partly Cloudy (12.7 °C)

Start Time	E Approach BROCK ST E					S Approach NELKYDD LN					W Approach BROCK ST E					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
16:15:00	49	3	0	0	52	7	15	0	0	22	15	79	0	0	94	168
16:30:00	44	0	0	0	44	6	10	0	0	16	16	84	0	0	100	160
16:45:00	45	2	0	0	47	1	9	0	0	10	13	69	1	0	83	140
17:00:00	43	1	0	0	44	4	12	0	0	16	11	95	0	0	106	166
Grand Total	181	6	0	0	187	18	46	0	0	64	55	327	1	0	383	**634**
Approach%	96.8%	3.2%	0%		-	28.1%	71.9%	0%		-	14.4%	85.4%	0.3%		-	-
Totals %	28.5%	0.9%	0%		29.5%	2.8%	7.3%	0%		10.1%	8.7%	51.6%	0.2%		60.4%	-
PHF	0.92	0.5	0		0.9	0.64	0.77	0		0.73	0.86	0.86	0.25		0.9	-
Heavy	13	0	0		13	0	0	0		0	0	15	0		15	-
Heavy %	7.2%	0%	0%		7%	0%	0%	0%		0%	0%	4.6%	0%		3.9%	-
Lights	168	6	0		174	18	46	0		64	55	312	1		368	-
Lights %	92.8%	100%	0%		93%	100%	100%	0%		100%	100%	95.4%	100%		96.1%	-
Single-Unit Trucks	10	0	0		10	0	0	0		0	0	9	0		9	-
Single-Unit Trucks %	5.5%	0%	0%		5.3%	0%	0%	0%		0%	0%	2.8%	0%		2.3%	-
Buses	0	0	0		0	0	0	0		0	0	1	0		1	-
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	-
Articulated Trucks	3	0	0		3	0	0	0		0	0	5	0		5	-
Articulated Trucks %	1.7%	0%	0%		1.6%	0%	0%	0%		0%	0%	1.5%	0%		1.3%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Mostly Cloudy (13.4 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Partly Cloudy (12.7 °C)



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

Turning Movement Count (3 . LOW BLVD & DONLAND LN)

Start Time	N Approach DONLAND LN					S Approach DONLAND LN					W Approach LOW BLVD					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	11	0	0	11	1	0	0	0	1	0	0	0	0	0	12	
07:15:00	0	8	0	0	8	3	0	0	0	3	0	0	0	0	0	11	
07:30:00	0	12	0	0	12	1	0	0	0	1	0	0	0	0	0	13	
07:45:00	0	10	0	0	10	1	0	0	0	1	1	0	0	0	1	12	48
08:00:00	0	9	0	0	9	6	1	0	0	7	0	0	0	0	0	16	52
08:15:00	0	21	0	1	21	5	0	0	0	5	2	0	0	1	2	28	69
08:30:00	0	15	0	1	15	9	1	0	0	10	0	0	0	2	0	25	81
08:45:00	0	12	0	0	12	3	0	0	0	3	0	0	0	8	0	15	84
09:00:00	0	13	0	0	13	9	0	0	0	9	0	0	0	0	0	22	90
09:15:00	0	4	0	0	4	3	1	0	0	4	1	0	0	3	1	9	71
09:30:00	0	6	0	0	6	4	0	0	0	4	0	0	0	1	0	10	56
09:45:00	0	6	0	0	6	4	0	0	0	4	1	0	0	0	1	11	52
BREAK																	
16:00:00	0	6	0	0	6	9	0	0	0	9	0	0	0	2	0	15	
16:15:00	0	5	0	0	5	11	2	0	0	13	0	0	0	1	0	18	
16:30:00	0	8	0	0	8	16	0	0	0	16	0	0	0	2	0	24	
16:45:00	0	7	0	0	7	12	0	0	0	12	0	0	0	2	0	19	76
17:00:00	0	9	0	0	9	13	0	0	0	13	0	0	0	0	0	22	83
17:15:00	0	5	0	0	5	20	0	0	0	20	0	0	0	1	0	25	90
17:30:00	0	6	0	0	6	9	0	0	0	9	0	0	0	0	0	15	81
17:45:00	0	6	0	0	6	9	0	0	0	9	1	0	0	2	1	16	78
18:00:00	0	12	0	0	12	13	0	0	0	13	0	0	0	0	0	25	81
18:15:00	0	4	0	0	4	8	0	0	0	8	0	0	0	0	0	12	68
18:30:00	0	9	0	0	9	8	1	0	0	9	1	0	0	2	1	19	72

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18:45:00	0	6	0	0	6	10	0	0	0	10	0	0	0	0	0	16	72
Grand Total	0	210	0	2	210	187	6	0	0	193	7	0	0	27	7	**410**	-
Approach%	0%	100%	0%		-	96.9%	3.1%	0%		-	100%	0%	0%		-	**-**	-
Totals %	0%	51.2%	0%		51.2%	45.6%	1.5%	0%		47.1%	1.7%	0%	0%		1.7%	**-**	-
Heavy	0	3	0		-	4	0	0		-	1	0	0		-	**-**	-
Heavy %	0%	1.4%	0%		-	2.1%	0%	0%		-	14.3%	0%	0%		-	**-**	-
Bicycles	2	2	0		-	0	0	0		-	1	2	0		-	**-**	-
Bicycle %	0%	1%	0%		-	0%	0%	0%		-	14.3%	0%	0%		-	**-**	-

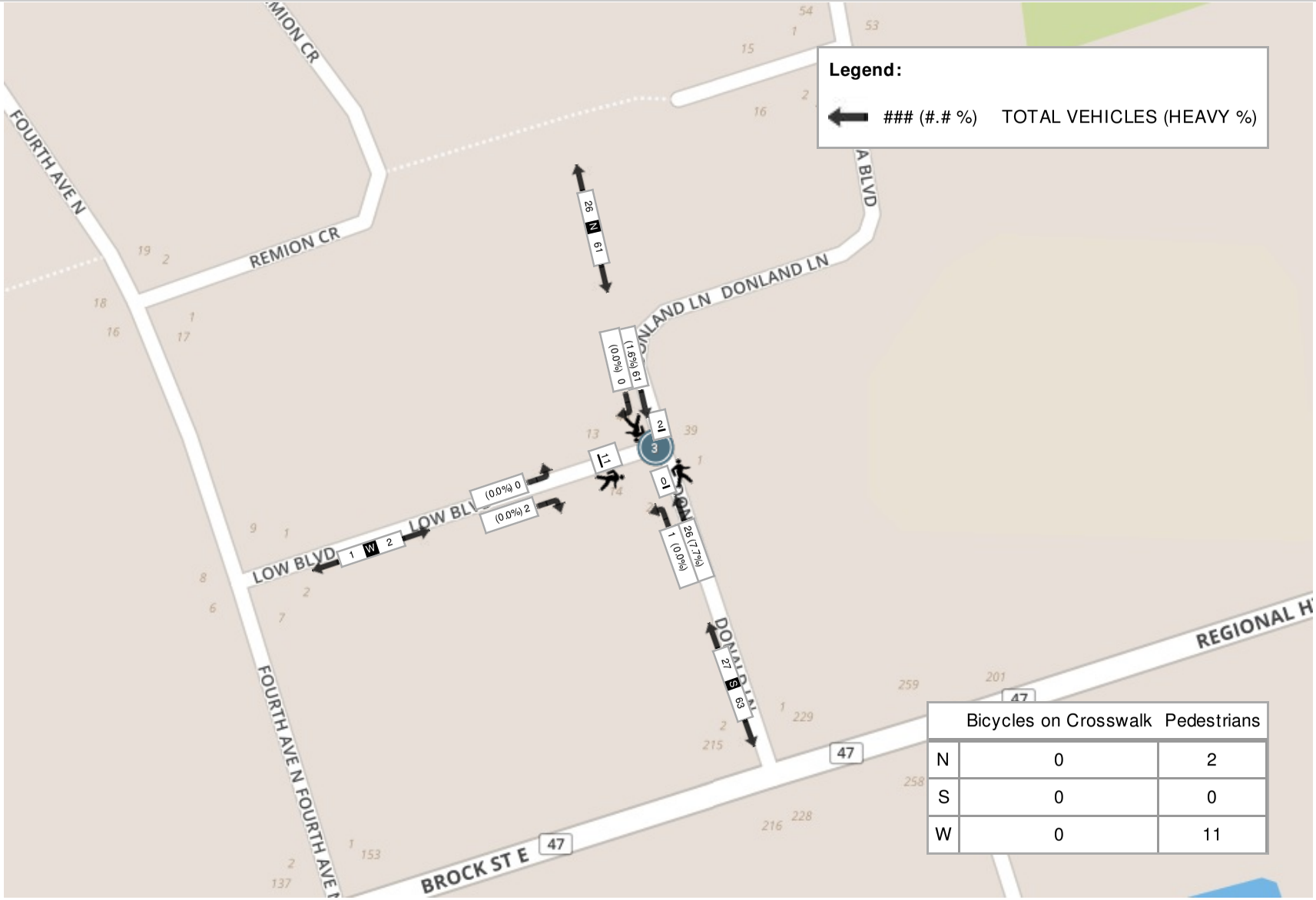
Peak Hour: 08:15 AM - 09:15 AM Weather: Mostly Cloudy (13.4 °C)

Start Time	N Approach DONLAND LN					S Approach DONLAND LN					W Approach LOW BLVD					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
08:15:00	0	21	0	1	21	5	0	0	0	5	2	0	0	1	2	28
08:30:00	0	15	0	1	15	9	1	0	0	10	0	0	0	2	0	25
08:45:00	0	12	0	0	12	3	0	0	0	3	0	0	0	8	0	15
09:00:00	0	13	0	0	13	9	0	0	0	9	0	0	0	0	0	22
Grand Total	0	61	0	2	61	26	1	0	0	27	2	0	0	11	2	**90**
Approach%	0%	100%	0%		-	96.3%	3.7%	0%		-	100%	0%	0%		-	-
Totals %	0%	67.8%	0%		67.8%	28.9%	1.1%	0%		30%	2.2%	0%	0%		2.2%	-
PHF	0	0.73	0		0.73	0.72	0.25	0		0.68	0.25	0	0		0.25	-
Heavy	0	1	0		1	2	0	0		2	0	0	0		0	-
Heavy %	0%	1.6%	0%		1.6%	7.7%	0%	0%		7.4%	0%	0%	0%		0%	-
Lights	0	60	0		60	24	1	0		25	2	0	0		2	-
Lights %	0%	98.4%	0%		98.4%	92.3%	100%	0%		92.6%	100%	0%	0%		100%	-
Single-Unit Trucks	0	0	0		0	1	0	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	3.8%	0%	0%		3.7%	0%	0%	0%		0%	-
Buses	0	1	0		1	1	0	0		1	0	0	0		0	-
Buses %	0%	1.6%	0%		1.6%	3.8%	0%	0%		3.7%	0%	0%	0%		0%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	11	-	-
Pedestrians%	-	-	-	15.4%		-	-	-	0%		-	-	-	84.6%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	1	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (12.7 °C)

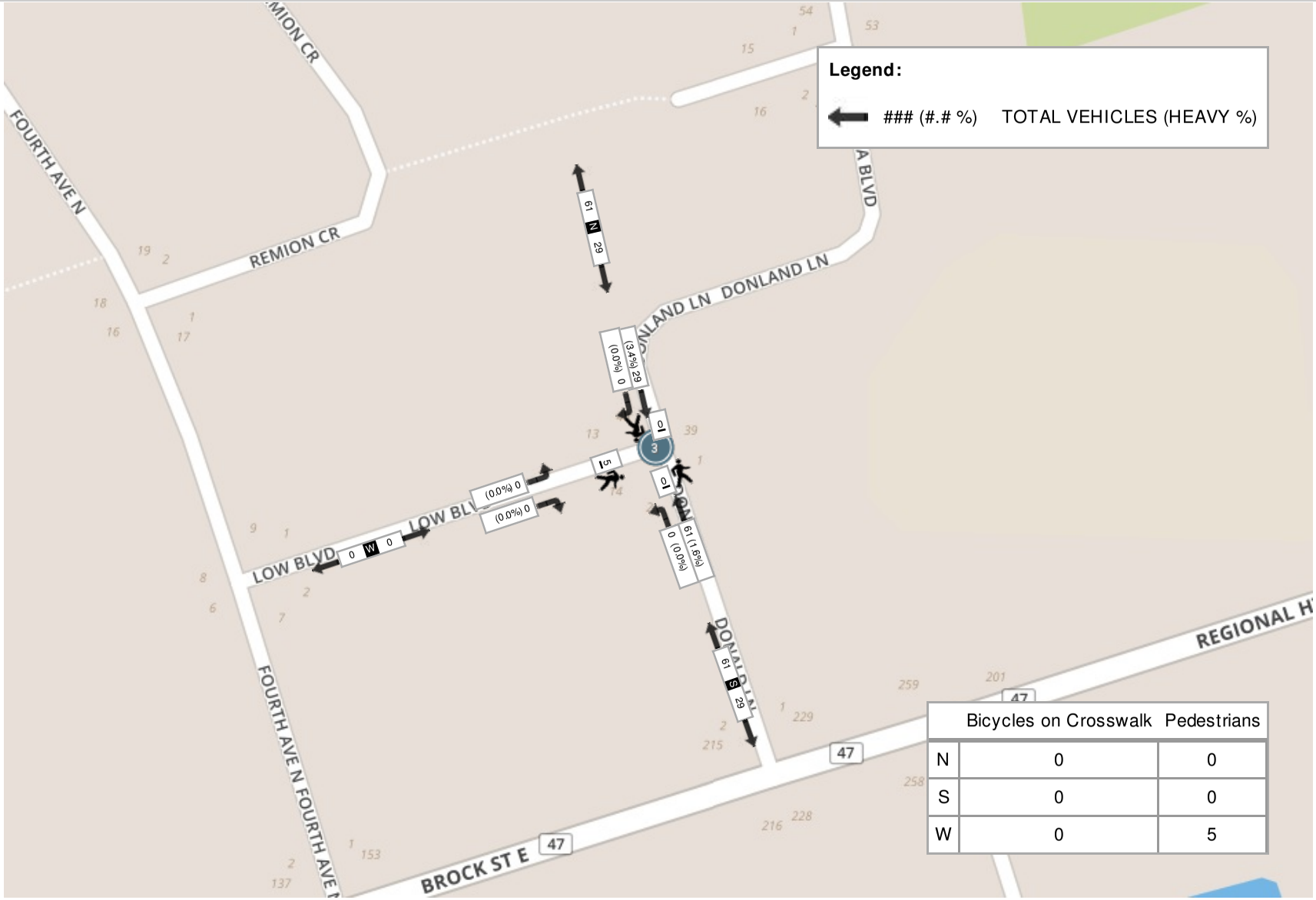
Start Time	N Approach DONLAND LN					S Approach DONLAND LN					W Approach LOW BLVD					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:30:00	0	8	0	0	8	16	0	0	0	16	0	0	0	2	0	24
16:45:00	0	7	0	0	7	12	0	0	0	12	0	0	0	2	0	19
17:00:00	0	9	0	0	9	13	0	0	0	13	0	0	0	0	0	22
17:15:00	0	5	0	0	5	20	0	0	0	20	0	0	0	1	0	25
Grand Total	0	29	0	0	29	61	0	0	0	61	0	0	0	5	0	**90**
Approach%	0%	100%	0%		-	100%	0%	0%		-	0%	0%	0%		-	-
Totals %	0%	32.2%	0%		32.2%	67.8%	0%	0%		67.8%	0%	0%	0%		0%	-
PHF	0	0.81	0		0.81	0.76	0	0		0.76	0	0	0		0	-
Heavy	0	1	0		1	1	0	0		1	0	0	0		0	-
Heavy %	0%	3.4%	0%		3.4%	1.6%	0%	0%		1.6%	0%	0%	0%		0%	-
Lights	0	28	0		28	60	0	0		60	0	0	0		0	-
Lights %	0%	96.6%	0%		96.6%	98.4%	0%	0%		98.4%	0%	0%	0%		0%	-
Single-Unit Trucks	0	1	0		1	1	0	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	3.4%	0%		3.4%	1.6%	0%	0%		1.6%	0%	0%	0%		0%	-
Buses	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%	-
Articulated Trucks	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%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	1	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 08:15 AM - 09:15 AM Weather: Mostly Cloudy (13.4 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	2
S	0	0
W	0	11

Peak Hour: 04:30 PM - 05:30 PM Weather: Partly Cloudy (12.7 °C)



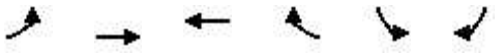
	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	0	5

Appendix D - Existing Traffic Level of Service Calculations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	157	115	54	259	69	22
Future Volume (Veh/h)	157	115	54	259	69	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.58	0.61	0.86	0.82	0.69
Hourly flow rate (vph)	176	198	89	301	84	32
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			374		655	176
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			374		655	176
tC, single (s)			4.2		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.5
p0 queue free %			92		78	96
cM capacity (veh/h)			1163		387	816

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	176	198	390	116
Volume Left	0	0	89	84
Volume Right	0	198	0	32
cSH	1700	1700	1163	452
Volume to Capacity	0.10	0.12	0.08	0.26
Queue Length 95th (m)	0.0	0.0	2.0	8.1
Control Delay (s)	0.0	0.0	2.5	15.7
Lane LOS			A	C
Approach Delay (s)	0.0		2.5	15.7
Approach LOS				C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	237	322	6	36	22
Future Volume (Veh/h)	19	237	322	6	36	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.48	0.75	0.88	0.50	0.64	0.69
Hourly flow rate (vph)	40	316	366	12	56	32
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	388				778	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	388				778	382
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	96				84	95
cM capacity (veh/h)	1119				352	655

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	356	378	88
Volume Left	40	0	56
Volume Right	0	12	32
cSH	1119	1700	423
Volume to Capacity	0.04	0.22	0.21
Queue Length 95th (m)	0.9	0.0	6.2
Control Delay (s)	1.3	0.0	15.7
Lane LOS	A		C
Approach Delay (s)	1.3	0.0	15.7
Approach LOS			C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	1	26	61	0
Future Volume (Veh/h)	0	2	1	26	61	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.72	0.73	0.25
Hourly flow rate (vph)	0	8	4	36	84	0
Pedestrians	11				2	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	141	95	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	141	95	95			
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)	845	958	1498			

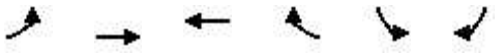
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	40	84
Volume Left	0	4	0
Volume Right	8	0	0
cSH	958	1498	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.2	0.1	0.0
Control Delay (s)	8.8	0.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	327	55	6	161	46	18
Future Volume (Veh/h)	327	55	6	161	46	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.50	0.92	0.77	0.64
Hourly flow rate (vph)	380	64	12	175	60	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked						
vC, conflicting volume			444		579	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			444		579	380
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		87	96
cM capacity (veh/h)			1127		475	671

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	380	64	187	88
Volume Left	0	0	12	60
Volume Right	0	64	0	28
cSH	1700	1700	1127	524
Volume to Capacity	0.22	0.04	0.01	0.17
Queue Length 95th (m)	0.0	0.0	0.3	4.8
Control Delay (s)	0.0	0.0	0.6	13.2
Lane LOS			A	B
Approach Delay (s)	0.0		0.6	13.2
Approach LOS				B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	373	210	21	13	16
Future Volume (Veh/h)	41	373	210	21	13	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.73	0.90	0.88	0.75	0.65	0.67
Hourly flow rate (vph)	56	414	239	28	20	24
Pedestrians		1	4		2	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	269				785	256
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	269				785	256
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	96				94	97
cM capacity (veh/h)	1292				347	771

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	470	267	44
Volume Left	56	0	20
Volume Right	0	28	24
cSH	1292	1700	495
Volume to Capacity	0.04	0.16	0.09
Queue Length 95th (m)	1.1	0.0	2.3
Control Delay (s)	1.3	0.0	13.0
Lane LOS	A		B
Approach Delay (s)	1.3	0.0	13.0
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	0	61	29	0
Future Volume (Veh/h)	0	2	0	61	29	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.76	0.81	0.25
Hourly flow rate (vph)	0	8	0	80	36	0
Pedestrians	5					
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	121	41	41			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	121	41	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 %	100	99	100			
cM capacity (veh/h)	876	1031	1575			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	80	36
Volume Left	0	0	0
Volume Right	8	0	0
cSH	1031	1575	1700
Volume to Capacity	0.01	0.00	0.02
Queue Length 95th (m)	0.2	0.0	0.0
Control Delay (s)	8.5	0.0	0.0
Lane LOS	A		
Approach Delay (s)	8.5	0.0	0.0
Approach LOS	A		

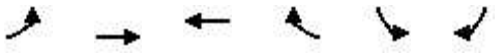
Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E – Future Background Traffic Level of Service Calculations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	163	115	54	270	69	22
Future Volume (Veh/h)	163	115	54	270	69	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.58	0.61	0.86	0.82	0.69
Hourly flow rate (vph)	183	198	89	314	84	32
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			381		675	183
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			381		675	183
tC, single (s)			4.2		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.5
p0 queue free %			92		78	96
cM capacity (veh/h)			1156		376	808

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	183	198	403	116
Volume Left	0	0	89	84
Volume Right	0	198	0	32
cSH	1700	1700	1156	441
Volume to Capacity	0.11	0.12	0.08	0.26
Queue Length 95th (m)	0.0	0.0	2.0	8.4
Control Delay (s)	0.0	0.0	2.5	16.1
Lane LOS			A	C
Approach Delay (s)	0.0		2.5	16.1
Approach LOS				C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	247	335	6	36	22
Future Volume (Veh/h)	19	247	335	6	36	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.48	0.75	0.88	0.50	0.64	0.69
Hourly flow rate (vph)	40	329	381	12	56	32
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	403				806	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	403				806	397
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	96				83	95
cM capacity (veh/h)	1104				338	643

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	369	393	88
Volume Left	40	0	56
Volume Right	0	12	32
cSH	1104	1700	409
Volume to Capacity	0.04	0.23	0.22
Queue Length 95th (m)	0.9	0.0	6.5
Control Delay (s)	1.2	0.0	16.2
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	16.2
Approach LOS			C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	1	27	63	0
Future Volume (Veh/h)	0	2	1	27	63	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.72	0.73	0.25
Hourly flow rate (vph)	0	8	4	38	86	0
Pedestrians	11				2	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	145	97	97			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145	97	97			
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)	841	956	1495			

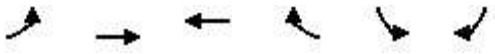
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	42	86
Volume Left	0	4	0
Volume Right	8	0	0
cSH	956	1495	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.2	0.1	0.0
Control Delay (s)	8.8	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	171	115	54	284	69	22
Future Volume (Veh/h)	171	115	54	284	69	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.58	0.61	0.86	0.82	0.69
Hourly flow rate (vph)	192	198	89	330	84	32
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			390		700	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			390		700	192
tC, single (s)			4.2		6.5	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.5
p0 queue free %			92		77	96
cM capacity (veh/h)			1147		363	799

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	192	198	419	116
Volume Left	0	0	89	84
Volume Right	0	198	0	32
cSH	1700	1700	1147	427
Volume to Capacity	0.11	0.12	0.08	0.27
Queue Length 95th (m)	0.0	0.0	2.0	8.7
Control Delay (s)	0.0	0.0	2.4	16.5
Lane LOS			A	C
Approach Delay (s)	0.0		2.4	16.5
Approach LOS				C

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	42.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	260	352	6	36	22
Future Volume (Veh/h)	19	260	352	6	36	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.48	0.75	0.88	0.50	0.64	0.69
Hourly flow rate (vph)	40	347	400	12	56	32
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	422				843	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	422				843	416
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	96				83	95
cM capacity (veh/h)	1086				322	627

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	387	412	88
Volume Left	40	0	56
Volume Right	0	12	32
cSH	1086	1700	391
Volume to Capacity	0.04	0.24	0.23
Queue Length 95th (m)	0.9	0.0	6.8
Control Delay (s)	1.2	0.0	16.9
Lane LOS	A		C
Approach Delay (s)	1.2	0.0	16.9
Approach LOS			C

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	39.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	1	28	64	0
Future Volume (Veh/h)	0	2	1	28	64	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.72	0.73	0.25
Hourly flow rate (vph)	0	8	4	39	88	0
Pedestrians	11				2	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	148	99	99			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	148	99	99			
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)	837	953	1493			

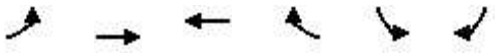
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	8	43	88
Volume Left	0	4	0
Volume Right	8	0	0
cSH	953	1493	1700
Volume to Capacity	0.01	0.00	0.05
Queue Length 95th (m)	0.2	0.1	0.0
Control Delay (s)	8.8	0.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.8	0.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	340	55	6	188	46	18
Future Volume (Veh/h)	340	55	6	188	46	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.50	0.92	0.77	0.64
Hourly flow rate (vph)	395	64	12	204	60	28
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			459		623	395
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			459		623	395
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		87	96
cM capacity (veh/h)			1113		448	659

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	395	64	216	88
Volume Left	0	0	12	60
Volume Right	0	64	0	28
cSH	1700	1700	1113	499
Volume to Capacity	0.23	0.04	0.01	0.18
Queue Length 95th (m)	0.0	0.0	0.3	5.1
Control Delay (s)	0.0	0.0	0.6	13.8
Lane LOS			A	B
Approach Delay (s)	0.0		0.6	13.8
Approach LOS				B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	388	219	21	13	16
Future Volume (Veh/h)	41	388	219	21	13	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.73	0.90	0.88	0.75	0.65	0.67
Hourly flow rate (vph)	56	431	249	28	20	24
Pedestrians		1	4		2	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	279				812	266
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	279				812	266
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	96				94	97
cM capacity (veh/h)	1282				334	761

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	487	277	44
Volume Left	56	0	20
Volume Right	0	28	24
cSH	1282	1700	481
Volume to Capacity	0.04	0.16	0.09
Queue Length 95th (m)	1.1	0.0	2.4
Control Delay (s)	1.3	0.0	13.2
Lane LOS	A		B
Approach Delay (s)	1.3	0.0	13.2
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	63	30	0
Future Volume (Veh/h)	0	0	0	63	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.76	0.81	0.25
Hourly flow rate (vph)	0	0	0	83	37	0
Pedestrians	5					
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	125	42	42			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	125	42	42			
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	100	100			
cM capacity (veh/h)	871	1030	1573			

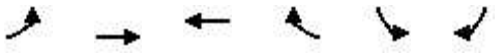
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	83	37
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1573	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		8.2%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	357	55	6	198	46	18
Future Volume (Veh/h)	357	55	6	198	46	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.50	0.92	0.77	0.64
Hourly flow rate (vph)	415	64	12	215	60	28
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			479		654	415
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			479		654	415
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		86	96
cM capacity (veh/h)			1094		430	642

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	415	64	227	88
Volume Left	0	0	12	60
Volume Right	0	64	0	28
cSH	1700	1700	1094	480
Volume to Capacity	0.24	0.04	0.01	0.18
Queue Length 95th (m)	0.0	0.0	0.3	5.3
Control Delay (s)	0.0	0.0	0.5	14.2
Lane LOS			A	B
Approach Delay (s)	0.0		0.5	14.2
Approach LOS				B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	408	230	21	13	16
Future Volume (Veh/h)	41	408	230	21	13	16
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.73	0.90	0.88	0.75	0.65	0.67
Hourly flow rate (vph)	56	453	261	28	20	24
Pedestrians		1	4		2	
Lane Width (m)		3.6	3.6		3.6	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	291				846	278
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	291				846	278
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	96				94	97
cM capacity (veh/h)	1269				319	749

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	509	289	44
Volume Left	56	0	20
Volume Right	0	28	24
cSH	1269	1700	464
Volume to Capacity	0.04	0.17	0.09
Queue Length 95th (m)	1.1	0.0	2.5
Control Delay (s)	1.3	0.0	13.6
Lane LOS	A		B
Approach Delay (s)	1.3	0.0	13.6
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	66	32	0
Future Volume (Veh/h)	0	0	0	66	32	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.25	0.25	0.25	0.76	0.81	0.25
Hourly flow rate (vph)	0	0	0	87	40	0
Pedestrians	5					
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	132	45	45			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	132	45	45			
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	100	100			
cM capacity (veh/h)	863	1026	1570			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	0	87	40
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1570	1700
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		8.2%	ICU Level of Service A
Analysis Period (min)		15	

Appendix F – Email Response from the Township of Uxbridge

Madeleine Catz

From: Jo Ann. Merrick <jmerrick@town.uxbridge.on.ca>
Sent: November-03-17 1:04 PM
To: Madeleine Catz
Subject: RE: Brock Street East Proposed Development

There is nothing at this time. We have had people inquiring about different properties in that area, but until we get an application, we don't really know.

Jo Ann Merrick
Administrative Assistant
Public Works & Operations/
Development Services
Township of Uxbridge
51 Toronto St. S.
Uxbridge, ON L9P 1T1

(t)905-852-9181 ext 202
(f) 905-852-9674

From: Madeleine Catz [mailto:madeleine@nextrans.ca]
Sent: Friday, November 03, 2017 12:57 PM
To: Jo Ann. Merrick <jmerrick@town.uxbridge.on.ca>
Subject: RE: Brock Street East Proposed Development

Hi Jo Ann,

Thank you for getting back to me. Would you know of any future developments in the area that I would be able consider in my transportation study?

Sincerely,

Madeleine Catz, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext. 207
c: 647-893-1640
e: madeleine@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Jo Ann. Merrick [mailto:jmerrick@town.uxbridge.on.ca]
Sent: November-03-17 11:39 AM
To: Madeleine Catz <madeleine@nextrans.ca>
Subject: RE: Brock Street East Proposed Development

Madeleine

We do not have any applications for 226 Brock St. at this time.

Jo Ann Merrick
Administrative Assistant
Public Works & Operations/
Development Services
Township of Uxbridge
51 Toronto St. S.
Uxbridge, ON L9P 1T1

(t)905-852-9181 ext 202
(f) 905-852-9674

From: Madeleine Catz [mailto:madeleine@nextrans.ca]
Sent: Thursday, November 02, 2017 4:30 PM
To: Jo Ann. Merrick <jmerrick@town.uxbridge.on.ca>
Subject: Brock Street East Proposed Development

Good afternoon Jo Ann,

I am working on the Transportation Study for a proposed mixed-use development at the northeast corner of Brock Street East and Donland Lane. Would you be able to provide me with any future developments that would need to be taken into account during our horizon period, 2021-2026? The Region of Durham mentioned how 54 units are being built just south of the proposed site at 226 Brock Street East, would you have more information on this?

Sincerely,

Madeleine Catz, B.Eng., EIT
Transportation Analyst

o: 905-503-2563 ext. 207
c: 647-893-1640
e: madeleine@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

Appendix G – TTS Data

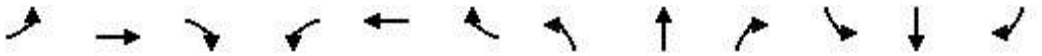
TTS AM Data

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column15	Column16	Column17	Column18	Column19	Column20	Column21
Fri Nov 03 2017 16:07:58 GMT-0400 (Eastern Daylight Time) - Run Time: 2920ms																				
Cross Tabulation Query Form - Trip - 2011																				
Row: 2006 GTA zone of origin - gta06_orig																				
Column: Planning district of destination - pd_dest																				
Table: Primary travel mode of trip - mode_prime																				
Filters:																				
(2006 GTA zone of origin - gta06_orig In 1317																				
and																				
Start time of trip - start_time In 600-900)																				
Trip 2011																				
Table: Transit excluding GO rail																				
	Oshawa																			
1317	31																			
Trip 2011																				
Table: Auto driver																				
	PD 1 of Toronto	PD 5 of Toronto	PD 11 of Toronto	PD 13 of Toronto	PD 16 of Toronto	Uxbridge	Scugog	Ajax	Clarington	Georgina	Newmarket	Aurora	Richmond Hill	Whitchurch-Stouffville	Markham	King	Vaughan	Mississauga	Kawartha Lakes	Peterborough
1317	57	40	24	40	40	696	135	17	17	31	105	48	17	111	231	31	50	22	24	24
Trip 2011																				
Table: Auto passenger																				
	Uxbridge	Aurora	Markham																	
1317	259	62	24																	
Trip 2011																				
Table: School bus																				
	Uxbridge																			
1317	53																			
Trip 2011																				
Table: Walk																				
	Uxbridge																			
1317	374																			

TTS PM Data

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column15	Column16	Column17
Fri Nov 03 2017 16:08:41 GMT-0400 (Eastern Daylight Time) - Run Time: 2959ms																
Cross Tabulation Query Form - Trip - 2011																
Row: 2006 GTA zone of origin - gta06_orig																
Column: Planning district of destination - pd_dest																
Table: Primary travel mode of trip - mode_prime																
Filters:																
(2006 GTA zone of origin - gta06_orig In 1317																
and																
Start time of trip - start_time In 1600-1900)																
Trip 2011																
Table: Auto driver																
	PD 4 of Toronto	PD 11 of Toronto	PD 13 of Toronto	Brock	Uxbridge	Scugog	Pickering	Ajax	Whitby	Oshawa	Georgina	Newmarket	Richmond Hill	Whitchurch-Stouffville	Markham	Kawartha Lakes
1317	15	24	15	19	639	119	18	22	64	39	38	33	45	61	50	32
Trip 2011																
Table: Auto passenger																
	PD 13 of Toronto	Uxbridge	Scugog	Whitby	East Gwillimbury	Richmond Hill	Markham									
1317	15	189	15	44	13	53	37									
Trip 2011																
Table: Walk																
	Uxbridge															
1317	62															

Appendix H – Future Total Traffic Level of Service Calculations



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	163	110	54	275	10	69	1	22	46	7	61
Future Volume (Veh/h)	35	163	110	54	275	10	69	1	22	46	7	61
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.89	0.58	0.61	0.86	0.92	0.82	0.92	0.69	0.92	0.92	0.92
Hourly flow rate (vph)	38	183	190	89	320	11	84	1	32	50	8	66
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	331			373			827	768	183	790	947	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	331			373			827	768	183	790	947	320
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	97			92			63	100	96	82	97	91
cM capacity (veh/h)	1228			1164			229	297	808	271	234	721

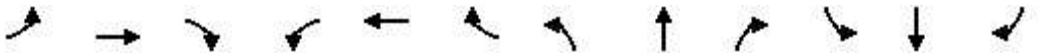
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	38	183	190	89	320	11	84	33	50	74
Volume Left	38	0	0	89	0	0	84	0	50	0
Volume Right	0	0	190	0	0	11	0	32	0	66
cSH	1228	1700	1700	1164	1700	1700	229	768	271	588
Volume to Capacity	0.03	0.11	0.11	0.08	0.19	0.01	0.37	0.04	0.18	0.13
Queue Length 95th (m)	0.8	0.0	0.0	2.0	0.0	0.0	12.8	1.1	5.3	3.4
Control Delay (s)	8.0	0.0	0.0	8.3	0.0	0.0	29.5	9.9	21.2	12.0
Lane LOS	A			A			D	A	C	B
Approach Delay (s)	0.7			1.8			24.0		15.7	
Approach LOS							C		C	

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	38.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	231	328	0	0	5
Future Volume (Veh/h)	0	231	328	0	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	251	357	0	0	5
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	357				608	357
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	357				608	357
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1202				459	687

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	251	357	5
Volume Left	0	0	0
Volume Right	0	0	5
cSH	1700	1700	687
Volume to Capacity	0.15	0.21	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	10.3
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.3
Approach LOS			B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	25	26	0	0	9	27	10	0	63	0
Future Volume (Veh/h)	0	0	25	26	0	0	9	27	10	0	63	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	27	28	0	0	10	29	11	0	68	0
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	122	128	68	150	122	34	68			40		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	122	128	68	150	122	34	68			40		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	96	100	100	99			100		
cM capacity (veh/h)	848	758	995	792	763	1039	1533			1570		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	28	50	68
Volume Left	0	28	10	0
Volume Right	27	0	11	0
cSH	995	792	1533	1570
Volume to Capacity	0.03	0.04	0.01	0.00
Queue Length 95th (m)	0.7	0.9	0.2	0.0
Control Delay (s)	8.7	9.7	1.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	9.7	1.5	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	24.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	43	3	0	114
Future Volume (Veh/h)	2	0	43	3	0	114
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)	2	0	47	3	0	124
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	172	48			50	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	172	48			50	
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	100			100	
cM capacity (veh/h)	818	1020			1557	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	50	124
Volume Left	2	0	0
Volume Right	0	3	0
cSH	818	1700	1557
Volume to Capacity	0.00	0.03	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	9.4	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.4	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	16.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	8	1	0	23
Future Volume (Veh/h)	0	0	8	1	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	9	1	0	25
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			0		19	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		19	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1623		993	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	10	25
Volume Left	0	9	0
Volume Right	0	0	25
cSH	1700	1623	1085
Volume to Capacity	0.00	0.01	0.02
Queue Length 95th (m)	0.0	0.1	0.6
Control Delay (s)	0.0	6.5	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	6.5	8.4
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	865	886	801	873	862	860
Vehs Exited	871	884	804	878	862	861
Starting Vehs	10	9	8	11	11	9
Ending Vehs	4	11	5	6	11	6
Travel Distance (km)	389	395	357	391	386	384
Travel Time (hr)	9.4	9.5	8.6	9.6	9.2	9.3
Total Delay (hr)	0.8	0.8	0.7	0.9	0.7	0.8
Total Stops	310	279	295	334	272	298
Fuel Used (l)	30.8	31.9	28.8	32.0	30.1	30.7

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	865	886	801	873	862	860
Vehs Exited	871	884	804	878	862	861
Starting Vehs	10	9	8	11	11	9
Ending Vehs	4	11	5	6	11	6
Travel Distance (km)	389	395	357	391	386	384
Travel Time (hr)	9.4	9.5	8.6	9.6	9.2	9.3
Total Delay (hr)	0.8	0.8	0.7	0.9	0.7	0.8
Total Stops	310	279	295	334	272	298
Fuel Used (l)	30.8	31.9	28.8	32.0	30.1	30.7

Intersection: 3: Nelkydd Lane/Herrema Boulevard & Brock Street East

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	R	L	L	TR	L	TR
Maximum Queue (m)	10.2	6.2	14.8	22.7	15.3	17.4	18.5
Average Queue (m)	3.4	0.2	4.1	9.1	4.8	6.5	8.2
95th Queue (m)	10.5	2.9	12.5	18.1	13.5	13.5	15.1
Link Distance (m)	167.1	167.1	208.9	74.4	74.4	33.7	33.7
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Brock Street East & Site Access

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Herrema Boulevard /Herrema Boulevard & Low Boulevard

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	17.7	16.8	4.2
Average Queue (m)	5.2	5.9	0.2
95th Queue (m)	13.2	14.3	2.2
Link Distance (m)	40.7	10.6	38.8
Upstream Blk Time (%)		2	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Herrema Boulevard/Herrema Boulevard & Internal Driveway 1

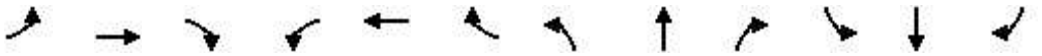
Movement	WB
Directions Served	LR
Maximum Queue (m)	8.3
Average Queue (m)	0.6
95th Queue (m)	4.2
Link Distance (m)	21.0
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: Internal Driveway 2 & Low Boulevard

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.4
Average Queue (m)	4.5
95th Queue (m)	12.0
Link Distance (m)	12.7
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	171	110	54	289	10	69	1	22	46	7	61
Future Volume (Veh/h)	35	171	110	54	289	10	69	1	22	46	7	61
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.89	0.58	0.61	0.86	0.92	0.82	0.92	0.69	0.92	0.92	0.92
Hourly flow rate (vph)	38	192	190	89	336	11	84	1	32	50	8	66
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	347			382			852	793	192	814	972	336
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			382			852	793	192	814	972	336
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	97			92			62	100	96	81	96	91
cM capacity (veh/h)	1212			1155			220	287	799	261	226	706

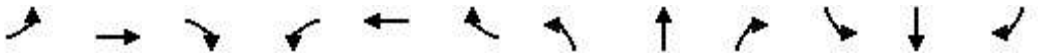
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	38	192	190	89	336	11	84	33	50	74
Volume Left	38	0	0	89	0	0	84	0	50	0
Volume Right	0	0	190	0	0	11	0	32	0	66
cSH	1212	1700	1700	1155	1700	1700	220	758	261	574
Volume to Capacity	0.03	0.11	0.11	0.08	0.20	0.01	0.38	0.04	0.19	0.13
Queue Length 95th (m)	0.8	0.0	0.0	2.0	0.0	0.0	13.5	1.1	5.5	3.5
Control Delay (s)	8.1	0.0	0.0	8.4	0.0	0.0	31.2	10.0	22.1	12.2
Lane LOS	A			A			D	A	C	B
Approach Delay (s)	0.7			1.7			25.2		16.2	
Approach LOS							D		C	

Intersection Summary				
Average Delay	5.5			
Intersection Capacity Utilization	39.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	239	342	0	0	5
Future Volume (Veh/h)	0	239	342	0	0	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	260	372	0	0	5
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	372				632	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372				632	372
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1186				444	674

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	260	372	5
Volume Left	0	0	0
Volume Right	0	0	5
cSH	1700	1700	674
Volume to Capacity	0.15	0.22	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	10.4
Lane LOS			B
Approach Delay (s)	0.0	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay		0.1	
Intersection Capacity Utilization		28.0%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	25	26	0	0	9	28	10	0	64	0
Future Volume (Veh/h)	0	0	25	26	0	0	9	28	10	0	64	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	27	28	0	0	10	30	11	0	70	0
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	126	131	70	152	126	36	70			41		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	126	131	70	152	126	36	70			41		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	96	100	100	99			100		
cM capacity (veh/h)	844	755	993	789	760	1037	1531			1568		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	28	51	70
Volume Left	0	28	10	0
Volume Right	27	0	11	0
cSH	993	789	1531	1568
Volume to Capacity	0.03	0.04	0.01	0.00
Queue Length 95th (m)	0.7	0.9	0.2	0.0
Control Delay (s)	8.7	9.7	1.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.7	9.7	1.5	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	3.3			
Intersection Capacity Utilization	24.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	43	3	0	115
Future Volume (Veh/h)	2	0	43	3	0	115
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)	2	0	47	3	0	125
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	174	48			50	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	174	48			50	
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	100			100	
cM capacity (veh/h)	816	1020			1557	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	50	125
Volume Left	2	0	0
Volume Right	0	3	0
cSH	816	1700	1557
Volume to Capacity	0.00	0.03	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	9.4	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.4	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	16.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	8	1	0	23
Future Volume (Veh/h)	0	0	8	1	0	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	9	1	0	25
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			0		19	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		19	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			1623		993	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	10	25
Volume Left	0	9	0
Volume Right	0	0	25
cSH	1700	1623	1085
Volume to Capacity	0.00	0.01	0.02
Queue Length 95th (m)	0.0	0.1	0.6
Control Delay (s)	0.0	6.5	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	6.5	8.4
Approach LOS			A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:50	7:50	7:50	7:50	7:50	7:50
End Time	9:00	9:00	9:00	9:00	9:00	9:00
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	881	919	822	872	874	871
Vehs Exited	888	915	826	876	874	874
Starting Vehs	11	9	10	11	9	9
Ending Vehs	4	13	6	7	9	7
Travel Distance (km)	394	413	368	391	395	392
Travel Time (hr)	9.5	9.9	8.8	9.5	9.4	9.4
Total Delay (hr)	0.8	0.9	0.7	0.8	0.7	0.8
Total Stops	311	277	286	324	266	294
Fuel Used (l)	31.5	33.1	29.7	31.6	30.6	31.3

Interval #0 Information Seeding

Start Time	7:50
End Time	8:00
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	8:00
End Time	9:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	881	919	822	872	874	871
Vehs Exited	888	915	826	876	874	874
Starting Vehs	11	9	10	11	9	9
Ending Vehs	4	13	6	7	9	7
Travel Distance (km)	394	413	368	391	395	392
Travel Time (hr)	9.5	9.9	8.8	9.5	9.4	9.4
Total Delay (hr)	0.8	0.9	0.7	0.8	0.7	0.8
Total Stops	311	277	286	324	266	294
Fuel Used (l)	31.5	33.1	29.7	31.6	30.6	31.3

Intersection: 3: Nelkydd Lane/Herrema Boulevard & Brock Street East

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	R	L	L	TR	L	TR
Maximum Queue (m)	10.3	6.1	17.5	24.3	16.0	14.9	16.3
Average Queue (m)	3.0	0.2	4.4	9.3	4.6	6.5	8.0
95th Queue (m)	10.0	3.3	13.2	18.8	13.1	13.4	14.0
Link Distance (m)	167.1	167.1	208.9	74.4	74.4	33.7	33.7
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Brock Street East & Site Access

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Herrema Boulevard /Herrema Boulevard & Low Boulevard

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	14.8	17.6	5.4
Average Queue (m)	4.6	6.1	0.2
95th Queue (m)	12.2	14.7	2.1
Link Distance (m)	40.7	10.6	38.8
Upstream Blk Time (%)		2	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Herrema Boulevard/Herrema Boulevard & Internal Driveway 1

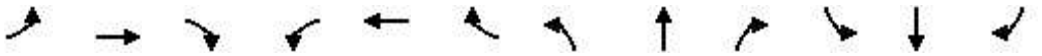
Movement	WB
Directions Served	LR
Maximum Queue (m)	8.4
Average Queue (m)	0.6
95th Queue (m)	4.2
Link Distance (m)	21.0
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: Internal Driveway 2 & Low Boulevard

Movement	NB
Directions Served	LR
Maximum Queue (m)	10.5
Average Queue (m)	4.4
95th Queue (m)	11.8
Link Distance (m)	12.7
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	340	50	6	188	35	46	2	18	22	6	50
Future Volume (Veh/h)	90	340	50	6	188	35	46	2	18	22	6	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.89	0.58	0.61	0.86	0.92	0.82	0.92	0.69	0.92	0.92	0.92
Hourly flow rate (vph)	98	382	86	10	219	38	56	2	26	24	7	54
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	257			468			874	855	382	844	903	219
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	257			468			874	855	382	844	903	219
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	93			99			75	99	96	90	97	93
cM capacity (veh/h)	1308			1073			224	271	621	252	254	821

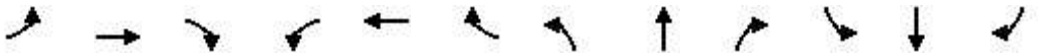
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	98	382	86	10	219	38	56	28	24	61
Volume Left	98	0	0	10	0	0	56	0	24	0
Volume Right	0	0	86	0	0	38	0	26	0	54
cSH	1308	1700	1700	1073	1700	1700	224	569	252	653
Volume to Capacity	0.07	0.22	0.05	0.01	0.13	0.02	0.25	0.05	0.10	0.09
Queue Length 95th (m)	1.9	0.0	0.0	0.2	0.0	0.0	7.7	1.2	2.5	2.5
Control Delay (s)	8.0	0.0	0.0	8.4	0.0	0.0	26.4	11.7	20.7	11.1
Lane LOS	A			A			D	B	C	B
Approach Delay (s)	1.4			0.3			21.5		13.8	
Approach LOS							C		B	

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	40.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	380	208	0	0	0
Future Volume (Veh/h)	0	380	208	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	413	226	0	0	0
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	226				639	226
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226				639	226
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1342				440	813

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	413	226	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.24	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		23.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	20	0	0	23	63	33	0	30	0
Future Volume (Veh/h)	0	0	15	20	0	0	23	63	33	0	30	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	16	22	0	0	25	68	36	0	33	0
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	169	187	33	185	169	86	33			104		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169	187	33	185	169	86	33			104		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	97	100	100	98			100		
cM capacity (veh/h)	785	696	1041	755	712	973	1579			1488		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	22	129	33
Volume Left	0	22	25	0
Volume Right	16	0	36	0
cSH	1041	755	1579	1488
Volume to Capacity	0.02	0.03	0.02	0.00
Queue Length 95th (m)	0.4	0.7	0.4	0.0
Control Delay (s)	8.5	9.9	1.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	9.9	1.5	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	0	118	9	0	65
Future Volume (Veh/h)	9	0	118	9	0	65
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)	10	0	128	10	0	71
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	204	133			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	133			138	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	784	916			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	138	71
Volume Left	10	0	0
Volume Right	0	10	0
cSH	784	1700	1446
Volume to Capacity	0.01	0.08	0.00
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	9.6	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.6	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	23	0	0	15
Future Volume (Veh/h)	0	0	23	0	0	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	25	0	0	16
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			0		50	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		50	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		100	99
cM capacity (veh/h)			1623		944	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	25	16
Volume Left	0	25	0
Volume Right	0	0	16
cSH	1700	1623	1085
Volume to Capacity	0.00	0.02	0.01
Queue Length 95th (m)	0.0	0.4	0.4
Control Delay (s)	0.0	7.3	8.4
Lane LOS		A	A
Approach Delay (s)	0.0	7.3	8.4
Approach LOS			A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:05	4:05	4:05	4:05	4:05	4:05
End Time	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	884	885	890	918	870	889
Vehs Exited	880	884	884	923	867	888
Starting Vehs	9	8	9	15	11	8
Ending Vehs	13	9	15	10	14	8
Travel Distance (km)	405	408	399	421	400	406
Travel Time (hr)	9.5	9.5	9.6	9.9	9.4	9.6
Total Delay (hr)	0.7	0.7	0.8	0.7	0.7	0.7
Total Stops	211	201	229	240	236	222
Fuel Used (l)	31.3	31.8	31.4	32.7	30.8	31.6

Interval #0 Information Seeding

Start Time	4:05
End Time	4:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:15
End Time	5:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	884	885	890	918	870	889
Vehs Exited	880	884	884	923	867	888
Starting Vehs	9	8	9	15	11	8
Ending Vehs	13	9	15	10	14	8
Travel Distance (km)	405	408	399	421	400	406
Travel Time (hr)	9.5	9.5	9.6	9.9	9.4	9.6
Total Delay (hr)	0.7	0.7	0.8	0.7	0.7	0.7
Total Stops	211	201	229	240	236	222
Fuel Used (l)	31.3	31.8	31.4	32.7	30.8	31.6

Intersection: 3: Nelkydd Lane/Herrema Boulevard & Brock Street East

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	L	TR	L	TR
Maximum Queue (m)	16.8	8.3	2.7	26.4	18.2	13.3	14.2
Average Queue (m)	4.2	0.9	0.1	8.5	4.3	4.6	7.2
95th Queue (m)	12.8	5.0	1.4	19.9	11.8	11.7	12.6
Link Distance (m)	167.1	208.9	208.9	74.4	74.4	37.2	37.2
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Brock Street East & Site Access

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Herrema Boulevard & Low Boulevard

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	8.4	12.6	3.8
Average Queue (m)	3.7	4.1	0.1
95th Queue (m)	10.4	11.6	1.6
Link Distance (m)	40.2	10.8	35.0
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Herrema Boulevard /Herrema Boulevard & Internal Driveway 1

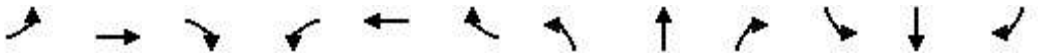
Movement	WB
Directions Served	LR
Maximum Queue (m)	8.3
Average Queue (m)	2.1
95th Queue (m)	7.9
Link Distance (m)	7.4
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 14: Internal Driveway 2 & Low Boulevard

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	4.1
95th Queue (m)	11.2
Link Distance (m)	15.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	357	50	6	198	35	46	2	18	22	6	50
Future Volume (Veh/h)	90	357	50	6	198	35	46	2	18	22	6	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.89	0.58	0.61	0.86	0.92	0.82	0.92	0.69	0.92	0.92	0.92
Hourly flow rate (vph)	98	401	86	10	230	38	56	2	26	24	7	54
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	268			487			904	885	401	874	933	230
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268			487			904	885	401	874	933	230
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.0	3.3
p0 queue free %	92			99			74	99	96	90	97	93
cM capacity (veh/h)	1296			1056			213	260	606	240	244	809

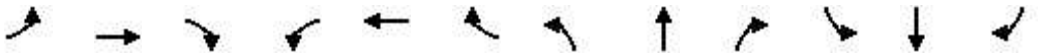
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	NB 2	SB 1	SB 2
Volume Total	98	401	86	10	230	38	56	28	24	61
Volume Left	98	0	0	10	0	0	56	0	24	0
Volume Right	0	0	86	0	0	38	0	26	0	54
cSH	1296	1700	1700	1056	1700	1700	213	553	240	639
Volume to Capacity	0.08	0.24	0.05	0.01	0.14	0.02	0.26	0.05	0.10	0.10
Queue Length 95th (m)	2.0	0.0	0.0	0.2	0.0	0.0	8.1	1.3	2.6	2.5
Control Delay (s)	8.0	0.0	0.0	8.4	0.0	0.0	27.8	11.9	21.6	11.2
Lane LOS	A			A			D	B	C	B
Approach Delay (s)	1.3			0.3			22.5		14.2	
Approach LOS							C		B	

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Volume (veh/h)	0	397	218	0	0	0
Future Volume (Veh/h)	0	397	218	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	432	237	0	0	0
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	237				669	237
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	237				669	237
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1330				423	802

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	432	237	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.25	0.14	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		24.2%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	15	20	0	0	23	66	33	0	32	0
Future Volume (Veh/h)	0	0	15	20	0	0	23	66	33	0	32	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	16	22	0	0	25	72	36	0	35	0
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	175	193	35	191	175	90	35			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	175	193	35	191	175	90	35			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	98	97	100	100	98			100		
cM capacity (veh/h)	778	691	1038	748	707	968	1576			1483		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	16	22	133	35
Volume Left	0	22	25	0
Volume Right	16	0	36	0
cSH	1038	748	1576	1483
Volume to Capacity	0.02	0.03	0.02	0.00
Queue Length 95th (m)	0.4	0.7	0.4	0.0
Control Delay (s)	8.5	10.0	1.5	0.0
Lane LOS	A	A	A	
Approach Delay (s)	8.5	10.0	1.5	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	27.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	0	118	9	0	67
Future Volume (Veh/h)	9	0	118	9	0	67
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)	10	0	128	10	0	73
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	206	133			138	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206	133			138	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	782	916			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	10	138	73
Volume Left	10	0	0
Volume Right	0	10	0
cSH	782	1700	1446
Volume to Capacity	0.01	0.08	0.00
Queue Length 95th (m)	0.3	0.0	0.0
Control Delay (s)	9.7	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.7	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	23	0	15
Future Volume (Veh/h)	0	0	0	23	0	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	25	0	16
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			0		25	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			0		25	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1623		991	1085

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	0	25	16
Volume Left	0	0	0
Volume Right	0	0	16
cSH	1700	1623	1085
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	8.4
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.4
Approach LOS			A

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:05	4:05	4:05	4:05	4:05	4:05
End Time	5:15	5:15	5:15	5:15	5:15	5:15
Total Time (min)	70	70	70	70	70	70
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	910	926	899	932	883	911
Vehs Exited	906	932	903	932	880	911
Starting Vehs	9	16	12	11	11	10
Ending Vehs	13	10	8	11	14	9
Travel Distance (km)	424	431	409	431	406	420
Travel Time (hr)	9.9	10.1	9.7	10.1	9.6	9.9
Total Delay (hr)	0.7	0.8	0.8	0.7	0.7	0.8
Total Stops	205	219	232	241	241	227
Fuel Used (l)	32.6	33.7	32.0	33.2	31.6	32.6

Interval #0 Information Seeding

Start Time	4:05
End Time	4:15
Total Time (min)	10

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:15
End Time	5:15
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	910	926	899	932	883	911
Vehs Exited	906	932	903	932	880	911
Starting Vehs	9	16	12	11	11	10
Ending Vehs	13	10	8	11	14	9
Travel Distance (km)	424	431	409	431	406	420
Travel Time (hr)	9.9	10.1	9.7	10.1	9.6	9.9
Total Delay (hr)	0.7	0.8	0.8	0.7	0.7	0.8
Total Stops	205	219	232	241	241	227
Fuel Used (l)	32.6	33.7	32.0	33.2	31.6	32.6

Intersection: 3: Nelkydd Lane/Herrema Boulevard & Brock Street East

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	L	R	L	TR	L	TR
Maximum Queue (m)	17.8	8.3	4.1	28.9	18.2	8.4	15.4
Average Queue (m)	4.3	0.9	0.2	8.9	4.5	4.6	7.0
95th Queue (m)	12.6	5.1	2.4	21.1	12.5	11.2	12.7
Link Distance (m)	167.1	208.9	208.9	74.4	74.4	37.2	37.2
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: Brock Street East & Site Access

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 8: Herrema Boulevard & Low Boulevard

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (m)	8.4	11.2	1.2
Average Queue (m)	4.0	3.9	0.0
95th Queue (m)	10.7	11.2	0.9
Link Distance (m)	40.2	10.8	35.0
Upstream Blk Time (%)		1	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Herrema Boulevard /Herrema Boulevard & Internal Driveway 1

Movement	WB
Directions Served	LR
Maximum Queue (m)	6.7
Average Queue (m)	1.9
95th Queue (m)	7.5
Link Distance (m)	7.4
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

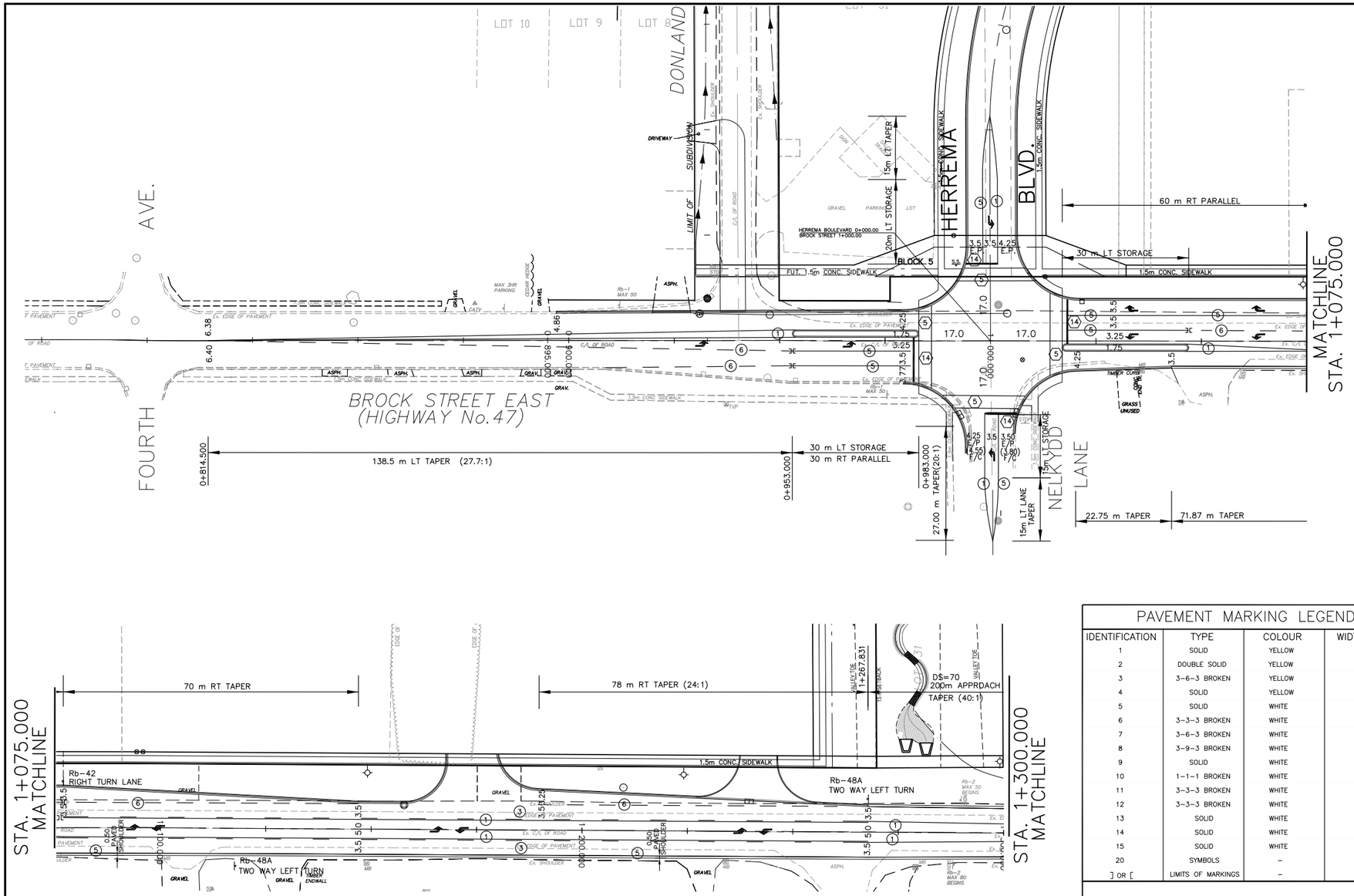
Intersection: 14: Internal Driveway 2 & Low Boulevard

Movement	NB
Directions Served	LR
Maximum Queue (m)	8.8
Average Queue (m)	4.0
95th Queue (m)	11.1
Link Distance (m)	15.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 0

Appendix I – Left and Right Turn Lane Design



BROCK STREET EAST (HIGHWAY No.47)

REMOVE EXIST. PAVEMENT MARKINGS WITHIN PROJECT LIMITS

NOTE

1) FOR GENERAL NOTES AND LEGEND SEE DWG. G–101.
2) MEASUREMENTS IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN.

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXIST. U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE CONSULTANT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

PAVEMENT MARKING LEGEND

IDENTIFICATION	TYPE	COLOUR	WIDTH (cm)
1	SOLID	YELLOW	10
2	DOUBLE SOLID	YELLOW	10
3	3–6–3 BROKEN	YELLOW	10
4	SOLID	YELLOW	20
5	SOLID	WHITE	10
6	3–3–3 BROKEN	WHITE	10
7	3–6–3 BROKEN	WHITE	10
8	3–9–3 BROKEN	WHITE	10
9	SOLID	WHITE	20
10	1–1–1 BROKEN	WHITE	20
11	3–3–3 BROKEN	WHITE	20
12	3–3–3 BROKEN	WHITE	30
13	SOLID	WHITE	30
14	SOLID	WHITE	45
15	SOLID	WHITE	60
20	SYMBOLS	–	–
] OR [	LIMITS OF MARKINGS	–	–

3–3–3, 3–6–3, 3–9–3 LINE – GAP – LINE SPACING IN METRES

(1) PERMANENT

[1] TEMPORARY

▽ TEMPORARY – REMOVABLE

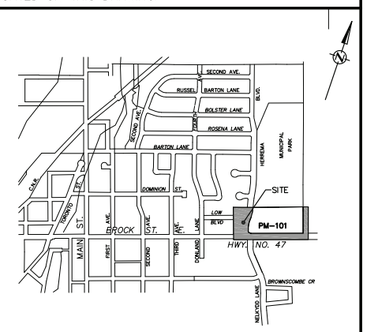
(1) TEMPORARY – REMOVABLE

◇ EXISTING MARKING TO BE REMOVED OR (TREATED?)

NOTES

1. ALL MARKINGS AND SIGNS SHALL CONFORM WITH THE ONTARIO TRAFFIC MANUAL(OTM), BOOK 11.
2. PROPOSED MARKINGS TO MATCH EXIST. AT ALL WORK AND/OR ROAD RECONSTRUCTION LIMITS

→ TRAFFIC SIGN



KEY PLAN
N.T.S.

ACCEPTED TO BE IN GENERAL CONFORMANCE WITH THE TOWNSHIP OF UXBRIDGE STANDARDS THIS ACCEPTANCE IS NOT TO BE CONSTRUED AS VERIFICATION OF ENGINEERING CONTENT

Totten Sims Hubicki Associates (1997) Limited

Date: _____

APPROVED

_____ P. Eng.
Department Of Works
Region Of Durham
Date: _____

REVISIONS

No.	DESCRIPTION	DATE	BY	APPROVED

CORPORATION OF THE TOWNSHIP OF UXBRIDGE
Engineering Department

GOLDMANCO SUBDIVISION
S–U–2005–02

BROCK STREET PAVEMENT MARKINGS PLAN

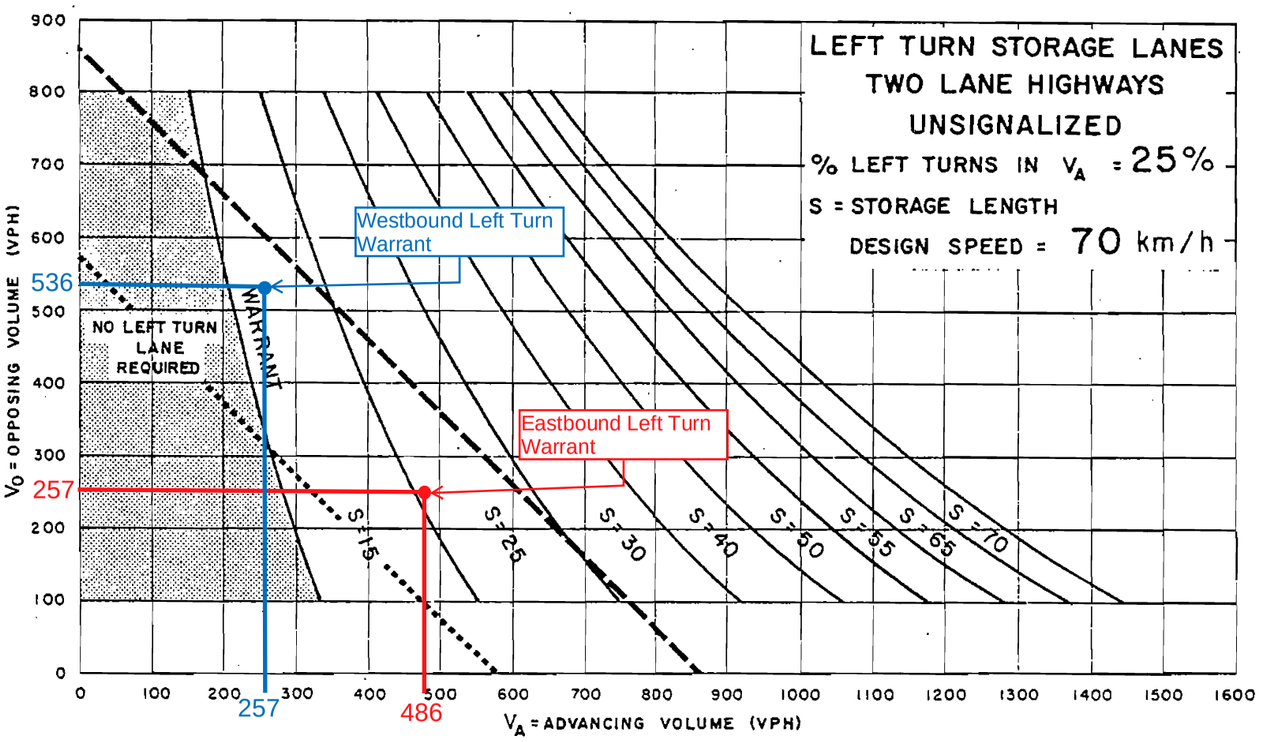
LICENSED PROFESSIONAL ENGINEER
A.J. CHRISTIE
PROVINCE OF ONTARIO

SERNAS ASSOCIATES
(A Member of The Sernas Group Inc.)
110 Scotia Court
Unit 41
Whby, ON
L1N 8Y7
T 905.686.6402
F 905.432.7877
sernas.com

DATE : AUGUST, 2007	DRAWN BY : L.O.	PROJECT No. 04440
SCALE : 1 : 500	DESIGNED BY : L.R.D.	DRAWING No. PM–101
	CHECKED BY :	

R/P Date - MAR. 27, 2008 File: 04440-PM-101.DWG

Appendix J – Left Turn Lane Warrant Nomograph



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

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

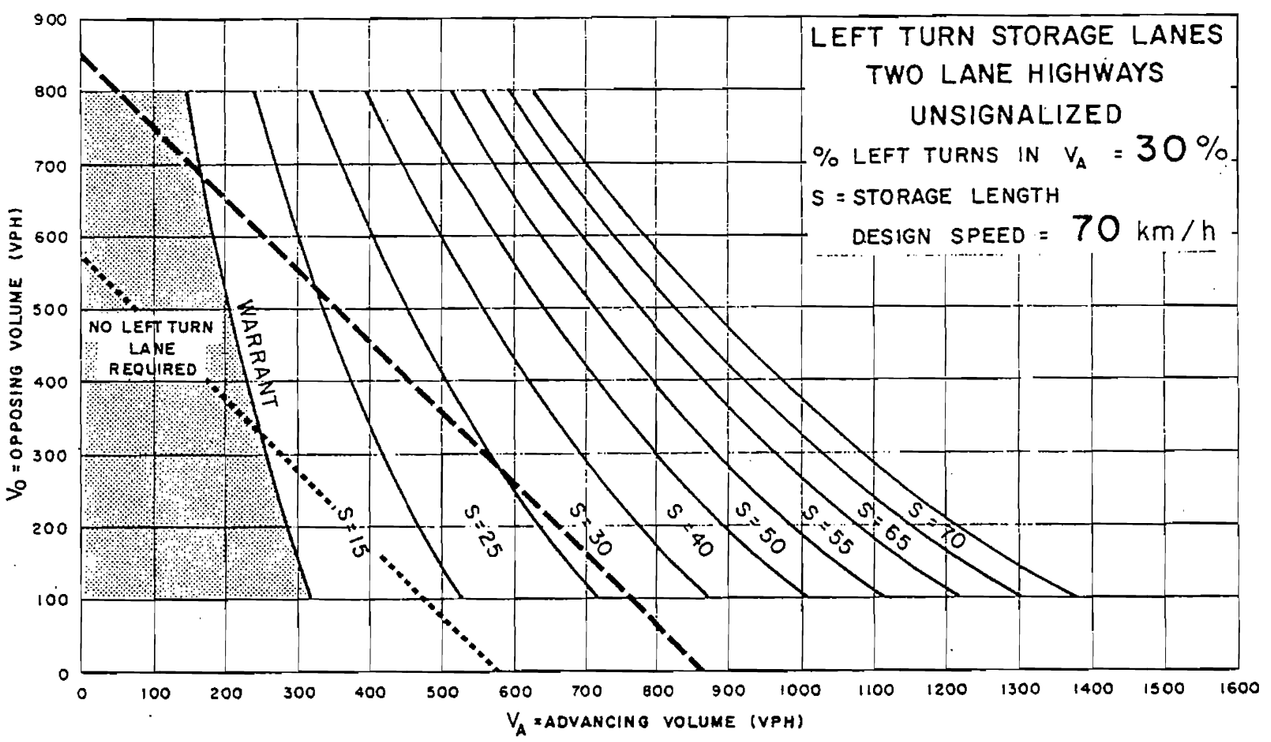


Figure EA-12

Appendix K – Transit Route Services

Durham Region Transit
Make Life Easy

ROUTE 601-603-950-960

BROCK - UXBRIDGE
PICKERING - UXBRIDGE
REACH - SIMCOE NORTH
NEWMARKET - UXBRIDGE

Monday - Friday

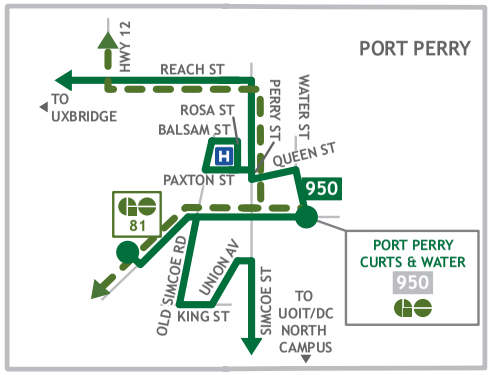
South to Pickering					North to Uxbridge			
Toronto & Brock | Uxbridge | Depart | Stop # 2424	**Welwood & Toronto** | Uxbridge | Stop # 2416	**Old Brock & Central | Acorn** | Uxbridge | Stop # 3386	**407 / Brock Park & Ride** | Pickering | Stop # 3377	**Pickering Parkway Terminal** | Arrive	**Pickering Parkway Terminal** | Depart | Stop # 93112	**407 / Brock Park & Ride** | Pickering | Stop # 3376	**Old Brock & Central | Acorn** | Uxbridge | Stop # 3385	**Welwood & Toronto** | Uxbridge | Arrive
603					**603**			
06:30	06:35	06:50	06:58	07:15	10:32	10:47	10:55	11:10
07:55	08:00	08:15	08:23	08:40	12:32	12:47	12:55	13:10
-	11:15	11:30	11:38	11:53	15:40	15:55	16:03	16:18
-	13:15	13:30	13:38	13:53	17:45	18:00	18:08	18:23

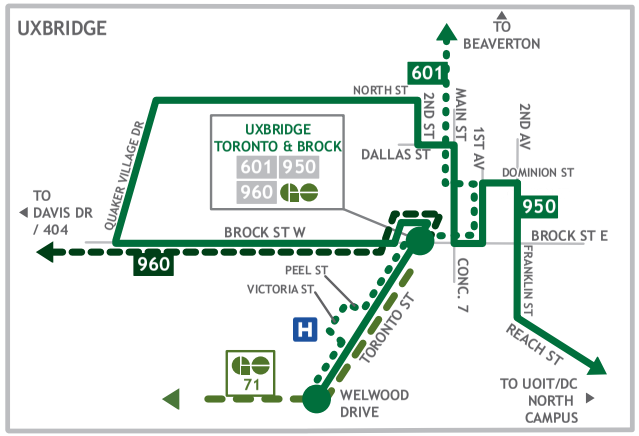
Monday - Friday

West to Newmarket				East to Uxbridge			
T							**T**
Toronto & Brock | North Side | Depart | Stop # 2424	**Brock & Quaker Village** Stop # 93547	**Regional Road 8 & Mill Run | Siloam** |Stop # 3237	**Davis - 404 Park & Ride | Arrive**	**Davis - 404 Park & Ride | Depart** Stop # 3241	**Regional Road 8 & Mill Run | Siloam** | Stop # 3238	**Brock & South Balsam** Stop # 3210	**Toronto & Albert | Arrive**
960				**960**			
07:20	07:23	07:28	07:44	07:50	08:06	08:11	08:15
08:40	08:43	08:48	09:04	09:20	09:36	09:41	09:45
13:40	13:43	13:48	14:04	14:10	14:26	14:31	14:35
17:00	17:03	17:08	17:24	17:35	17:51	17:56	18:00
18:05	18:08	18:13	18:29	18:35	18:51	18:56	19:00

Legend

→ Stop not serviced by this trip





Mobile Apps

DRT provides its service schedules to The Regional Municipality of Durham's Open Data Program. Various third-party transit apps using this data are available on the App Store and Google Play.

CONTACT US

durhamregiontransit.com

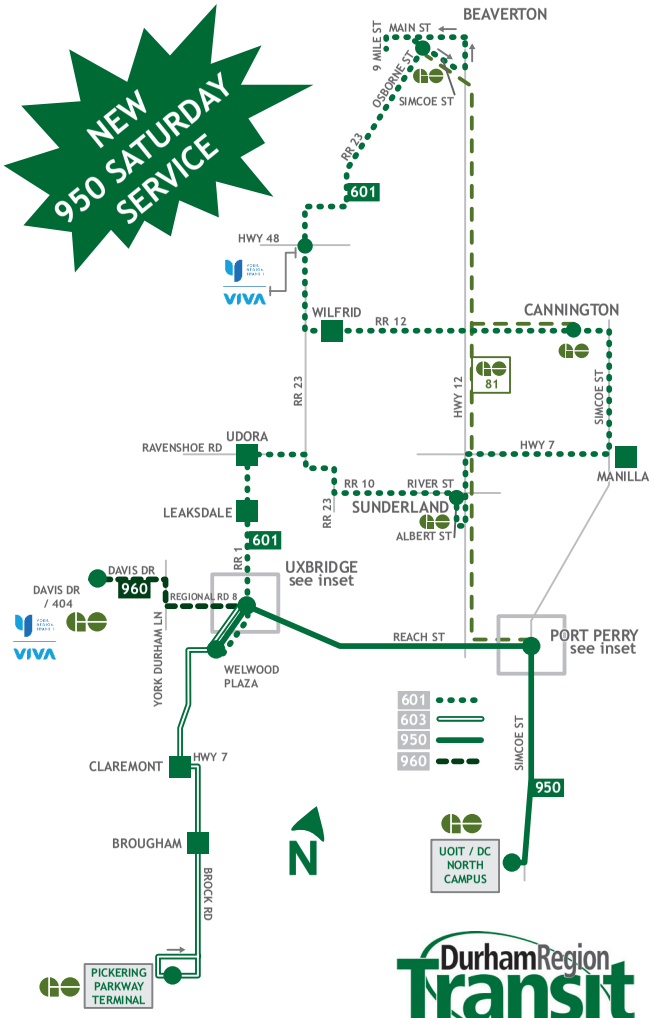
DRTHelps@durham.ca

Customer Service Centre
1-866-247-0055

@durham_transit

/durhamregiontransit

NEW 950 SATURDAY SERVICE



Durham Region Transit

Effective September 4, 2017 Make Life Easy

ROUTE 601 - 603 - 950 - 960

BROCK - UXBRIDGE
REACH - SIMCOE NORTH
PICKERING - UXBRIDGE
NEWMARKET - UXBRIDGE

Durham Region Transit — Make Life Easy

Monday - Saturday

South to UOIT / DC North Campus Terminal

Branch	Welwood & Toronto | Depart Stop # 2416	T Toronto & Albert Stop # 2422	Brock & Quaker Village Stop # 93547	First & Brock Stop # 3333	Reach & East Stop # 2428	Reach & Simcoe Stop # 2453	Paxton & Rosa | Port Perry Hospital |Stop # 2498	Curts & Water | Port Perry Terminal |Stop # 2491	Smart Centre Port Perry Stop # 3300	Simcoe & Green Way Stop # 2745	Simcoe & Raglan Stop # 2465	Simcoe & Columbus Stop # 2458	UOIT / DC North Campus | Arrive
Monday - Friday													
950													
950C	-	06:20	06:23	06:30	06:33	06:45	06:49	06:54	→	07:05	07:12	07:15	07:23
950C	-	07:20	07:23	07:30	07:33	07:45	07:49	07:54	→	08:05	08:12	08:15	08:23
950	-	08:20	08:23	08:30	08:33	08:45	08:49	08:54	09:00	09:08	09:15	09:18	09:26
950	-	09:50	09:53	10:00	10:03	10:15	10:19	10:24	10:30	10:38	10:45	10:48	10:56
950	11:15	11:20	11:23	11:30	11:33	11:45	11:49	11:54	12:00	12:08	12:15	12:18	12:26
950	13:15	13:20	13:23	13:30	13:33	13:45	13:49	13:54	14:00	14:08	14:15	14:18	14:26
950	-	14:40	14:43	14:50	14:53	15:05	15:09	15:14	15:20	15:28	15:35	15:38	15:46
950	16:25	16:30	16:33	16:40	16:43	16:55	16:59	17:04	17:10	17:18	17:25	17:28	17:36
950	-	18:05	18:08	18:15	18:18	18:30	18:34	18:39	18:45	18:53	19:00	19:03	19:11
950	-	19:05	19:08	19:15	19:18	19:30	19:34	19:39	19:45	19:53	20:00	20:03	20:11
950	21:00	21:05	21:08	21:15	21:18	21:30	21:34	21:39	21:45	21:53	22:00	22:03	22:11
Saturday													
950													
950	08:20	08:25	08:28	08:34	08:37	08:47	08:51	08:56	09:02	09:09	09:15	09:18	09:25
950	10:40	10:45	10:48	10:54	10:57	11:07	11:11	11:16	11:22	11:29	11:35	11:38	11:45
950	13:00	13:05	13:08	13:14	13:17	13:27	13:31	13:36	13:42	13:49	13:55	13:58	14:05
950	15:20	15:25	15:28	15:34	15:37	15:47	15:51	15:56	16:02	16:09	16:15	16:18	16:25
950	17:40	17:45	17:48	17:54	17:57	18:07	18:11	18:16	18:22	18:29	18:35	18:38	18:45

North to Uxbridge

Branch	UOIT / DC North Campus | Depart Stop # 698	Simcoe & Columbus Stop # 2457	Simcoe & Raglan Stop # 2462	Simcoe & Greenway Stop # 2733	Smart Centre Port Perry Stop # 3300	Curts & Water | Port Perry Terminal |Stop # 2491	Paxton & Rosa | Port Perry Hospital | Stop # 2498	Reach & Simcoe Stop # 2454	Franklin & Reach Stop # 3224	First & Brock Stop # 2435	Brock & South Balsam Stop # 3210	T Toronto & Brock | North Side | Stop # 2424	Welwood & Toronto | Arrive
Monday - Friday													
950													
950B	-	-	-	-	-	06:44	06:49	06:53	07:05	07:08	07:16	07:20	-
950B	07:25	07:32	07:35	07:42	07:50	07:57	08:02	08:06	08:18	08:21	08:29	08:33	-
950	08:25	08:32	08:35	08:42	08:50	08:57	09:02	09:06	09:18	09:21	09:29	09:33	09:38
950	09:55	10:02	10:05	10:12	10:20	10:27	10:32	10:36	10:48	10:51	10:59	11:03	11:08
950B	12:30	12:37	12:40	12:47	12:55	13:02	13:07	13:11	13:23	13:26	13:34	13:38	-
950	14:30	14:37	14:40	14:47	14:55	15:02	15:07	15:11	15:23	15:26	15:34	15:38	15:43
950B	15:50	15:57	16:00	16:07	16:15	16:22	16:27	16:31	16:43	16:46	16:54	16:58	-
950B	16:50	16:57	17:00	17:07	17:15	17:22	17:27	17:31	17:43	17:46	17:54	17:58	-
950	17:45	17:52	17:55	18:02	18:10	18:17	18:22	18:26	18:38	18:41	18:49	18:53	18:58
950	19:15	19:22	19:25	19:32	19:40	19:47	19:52	19:56	20:08	20:11	20:19	20:23	20:28
950	20:15	20:22	20:25	20:32	20:40	20:47	20:52	20:56	21:08	21:11	21:19	21:23	21:28
950	22:15	22:22	22:25	22:32	22:40	22:47	22:52	22:56	23:08	23:11	23:19	23:23	23:28
Saturday													
950													
950	-	-	-	-	-	07:38	07:43	07:47	07:57	08:00	08:06	08:10	08:15
950	09:30	09:37	09:40	09:46	09:52	09:58	10:03	10:07	10:17	10:20	10:26	10:30	10:35
950	11:50	11:57	12:00	12:06	12:12	12:18	12:23	12:27	12:37	12:40	12:46	12:50	12:55
950	14:10	14:17	14:20	14:26	14:32	14:38	14:43	14:47	14:57	15:00	15:06	15:10	15:15
950	16:30	16:37	16:40	16:46	16:52	16:58	17:03	17:07	17:17	17:20	17:26	17:30	17:35
950	18:50	18:57	19:00	19:06	19:12	19:18	19:23	19:27	19:37	19:40	19:46	19:50	19:55

If this information is required in an accessible format, please call 1-866-247-0055

Monday - Friday

North to Beaverton

Branch	Welwood & Toronto | Uxbridge | Depart Stop # 2416	T Toronto & Brock | South Side | Uxbridge | Stop # 93018	First & Brock | Uxbridge | Stop # 3333	R.R. 1 & Harrison | Leaskdale | Stop # 3198	R.R. 1 & Ravenshoe | Udora | Stop # 3194	Albert & River | Sunderland | Stop # 2530	Simcoe & Hwy. 7 | Manilla | Stop # 3192	Cameron & Ann | Cannington | Stop # 93549	Hwy. 12 & Brock Road | Wilfrid | Stop # 3234	R.R 23 & Hwy. 48 Stop # 3180	R.R. 23 & Concession 2 Stop # 3182	Hwy. 12 & Beaver | Beaverton | Stop # 93528	Main & Franklin | Beaverton | Stop # 93529	9 Mile at Lakeview Mannor | Beaverton | Arrive
601														
601	-	-	-	-	-	-	-	-	-	-	-	05:51	05:55	06:00
601	10:15	10:20	10:22	10:31	10:36	10:47	10:59	11:08	11:20	11:22	11:26	11:36	11:40	11:45
601	15:55	16:00	16:02	16:11	16:16	16:27	16:39	16:48	17:00	17:02	17:06	17:16	17:20	17:25
601B	18:30	18:35	18:37	18:46	18:51	19:02	-	-	-	-	-	-	-	-

South to Uxbridge

Branch	9 Mile at Lakeview Mannor | Beaverton | Depart Stop # 3190	R.R. 23 & Concession 2 Stop # 3183	R.R 23 & Hwy. 48 Stop # 3181	Hwy. 12 & Brock Road | Wilfrid | Stop # 3235	Cameron & Ann | Cannington | Stop # 2533	Simcoe & Hwy. 7 | Manilla | Stop # 3191	Albert & Jones | Sunderland | Stop # 3193	R.R. 1 & Ravenshoe | Udora | Stop # 3195	R.R. 1 & Harrison | Leaskdale | Stop # 3199	First & Brock | Uxbridge | Stop # 2435	T Toronto & Brock | South Side | Uxbridge | Stop # 2438	Toronto & Albert | Uxbridge | Stop # 2422	Victoria at Uxbridge Hospital Entrance Stop # 3301	Welwood & Toronto | Uxbridge | Arrive
601														
601B	-	-	-	-	-	-	05:53	06:03	06:08	06:17	→	06:19	-	-
601B	06:00	06:09	06:13	06:15	06:27	06:36	06:48	06:59	07:04	07:13	07:15	-	-	-
601	11:50	11:59	12:03	12:05	12:17	12:26	12:38	12:49	12:54	13:03	13:05	→	13:06	13:10
601	17:30	17:39	17:43	17:45	17:57	18:06	18:18	18:29	18:34	18:43	18:45	→	18:46	18:50

Legend

→ Stop not serviced by this trip

T Connect between Routes 601 / 950 / 960