

**TRANSPORTATION IMPACT
STUDY ADDENDUM**

**BARRIE CENTRAL REDEVELOPMENT
CITY OF BARRIE**

**PREPARED FOR:
BARRIE CENTRAL DEVELOPMENTS INC.**

**PREPARED BY:
C.F. CROZIER & ASSOCIATES INC.
2800 HIGH POINT DRIVE, SUITE 100
MILTON, ON. L9T 6P4**

**ORIGINAL TIS - JUNE 2019
ADDENDUM - FEBRUARY 2022**

CFCA FILE NO. 1351-5233

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Revision Number	Date	Comments
Rev.0	June 2019	Issued for First Submission
Rev.1	February 2022	Addendum

1.0 Executive Summary

C.F. Crozier & Associates Inc. (Crozier) was retained by Barrie Central Developments Inc. to undertake a Transportation Impact Study (TIS) in support of a Zoning By-Law Amendment and Site Plan Application for a proposed residential located at 34-50 Bradford Street in the City of Barrie, referred to as the Barrie Central Redevelopment. This TIS was submitted in June 2019 and comments were provided from the City of Barrie. These comments, along with the changes to the Site Plan that was included in the original TIS, are addressed in this addendum.

The development proposes two high-rise residential buildings with a total of 630 dwelling units. A total of 491 parking spaces are proposed for the entire development with two access connections to the surrounding external roads. The development is projected to have the full buildout in 2025. An earlier Site Plan had outlined the development with 623 units, this change did not significantly affect the Synchro analysis and the analysis was not changed.

Under 2022 existing traffic conditions, the study intersections of Dunlop Street at Eccles Street, Dunlop Street at Bradford Street/ High Street, and Bradford Street at Simcoe Street are all operating below capacity and at a Level of Service (LOS) "B" or better during both a.m. and p.m. peak hours.

The proposed residential development is projected to generate a total of 160 and 189 trips during the weekday A.M. and P.M. peak hours, respectively.

Under the study horizon, the boundary road network is projected to operate with similar measures of effectiveness between their respective future background traffic conditions (excludes site generated trips) and total traffic conditions (includes site generated trips).

Under full buildout in 2025, the boundary road network is projected to operate at LOS "B" or better during both the A.M. and P.M. peak hours.

In the 2030 and 2035 horizon years, the boundary road network is projected to operate at similar levels to the future background scenarios with the worst LOS being a "C" during the 2035 P.M. peak hour and the rest having a LOS "B" or better.

Based on the analysis and results herein, it is our professional conclusion that the traffic generated by the proposed Barrie Central development at 34-50 Bradford Street, will not materially affect the operations of the boundary road network. Moreover, the boundary road network has capacity to accommodate the additional trips generated by the development. The Zoning By-Law Amendment and Site Plan Application can be supported from a traffic operations perspective.

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2.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by Barrie Central Developments Inc. to undertake a Transportation Impact Study (TIS) in support of a Zoning By-Law Amendment and Site Plan Application (SPA) for a proposed development located at 34-50 Bradford Street, in the City of Barrie, referred to as the Barrie Central Redevelopment. The purpose of the study was to assess the impacts of the proposed development on the boundary road network and to recommend required mitigation measures, if warranted. This TIS was submitted in June 2019 and includes detailed information on the existing infrastructure and other relevant information. After the approval of the Zoning By Law Amendment and the initiation of the Site Plan Application, the owner revisited the site design. The revised design has been assessed through this TIS Addendum.

This addendum TIS was prepared in accordance with the TIS guidelines adopted by the City of Barrie dated December 1, 2021, as well as the Terms of Reference (ToR) discussed with City of Barrie staff. This ToR, and the original TIS ToR, is included in Appendix A.

The analysis undertaken herein was prepared using the site plan and statistics prepared by Martin Simmons Architects, dated February 23, 2022. Any minor changes to the site plan will not materially affect the findings and conclusions contained within this report.

The development proposal is illustrated on the site plan dated February 23, 2022. The site proposes a full-moves site access (located west of tower 1), which connects to Simcoe Street west of the intersection with Bradford Street, and a right-in/right-out access onto Bradford Street. A total of 491 parking spaces are proposed for the entire site. Refer to Figure 2 for the Site Plan and specifications prepared by Martin Simmons Architects, dated February 23, 2022.

3.0 Existing Conditions

This section discusses the existing conditions at the site and the existing operations of the boundary road network. Detailed information on the existing transportation infrastructure and surrounding area can be found in the 2019 TIS.

3.1 Traffic Data

The turning movement counts remain the same as were used in the 2019 TIS with counts at the intersections of Bradford Street at Simcoe Street, and Dunlop Street at Bradford Street/ High Street were surveyed by Pyramid Traffic Inc. on Tuesday, April 30, 2019, between 7:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m. Existing traffic signal timing plans for the three intersections were obtained from the City of Barrie.

3.2 Intersection Operations

The 2022 existing traffic operations at the intersections of Bradford Street at Simcoe Street, Dunlop Street at Eccles Street, and Dunlop Street at Bradford Street/ High Street were analyzed based on the 2019 traffic volume counts grown to 2022 using the growth rate of 3% per annum discussed with the City of Barrie. Refer to Appendix C for the 2019 traffic volume data. The signal timing plans for the study intersections were provided by the City of Barrie. Figure 3 illustrates the 2022 existing traffic volumes and Table 1 outlines the 2022 existing traffic operations. Detailed capacity analyses are shown in Appendix E.

Table 1: 2022 Existing Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	11.2 s	0.29 (EBT)	-
		P.M.	B	16.6 s	0.51 (SBT)	-
Bradford Street at Simcoe Street	Signal	A.M.	A	9.9 s	0.58 (WBL)	17.4 m > 10.0 m (NBR)
		P.M.	B	13.8 s	0.75 (WBL)	18.8 m > 10.0 m (NBR)

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

As indicated in Table 1, under 2019 existing traffic volumes, the signalized intersections of Dunlop Street at Bradford Street/ High Street, and Bradford Street at Simcoe Street are all operating below capacity. The worst Level of Service at any of the two intersections is "B" during the p.m. peak hour (with a worst delay of 16.6 seconds) occurring at the intersection of Dunlop Street and Bradford Street/High Street.

The 95th percentile queues indicate that the northbound right storage at the intersection of Bradford Street at Simcoe Street are occasionally exceeded with spillovers into the tapers and adjacent through lanes.

4.0 Future Background Conditions

This section discusses the projected future background traffic conditions and traffic operations at the study intersections.

4.1 Study Horizons

Given the anticipated development implementation phases, study horizon years for the full buildout phase as well as five and ten years from full buildout have been selected for the analysis. Therefore, the 2025, 2030 and 2035 future background and total traffic operations were analyzed.

4.2 Traffic Growth Rates

A 3% per annum growth rate was applied to the through trips on Dunlop Street and on Bradford Street as advised by the City of Barrie per the response to the terms of reference shown in Appendix A.

4.3 Future Background Developments

The TIS initially included two background developments that were included as part of the future background scenarios. These were:

- The Barrie 5 Points (2–14 Dunlop Street West, 43 & 45 Maple Avenue, 30–42 Bayfield Street) proposes a 20-storey apartment building with 208 residential condominium units. The site plan application was approved August 29, 2017 as noted on the City's "proposed developments" website.
- The 185-205 Dunlop Street East proposes a mixed-use 11 storey building with 193 residential condominium units and ground floor commercial. According to the City's "proposed developments" website, the site plan application is noted as under review dated January 19, 2018.

These background developments were not changed for this addendum and are still included in the analysis. Per the terms of reference for this addendum, an additional background development was included:

- 51-75 Bradford Street & 20 Checkley Street proposes a mixed-use residential, retail and hotel across four (4) towers built in four (4) phases. Phase 1 is expected to be completed in 2024 and full buildout in 2039.

The trip generation and assignment were completed by BA Group as part of their urban transportation advisory report and excerpts can be found in Appendix B. Phase 1 trips were included in the horizon years of 2025, 2030 and 2035 while phases 2 and 3 were included in the 2035 horizon year.

4.4 Intersection Operations

Traffic operations at the intersections of Bradford Street at Simcoe Street, Dunlop Street at Eccles Street, and Dunlop Street at Bradford Street/ High Street were analyzed under the 2025, 2030, and 2035 future background traffic volumes.

The future background traffic volumes for the 2025, 2030, and 2035 future background scenarios are illustrated in Figures 4, 5, 6 and 7, respectively. Tables 2, 3 and 4 outline the 2025, 2030 and 2035 future background traffic operations. Detailed capacity analyses are shown in Appendix E.

Table 2: 2025 Future Background Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	11.6 s	0.32 (EBT)	-
		P.M.	B	17.4 s	0.53 (SBT)	32.4 m > 30.0 m (WBL)
Bradford Street at Simcoe Street	Signal	A.M.	B	10.3 s	0.62 (WBL)	20.1 m > 10.0 m (NBR)
		P.M.	B	14.1 s	0.77 (WBL)	20.1 m > 10.0 m (NBR)

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

Table 3: 2030 Future Background Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	13.0 s	0.39 (EBT)	-
		P.M.	B	18.4 s	0.58 (SBT)	-
Bradford Street at Simcoe Street	Signal	A.M.	B	10.2 s	0.62 (WBL)	19.4 m > 10.0 m (NBR)
		P.M.	B	14.3 s	0.77 (WBL)	18.6 m > 10.0 m (NBR)

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

Table 4: 2035 Future Background Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	13.6 s	0.44 (EBT)	-
		P.M.	B	19.8 s	0.62 (SBT)	37.0m > 30.0 m (WBL)
Bradford Street at Simcoe Street	Signal	A.M.	A	9.8 s	0.62 (WBL)	18.7 m > 10.0 m (NBR)
		P.M.	B	15.2 s	0.77 (WBL)	18.8 m > 10.0 m (NBR)

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

As seen in the tables, the study intersections are performing well in the 2025, 2030 and 2035 horizon years as they both have an LOS of "B" or higher. While there are increases between the horizon years in the delay, they are not significant enough to lower than LOS. The 95th percentile queues at the intersection of Bradford Street and Simcoe Street are higher than the storage lengths for the northbound right turn movement in all horizon years and the westbound left at the intersection of Dunlop Street and Bradford Street/High Street also has a larger queue than its storage length in the 2035 horizon year. The increases in average delay during the A.M. peak period at Bradford Street and Simcoe Street can be attributed to the growth along Bradford Street as more vehicles are experiencing the lower delay times along Bradford Street.

5.0 Total Traffic Conditions

The proposed development will result in additional traffic and turning movements on the boundary road network that previously did not exist. This section discusses the site generated trips and traffic operations with the addition of site generated trips.

5.1 ITE Trip Generation

In order to complete the trip generation for the proposed development, the Institute of Transportation Engineers (ITE) Trip Generation Manual 10th Edition was used. The trips generated by the residential development was calculated using the Land Use Category (LUC: 222 "Multifamily High-Rise". The trips generated by the development based on the anticipated plan are illustrated in Table 5. An earlier Site Plan had outlined the development with 623 units, this change did not significantly affect the Synchro analysis and the analysis was not changed.

Table 5: ITE Trip Generation

Type of Use	Dwelling Units	Peak Hour	Trip Rate	Inbound ¹	Outbound ¹	Total ¹
Multifamily Housing High-Rise (LUC: 222)	630	A.M.	$T = 0.22(X) + 18.85$	55 (34%)	106 (66%)	161
		P.M.	$T = 0.26(X) + 23.12$	108 (56%)	84 (44%)	192

Note 1: Trips generated have been reduced by 5% to account for modal split.

As noted in Table 5 a 5% trip reduction was applied to the site generated trips as recommended by the City of Barrie staff to account for transit trips as there is a significant presence of transit routes on the boundary road network.

5.2 Transportation Tomorrow Survey

The site is located in the GTA 2006 Zone 8501, and the trip distribution was completed based on the 2016 Transportation Tomorrow Survey (TTS). TTS data was used to determine the trip distribution based on the zones of origin and destinations to and from the GTA 2006 Zone 8501. The selected primary travel mode of trips was automobile, and the peak hours were 7:00 a.m. – 10:00 a.m. and 3:00 p.m. – 7:00 p.m. to be consistent with the turning movement counts. The TTS data for trip origins and destinations, from and to the Zone are all included in Appendix C.

5.3 Trip Distribution and Assignment

Based on the anticipated implementation of the development phases, access to the development can be made through the intersection of Bradford Street at Simcoe Street and through the southern site access onto Bradford Street.

5.4 Intersection Operations

Traffic operations at the intersections of Bradford Street at Simcoe Street, and Dunlop Street at Bradford Street/ High Street were analyzed under the 2025, 2030 and 2035 total traffic volumes. The total traffic volume for each horizon is the sum of the site generated traffic and the respective future background traffic volumes. The total traffic volumes for the 2025, 2030 and 2035 are illustrated in Figures 7, 8 and 9, respectively. Tables 6, 7 and 8 summarize the operations during the 2025, 2030 and 2035 total traffic scenarios respectively.

Table 6: 2025 Total Traffic Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	13.0 s	0.42 (EBT)	-
		P.M.	B	18.2 s	0.62 (NBL)	22.8 m > 20.0 m (WBR)
Bradford Street at Simcoe Street/ Site Access	Signal	A.M.	B	12.4 s	0.72 (WBL)	20.5 m > 10.0 m (NBR)
		P.M.	B	18.0 s	0.88 (WBL)	19.1 m > 10.0 m (NBR)
Bradford Street at Site Access	Stop	A.M.	A	8.5 s	0.04 (EB)	-
		P.M.	A	8.4 s	0.03 (EB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The Level of Service of a Stop-controlled intersection is based on the delay associated with the critical minor approach. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

Table 7: 2030 Total Traffic Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	13.7 s	0.47 (EBT)	-
		P.M.	B	19.5 s	0.65 (NBL)	31.9 m > 30.0 m (WBL)
Bradford Street at Simcoe Street/ Site Access	Signal	A.M.	B	12.3 s	0.72 (WBL)	19.3 m > 10.0 m (NBR)
		P.M.	B	18.4 s	0.88 (WBL)	18.5 m > 10.0 m (NBR)
Bradford Street at Site Access	Stop	A.M.	A	8.5 s	0.04 (EB)	-
		P.M.	A	8.4 s	0.03 (EB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The Level of Service of a Stop-Controlled intersection is based on the delay associated with the critical minor approach. 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

Table 8: 2035 Total Traffic Level of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	14.6s	0.52 (EBT)	-
		P.M.	C	20.8 s	0.66 (NBL)	39.3 m > 30.0 m (WBL)
Bradford Street at Simcoe Street/ Site Access	Signal	A.M.	B	12.0 s	0.71 (WBL)	20.3 m > 10.0 m (NBR)
		P.M.	C	20.0 s	0.88 (WBL)	18.8 m > 10.0 m (NBR)
Bradford Street at Site Access	Stop	A.M.	A	8.5 s	0.04 (EB)	-
		P.M.	A	8.4 s	0.03 (EB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The Level of Service of a Stop-Controlled intersection is based on the delay associated with the critical minor approach. 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

As can be seen in the tables, the intersections are operating under capacity in all horizon years. In 2035, the intersection of Bradford Street and Simcoe Street/Site Access is operating at the worst LOS of "C" and the highest v/c ratio of 0.88 during the P.M. peak hour. The values for these LOS's of "C" are less than 1 second of delay into the range of values. In the 2035 scenario, the 95th percentile queues are larger than the available storage lengths for both the westbound left turn movements at the intersection of Dunlop Street at Bradford Street/ High Street and the northbound right turn movements at the intersection of Bradford Street at Simcoe Street/Site Access.

6.0 Comparing Future Background and Total Traffic Conditions

Tables 9, 10 and 11 outline the changes that result upon addition of the site generated trips. The tables are setup to illustrate the resulting changes in measures of operational effectiveness transiting from respective future background operations (without site generated trips) to the total traffic operations (with site generated trips).

Table 9: 2025 Future Background Traffic versus 2025 Total Traffic Levels of Service

Intersection	Peak Hour	Level of Service	Average Delay per Vehicle(s)	Max V/C ratio
Dunlop Street at Bradford Street/ High Street	A.M.	Remains B	Increases by 1.4 s	Increases by 0.10 (EBT)
	P.M.	Remains B	Increases by 0.8 s	Increases by 0.09 (NBL)
Bradford Street at Simcoe Street/ Site Access	A.M.	Remains B	Increases by 2.1 s	Increases by 0.10 (WBL)
	P.M.	Remains B	Increases by 3.9 s	Increases by 0.11 (WBL)

Table 10: 2030 Future Background Traffic versus 2030 Total Traffic Levels of Service

Intersection	Peak Hour	Level of Service	Average Delay per Vehicle(s)	Max V/C ratio
Dunlop Street at Bradford Street/ High Street	A.M.	Remains B	Increases by 0.7 s	Increases by 0.08 (EBT)
	P.M.	Remains B	Increases by 1.1 s	Increases by 0.07 (NBL)
Bradford Street at Simcoe Street/ Site Access	A.M.	Remains B	Increases by 2.1 s	Increases by 0.10 (WBL)
	P.M.	Remains B	Increases by 3.1 s	Increases by 0.11 (WBL)

Table 11: 2035 Future Background Traffic versus 2030 Total Traffic Levels of Service

Intersection	Peak Hour	Level of Service	Average Delay per Vehicle(s)	Max V/C ratio
Dunlop Street at Bradford Street/ High Street	A.M.	Remains B	Increases by 0.9 s	Increases by 0.08 (EBT)
	P.M.	Falls from B to C	Increases by 1.0 s	Increases by 0.04 (NBL)
Bradford Street at Simcoe Street/ Site Access	A.M.	Falls from A to B	Increases by 2.2 s	Increases by 0.09 (WBL)
	P.M.	Falls from B to C	Increases by 4.8 s	Increases by 0.11 (WBL)

As can be seen, the greatest difference in delay is approximately 5 seconds during the 2035 future total scenario. Outside of this increase, the rest are 3 s or less with some delay increases being less than a second.

7.0 Recommendations

While the LOS's and intersection delays are not of concern, some of the queue lengths at Bradford Street and Dunlop Street West are larger than the storage lengths. Optimizing the signal timings for the 2035 Future Total scenario was examined to examine the effects of this optimization on the queue lengths. The results can be seen in Table 12.

Table 12: 2035 Total Traffic Level of Service with Optimized Signal Timing

Intersection	Control	Peak Hour	Level of Service	Control Delay	Max V/C Ratio & V/C Ratios > 0.85	95 th %ile Queues > Storage Length
Dunlop Street at Bradford Street/ High Street	Signal	A.M.	B	14.6s	0.52 (EBT)	
		P.M.	C	21.1 s	0.69 (NBL)	38.3m > 30.0 m (WBL)
Bradford Street at Simcoe Street/ Site Access	Signal	A.M.	B	12.4 s	0.76 (WBL)	18.5 m > 10.0 m (NBR)
		P.M.	B	19.8 s	0.89 (WBL)	18.5 m > 10.0 m (NBR)
Bradford Street at Site Access	Stop	A.M.	A	8.5 s	0.04 (EB)	-
		P.M.	A	8.4 s	0.03 (EB)	-

Note: The Level of Service of a signalized intersection is based on the average control delay per vehicle. Signal timing plans provided by the City of Barrie were used. The Level of Service of a Stop-Controlled intersection is based on the delay associated with the critical minor approach. The 95th percentile queue analysis was completed using Sim-Traffic with 60 minutes recording time, 10 minutes seeding time, and an average of three runs.

As can be seen, the queue lengths at Bradford Street and Dunlop Street West do decrease slightly but are still higher than the storage lengths. There are physical constraints which limits the expansion of the storage length. The signal optimization had a slight effect on the LOS's and delay of both intersections but were not significant changes.

8.0 Conclusions

This study has analyzed the operations of boundary road network to determine the impact of the proposed Barrie Central Redevelopment at 34-50 Bradford Street, City of Barrie. The detailed analysis contained within this report has resulted in the following key findings:

- Under 2022 existing traffic conditions, the study intersections of Dunlop Street at Eccles Street, Dunlop Street at Bradford Street/ High Street, and Bradford Street at Simcoe Street are all operating below capacity and at a Level of Service (LOS) "B" or better during both A.M. and P.M. peak hours.
- The proposed residential portion of the development is projected to generate a total of 161 and 192 trips during the weekday A.M. and P.M. peak hours, respectively, with the 5% modal split reduction specified by the City. An earlier site plan had outlined the development with 623 units, this change did not significantly affect the Synchro analysis.
- Under the study horizon, the boundary road network is projected to operate with similar measures of effectiveness between their respective future background traffic conditions (excludes site generated trips) and total traffic conditions (includes site generated trips).
- Under full buildout in 2025, the boundary road network is projected to operate at LOS "B" or better during both the A.M. and P.M. peak hours.

- In the 2030 and 2035 horizon years, the boundary road network is projected to operate at similar levels to the future background scenarios with the worst LOS being a "C" during the 2035 P.M. peak hour and the rest having a LOS "B" or better.
- Under all study horizons, the boundary road network is projected to operate with similar measures of effectiveness between their respective future background traffic conditions (excludes site generated trips) and total traffic conditions (includes site generated trips).
- We recommend that the signals at the study intersections are optimized in order to help improve the queue lengths without losing the operation

It is our professional conclusion that the traffic generated by the proposed Barrie Central Redevelopment at 34-50 Bradford Street, will not materially affect the operations of the boundary road network. Moreover, the boundary road network has capacity to accommodate the additional trips generated by the development. The Zoning By-Law Amendment and Site Plan Application can be supported from a traffic operations perspective.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.



Ian Lindley, M.A.Sc., EIT.
Transportation

ll/cj

C.F. CROZIER & ASSOCIATES INC.



R. Aaron Wignall
Associate, Transportation

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APPENDIX A

Correspondence

From: Justin MacDonald <Justin.MacDonald@barrie.ca>
Sent: February 16, 2022 3:04 PM
To: Ian Lindley
Cc: Aaron Wignall; Michelle Banfield; Celeste Kitsemetry
Subject: RE: 34-50 Bradford Street TIS Addendum Terms of Reference

Good afternoon Ian,

Yes, please still utilize a 5% modal split.

Thanks.

Justin MacDonald, C.E.T.
Senior Transportation Technologist – Transportation Planning, Development Services
The City of Barrie
Mobile 705-734-8020
Please consider the environment before printing this email.

From: Ian Lindley <ilindley@cfcrozier.ca>
Sent: Wednesday, February 16, 2022 2:57 PM
To: Justin MacDonald <Justin.MacDonald@barrie.ca>
Cc: Aaron Wignall <awignall@cfcrozier.ca>; Michelle Banfield <Michelle.Banfield@barrie.ca>; Celeste Kitsemetry <Celeste.Kitsemetry@barrie.ca>
Subject: RE: 34-50 Bradford Street TIS Addendum Terms of Reference

Good Afternoon Justin,

In the previous TIS it was recommended from the City that a 5% modal split was to be used.
I just wanted to confirm that was still the opinion of the City.

If not, please let me know. Please reach out if more information is required.

Regards,
Ian

Ian Lindley | Engineering Intern
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
T: 905.875.0026



Crozier Connections:    

Read our latest news and announcements [here](#).

From: Justin MacDonald <Justin.MacDonald@barrie.ca>
Sent: February 9, 2022 10:33 AM
To: Ian Lindley <ilindley@cfcrozier.ca>
Cc: Aaron Wignall <awignall@cfcrozier.ca>; Michelle Banfield <Michelle.Banfield@barrie.ca>; Celeste Kitsetmetry <Celeste.Kitsetmetry@barrie.ca>
Subject: RE: 34-50 Bradford Street TIS Addendum Terms of Reference

Good morning Ian,

Thanks for the meeting this morning, as per our conversation please see the below amendments.

Study Area

Dunlop Street at High Street
Bradford Street at Simcoe Street / Site Access
Bradford Street at Secondary Access – access shall be restricted to a right turn in / right turn out

Growth Rate

Dunlop Street 3% per annum
Bradford Street 3% per annum.

Additional Background Development to be included

51-75 Bradford – Information can be found [here](#)

Horizon Years

Full Build Out (2025)
5 Year post build out (2030)
10 Year post build out (2035)

Should you have any questions, please let me know.

Thanks.

Justin MacDonald, C.E.T.
Senior Transportation Technologist – Transportation Planning, Development Services
The City of Barrie
Mobile 705-734-8020
Please consider the environment before printing this email.

From: Ian Lindley <ilindley@cfcrozier.ca>
Sent: Tuesday, February 8, 2022 1:54 PM
To: Justin MacDonald <Justin.MacDonald@barrie.ca>
Cc: Aaron Wignall <awignall@cfcrozier.ca>; Michelle Banfield <Michelle.Banfield@barrie.ca>; Celeste Kitsetmetry <Celeste.Kitsetmetry@barrie.ca>
Subject: RE: 34-50 Bradford Street TIS Addendum Terms of Reference

Good Afternoon,

We were hoping that you could provide comments to our terms of reference seen below regarding the traffic addendum for the Barrie Central Redevelopment.

Hip Developments had mentioned that they were aiming for submission on February 25th when they discussed with Michelle and they are still aiming for this target date so your clarification on the details regarding the addendum would be appreciated.

Regards,
Ian

Ian Lindley | Engineering Intern
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
T: 905.875.0026



Crozier Connections: [!\[\]\(6204b2b9447b1eb7bc3c04a584718a35_img.jpg\)](#) [!\[\]\(34ca17026bcbac2fc6dc7a2f841c49a9_img.jpg\)](#) [!\[\]\(dcb67079eac71be9a3c2fc0810217a57_img.jpg\)](#) [!\[\]\(ec2f8f224b1e576e0e4364e4fec96949_img.jpg\)](#)

Read our latest news and announcements [here](#).

From: Ian Lindley

Sent: Thursday, February 3, 2022 9:00 AM

To: Justin.MacDonald@barrie.ca

Cc: Aaron Wignall <awignall@cfcrozier.ca>

Subject: 34-50 Bradford Street TIS Addendum Terms of Reference

Good Morning Justin,

C.F. Crozier & Associates Inc. (Crozier) was retained by HIP Barrie Central Inc. to complete a Traffic Impact Study (TIS) in support of a Zoning By-Law Amendment (ZBA) and Site Plan Application (SPA) for a development located 34-50 Bradford Street in the City of Barrie, referred as the Barrie Central Redevelopment. This TIS was submitted in June 2019.

The latest site plan features two (2) residential towers of twenty-five (25) and twenty-nine (29) storeys respectively with a shared base, at-grade, and underground parking facilities.

Kindly confirm the details of the addendum for the TIS as discussed below.

Study methodology for the TIS addendum

The City of Barrie has requested an addendum to the previously submitted TIS and Crozier would like to confirm the details required in this addendum.

In the TIS, the following intersections were studied:

- Bradford Street and Simcoe Street
- Dunlop Street and Eccles Street
- Dunlop Street and High Street/Bradford Street
- Simcoe Street and Site Access
- Bradford Street and Site Access

Please confirm if the addendum would require changes to these study intersections.

Traffic Data & Growth Rate

2019 Traffic counts were used in the TIS and were grown using a growth rate of 1% to the through movement except for the through movements on Dunlop Street which used a 3% growth rate after discussions with the City. Trip generation for the site was done in the previous study based on the Trip Generation Manual, 10th Edition prepared by the Institute of Transportation Engineers (ITE) and this study will use these land use codes as well. Please confirm if these traffic counts and growth rates are still valid.

Horizon Years

As a reminder, the previous TIS included the horizon years of 2023 (phase 1 completion), 2024 (phase 2 completion), 2025 (phase 3 completion) and 2030 (5 years from full build out). As the latest site plan only includes one phase, please confirm if the horizon years of 2025 and 2030 will be sufficient.

Could you please provide any comments you may have on the above ToR and provide the following information for inclusion in the study:

- Please confirm the details required in this addendum
- Please confirm if the addendum would require changes to the study intersections.
- Please confirm if the traffic counts, growth rates and other relevant data used in the TIS are still relevant and can be used
- Please confirm if the horizon years of 2025 and 2030 will be sufficient

Regards,
Ian

Peter Apasnore

From: Justin MacDonald <Justin.MacDonald@barrie.ca>
Sent: June 4, 2019 2:50 PM
To: Peter Apasnore
Cc: Aaron Wignall
Subject: RE: Terms of Reference:

Good morning Peter,

With regards to the modal split staff do not support the proposed reduction in trips. Our current modal split is 3%, and we have utilized 5% percent for the Secondary lands. It is staff's recommendation to use a modal split of 5%.

I cannot provide the reported submitted for the reports indicated below as they are prepared by 3rd party and are cannot be distributed by the City. They are viewable at the Planning Department located at 70 Collier Street.

Thanks,

Justin MacDonald, C.E.T.,
Senior Transportation Operations Technologist
Roads, Parks & Fleet



City of Barrie: Barrie Operations Centre, 165 Ferndale Drive North, Barrie ON, L4N 9V9
Office: 705-739-4220 5178

From: Peter Apasnore [mailto:papasnore@cfcrozier.ca]
Sent: Wednesday, May 15, 2019 4:03 PM
To: Justin MacDonald <Justin.MacDonald@barrie.ca>
Cc: Aaron Wignall <awignall@cfcrozier.ca>
Subject: RE: Terms of Reference:

Hi Justin,

Thank you for the feedback. As advised, we will apply a 3% growth rate to the through movements on Dunlop, all other streets will be analyzed with a 1% growth rate applied to the through movements as the study area is built up.

Rental condominium units typically have a high transit demand and a lower single occupant vehicle trips compared to other residential uses. There are currently no condominium buildings in the study area which is why transit is at 3%, walking 2% and cycling 2% (based on TTS attached).

We have assumed a 15% transit modal split for the following reasons:

- the proposed buildings are rental condominium units
- there are 4 transit bus routes operating on each of Bradford Street, Dunlop Street and Simcoe Street
- the site proposes to implement aggressive transportation demand management measures to encourage active transportation and transit use

Given the above, I hope the 15% transit modal split is acceptable. Additionally, please provide traffic reports for the following background developments, or may we exclude them?

- the Barrie 5 Points (2–14 Dunlop Street West, 43 & 45 Maple Avenue, 30–42 Bayfield Street) for 20-storey apartment building with 208 residential condominium units.
- 185-205 Dunlop Street East for Mixed use 11 storey building with 193 residential condominium units and ground floor commercial.

Regards,

Peter Apasnore M.A.Sc., EIT | Transportation
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | papasnore@cfcrozier.ca
tel: 905.875.0026 ext: 306



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From: Justin MacDonald <Justin.MacDonald@barrie.ca>
Sent: May 15, 2019 11:07 AM
To: Peter Apasnore <papasnore@cfcrozier.ca>
Subject: RE: Terms of Reference:

Good morning Peter,

I have spoken with my manager and we have concerns regarding the proposed 15% reduction in trips relating transit ridership. Our current modal split is 3%.

With regards to growth rate a growth rate of 3% per year would be applicable to Dunlop Street and Simcoe Street.

The growth rate for Eccles Street would have to account for the Simcoe Street extension.

I have a request in with our Engineering Department to run the EMME 3 model to estimate volumes on the Simcoe Street extension.

Should you have any questions please let me know.

Thanks,

Justin MacDonald, C.E.T.,
Senior Transportation Operations Technologist
Roads, Parks & Fleet



City of Barrie: Barrie Operations Centre, 165 Ferndale Drive North, Barrie ON, L4N 9V9
Office: 705-739-4220 5178

From: Peter Apasnore [<mailto:papasnore@cfcrozier.ca>]
Sent: Wednesday, May 15, 2019 9:18 AM
To: Justin MacDonald <Justin.MacDonald@barrie.ca>
Subject: RE: Terms of Reference:

Hi Justin,

This is another follow up. Can you provide a feedback as promised and please provide Traffic Impact Study reports for the background developments noted.

Thanks.

Peter Apasnore M.A.Sc., EIT | Transportation
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100 | Milton, ON L9T 6P4
cfcrozier.ca | papasnore@cfcrozier.ca
tel: 905.875.0026 ext: 306



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From: Peter Apasnore
Sent: May 6, 2019 1:41 PM
To: Justin.MacDonald@barrie.ca
Subject: RE: Terms of Reference:

Hi Justin,

I am following up again on the terms of reference submitted below. Please provide your feedback. Additionally, please direct me to appropriate staff to obtain traffic signals timing plans for the study intersections. Thank you.

Regards,

From: Peter Apasnore
Sent: April 30, 2019 8:50 AM
To: Justin.MacDonald@barrie.ca
Subject: RE: Terms of Reference:

Hi Justin,

This is a follow up to the term of reference submitted below. We are getting underway, so a quick feedback will be appreciated.

Regards,

From: Peter Apasnore
Sent: April 17, 2019 4:13 PM
To: Justin.MacDonald@barrie.ca
Cc: Aaron Wignall <awignall@cfcrozier.ca>
Subject: Terms of Reference:

Hi Justin,

We have been retained to prepare a Traffic Impact Study (TIS) for the proposed residential plus YMCA development located at 34-50 Bradford Street, 125 & 155 Dunlop Street West in the City of Barrie. I have attached the latest site plan for your review.

The development proposal as illustrated on the site plan will be implemented in three phases as outlined below:

- **Phase 1:** Consist of Apartment Building 1 (20-storey and 229 units) which is located near the former Prince of Wales School and a YMCA (75,000 ft² GFA) located immediately north of Building 1. Anticipated completion in 2023.
- **Phase 2:** Consist of Apartment Building 2 (20-storey and 222 units) which is located to the west of Building 1, and the Simcoe Street Extension to Eccles Street. Anticipated completion in 2024.
- **Phase 3:** Consist of Apartment Building 3 (10-storey and 144 units) which is located at the western limits of the property. Anticipated completion in 2025.

Our proposed scope of work will incorporate the procedures set out in the Traffic Impact Study Requirements (Appendix 2) of the *"City of Barrie Urban Design Manual (2014)"*. Additionally, the study will incorporate the vision of the *"City of Barrie Multi-Modal Active Transportation Master Plan (MMATMP)"*. To prepare the TIS, we will:

- Commission traffic counts and analyze the 2019 existing traffic operations for the Weekday a.m., and Weekday p.m. peak hours at the proposed study intersections listed below:
 - Bradford Street and Simcoe Street
 - Dunlop Street and Eccles Street
 - Dunlop Street and High Street/Bradford Street
 - Simcoe Street Extension and Eccles Street/Perry Street (**only future analysis**)
- Given the development implementation phases, study horizon years for each phase as well as five years from full buildout have been selected for the analysis (*i.e.* 2023, 2024, 2025 and 2030 horizon years).
- Forecast the future background traffic volumes (excludes site generated trips) for the 2023, 2024, 2025 and 2030 horizon years. The forecast will be as follows:
 - Grow the through traffic volumes at a 1% annual growth rate.
 - Incorporate traffic from background developments. The following future developments have been identified;
 - The Barrie 5 Points (2–14 Dunlop Street West, 43 & 45 Maple Avenue, 30–42 Bayfield Street) for 20-storey apartment building with 208 residential condominium units.
 - 185-205 Dunlop Street East for Mixed use 11 storey building with 193 residential condominium units and ground floor commercial.
 - Reroute 10% of trips from the intersection of Dunlop Street at High Street/Bradford Street through the Simcoe Street Extension in the 2024 horizon year and beyond.
- Forecast the development trips and assign to boundary road network as follows:
 - Use the *Institute of Transportation Engineers' (ITE - 10th edition)* data to generate the development trips.
 - Apply a modal split trip reduction of 15% to account for the Barrie GO Station (350 m from the site) and the presence of several Barrie transit routes near the development.
 - Assign trips to the boundary road network using a combination of Transportation Tomorrow Survey (TTS) data and the existing travel pattern.
- Analyze the total traffic operations (includes site generated trips) for the study horizon years. All analysis will be conducted using *Synchro (Version 10)* modelling software.
- Compare the future background and total traffic operations to identify if capacity issues are forecast to occur per the development proposal herein and recommend mitigation measures if required.

- Review the proposed site accesses from a safety perspective with regards to driver sight lines, intersection spacing, access configuration, and corner clearance.
- Document all analysis and recommendations regarding the findings of the study to maintain acceptable operations of the boundary road network.

I hope this scope is acceptable. Please provide your feedback and confirm that the background developments are sufficient. Additionally, we will appreciate if you can provide us with the Traffic Impact Study reports for these background developments.

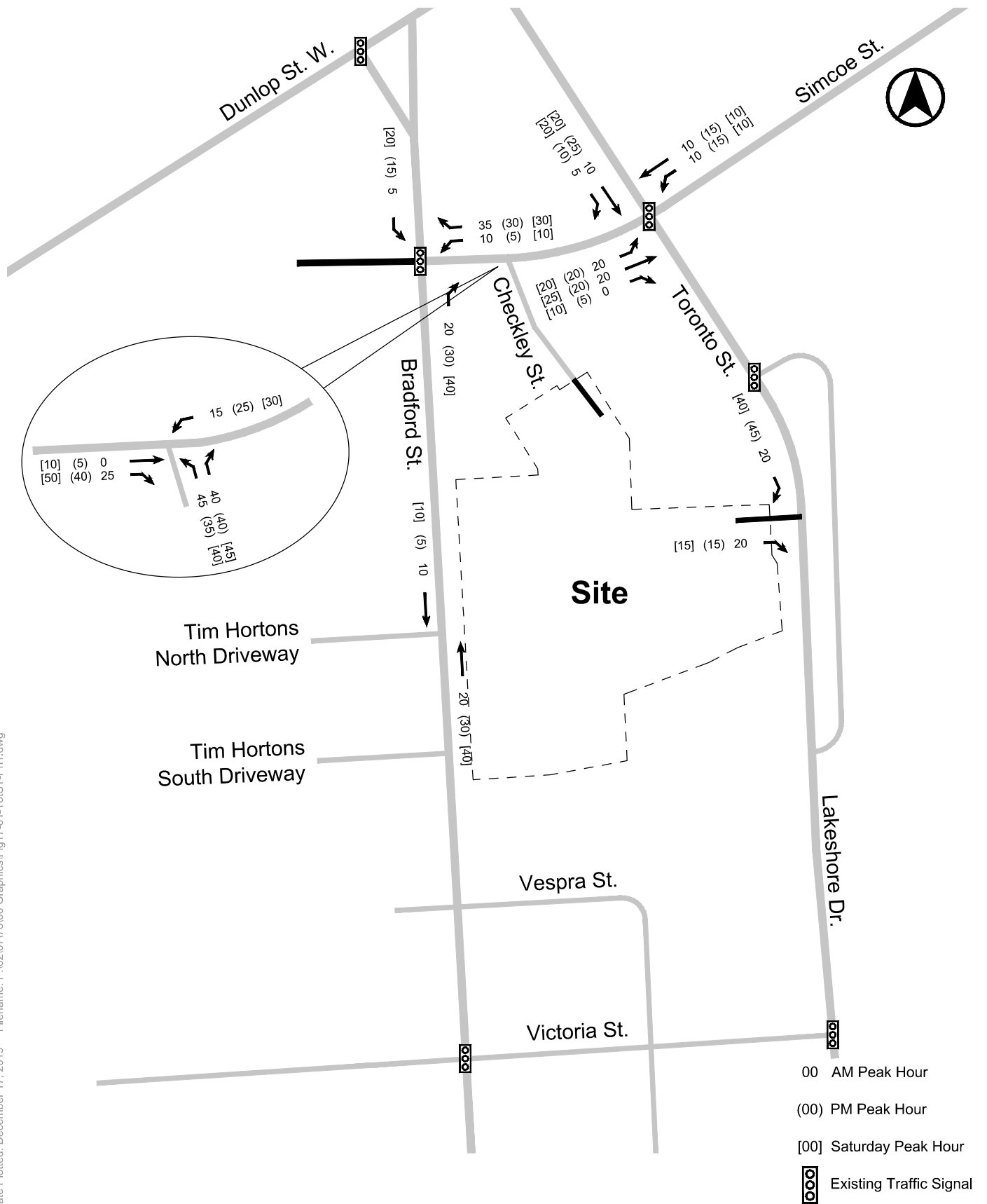
Regards,

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APPENDIX B

BACKGROUND DEVELOPMENT EXCERPTS



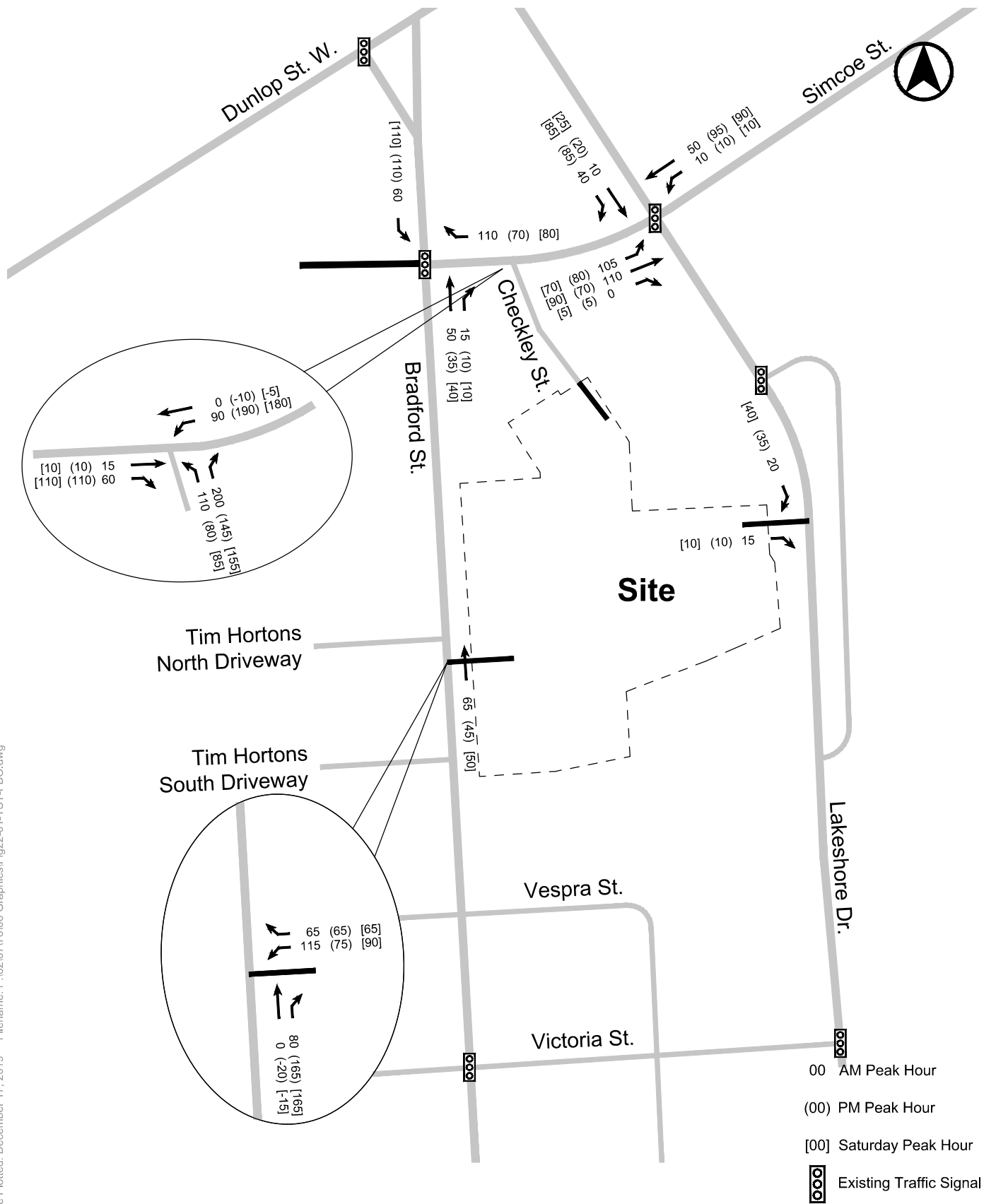
TOTAL SITE TRAFFIC VOLUMES - PHASE 1



BA Group

51-75 BRADFORD STREET AND 20 CHECKLEY STREET
6207-76 December 2019

Figure 17



TOTAL SITE TRAFFIC VOLUMES - FULL BUILD-OUT



BA Group

51-75 BRADFORD STREET AND 20 CHECKLEY STREET
6207-76 December 2019

Figure 22

The distribution of traffic entering at each site access driveway is based on our review of the internal parking and building layout, in conjunction with the external traffic distribution.

Using the traffic distribution patterns noted above, the residential and health and fitness club traffic assignments for the proposed development was calculated for the AM and PM peak hour and is illustrated in **Figures 1 and 2**, respectively.

Figure 1 – Proposed Development – Residential Traffic Assignment

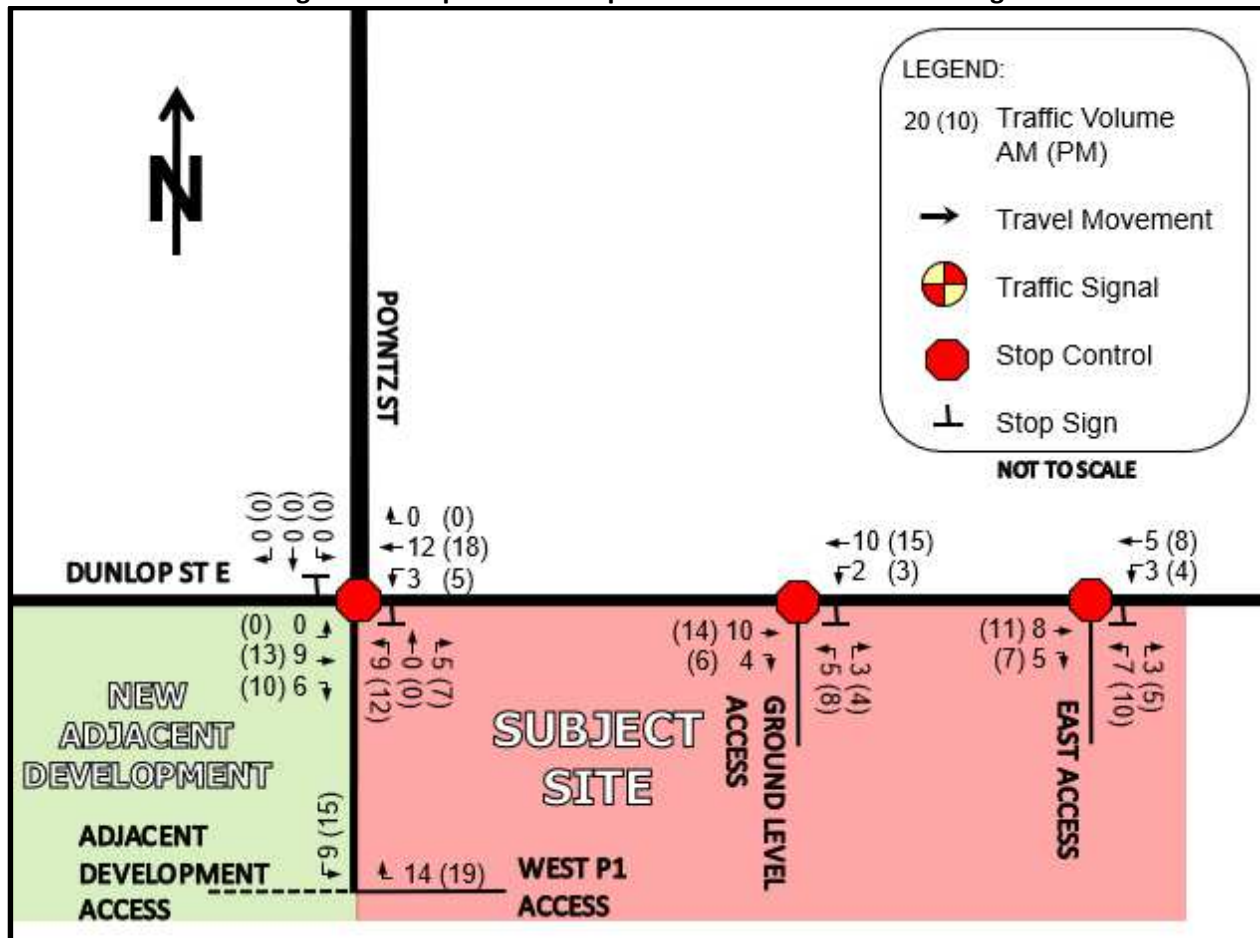
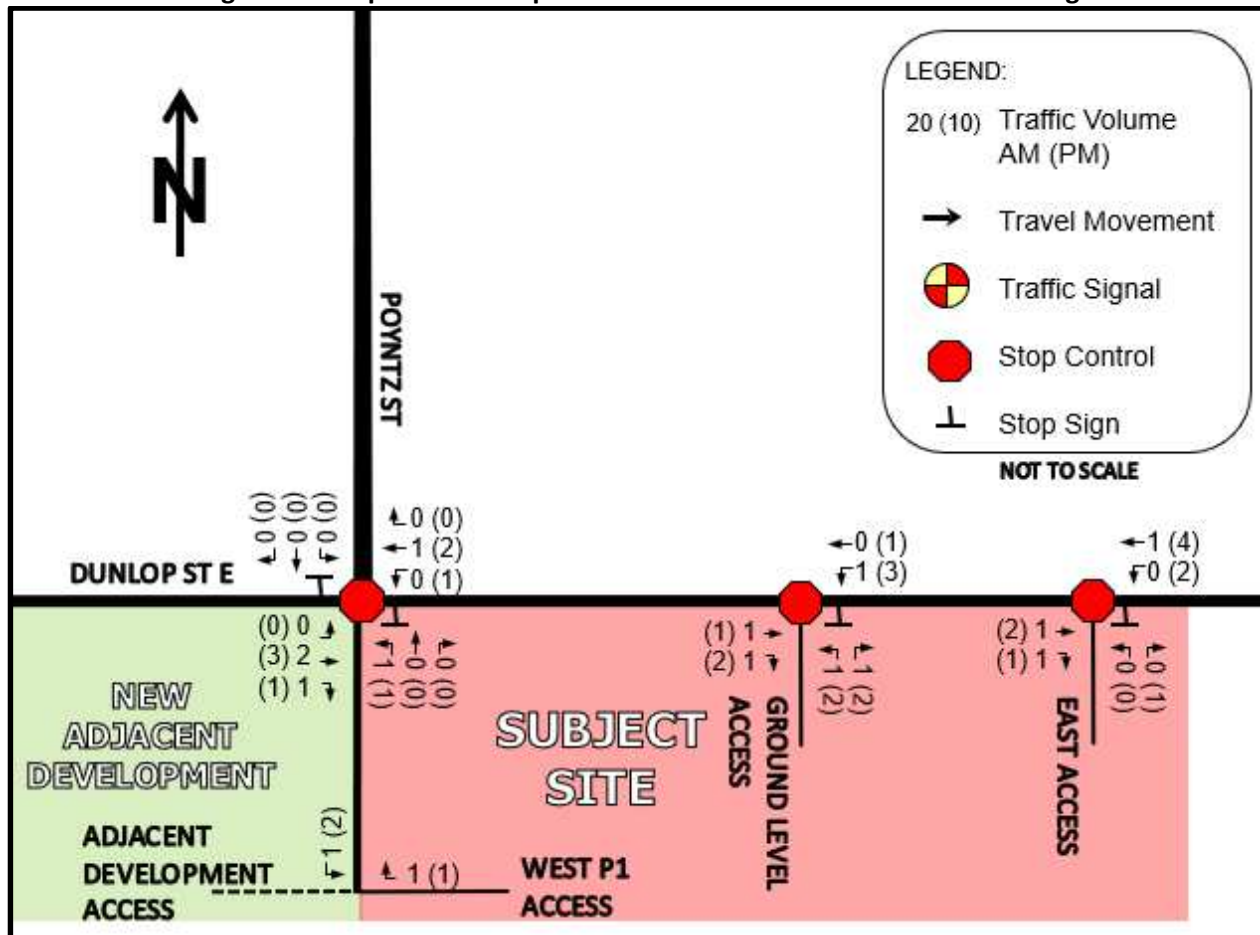


Figure 2 – Proposed Development – Health and Fitness Club Traffic Assignment

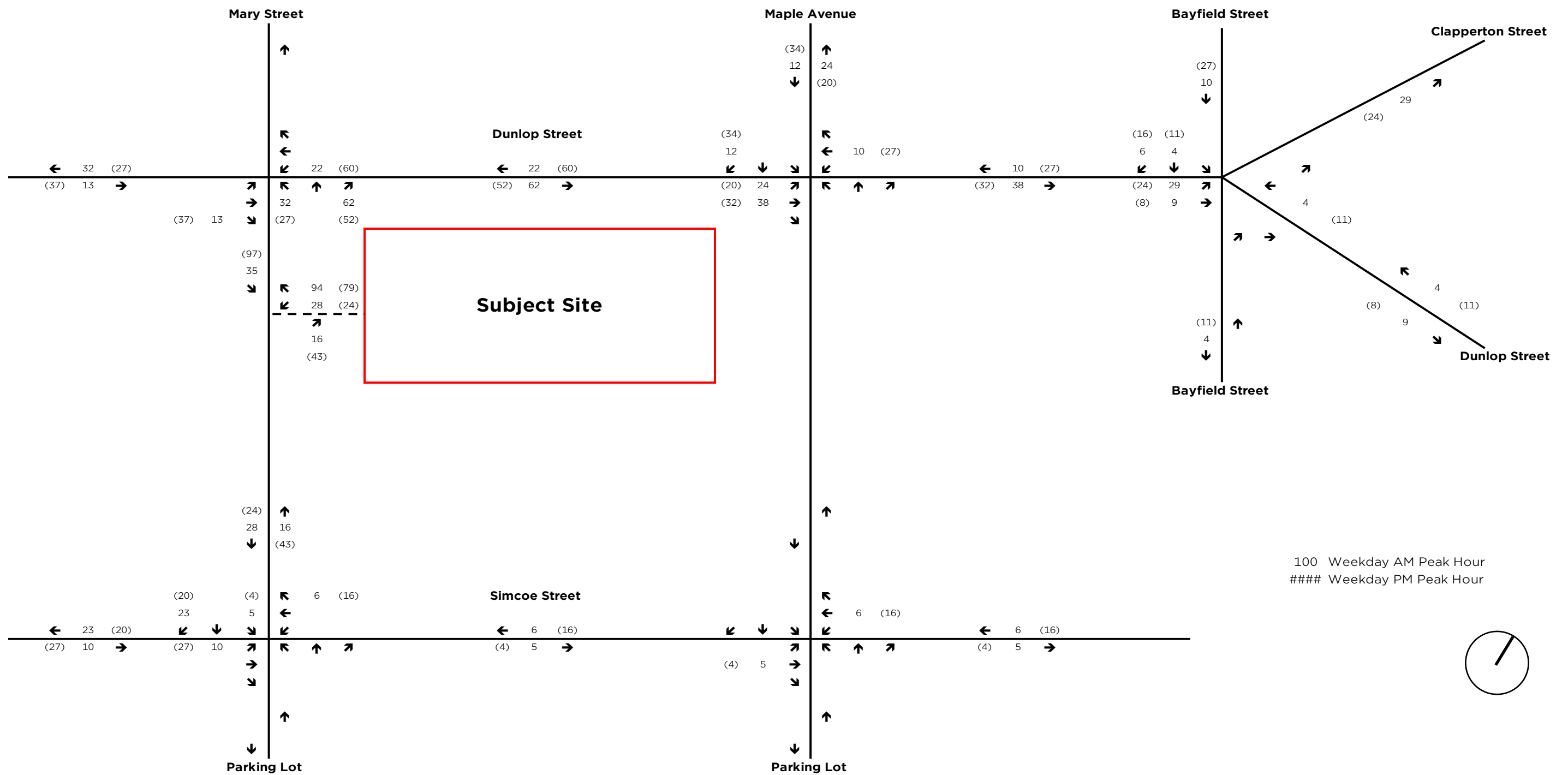


4.0 NEW ADJACENT DEVELOPMENT TRAFFIC GENERATION

The New Adjacent Development includes 130 hotel rooms, 136 condominium units and 500 sq.m. of commercial space. It has been assumed that this development will be occupied prior to the 2027 horizon year.

A traffic impact study is not available for the New Adjacent Development. The traffic generation for the New Adjacent Development has been calculated based on the data provided in the ITE Trip Generation Manual. The following ITE land uses have been applied to estimate the traffic from the New Adjacent Development:

- ITE land use 231 (Mid-Rise Residential with 1st-Floor Commercial) –
 - Dense Multi-Use Urban Setting
- ITE land use 310 (Hotel) – General Urban/Suburban Setting



BARRIE WATERFRONT DEVELOPMENTS
 Figure 10: Site Traffic



APPENDIX C

Traffic Data



Turning Movement Count (1 . BRADFORD ST & SIMCOE ST)

Start Time	N Approach BRADFORD ST					E Approach SIMCOE ST					S Approach BRADFORD ST					Int. Total (15 min)		Int. Total (1 hr)	
	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	U-Turn S:S	Peds S:	Approach Total				
07:00:00	25	1	0	0	26	1	32	0	3	33	23	37	0	0	60	119			
07:15:00	26	2	0	0	28	5	53	0	0	58	19	27	0	0	46	132			
07:30:00	35	4	0	0	39	3	43	0	1	46	34	42	0	1	76	161			
07:45:00	41	6	0	1	47	2	55	0	1	57	44	43	0	0	87	191		603	
08:00:00	30	5	0	0	35	7	45	0	2	52	47	60	0	0	107	194		678	
08:15:00	40	2	0	0	42	6	50	0	1	56	52	65	0	0	117	215		761	
08:30:00	46	6	0	2	52	11	53	0	3	64	51	45	0	0	96	212		812	
08:45:00	51	11	0	2	62	12	54	0	4	66	71	63	0	1	134	262		883	
09:00:00	32	11	0	0	43	10	63	0	5	73	48	62	0	1	110	226		915	
09:15:00	39	14	0	1	53	8	50	0	4	58	41	68	0	1	109	220		920	
09:30:00	47	11	0	0	58	6	42	0	7	48	31	63	0	0	94	200		908	
09:45:00	42	8	0	2	50	6	46	0	5	52	46	59	0	1	105	207		853	
BREAK																			
15:00:00	49	7	0	0	56	10	63	0	6	73	50	84	0	3	134	263			
15:15:00	39	6	0	2	45	12	59	0	4	71	48	71	0	1	119	235			
15:30:00	60	6	0	1	66	14	64	0	0	78	57	71	0	0	128	272			
15:45:00	56	17	0	4	73	12	76	0	5	88	54	70	0	0	124	285		1055	
16:00:00	40	19	0	0	59	10	65	0	7	75	77	104	0	1	181	315		1107	
16:15:00	56	11	0	1	67	7	125	0	6	132	73	101	0	2	174	373		1245	
16:30:00	72	9	0	0	81	13	76	0	7	89	67	90	0	2	157	327		1300	
16:45:00	71	12	0	1	83	4	90	0	4	94	65	87	0	2	152	329		1344	
17:00:00	66	7	0	1	73	16	100	0	5	116	85	87	0	0	172	361		1390	
17:15:00	76	12	0	8	88	11	87	0	10	98	64	78	0	3	142	328		1345	
17:30:00	48	7	0	3	55	12	94	0	7	106	78	82	0	1	160	321		1339	



17:45:00	39	7	0	2	46	12	71	0	8	83	43	68	0	1	111	240	1250
18:00:00	45	15	0	2	60	13	45	0	4	58	45	64	0	0	109	227	1116
18:15:00	41	6	0	2	47	7	47	0	5	54	39	63	0	1	102	203	991
18:30:00	28	2	0	0	30	7	30	0	8	37	42	66	0	2	108	175	845
18:45:00	39	6	0	0	45	6	69	0	5	75	46	63	0	1	109	229	834
Grand Total	1279	230	0	35	1509	243	1747	0	127	1990	1440	1883	0	25	3323	6822	-
Approach%	84.8%	15.2%	0%	-	-	12.2%	87.8%	0%	-	-	43.3%	56.7%	0%	-	-	-	-
Totals %	18.7%	3.4%	0%	22.1%	-	3.6%	25.6%	0%	29.2%	-	21.1%	27.6%	0%	48.7%	-	-	-
Heavy	1	1	0	-	-	0	1	0	-	-	0	2	0	-	-	-	-
Heavy %	0.1%	0.4%	0%	-	-	0%	0.1%	0%	-	-	0%	0.1%	0%	-	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 08:30 AM - 09:30 AM Weather: Scattered Clouds (0.78 °C)

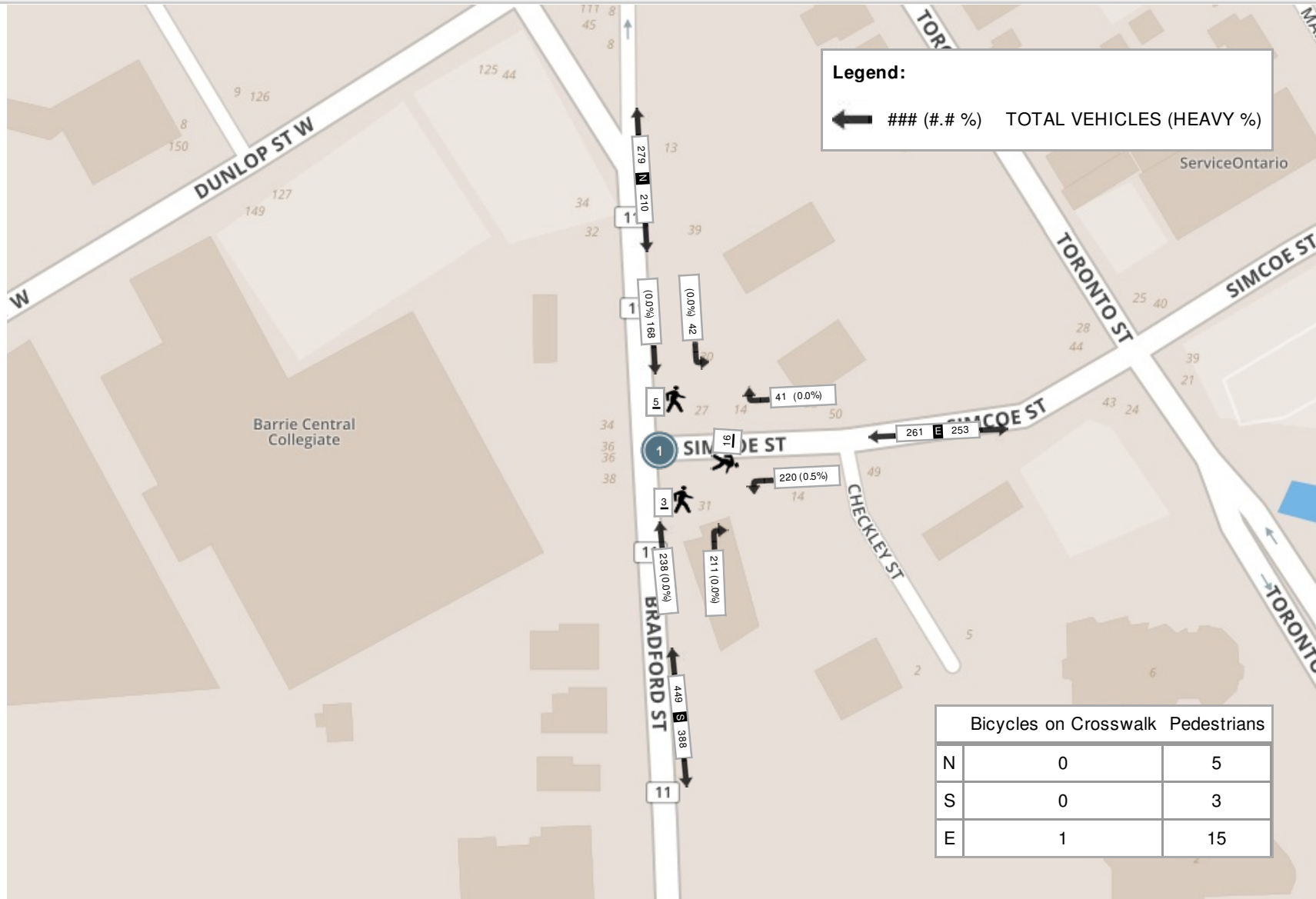
Start Time	N Approach BRADFORD ST					E Approach SIMCOE ST					S Approach BRADFORD ST					Int. Total (15 min)
	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	
08:30:00	46	6	0	2	52	11	53	0	3	64	51	45	0	0	96	212
08:45:00	51	11	0	2	62	12	54	0	4	66	71	63	0	1	134	262
09:00:00	32	11	0	0	43	10	63	0	5	73	48	62	0	1	110	226
09:15:00	39	14	0	1	53	8	50	0	4	58	41	68	0	1	109	220
Grand Total	168	42	0	5	210	41	220	0	16	261	211	238	0	3	449	920
Approach%	80%	20%	0%		-	15.7%	84.3%	0%		-	47%	53%	0%		-	-
Totals %	18.3%	4.6%	0%		22.8%	4.5%	23.9%	0%		28.4%	22.9%	25.9%	0%		48.8%	-
PHF	0.82	0.75	0		0.85	0.85	0.87	0		0.89	0.74	0.88	0		0.84	-
Heavy	0	0	0		0	0	1	0		1	0	0	0		0	-
Heavy %	0%	0%	0%		0%	0%	0.5%	0%		0.4%	0%	0%	0%		0%	-
Lights	164	41	0		205	40	208	0		248	198	230	0		428	-
Lights %	97.6%	97.6%	0%		97.6%	97.6%	94.5%	0%		95%	93.8%	96.6%	0%		95.3%	-
Mediums	4	1	0		5	1	11	0		12	13	8	0		21	-
Mediums %	2.4%	2.4%	0%		2.4%	2.4%	5%	0%		4.6%	6.2%	3.4%	0%		4.7%	-
Articulated Trucks	0	0	0		0	0	1	0		1	0	0	0		0	-
Articulated Trucks %	0%	0%	0%		0%	0%	0.5%	0%		0.4%	0%	0%	0%		0%	-
Pedestrians	-	-	-	5	-	-	-	-	15	-	-	-	-	3	-	-
Pedestrians%	-	-	-	20.8%	-	-	-	-	62.5%	-	-	-	-	12.5%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	4.2%	-	-	-	-	0%	-	-



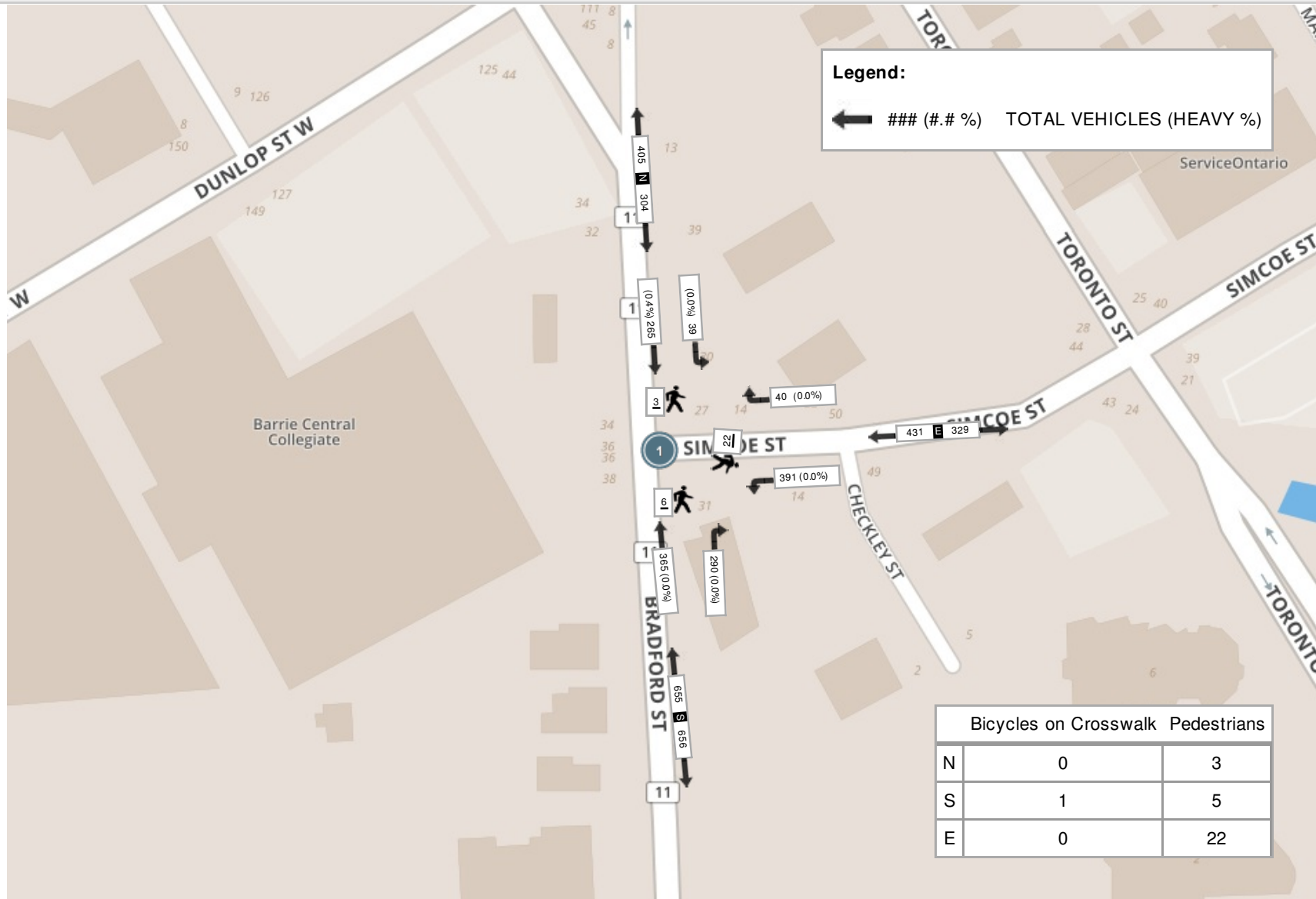
Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)

Start Time	N Approach BRADFORD ST					E Approach SIMCOE ST					S Approach BRADFORD ST					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	56	11	0	1	67	7	125	0	6	132	73	101	0	2	174	373
16:30:00	72	9	0	0	81	13	76	0	7	89	67	90	0	2	157	327
16:45:00	71	12	0	1	83	4	90	0	4	94	65	87	0	2	152	329
17:00:00	66	7	0	1	73	16	100	0	5	116	85	87	0	0	172	361
Grand Total	265	39	0	3	304	40	391	0	22	431	290	365	0	6	655	1390
Approach%	87.2%	12.8%	0%		-	9.3%	90.7%	0%		-	44.3%	55.7%	0%		-	-
Totals %	19.1%	2.8%	0%		21.9%	2.9%	28.1%	0%		31%	20.9%	26.3%	0%		47.1%	-
PHF	0.92	0.81	0		0.92	0.63	0.78	0		0.82	0.85	0.9	0		0.94	-
Heavy	1	0	0		1	0	0	0		0	0	0	0		0	-
Heavy %	0.4%	0%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	-
Lights	263	38	0		301	40	376	0		416	283	364	0		647	-
Lights %	99.2%	97.4%	0%		99%	100%	96.2%	0%		96.5%	97.6%	99.7%	0%		98.8%	-
Mediums	1	1	0		2	0	15	0		15	7	1	0		8	-
Mediums %	0.4%	2.6%	0%		0.7%	0%	3.8%	0%		3.5%	2.4%	0.3%	0%		1.2%	-
Articulated Trucks	1	0	0		1	0	0	0		0	0	0	0		0	-
Articulated Trucks %	0.4%	0%	0%		0.3%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	3	-	-	-	-	22	-	-	-	-	5	-	-
Pedestrians%	-	-	-	9.7%	-	-	-	-	71%	-	-	-	-	16.1%	-	-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	3.2%	-	-

Peak Hour: 08:30 AM - 09:30 AM Weather: Scattered Clouds (0.78 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)





Turning Movement Count (2 . DUNLOP ST & ECCLES ST)

Start Time	N Approach ECCLES ST						E Approach DUNLOP ST						S Approach ECCLES ST						W Approach DUNLOP ST						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total			
07:00:00	14	21	0	0	1	35	2	52	6	0	1	60	5	11	0	0	3	16	3	34	3	0	1	40	151		
07:15:00	12	28	3	0	0	43	2	40	11	0	0	53	5	8	2	0	2	15	2	34	3	0	1	39	150		
07:30:00	10	38	10	0	2	58	3	62	8	0	0	73	7	21	4	0	1	32	1	48	2	0	0	51	214		
07:45:00	15	33	5	0	0	53	4	59	6	0	0	69	7	24	2	0	1	33	2	57	3	0	0	62	217	732	
08:00:00	10	33	4	0	2	47	4	60	15	0	0	79	8	11	4	0	1	23	6	72	4	0	0	82	231	812	
08:15:00	5	23	4	0	2	32	7	58	5	0	1	70	8	12	5	0	0	25	4	64	2	0	0	70	197	859	
08:30:00	8	28	6	0	1	42	6	64	12	0	0	82	9	27	2	0	4	38	2	73	10	0	0	85	247	892	
08:45:00	14	29	2	0	0	45	4	67	7	0	0	78	8	30	2	0	1	40	5	121	12	0	0	138	301	976	
09:00:00	12	29	9	0	2	50	13	59	13	0	1	85	11	33	2	0	2	46	4	93	5	0	0	102	283	1028	
09:15:00	8	20	11	0	0	39	6	81	8	0	1	95	10	25	1	0	1	36	0	86	8	0	0	94	264	1095	
09:30:00	8	35	8	0	1	51	4	73	13	0	0	90	6	26	6	0	4	38	2	74	4	0	0	80	259	1107	
09:45:00	14	33	12	0	1	59	7	59	9	0	1	75	13	29	3	0	2	45	6	66	6	0	5	78	257	1063	
BREAK																											
15:00:00	15	32	9	0	4	56	13	96	14	0	3	123	14	52	8	0	2	74	9	98	8	0	1	115	368		
15:15:00	8	43	12	0	4	63	6	90	17	0	1	113	12	43	6	0	4	61	7	82	9	0	2	98	335		
15:30:00	18	40	11	0	2	69	10	98	10	0	0	118	14	48	14	0	6	76	10	78	13	0	1	101	364		
15:45:00	12	29	10	0	3	51	8	103	9	0	0	120	16	50	5	0	2	71	8	108	14	0	1	130	372	1439	
16:00:00	12	53	12	0	2	77	9	98	16	0	1	123	16	43	8	0	5	67	5	105	12	0	2	122	389	1460	
16:15:00	8	49	13	0	5	70	13	91	12	0	3	116	24	60	2	0	4	86	4	94	15	0	1	113	385	1510	
16:30:00	11	47	8	0	1	66	6	115	11	0	1	132	21	76	9	0	4	106	5	103	21	0	0	129	433	1579	
16:45:00	9	45	11	0	0	65	12	85	13	0	1	110	15	59	6	0	5	80	5	111	14	0	2	130	385	1592	
17:00:00	14	43	8	0	3	65	8	114	15	0	0	137	22	52	5	0	2	79	3	100	14	0	0	117	398	1601	
17:15:00	11	48	13	0	13	72	10	92	18	0	2	120	18	42	9	0	2	69	5	96	14	0	0	115	376	1592	
17:30:00	7	29	12	0	5	48	8	89	7	0	4	104	12	30	10	0	8	52	4	95	10	0	0	109	313	1472	
17:45:00	7	20	8	0	5	35	5	90	6	0	2	101	10	27	2	0	8	39	2	85	6	0	1	93	268	1355	
18:00:00	11	19	16	0	3	46	3	83	6	0	2	92	12	24	7	0	6	43	4	82	9	0	0	95	276	1233	
18:15:00	7	17	9	0	4	33	8	66	14	0	0	88	7	19	3	0	4	29	0	98	13	0	1	111	261	1118	
18:30:00	7	28	7	0	3	42	9	79	11	0	0	99	5	33	3	0	1	41	3	74	12	1	0	90	272	1077	
18:45:00	5	24	5	0	3	34	7	75	6	0	1	88	6	22	3	0	1	31	3	89	2	0	1	94	247	1056	
Grand Total	292	916	238	0	72	1446	197	2198	298	0	26	2693	321	937	133	0	86	1391	114	2320	248	1	20	2683	8213	-	
Approach%	20.2%	63.3%	16.5%	0%	-	-	7.3%	81.6%	11.1%	0%	-	-	23.1%	67.4%	9.6%	0%	-	-	4.2%	86.5%	9.2%	0%	-	-	-	-	



Turning Movement Count
Location Name: DUNLOP ST & ECCLES ST
Date: Thu, Apr 25, 2019 Deployment Lead: David Chu

Crozier & Associates

Totals %	3.6%	11.2%	2.9%	0%	17.6%	2.4%	26.8%	3.6%	0%	32.8%	3.9%	11.4%	1.6%	0%	16.9%	1.4%	28.2%	3%	0%	32.7%	-	-
Heavy	1	2	0	0	-	0	5	0	0	-	0	1	2	0	-	2	5	0	0	-	-	-
Heavy %	0.3%	0.2%	0%	0%	-	0%	0.2%	0%	0%	-	0%	0.1%	1.5%	0%	-	1.8%	0.2%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 08:45 AM - 09:45 AM Weather: Scattered Clouds (0.78 °C)

Start Time	N Approach ECCLES ST						E Approach DUNLOP ST						S Approach ECCLES ST						W Approach DUNLOP ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:45:00	14	29	2	0	0	45	4	67	7	0	0	78	8	30	2	0	1	40	5	121	12	0	0	138	301
09:00:00	12	29	9	0	2	50	13	59	13	0	1	85	11	33	2	0	2	46	4	93	5	0	0	102	283
09:15:00	8	20	11	0	0	39	6	81	8	0	1	95	10	25	1	0	1	36	0	86	8	0	0	94	264
09:30:00	8	35	8	0	1	51	4	73	13	0	0	90	6	26	6	0	4	38	2	74	4	0	0	80	259
Grand Total	42	113	30	0	3	185	27	280	41	0	2	348	35	114	11	0	8	160	11	374	29	0	0	414	1107
Approach%	22.7%	61.1%	16.2%	0%	-	-	7.8%	80.5%	11.8%	0%	-	-	21.9%	71.3%	6.9%	0%	-	-	2.7%	90.3%	7%	0%	-	-	-
Totals %	3.8%	10.2%	2.7%	0%	16.7%	2.4%	25.3%	3.7%	0%	31.4%	3.2%	10.3%	1%	0%	14.5%	1%	33.8%	2.6%	0%	37.4%	-	-	-	-	-
PHF	0.75	0.81	0.68	0	0.91	0.52	0.86	0.79	0	0.92	0.8	0.86	0.46	0	0.87	0.55	0.77	0.6	0	0.75	-	-	-	-	-
Heavy	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	2	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	0.5%	-
Lights	41	113	30	0	184	27	268	38	0	333	31	111	11	0	153	11	362	29	0	402	-	-	-	-	-
Lights %	97.6%	100%	100%	0%	99.5%	100%	95.7%	92.7%	0%	95.7%	88.6%	97.4%	100%	0%	95.6%	100%	96.8%	100%	0%	97.1%	-	-	-	-	-
Mediums	1	0	0	0	1	0	11	3	0	14	4	3	0	0	7	0	10	0	0	10	-	-	-	-	-
Mediums %	2.4%	0%	0%	0%	0.5%	0%	3.9%	7.3%	0%	4%	11.4%	2.6%	0%	0%	4.4%	0%	2.7%	0%	0%	2.4%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.4%	0%	0%	0.3%	0%	0%	0%	0%	0%	0%	0.5%	0%	0%	0.5%	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	2	-	-	-	-	8	-	-	-	-	0	-	-	-	-	-
Pedestrians%	-	-	-	-	23.1%	-	-	-	-	15.4%	-	-	-	-	61.5%	-	-	-	-	0%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)

Start Time	N Approach ECCLES ST						E Approach DUNLOP ST						S Approach ECCLES ST						W Approach DUNLOP ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	8	49	13	0	5	70	13	91	12	0	3	116	24	60	2	0	4	86	4	94	15	0	1	113	385
16:30:00	11	47	8	0	1	66	6	115	11	0	1	132	21	76	9	0	4	106	5	103	21	0	0	129	433
16:45:00	9	45	11	0	0	65	12	85	13	0	1	110	15	59	6	0	5	80	5	111	14	0	2	130	385
17:00:00	14	43	8	0	3	65	8	114	15	0	0	137	22	52	5	0	2	79	3	100	14	0	0	117	398
Grand Total	42	184	40	0	9	266	39	405	51	0	5	495	82	247	22	0	15	351	17	408	64	0	3	489	1601
Approach%	15.8%	69.2%	15%	0%		-	7.9%	81.8%	10.3%	0%		-	23.4%	70.4%	6.3%	0%		-	3.5%	83.4%	13.1%	0%		-	-
Totals %	2.6%	11.5%	2.5%	0%		16.6%	2.4%	25.3%	3.2%	0%		30.9%	5.1%	15.4%	1.4%	0%		21.9%	1.1%	25.5%	4%	0%		30.5%	-
PHF	0.75	0.94	0.77	0		0.95	0.75	0.88	0.85	0		0.9	0.85	0.81	0.61	0		0.83	0.85	0.92	0.76	0		0.94	-
Heavy	1	0	0	0		1	0	1	0	0		1	0	0	1	0		1	0	0	0	0		0	-
Heavy %	2.4%	0%	0%	0%		0.4%	0%	0.2%	0%	0%		0.2%	0%	0%	4.5%	0%		0.3%	0%	0%	0%	0%		0%	-
Lights	41	181	40	0		262	39	389	49	0		477	78	244	21	0		343	16	399	64	0		479	-
Lights %	97.6%	98.4%	100%	0%		98.5%	100%	96%	96.1%	0%		96.4%	95.1%	98.8%	95.5%	0%		97.7%	94.1%	97.8%	100%	0%		98%	-
Mediums	0	3	0	0		3	0	15	2	0		17	4	3	0	0		7	1	9	0	0		10	-
Mediums %	0%	1.6%	0%	0%		1.1%	0%	3.7%	3.9%	0%		3.4%	4.9%	1.2%	0%	0%		2%	5.9%	2.2%	0%	0%		2%	-
Articulated Trucks	1	0	0	0		1	0	1	0	0		1	0	0	1	0		1	0	0	0	0		0	-
Articulated Trucks %	2.4%	0%	0%	0%		0.4%	0%	0.2%	0%	0%		0.2%	0%	0%	4.5%	0%		0.3%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	5	-	-	-	-	-	13	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	25%	-	-	-	-	-	15.6%	-	-	-	-	-	40.6%	-	-	-	-	-	9.4%	-	-
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	3.1%	-	-	-	-	-	0%	-	-	-	-	-	6.3%	-	-	-	-	-	0%	-	-

Peak Hour: 08:45 AM - 09:45 AM Weather: Scattered Clouds (0.78 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)





Turning Movement Count (3 . DUNLOP ST & HIGH ST / BRADFORD ST)

Start Time	N Approach HIGH ST						E Approach DUNLOP ST						S Approach BRADFORD ST						W Approach DUNLOP ST						Int. Total (15 min)	Int. Total (1 hr)	
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total			
07:00:00	1	3	0	0	2	4	4	47	14	0	5	65	24	5	10	0	5	39	13	27	3	0	0	43	151		
07:15:00	4	2	3	0	3	9	0	35	16	0	3	51	18	3	7	0	3	28	15	30	5	0	2	50	138		
07:30:00	2	7	3	0	2	12	2	56	16	0	3	74	22	7	16	0	4	45	18	46	1	0	1	65	196		
07:45:00	2	9	3	0	2	14	4	63	20	0	5	87	24	10	11	0	6	45	20	59	2	0	0	81	227	712	
08:00:00	4	9	2	0	5	15	3	48	12	0	2	63	32	11	18	0	3	61	20	64	3	0	3	87	226	787	
08:15:00	2	8	2	0	5	12	2	48	17	0	4	67	34	16	17	0	2	67	22	73	2	0	4	97	243	892	
08:30:00	3	8	1	0	2	12	2	59	26	0	5	87	30	15	16	0	3	61	25	66	4	0	6	95	255	951	
08:45:00	4	9	1	0	6	14	3	57	23	0	5	83	41	13	17	0	6	71	38	86	4	0	3	128	296	1020	
09:00:00	1	9	5	0	2	15	6	63	16	0	3	85	31	14	23	0	2	68	27	92	4	0	4	123	291	1085	
09:15:00	1	8	2	0	2	11	3	64	17	0	5	84	29	15	25	0	5	69	32	75	4	0	8	111	275	1117	
09:30:00	1	14	1	0	6	16	3	69	15	0	5	87	34	16	15	0	4	65	31	62	4	0	5	97	265	1127	
09:45:00	1	13	2	0	6	16	1	57	23	0	5	81	28	6	20	0	6	54	18	75	4	0	6	97	248	1079	
BREAK																											
15:00:00	1	12	2	0	2	15	6	80	24	0	5	110	39	23	35	0	4	97	22	100	3	0	3	125	347		
15:15:00	6	14	5	0	8	25	8	85	16	0	4	109	33	22	23	0	7	78	21	86	2	0	3	109	321		
15:30:00	4	15	3	0	5	22	2	85	32	0	1	119	42	17	30	0	4	89	17	93	2	0	4	112	342		
15:45:00	1	12	2	0	6	15	7	89	30	0	4	126	38	14	30	0	8	82	28	110	0	0	3	138	361	1371	
16:00:00	3	12	3	0	9	18	1	71	27	0	6	99	44	27	41	0	5	112	23	102	2	0	6	127	356	1380	
16:15:00	5	13	7	0	11	25	6	76	21	0	2	103	47	31	36	0	5	114	24	107	2	0	5	133	375	1434	
16:30:00	2	22	1	0	5	25	5	82	31	0	3	118	35	28	39	0	11	102	25	94	0	0	2	119	364	1456	
16:45:00	3	21	4	0	14	28	5	68	37	0	2	110	44	26	27	0	6	97	26	123	4	0	7	153	388	1483	
17:00:00	5	26	1	0	9	32	7	102	25	0	0	134	40	25	45	0	3	110	21	102	0	0	10	123	399	1526	
17:15:00	3	25	1	0	7	29	2	77	27	0	4	106	41	22	29	0	6	92	32	92	2	0	4	126	353	1504	
17:30:00	4	10	4	0	11	18	6	64	22	0	0	92	42	18	31	0	4	91	21	98	7	0	2	126	327	1467	
17:45:00	1	11	5	0	6	17	3	83	11	0	2	97	36	25	24	0	14	85	20	96	1	0	6	117	316	1395	
18:00:00	7	7	3	0	5	17	7	58	24	0	3	89	32	13	30	0	4	75	25	79	4	0	3	108	289	1285	
18:15:00	6	5	3	0	6	14	1	56	17	0	4	74	29	14	27	0	2	70	24	97	1	0	2	122	280	1212	
18:30:00	4	5	1	0	5	10	8	69	14	0	1	91	33	19	17	0	1	69	11	78	5	0	3	94	264	1149	
18:45:00	3	9	2	0	6	14	8	69	17	0	1	94	25	19	21	0	2	65	15	77	3	0	4	95	268	1101	
Grand Total	84	318	72	0	158	474	115	1880	590	0	92	2585	947	474	680	0	135	2101	634	2289	78	0	109	3001	8161	-	
Approach%	17.7%	67.1%	15.2%	0%	-	-	4.4%	72.7%	22.8%	0%	-	-	45.1%	22.6%	32.4%	0%	-	-	21.1%	76.3%	2.6%	0%	-	-	-	-	



Turning Movement Count
Location Name: DUNLOP ST & HIGH ST / BRADFORD ST
Date: Thu, Apr 25, 2019 Deployment Lead: David Chu

Crozier & Associates

Totals %	1%	3.9%	0.9%	0%	5.8%	1.4%	23%	7.2%	0%	31.7%	11.6%	5.8%	8.3%	0%	25.7%	7.8%	28%	1%	0%	36.8%	-	-
Heavy	0	0	0	0	-	0	6	2	0	-	1	0	0	0	-	0	3	0	0	-	-	-
Heavy %	0%	0%	0%	0%	-	0%	0.3%	0.3%	0%	-	0.1%	0%	0%	0%	-	0%	0.1%	0%	0%	-	-	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 08:45 AM - 09:45 AM Weather: Scattered Clouds (0.78 °C)

Start Time	N Approach HIGH ST						E Approach DUNLOP ST						S Approach BRADFORD ST						W Approach DUNLOP ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:45:00	4	9	1	0	6	14	3	57	23	0	5	83	41	13	17	0	6	71	38	86	4	0	3	128	296
09:00:00	1	9	5	0	2	15	6	63	16	0	3	85	31	14	23	0	2	68	27	92	4	0	4	123	291
09:15:00	1	8	2	0	2	11	3	64	17	0	5	84	29	15	25	0	5	69	32	75	4	0	8	111	275
09:30:00	1	14	1	0	6	16	3	69	15	0	5	87	34	16	15	0	4	65	31	62	4	0	5	97	265
Grand Total	7	40	9	0	16	56	15	253	71	0	18	339	135	58	80	0	17	273	128	315	16	0	20	459	1127
Approach%	12.5%	71.4%	16.1%	0%	-	-	4.4%	74.6%	20.9%	0%	-	-	49.5%	21.2%	29.3%	0%	-	-	27.9%	68.6%	3.5%	0%	-	-	-
Totals %	0.6%	3.5%	0.8%	0%	5%	5%	1.3%	22.4%	6.3%	0%	30.1%	30.1%	12%	5.1%	7.1%	0%	24.2%	24.2%	11.4%	28%	1.4%	0%	40.7%	40.7%	-
PHF	0.44	0.71	0.45	0	0.88	0.88	0.63	0.92	0.77	0	0.97	0.97	0.82	0.91	0.8	0	0.96	0.96	0.84	0.86	1	0	0.9	0.9	-
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0%	0.4%	-
Lights	7	40	9	0	56	56	14	240	67	0	321	321	132	58	77	0	267	267	126	298	16	0	440	440	-
Lights %	100%	100%	100%	0%	100%	100%	93.3%	94.9%	94.4%	0%	94.7%	94.7%	97.8%	100%	96.3%	0%	97.8%	97.8%	98.4%	94.6%	100%	0%	95.9%	95.9%	-
Mediums	0	0	0	0	0	0	1	13	4	0	18	18	3	0	3	0	6	6	2	15	0	0	17	17	-
Mediums %	0%	0%	0%	0%	0%	0%	6.7%	5.1%	5.6%	0%	5.3%	5.3%	2.2%	0%	3.8%	0%	2.2%	2.2%	1.6%	4.8%	0%	0%	3.7%	3.7%	-
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0%	0.4%	-
Pedestrians	-	-	-	-	16	-	-	-	-	-	18	-	-	-	-	-	17	-	-	-	-	-	20	-	-
Pedestrians%	-	-	-	-	22.5%	-	-	-	-	-	25.4%	-	-	-	-	-	23.9%	-	-	-	-	-	28.2%	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)

Start Time	N Approach HIGH ST						E Approach DUNLOP ST						S Approach BRADFORD ST						W Approach DUNLOP ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	5	13	7	0	11	25	6	76	21	0	2	103	47	31	36	0	5	114	24	107	2	0	5	133	375
16:30:00	2	22	1	0	5	25	5	82	31	0	3	118	35	28	39	0	11	102	25	94	0	0	2	119	364
16:45:00	3	21	4	0	14	28	5	68	37	0	2	110	44	26	27	0	6	97	26	123	4	0	7	153	388
17:00:00	5	26	1	0	9	32	7	102	25	0	0	134	40	25	45	0	3	110	21	102	0	0	10	123	399
Grand Total	15	82	13	0	39	110	23	328	114	0	7	465	166	110	147	0	25	423	96	426	6	0	24	528	1526
Approach%	13.6%	74.5%	11.8%	0%	-	-	4.9%	70.5%	24.5%	0%	-	-	39.2%	26%	34.8%	0%	-	-	18.2%	80.7%	1.1%	0%	-	-	-
Totals %	1%	5.4%	0.9%	0%	7.2%	1.5%	21.5%	7.5%	0%	30.5%	10.9%	7.2%	9.6%	0%	27.7%	6.3%	27.9%	0.4%	0%	34.6%	-	-	-	-	-
PHF	0.75	0.79	0.46	0	0.86	0.82	0.8	0.77	0	0.87	0.88	0.89	0.82	0	0.93	0.92	0.87	0.38	0	0.86	-	-	-	-	-
Heavy	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Heavy %	0%	0%	0%	0%	0%	0%	0%	0.3%	0.9%	0%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
Lights	15	82	13	0	110	23	312	113	0	448	166	109	147	0	422	94	415	6	0	515	-	-	-	-	-
Lights %	100%	100%	100%	0%	100%	100%	95.1%	99.1%	0%	96.3%	100%	99.1%	100%	0%	99.8%	97.9%	97.4%	100%	0%	97.5%	-	-	-	-	-
Mediums	0	0	0	0	0	0	15	0	0	15	0	1	0	0	1	2	11	0	0	13	-	-	-	-	-
Mediums %	0%	0%	0%	0%	0%	0%	4.6%	0%	0%	3.2%	0%	0.9%	0%	0%	0.2%	2.1%	2.6%	0%	0%	2.5%	-	-	-	-	-
Articulated Trucks	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0.3%	0.9%	0%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-	-	-
Pedestrians	-	-	-	-	39	-	-	-	-	7	-	-	-	-	25	-	-	-	-	24	-	-	-	-	-
Pedestrians%	-	-	-	-	41.1%	-	-	-	-	7.4%	-	-	-	-	26.3%	-	-	-	-	25.3%	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-

Peak Hour: 08:45 AM - 09:45 AM Weather: Scattered Clouds (0.78 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (16.45 °C)



May 16, 2019

File: T07-SI

Peter Apasnore
C.F. Crozier & Associates Consulting Engineers
2800 High Point Drive, Suite 100
Milton, ON L9T 6P4

Dear Mr. Apasnore,

RE: Traffic Signal Timings

With respect to your inquiry on April 30, 2019, attached are the Signal Timings for the following intersections:

- Bradford Street and Simcoe Street
- Dunlop Street and Eccles Street
- Dunlop Street and High Street

The side street phases are actuated; meaning a vehicle or pedestrian must be present on the side street before the side street is given a green indication. Actuation at this intersection occurs in two ways: first, for vehicles a loop detector is imbedded into the roadway at the painted stop bar; and secondly, pushbuttons are located on all corners for pedestrians to activate their movement. Vehicle presence only on the side street would result in a possible green time of between the minimum and maximum times noted below, depending on demand.

Pedestrian "Walk" and "Flashing Don't Walk" times on the side street as noted would be used in the event that the pedestrian push button was activated. Should there be no demand on the actuated phases; the signals would rest in a green indication for the main street.

If you require any further information please feel free to contact me at (705) 739-4220 ext. 4937.

Sincerely,

THE CITY OF BARRIE



Stephen Salis, C.E.T.
Transportation Systems Technologist

Bradford Street & Simcoe Street – FREE PLAN (NO COORDINATION)

Roadway	Direction	Vehicular Indications				Pedestrian Indications	
		Minimum Green	Maximum Green	Amber	All Red	Walk	Flashing Don't Walk
Bradford Street (main street)	Northbound	30	30	4	2	16	14
Bradford Street (main street)	Southbound	30	30	4	2	16	14
Simcoe Street (side street)	Westbound	10	30	4	2	10	15

NOTE: All times are recorded in seconds, based on full demand.

Dunlop Street West & Eccles Street – FREE PLAN (NO COORDINATION)

Roadway	Direction	Vehicular Indications				Pedestrian Indications	
		Minimum Green	Maximum Green	Amber	All Red	Walk	Flashing Don't Walk
Dunlop Street West (main street)	Advanced Eastbound Left Turn	7	7	3	1	N/A	N/A
Dunlop Street West (main street)	Advanced Westbound Left Turn	7	7	3	1	N/A	N/A
Dunlop Street West (main street)	Eastbound	44	44	4	2	28	16
Dunlop Street West (main street)	Westbound	44	44	4	2	28	16
Eccles Street (side street)	Northbound	10	26	4	2	10	16
Eccles Street (side street)	Southbound	10	26	4	2	10	16

NOTE: All times are recorded in seconds, based on full demand.

Dunlop Street West & High Street– FREE PLAN (NO COORDINATION)

Roadway	Direction	Vehicular Indications				Pedestrian Indications	
		Minimum Green	Maximum Green	Amber	All Red	Walk	Flashing Don't Walk
Dunlop Street West (main street)	Advanced Westbound left turn	7	7	3	1	N/A	N/A
Dunlop Street West (main street)	Eastbound	24	24	4	2	12	12
Dunlop Street West (main street)	Westbound	24	24	4	2	12	12
High Street (side street)	Advanced Northbound left turn	7	7	3	1	N/A	N/A
High Street (side street)	Northbound	10	24	4	2	9	12
High Street (side street)	Southbound	10	24	4	2	9	12

NOTE: All times are recorded in seconds, based on full demand.

Dunlop Street West & High Street – AM WEEKDAY PLAN (6:30AM – 9:00AM)

Roadway	Direction	Split Timings (Including Amber + All Red)
Dunlop Street West (main street)	Advanced Westbound left turn	10
Dunlop Street West (main street)	Eastbound	32
Dunlop Street West (main street)	Westbound	42
High Street (side street)	Advanced Northbound left turn	10
High Street (side street)	Northbound	33
High Street (side street)	Southbound	23
Total Cycle Length		75

NOTE: All times are recorded in seconds, based on full demand.

Refer to the FREE PLAN for the Walk and Flashing Don't Walk Timings

Dunlop Street West & High Street – NOON WEEKDAY PLAN (9:00AM – 3:30PM)

Roadway	Direction	Split Timings (Including Amber + All Red)
Dunlop Street West (main street)	Advanced Westbound left turn	20
Dunlop Street West (main street)	Eastbound	36
Dunlop Street West (main street)	Westbound	56
High Street (side street)	Advanced Northbound left turn	11
High Street (side street)	Northbound	34
High Street (side street)	Southbound	23
Total Cycle Length		90

NOTE: All times are recorded in seconds, based on full demand.

Refer to the FREE PLAN for the Walk and Flashing Don't Walk Timings

Dunlop Street West & High Street – PM WEEKDAY PLAN (3:30PM – 9:30PM)

Roadway	Direction	Split Timings (Including Amber + All Red)
Dunlop Street West (main street)	Advanced Westbound left turn	20
Dunlop Street West (main street)	Eastbound	37
Dunlop Street West (main street)	Westbound	57
High Street (side street)	Advanced Northbound left turn	10
High Street (side street)	Northbound	33
High Street (side street)	Southbound	23
Total Cycle Length		90

NOTE: All times are recorded in seconds, based on full demand.

Refer to the FREE PLAN for the Walk and Flashing Don't Walk Timings

Tue Apr 30 2019 13:21:20 GMT-0400 (Eastern Daylight Time) - Run Time: 1709ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig

Column: Primary travel mode of trip - mode_prime

Filters:

(2006 GTA zone of origin - gta06_orig In 8501)

Trip 2016

Table:

Travel Mode	Barrie	Distribution
Transit excluding GO rail	494	3%
Cycle	284	2%
Auto driver	13727	80%
GO rail only	19	0%
Joint GO rail and local trans	10	0%
Motorcycle	41	0%
Other	4	0%
Auto passenger	2247	13%
School bus	20	0%
Taxi passenger	44	0%
Walk	360	2%
Total	17250	100%

Tue Apr 30 2019 13:34:00 GMT-0400 (Eastern Daylight Time) - Run Time: 2122ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest

Column: Primary travel mode of trip - mode_prime

Filters:

(2006 GTA zone of origin - gta06_orig In 8501

and

Primary travel mode of trip - mode_prime In D

and

Start time of trip - start_time In 700-1000)

Trip 2016

Table:

	Auto driver	Distribution
PD 1 of Toronto	9	1%
Scugog	10	1%
Vaughan	52	4%
Hamilton	8	1%
Barrie	1012	77%
Innisfil	31	2%
New Tecumseth	19	1%
Adjala-Tosorontio	9	1%
Springwater	75	6%
Muskoka	7	1%
Grey	21	2%
Penetanguishene	18	1%
Orillia	44	3%
Total	1315	100%

Tue Apr 30 2019 13:31:34 GMT-0400 (Eastern Daylight Time) - Run Time: 2429ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig

Column: Primary travel mode of trip - mode_prime

Filters:

(2006 GTA zone of destination - gta06_dest In 8501

and

Primary travel mode of trip - mode_prime In D

and

Start time of trip - start_time In 700-1000)

Trip 2016

Table:

	Auto driver	Distribution
PD 1 of Toronto	19	0%
PD 6 of Toronto	51	1%
Uxbridge	17	0%
Newmarket	32	1%
Aurora	22	0%
Richmond Hill	40	1%
Cambridge	32	1%
Barrie	2816	55%
Innisfil	309	6%
New Tecumseth	23	0%
Essa	277	5%
Springwater	405	8%
Collingwood	28	1%
Wasaga Beach	121	2%
Tiny	209	4%
Midland	58	1%
Tay	14	0%
Oro-Medonte	282	5%
Severn	61	1%
Ramara	31	1%
Orillia	170	3%
Shelburne	108	2%
Mono	12	0%
Total	5137	100%

Tue Apr 30 2019 13:33:28 GMT-0400 (Eastern Daylight Time) - Run Time: 2046ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest

Column: Primary travel mode of trip - mode_prime

Filters:

(2006 GTA zone of origin - gta06_orig In 8501

and

Primary travel mode of trip - mode_prime In D

and

Start time of trip - start_time In 1500-1900)

Trip 2016

Table:

	Auto driver	Distribution
PD 2 of Toronto	25	0%
PD 4 of Toronto	15	0%
PD 5 of Toronto	33	1%
Uxbridge	17	0%
Scugog	9	0%
Whitby	11	0%
East Gwillimbury	28	0%
Newmarket	32	1%
Aurora	22	0%
Richmond Hill	40	1%
Brampton	12	0%
Mississauga	106	2%
Glanbrook	24	0%
Orangeville	14	0%
Barrie	3779	60%
Innisfil	347	5%
Bradford-West Gwillimbury	5	0%
New Tecumseth	27	0%
Essa	319	5%
Clearview	65	1%
Springwater	371	6%
Kawartha Lakes	20	0%
Collingwood	34	1%
Wasaga Beach	139	2%
Tiny	14	0%
Midland	66	1%
Tay	4	0%
Oro-Medonte	399	6%
Severn	31	0%
Ramara	9	0%
Orillia	193	3%
Grand Valley	108	2%
Total	6318	100%

Tue Apr 30 2019 13:32:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2086ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of origin - pd_orig

Column: Primary travel mode of trip - mode_prime

Filters:

(2006 GTA zone of destination - gta06_dest In 8501

and

Primary travel mode of trip - mode_prime In D

and

Start time of trip - start_time In 1500-1900)

Trip 2016

Table:

	Auto driver	Distribution
PD 1 of Toronto	14	0%
PD 10 of Toronto	45	1%
PD 16 of Toronto	14	0%
Newmarket	11	0%
Richmond Hill	19	1%
Markham	69	2%
Brampton	12	0%
Mississauga	22	1%
Orangeville	62	2%
Barrie	2682	75%
Innisfil	115	3%
Bradford-West Gwillimbury	11	0%
New Tecumseth	41	1%
Adjala-Tosorontio	51	1%
Springwater	114	3%
Grey	21	1%
Wasaga Beach	73	2%
Tiny	10	0%
Penetanguishene	18	1%
Oro-Medonte	7	0%
Severn	12	0%
Orillia	124	3%
External	9	0%
Total	3556	100%

APPENDIX D

Levels of Service (LOS) Definitions

APPENDIX E

Detailed Capacity Analysis

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Level of Service Definitions

Signalized Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	> 10 and ≤ 20	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	> 20 and ≤ 35	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	> 35 and ≤ 55	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	> 55 and ≤ 80	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	> 80	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	48.5	39.5	26.9	34.0	6.1	34.8	26.4	30.2
Average Queue (m)	23.7	13.8	9.3	18.7	1.4	12.1	9.9	10.9
95th Queue (m)	39.9	28.4	19.1	31.5	6.6	23.0	22.6	22.2
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	5				
Queuing Penalty (veh)			0	5				

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	T	T	R	LT	T
Maximum Queue (m)	49.4	11.8	21.8	40.5	17.5	21.6	24.0
Average Queue (m)	24.5	3.0	6.6	15.6	14.0	9.6	9.5
95th Queue (m)	42.9	8.2	17.4	33.3	20.3	18.8	20.3
Link Distance (m)	238.3	238.3	28.0	28.0		48.8	48.8
Upstream Blk Time (%)			0	1			
Queuing Penalty (veh)			0	0			
Storage Bay Dist (m)					10.0		
Storage Blk Time (%)				14	9		
Queuing Penalty (veh)				31	12		

Network Summary

Network wide Queuing Penalty: 48

2022 Existing Traffic AM
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	345	128	71	277	15	80	64	135	9	44	7
Future Volume (vph)	16	345	128	71	277	15	80	64	135	9	44	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3413	0	1805	1900	1615	1805	1900	1615	0	1846	0
Flt Permitted		0.941		0.402			0.656				0.932	
Satd. Flow (perm)	0	3217	0	759	1900	1543	1220	1900	1615	0	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73				102			147			8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	531	0	77	301	16	87	70	147	0	66	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		35.4		41.7	41.0	41.0	16.3	15.8	15.8		10.1	
Actuated g/C Ratio		0.55		0.65	0.64	0.64	0.26	0.25	0.25		0.16	
v/c Ratio		0.29		0.13	0.25	0.02	0.24	0.15	0.29		0.23	
Control Delay		11.2		7.2	8.5	0.0	18.6	18.9	5.4		25.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		11.2		7.2	8.5	0.0	18.6	18.9	5.4		25.3	
LOS		B		A	A	A	B	B	A		C	
Approach Delay		11.2			7.9			12.3			25.3	
Approach LOS		B			A			B			C	
Queue Length 50th (m)		22.4		4.3	20.7	0.0	8.1	6.8	0.0		6.9	
Queue Length 95th (m)		35.1		9.8	35.2	0.0	17.6	15.6	11.7		17.5	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1812		593	1218	1026	369	809	771		469	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2022 Existing Traffic AM
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.29		0.13	0.25	0.02	0.24	0.09	0.19		0.14	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 63.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 11.2

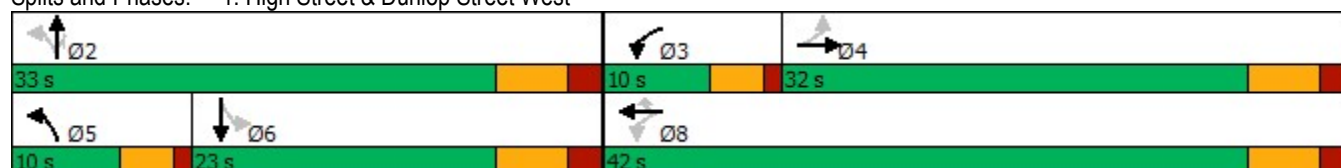
Intersection LOS: B

Intersection Capacity Utilization 67.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2022 Existing Traffic AM
2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	220	41	261	211	42	184
Future Volume (vph)	220	41	261	211	42	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	1615	3610	1615	0	3578
Flt Permitted	0.950					0.862
Satd. Flow (perm)	1782	1588	3610	1577	0	3107
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		45		229		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	3	5		16	16	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	45	284	229	0	246
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	12.8	12.8	30.6	30.6		30.6
Actuated g/C Ratio	0.23	0.23	0.55	0.55		0.55
v/c Ratio	0.58	0.11	0.14	0.24		0.14
Control Delay	24.7	6.6	6.8	2.0		6.9
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	24.7	6.6	6.8	2.0		6.9
LOS	C	A	A	A		A
Approach Delay	21.9		4.7			6.9
Approach LOS	C		A			A
Queue Length 50th (m)	22.1	0.0	6.5	0.0		5.7
Queue Length 95th (m)	40.3	6.1	14.2	8.8		12.6
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	964	880	1992	973		1715
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

8:00 am Baseline

Synchro 10 Report
Page 3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.25	0.05	0.14	0.24		0.14

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 55.5

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.9

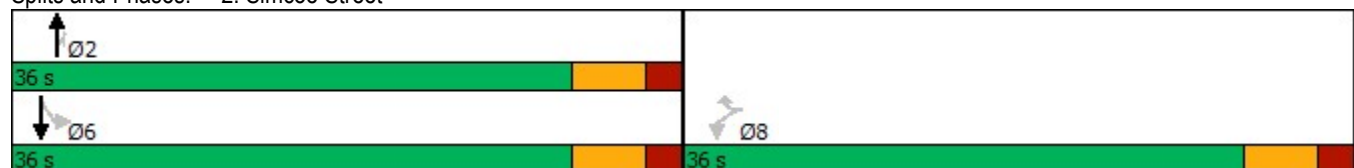
Intersection LOS: A

Intersection Capacity Utilization 60.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	58.6	50.3	37.4	64.2	17.4	45.5	36.7	49.6
Average Queue (m)	32.6	19.4	14.7	25.8	2.1	22.6	18.9	21.1
95th Queue (m)	54.3	41.8	30.3	50.3	9.6	39.5	33.8	38.9
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	9	0			
Queuing Penalty (veh)			1	13	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	SB	SB
Directions Served	L	R	T	T	R	T	LT	T
Maximum Queue (m)	73.6	11.7	29.6	49.4	17.5	25.8	30.6	33.3
Average Queue (m)	36.5	2.7	11.9	26.1	16.3	2.1	15.9	14.9
95th Queue (m)	58.3	7.7	24.0	49.1	18.6	12.3	28.9	26.8
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	48.8	48.8
Upstream Blk Time (%)			0	6				
Queuing Penalty (veh)			0	0				
Storage Bay Dist (m)					10.0			
Storage Blk Time (%)				26	16			
Queuing Penalty (veh)				75	32			

Network Summary

Network wide Queuing Penalty: 122

2022 Existing Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	466	96	114	359	23	147	121	166	13	90	15
Future Volume (vph)	6	466	96	114	359	23	147	121	166	13	90	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3493	0	1787	1900	1615	1805	1900	1615	0	1847	0
Flt Permitted		0.950		0.338			0.493				0.949	
Satd. Flow (perm)	0	3320	0	630	1900	1467	913	1900	1615	0	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29				85			180			7
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.7			110.1			80.8			180.5	
Travel Time (s)		7.0			7.9			5.8			13.0	
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	618	0	124	390	25	160	132	180	0	128	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		38.9		53.0	51.0	51.0	23.9	21.9	21.9		11.9	
Actuated g/C Ratio		0.46		0.62	0.60	0.60	0.28	0.26	0.26		0.14	
v/c Ratio		0.40		0.25	0.34	0.03	0.50	0.27	0.33		0.51	
Control Delay		16.0		8.1	9.9	0.0	30.1	26.6	5.8		39.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		16.0		8.1	9.9	0.0	30.1	26.6	5.8		39.2	
LOS		B		A	A	A	C	C	A		D	
Approach Delay		16.0			9.0			19.9			39.2	
Approach LOS		B			A			B			D	
Queue Length 50th (m)		32.6		7.4	29.5	0.0	21.5	18.0	0.0		19.4	
Queue Length 95th (m)		53.5		16.4	52.9	0.0	37.7	32.7	14.8		36.4	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1536		611	1141	915	319	604	636		358	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

2022 Existing Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.40		0.20	0.34	0.03	0.50	0.22	0.28		0.36	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 84.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 16.6

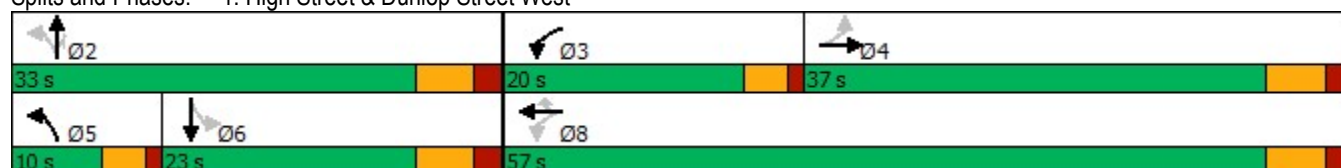
Intersection LOS: B

Intersection Capacity Utilization 72.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2022 Existing Traffic P.M.
2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	391	40	399	290	39	290
Future Volume (vph)	391	40	399	290	39	290
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1805	1615	3610	1615	0	3588
Flt Permitted	0.950					0.868
Satd. Flow (perm)	1795	1591	3610	1571	0	3130
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		43		266		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	6	3		22	22	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	425	43	434	315	0	357
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	19.5	19.5	30.2	30.2		30.2
Actuated g/C Ratio	0.32	0.32	0.49	0.49		0.49
v/c Ratio	0.75	0.08	0.25	0.35		0.23
Control Delay	27.8	5.2	10.7	4.0		10.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	27.8	5.2	10.7	4.0		10.8
LOS	C	A	B	A		B
Approach Delay	25.7		7.9			10.8
Approach LOS	C		A			B
Queue Length 50th (m)	44.6	0.0	14.5	2.8		11.9
Queue Length 95th (m)	72.1	5.4	29.6	18.2		25.2
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	878	800	1766	904		1531
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

5:00 pm Baseline

Synchro 10 Report
Page 3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.48	0.05	0.25	0.35		0.23

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 61.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 13.8

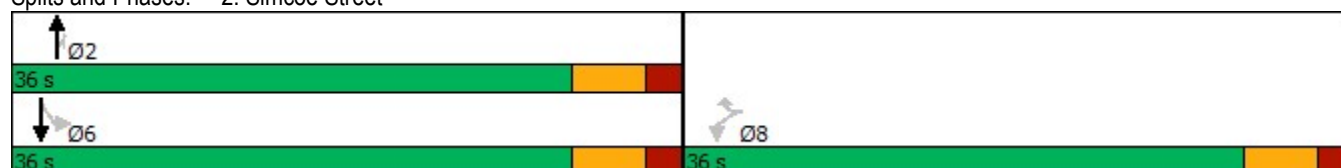
Intersection LOS: B

Intersection Capacity Utilization 70.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	50.6	41.0	29.0	58.5	14.7	24.4	19.4	29.9
Average Queue (m)	25.3	13.9	8.9	25.9	1.8	11.6	9.1	11.7
95th Queue (m)	43.4	28.1	19.3	47.9	8.6	22.2	18.2	23.3
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)				9	0			
Queuing Penalty (veh)				8	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	SB	SB
Directions Served	L	R	T	T	R	T	LT	T
Maximum Queue (m)	59.2	15.2	24.1	37.4	17.5	6.3	25.1	26.4
Average Queue (m)	28.0	5.3	9.3	13.7	14.6	0.2	10.4	10.5
95th Queue (m)	49.0	11.3	19.2	29.9	20.1	2.5	21.2	21.8
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	48.8	48.8
Upstream Blk Time (%)			0	1				
Queuing Penalty (veh)			0	0				
Storage Bay Dist (m)					10.0			
Storage Blk Time (%)				14	13			
Queuing Penalty (veh)				33	19			

Network Summary

Network wide Queuing Penalty: 60

2025 Future Background Traffic A.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	395	128	71	352	15	80	70	135	9	49	7
Future Volume (vph)	16	395	128	71	352	15	80	70	135	9	49	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3429	0	1805	1900	1615	1805	1900	1615	0	1850	0
Flt Permitted		0.940		0.373			0.653				0.935	
Satd. Flow (perm)	0	3225	0	705	1900	1543	1214	1900	1615	0	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60				102			147			8
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	585	0	77	383	16	87	76	147	0	71	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		35.3		41.6	41.0	41.0	16.4	15.8	15.8		10.2	
Actuated g/C Ratio		0.55		0.65	0.64	0.64	0.26	0.25	0.25		0.16	
v/c Ratio		0.32		0.14	0.31	0.02	0.24	0.16	0.29		0.25	
Control Delay		11.9		7.3	9.1	0.0	18.5	19.0	5.4		25.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		11.9		7.3	9.1	0.0	18.5	19.0	5.4		25.6	
LOS		B		A	A	A	B	B	A		C	
Approach Delay		11.9			8.5			12.4			25.6	
Approach LOS		B			A			B			C	
Queue Length 50th (m)		26.5		4.3	27.7	0.0	8.1	7.4	0.0		7.6	
Queue Length 95th (m)		40.5		9.9	46.4	0.0	17.6	16.6	11.6		18.4	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1810		563	1217	1025	368	808	771		471	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.32		0.14	0.31	0.02	0.24	0.09	0.19		0.15	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 63.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 11.6

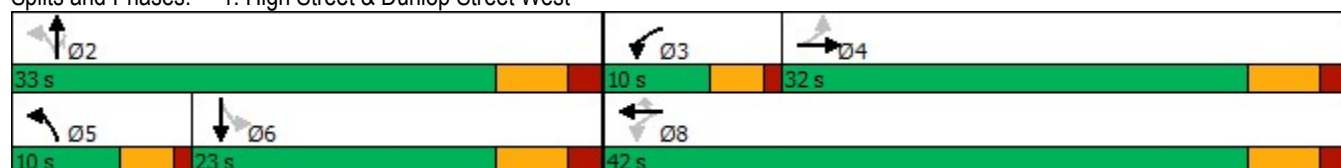
Intersection LOS: B

Intersection Capacity Utilization 67.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2025 Future Background Traffic A.M.

2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	253	76	286	241	47	202
Future Volume (vph)	253	76	286	241	47	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	1615	3610	1615	0	3578
Flt Permitted	0.950					0.852
Satd. Flow (perm)	1782	1588	3610	1577	0	3071
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		83		262		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	3	5		16	16	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	275	83	311	262	0	271
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effect Green (s)	13.9	13.9	30.1	30.1		30.1
Actuated g/C Ratio	0.25	0.25	0.54	0.54		0.54
v/c Ratio	0.62	0.18	0.16	0.27		0.16
Control Delay	25.2	5.5	7.5	2.2		7.6
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	25.2	5.5	7.5	2.2		7.6
LOS	C	A	A	A		A
Approach Delay	20.7		5.1			7.6
Approach LOS	C		A			A
Queue Length 50th (m)	26.0	0.0	7.7	0.0		6.7
Queue Length 95th (m)	46.3	8.1	16.4	9.9		14.8
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	956	891	1938	968		1649
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

8:00 am Baseline



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.29	0.09	0.16	0.27		0.16

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 56.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.3

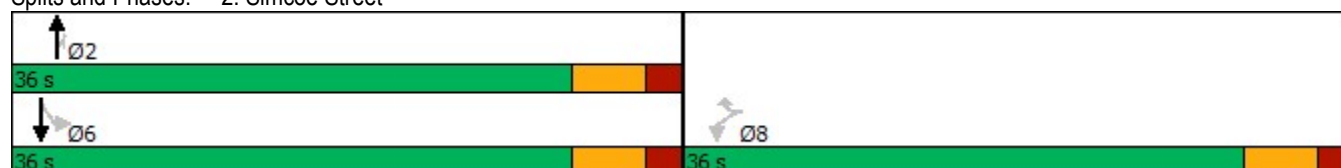
Intersection LOS: B

Intersection Capacity Utilization 64.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	83.7	54.2	37.4	83.3	27.4	50.9	43.0	44.0
Average Queue (m)	37.3	20.0	15.3	33.3	4.4	22.8	21.3	20.4
95th Queue (m)	62.7	39.4	32.4	64.5	17.2	40.5	38.0	35.5
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	0			0		0	0	
Queuing Penalty (veh)	0			0		0	0	
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	14	0			
Queuing Penalty (veh)			1	19	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	SB	SB
Directions Served	L	R	T	T	R	T	LT	T
Maximum Queue (m)	82.4	12.3	37.2	49.4	17.5	38.0	38.6	30.5
Average Queue (m)	44.7	5.2	15.3	31.8	16.3	3.3	19.1	14.1
95th Queue (m)	71.8	11.5	29.8	54.6	20.1	17.7	31.5	26.6
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	48.8	48.8
Upstream Blk Time (%)			1	9				
Queuing Penalty (veh)			0	0				
Storage Bay Dist (m)					10.0			
Storage Blk Time (%)				27	19			
Queuing Penalty (veh)				94	42			

Network Summary

Network wide Queuing Penalty: 156

2025 Future Background Traffic P.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	560	96	114	429	23	147	133	166	13	99	15
Future Volume (vph)	6	560	96	114	429	23	147	133	166	13	99	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3510	0	1787	1900	1615	1805	1900	1615	0	1850	0
Flt Permitted		0.950		0.287			0.469				0.951	
Satd. Flow (perm)	0	3334	0	536	1900	1467	870	1900	1615	0	1766	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23				85			180			6
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.7			110.1			80.8			180.5	
Travel Time (s)		7.0			7.9			5.8			13.0	
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	720	0	124	466	25	160	145	180	0	138	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effct Green (s)		38.9		53.0	51.0	51.0	24.3	22.2	22.2		12.2	
Actuated g/C Ratio		0.46		0.62	0.60	0.60	0.28	0.26	0.26		0.14	
v/c Ratio		0.47		0.27	0.41	0.03	0.51	0.29	0.32		0.53	
Control Delay		17.4		8.6	10.9	0.0	30.4	26.8	5.7		40.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		17.4		8.6	10.9	0.0	30.4	26.8	5.7		40.3	
LOS		B		A	B	A	C	C	A		D	
Approach Delay		17.4			10.0			20.1			40.3	
Approach LOS		B			A			C			D	
Queue Length 50th (m)		40.6		7.6	37.8	0.0	21.5	19.9	0.0		21.3	
Queue Length 95th (m)		65.6		16.7	66.8	0.0	37.7	35.4	14.7		39.3	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1531		568	1136	912	313	602	634		357	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

Baseline

Synchro 10 Report
Page 1

2025 Future Background Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.47		0.22	0.41	0.03	0.51	0.24	0.28		0.39	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.3

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 17.4

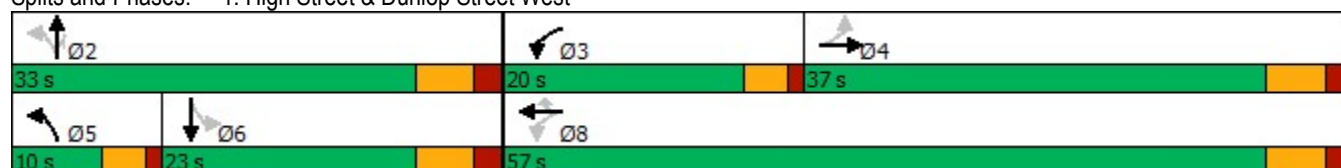
Intersection LOS: B

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2025 Future Background Traffic P.M.

2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	416	70	436	347	54	317
Future Volume (vph)	416	70	436	347	54	317
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1805	1615	3610	1615	0	3585
Flt Permitted	0.950					0.830
Satd. Flow (perm)	1795	1591	3610	1571	0	2993
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		76		292		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	6	3		22	22	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	76	474	377	0	404
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	20.6	20.6	30.2	30.2		30.2
Actuated g/C Ratio	0.33	0.33	0.48	0.48		0.48
v/c Ratio	0.77	0.13	0.27	0.42		0.28
Control Delay	28.4	4.4	11.4	5.0		11.7
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	28.4	4.4	11.4	5.0		11.7
LOS	C	A	B	A		B
Approach Delay	24.9		8.6			11.7
Approach LOS	C		A			B
Queue Length 50th (m)	48.4	0.0	16.8	5.3		14.4
Queue Length 95th (m)	77.5	7.0	33.6	24.8		29.8
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	863	804	1736	906		1439
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

Baseline



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.52	0.09	0.27	0.42		0.28

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 62.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.1

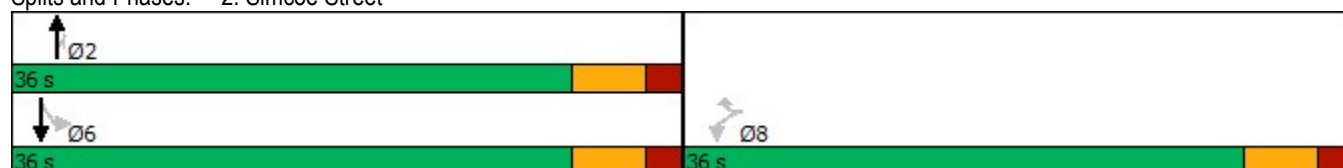
Intersection LOS: B

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



2025 Future Total P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	560	129	131	429	23	176	140	178	13	109	15
Future Volume (vph)	6	560	129	131	429	23	176	140	178	13	109	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3483	0	1787	1900	1615	1805	1900	1615	0	1852	0
Flt Permitted		0.951		0.267			0.448				0.954	
Satd. Flow (perm)	0	3311	0	499	1900	1467	832	1900	1615	0	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				85			193			6
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	756	0	142	466	25	191	152	193	0	148	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		38.5		53.1	51.0	51.0	24.5	22.5	22.5		12.5	
Actuated g/C Ratio		0.45		0.62	0.60	0.60	0.29	0.26	0.26		0.15	
v/c Ratio		0.50		0.32	0.41	0.03	0.62	0.30	0.34		0.56	
Control Delay		18.1		9.3	11.0	0.0	34.6	26.9	5.6		41.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		18.1		9.3	11.0	0.0	34.6	26.9	5.6		41.0	
LOS		B		A	B	A	C	C	A		D	
Approach Delay		18.1			10.2			22.0			41.0	
Approach LOS		B			B			C			D	
Queue Length 50th (m)		43.7		8.9	38.5	0.0	26.1	20.9	0.0		23.0	
Queue Length 95th (m)		70.7		19.1	67.8	0.0	44.3	36.8	15.1		41.8	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1506		549	1133	909	306	600	641		357	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

2025 Future Total P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.50		0.26	0.41	0.03	0.62	0.25	0.30		0.41	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 18.3

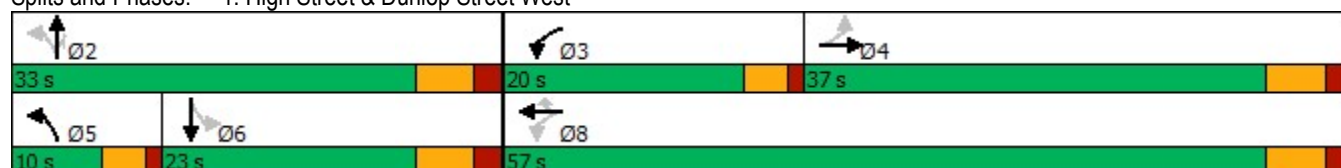
Intersection LOS: B

Intersection Capacity Utilization 84.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2025 Future Total P.M.
2: Site Access/Simcoe Street

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	12	0	416	17	70	37	436	347	54	317	59
Future Volume (vph)	47	12	0	416	17	70	37	436	347	54	317	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1805	1608	1534	0	3590	1615	0	3503	0
Flt Permitted		0.788		0.715				0.887			0.831	
Satd. Flow (perm)	0	1468	0	1352	1608	1512	0	3197	1571	0	2926	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					30	46			268			30
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		81.1			254.6			50.7			68.6	
Travel Time (s)		5.8			18.3			3.7			4.9	
Confl. Peds. (#/hr)				6		3			22	22		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)						40%						
Lane Group Flow (vph)	0	64	0	452	48	46	0	514	377	0	468	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0	6.0		6.0	6.0		6.0	
Act Effect Green (s)		25.9		25.9	25.9	25.9		30.2	30.2		30.2	
Actuated g/C Ratio		0.38		0.38	0.38	0.38		0.44	0.44		0.44	
v/c Ratio		0.11		0.88	0.08	0.08		0.36	0.45		0.36	
Control Delay		13.7		40.1	7.4	4.7		14.4	6.4		13.5	
Queue Delay		0.0		0.0	0.0	0.0		0.0	0.0		0.0	
Total Delay		13.7		40.1	7.4	4.7		14.4	6.4		13.5	
LOS		B		D	A	A		B	A		B	
Approach Delay		13.7			34.2			11.0			13.5	
Approach LOS		B			C			B			B	
Queue Length 50th (m)		5.4		54.3	1.5	0.0		25.4	9.2		21.3	
Queue Length 95th (m)		12.5		#105.1	7.6	5.8		37.7	28.3		33.1	
Internal Link Dist (m)		57.1			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		650		598	729	695		1416	845		1312	
Starvation Cap Reductn		0		0	0	0		0	0		0	
Spillback Cap Reductn		0		0	0	0		0	0		0	
Storage Cap Reductn		0		0	0	0		0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.10		0.76	0.07	0.07		0.36	0.45		0.36	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 68.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 90.3%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Site Access/Simcoe Street

 Ø2	 Ø4
36 s	36 s
 Ø6	 Ø8
36 s	36 s

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	58.7	47.9	32.3	60.1	17.3	34.7	30.1	28.0
Average Queue (m)	27.2	16.8	11.0	26.5	2.2	17.2	12.9	11.5
95th Queue (m)	45.5	33.8	23.7	47.5	9.8	29.7	25.2	22.8
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)				10	0			
Queuing Penalty (veh)				10	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	22.5	52.4	14.2	18.9	27.3	17.4	28.5	30.4
Average Queue (m)	11.0	28.0	6.1	11.3	13.9	14.9	11.0	12.4
95th Queue (m)	20.6	47.7	12.2	20.3	24.7	19.1	22.0	23.8
Link Distance (m)	52.1	238.3	238.3	27.6	27.6		48.2	48.2
Upstream Blk Time (%)					0			
Queuing Penalty (veh)					0			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					10	15		
Queuing Penalty (veh)					24	21		

Intersection: 3: Secondary Access

Movement	EB
Directions Served	R
Maximum Queue (m)	13.2
Average Queue (m)	6.6
95th Queue (m)	13.5
Link Distance (m)	51.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 55

2025 Future Total Traffic A.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	395	146	80	352	15	113	79	152	9	53	7
Future Volume (vph)	16	395	146	80	352	15	113	79	152	9	53	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3416	0	1805	1900	1615	1805	1900	1615	0	1853	0
Flt Permitted		0.939		0.341			0.659				0.947	
Satd. Flow (perm)	0	3210	0	644	1900	1543	1226	1900	1615	0	1763	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73				102			165			7
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	605	0	87	383	16	123	86	165	0	76	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		29.9		39.9	37.9	37.9	20.1	18.1	18.1		10.2	
Actuated g/C Ratio		0.44		0.59	0.56	0.56	0.30	0.27	0.27		0.15	
v/c Ratio		0.42		0.18	0.36	0.02	0.30	0.17	0.30		0.28	
Control Delay		14.0		8.1	10.4	0.1	19.1	18.8	5.1		26.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		14.0		8.1	10.4	0.1	19.1	18.8	5.1		26.9	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		14.0			9.6			12.8			26.9	
Approach LOS		B			A			B			C	
Queue Length 50th (m)		26.9		4.9	27.7	0.0	11.7	8.4	0.0		8.3	
Queue Length 95th (m)		41.5		10.9	46.7	0.0	23.5	18.1	12.2		19.7	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1451		479	1057	904	414	754	740		446	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2025 Future Total Traffic A.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.42		0.18	0.36	0.02	0.30	0.11	0.22		0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 68

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 13.0

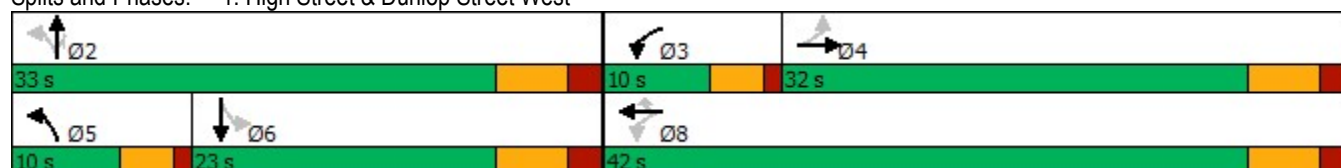
Intersection LOS: B

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2025 Future Total Traffic A.M.

2: Site Access/Simcoe Street

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	17	0	253	9	76	19	286	241	47	202	30
Future Volume (vph)	59	17	0	253	9	76	19	286	241	47	202	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1787	1618	0	0	3595	1615	0	3516	0
Flt Permitted		0.730		0.704				0.925			0.854	
Satd. Flow (perm)	0	1360	0	1321	1618	0	0	3335	1577	0	3023	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					83				262			22
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.2			254.6			50.7			68.6	
Travel Time (s)		4.6			18.3			3.7			4.9	
Confl. Peds. (#/hr)				3		5			16	16		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	275	93	0	0	332	262	0	304	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		17.3		17.3	17.3			30.3	30.3		30.3	
Actuated g/C Ratio		0.29		0.29	0.29			0.51	0.51		0.51	
v/c Ratio		0.21		0.72	0.18			0.20	0.28		0.20	
Control Delay		16.5		29.8	5.6			9.6	2.6		9.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		16.5		29.8	5.6			9.6	2.6		9.1	
LOS		B		C	A			A	A		A	
Approach Delay		16.5			23.7			6.6			9.1	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		7.0		27.9	0.8			9.9	0.0		8.4	
Queue Length 95th (m)		15.7		50.3	8.9			22.1	11.8		19.5	
Internal Link Dist (m)		40.2			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		689		669	861			1690	928		1543	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.12		0.41	0.11			0.20	0.28		0.20	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 59.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.4

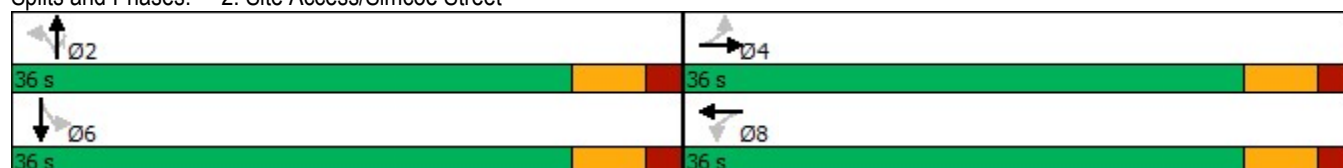
Intersection LOS: B

Intersection Capacity Utilization 73.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Site Access/Simcoe Street



						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	37	0	49	10	0
Future Volume (Veh/h)	0	37	0	49	10	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	40	0	53	11	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)					51	
pX, platoon unblocked						
vC, conflicting volume	38	6	11			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38	6	11			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	970	1076	1607			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	40	26	26	7	4	
Volume Left	0	0	0	0	0	
Volume Right	40	0	0	0	0	
cSH	1076	1700	1700	1700	1700	
Volume to Capacity	0.04	0.02	0.02	0.00	0.00	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.5	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	54.9	47.1	29.5	55.7	15.3	42.9	41.4	39.4
Average Queue (m)	37.3	25.9	15.1	32.8	7.2	26.9	21.0	27.3
95th Queue (m)	62.0	48.8	28.8	69.1	22.8	47.2	42.2	43.8
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	1					0		
Queuing Penalty (veh)	0					0		
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	13	0			
Queuing Penalty (veh)			2	19	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	14.0	71.1	11.5	21.1	27.5	17.5	32.9	34.9
Average Queue (m)	6.3	49.9	5.5	14.5	21.3	16.9	21.0	21.4
95th Queue (m)	16.0	77.9	12.2	25.0	28.2	19.1	34.4	37.4
Link Distance (m)	69.0	238.3	238.3	27.5	27.5		48.2	48.2
Upstream Blk Time (%)				0	3			
Queuing Penalty (veh)				0	1			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					25	24		
Queuing Penalty (veh)					86	52		

Intersection: 3: Secondary Acces

Movement	EB
Directions Served	R
Maximum Queue (m)	8.8
Average Queue (m)	3.2
95th Queue (m)	9.9
Link Distance (m)	68.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 161

2025 Future Total P.M.
1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔↔		↔	↔	↔	↔	↔	↔		↔↔	
Traffic Volume (vph)	6	560	129	131	429	23	176	140	178	13	109	15
Future Volume (vph)	6	560	129	131	429	23	176	140	178	13	109	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3483	0	1787	1900	1615	1805	1900	1615	0	1852	0
Flt Permitted		0.951		0.267			0.448				0.954	
Satd. Flow (perm)	0	3311	0	499	1900	1467	832	1900	1615	0	1775	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				85			193		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.7			110.1			80.8			180.5	
Travel Time (s)		7.0			7.9			5.8			13.0	
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	756	0	142	466	25	191	152	193	0	148	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		38.5		53.1	51.0	51.0	24.5	22.5	22.5		12.5	
Actuated g/C Ratio		0.45		0.62	0.60	0.60	0.29	0.26	0.26		0.15	
v/c Ratio		0.50		0.32	0.41	0.03	0.62	0.30	0.34		0.56	
Control Delay		18.1		9.3	11.0	0.0	34.6	26.9	5.6		41.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		18.1		9.3	11.0	0.0	34.6	26.9	5.6		41.0	
LOS		B		A	B	A	C	C	A		D	
Approach Delay		18.1			10.2			22.0			41.0	
Approach LOS		B			B			C			D	
Queue Length 50th (m)		43.7		8.9	38.5	0.0	26.1	20.9	0.0		23.0	
Queue Length 95th (m)		70.7		19.1	67.8	0.0	44.3	36.8	15.1		41.8	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1506		549	1133	909	306	600	641		357	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

2025 Future Total P.M.
1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.50		0.26	0.41	0.03	0.62	0.25	0.30		0.41	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.6

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 18.3

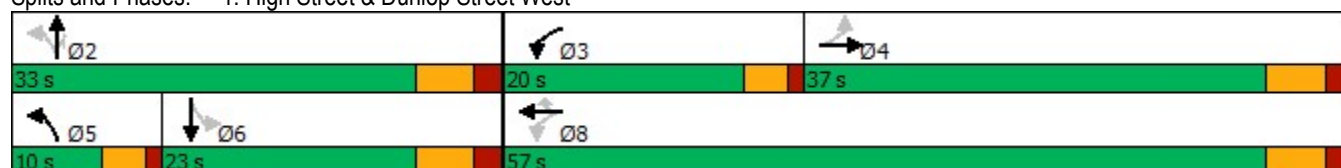
Intersection LOS: B

Intersection Capacity Utilization 84.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2025 Future Total P.M.
2: Site Access/Simcoe Street

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	12	0	416	17	70	37	436	347	54	317	59
Future Volume (vph)	47	12	0	416	17	70	37	436	347	54	317	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1805	1644	0	0	3590	1615	0	3503	0
Flt Permitted		0.765		0.715				0.887			0.831	
Satd. Flow (perm)	0	1425	0	1352	1644	0	0	3197	1571	0	2926	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					76				268			30
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		81.1			254.6			50.7			68.6	
Travel Time (s)		5.8			18.3			3.7			4.9	
Confl. Peds. (#/hr)				6		3			22	22		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	452	94	0	0	514	377	0	468	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		25.9		25.9	25.9			30.2	30.2		30.2	
Actuated g/C Ratio		0.38		0.38	0.38			0.44	0.44		0.44	
v/c Ratio		0.12		0.88	0.14			0.36	0.45		0.36	
Control Delay		13.7		40.1	5.4			14.4	6.4		13.5	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		13.7		40.1	5.4			14.4	6.4		13.5	
LOS		B		D	A			B	A		B	
Approach Delay		13.7			34.1			11.0			13.5	
Approach LOS		B			C			B			B	
Queue Length 50th (m)		5.4		54.3	1.5			25.4	9.2		21.3	
Queue Length 95th (m)		12.5		#105.1	9.4			37.7	28.3		33.1	
Internal Link Dist (m)		57.1			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		630		598	770			1416	845		1312	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.10		0.76	0.12			0.36	0.45		0.36	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 68.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 18.1

Intersection LOS: B

Intersection Capacity Utilization 90.3%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Site Access/Simcoe Street

 Ø2	 Ø4
36 s	36 s
 Ø6	 Ø8
36 s	36 s

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	31	0	94	5	0
Future Volume (Veh/h)	0	31	0	94	5	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	0	102	5	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)					51	
pX, platoon unblocked						
vC, conflicting volume	56	2	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56	2	5			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	945	1080	1615			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	34	51	51	3	2	
Volume Left	0	0	0	0	0	
Volume Right	34	0	0	0	0	
cSH	1080	1700	1700	1700	1700	
Volume to Capacity	0.03	0.03	0.03	0.00	0.00	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.4	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	58.2	49.8	25.0	62.4	17.3	21.8	24.3	28.0
Average Queue (m)	31.3	19.4	10.0	28.7	2.0	10.5	10.9	11.7
95th Queue (m)	51.1	39.6	22.0	49.0	9.4	19.4	21.3	24.2
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	12	0			
Queuing Penalty (veh)			0	10	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	R	T	T	R	LT	T
Maximum Queue (m)	59.5	13.6	24.4	44.8	17.5	26.0	20.3
Average Queue (m)	28.5	5.2	10.6	16.1	15.2	12.3	10.7
95th Queue (m)	49.0	11.1	20.4	35.3	19.4	22.3	20.0
Link Distance (m)	238.3	238.3	28.0	28.0		48.8	48.8
Upstream Blk Time (%)			0	2			
Queuing Penalty (veh)			0	0			
Storage Bay Dist (m)					10.0		
Storage Blk Time (%)				14	12		
Queuing Penalty (veh)				34	19		

Network Summary

Network wide Queuing Penalty: 63

2030 Future Background Traffic A.M.

1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	456	128	71	400	15	80	82	135	9	56	7
Future Volume (vph)	16	456	128	71	400	15	80	82	135	9	56	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3444	0	1805	1900	1615	1805	1900	1615	0	1855	0
Flt Permitted		0.939		0.328			0.648				0.939	
Satd. Flow (perm)	0	3236	0	620	1900	1543	1205	1900	1615	0	1749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				102			147			7
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	652	0	77	435	16	87	89	147	0	79	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		33.3		41.7	41.1	41.1	18.5	18.0	18.0		10.2	
Actuated g/C Ratio		0.50		0.63	0.62	0.62	0.28	0.27	0.27		0.15	
v/c Ratio		0.39		0.15	0.37	0.02	0.22	0.17	0.27		0.29	
Control Delay		14.4		7.9	10.3	0.0	17.9	18.8	5.1		27.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		14.4		7.9	10.3	0.0	17.9	18.8	5.1		27.0	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		14.4			9.6			12.3			27.0	
Approach LOS		B			A			B			C	
Queue Length 50th (m)		31.3		4.3	32.6	0.0	8.1	8.7	0.0		8.7	
Queue Length 95th (m)		47.2		10.0	54.6	0.0	17.6	18.7	11.6		20.4	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1658		500	1181	998	394	781	750		458	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2030 Future Background Traffic A.M.

1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.39		0.15	0.37	0.02	0.22	0.11	0.20		0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 66

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 13.0

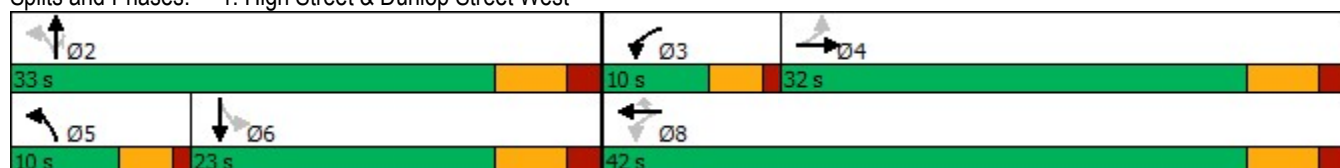
Intersection LOS: B

Intersection Capacity Utilization 68.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2030 Future Background Traffic A.M.

2: Simcoe Street

02-16-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	253	76	331	241	47	234
Future Volume (vph)	253	76	331	241	47	234
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	1615	3610	1615	0	3581
Flt Permitted	0.950					0.852
Satd. Flow (perm)	1782	1588	3610	1577	0	3072
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		83		262		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	3	5		16	16	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	275	83	360	262	0	305
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	13.9	13.9	30.1	30.1		30.1
Actuated g/C Ratio	0.25	0.25	0.54	0.54		0.54
v/c Ratio	0.62	0.18	0.19	0.27		0.18
Control Delay	25.2	5.5	7.6	2.2		7.7
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	25.2	5.5	7.6	2.2		7.7
LOS	C	A	A	A		A
Approach Delay	20.7		5.3			7.7
Approach LOS	C		A			A
Queue Length 50th (m)	26.0	0.0	9.2	0.0		7.7
Queue Length 95th (m)	46.3	8.1	18.8	9.9		16.6
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	956	891	1938	968		1649
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

8:00 am Baseline

Synchro 10 Report
Page 3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.29	0.09	0.19	0.27		0.18

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 56.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.2

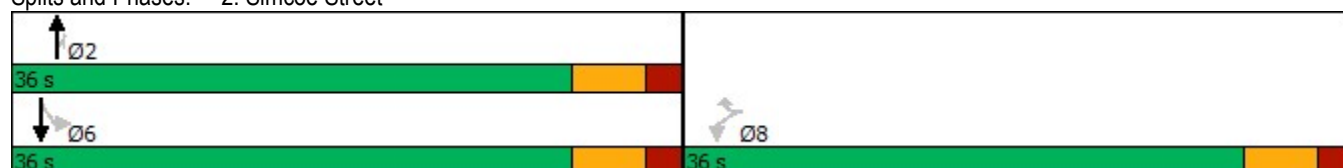
Intersection LOS: B

Intersection Capacity Utilization 64.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	85.0	66.0	37.3	88.4	27.4	52.2	49.0	53.7
Average Queue (m)	47.2	29.6	16.2	41.8	2.4	24.1	22.9	24.8
95th Queue (m)	75.1	59.9	32.7	71.0	12.5	43.0	39.7	43.5
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	0					0	0	
Queuing Penalty (veh)	0					0	0	
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	17	0			
Queuing Penalty (veh)			2	24	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	SB	SB
Directions Served	L	R	T	T	R	T	LT	T
Maximum Queue (m)	76.4	15.7	35.9	49.4	17.5	54.2	35.2	35.4
Average Queue (m)	46.4	5.0	17.7	33.0	16.6	5.8	21.2	17.3
95th Queue (m)	70.1	11.6	30.6	57.0	18.6	26.4	34.4	31.8
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	48.8	48.8
Upstream Blk Time (%)			2	11			0	0
Queuing Penalty (veh)			0	0			0	0
Storage Bay Dist (m)					10.0			
Storage Blk Time (%)				31	19			
Queuing Penalty (veh)				108	47			

Network Summary

Network wide Queuing Penalty: 181

2030 Future Background Traffic P.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	641	96	114	491	23	147	154	166	13	115	15
Future Volume (vph)	6	641	96	114	491	23	147	154	166	13	115	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3523	0	1787	1900	1615	1805	1900	1615	0	1856	0
Flt Permitted		0.950		0.245			0.434				0.955	
Satd. Flow (perm)	0	3346	0	458	1900	1467	806	1900	1615	0	1779	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20				85			180			6
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.7			110.1			80.8			180.5	
Travel Time (s)		7.0			7.9			5.8			13.0	
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	808	0	124	534	25	160	167	180	0	155	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effct Green (s)		38.8		53.0	51.0	51.0	24.7	22.7	22.7		12.7	
Actuated g/C Ratio		0.45		0.62	0.59	0.59	0.29	0.26	0.26		0.15	
v/c Ratio		0.53		0.30	0.47	0.03	0.53	0.33	0.32		0.58	
Control Delay		18.7		9.2	12.0	0.0	30.9	27.3	5.6		41.5	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		18.7		9.2	12.0	0.0	30.9	27.3	5.6		41.5	
LOS		B		A	B	A	C	C	A		D	
Approach Delay		18.7			11.0			20.7			41.5	
Approach LOS		B			B			C			D	
Queue Length 50th (m)		48.6		7.8	46.8	0.0	21.5	23.2	0.0		24.2	
Queue Length 95th (m)		76.8		16.9	80.8	0.0	37.7	40.0	14.7		43.6	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1524		531	1130	907	302	598	632		357	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

5:00 pm Baseline

Synchro 10 Report
Page 1

2030 Future Background Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.53		0.23	0.47	0.03	0.53	0.28	0.28		0.43	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 85.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 18.4

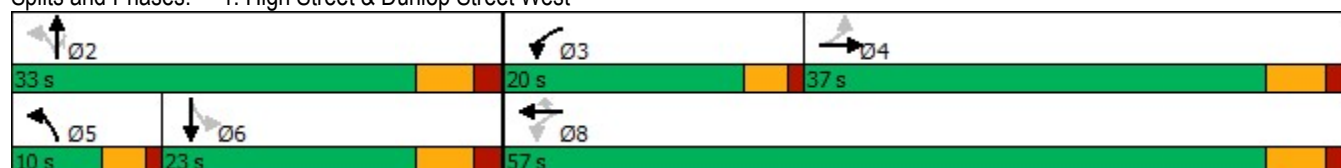
Intersection LOS: B

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2030 Future Background Traffic P.M.

2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	416	70	506	347	54	368
Future Volume (vph)	416	70	506	347	54	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1805	1615	3610	1615	0	3588
Flt Permitted	0.950					0.827
Satd. Flow (perm)	1795	1591	3610	1571	0	2983
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		76		252		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	6	3		22	22	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	76	550	377	0	459
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effect Green (s)	20.6	20.6	30.2	30.2		30.2
Actuated g/C Ratio	0.33	0.33	0.48	0.48		0.48
v/c Ratio	0.77	0.13	0.32	0.43		0.32
Control Delay	28.4	4.4	11.7	6.1		12.0
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	28.4	4.4	11.7	6.1		12.0
LOS	C	A	B	A		B
Approach Delay	24.9		9.5			12.0
Approach LOS	C		A			B
Queue Length 50th (m)	48.4	0.0	20.0	8.0		16.7
Queue Length 95th (m)	77.5	7.0	39.3	30.5		34.1
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	863	804	1736	886		1434
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

5:00 pm Baseline

Synchro 10 Report
Page 3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.52	0.09	0.32	0.43		0.32

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 62.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.3

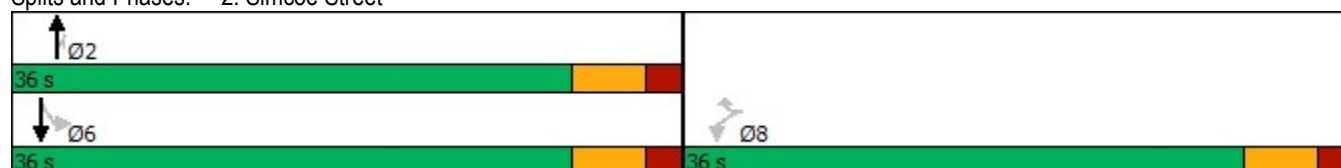
Intersection LOS: B

Intersection Capacity Utilization 85.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	60.4	38.9	37.3	57.0	21.3	36.7	28.0	25.8
Average Queue (m)	30.9	16.9	11.7	28.7	2.5	16.2	13.0	10.5
95th Queue (m)	51.3	32.9	24.4	49.6	11.0	30.2	25.1	21.3
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	12	0			
Queuing Penalty (veh)			0	11	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	25.1	61.4	18.0	23.2	22.8	17.5	21.2	25.2
Average Queue (m)	10.6	29.2	6.0	12.5	15.8	15.0	11.3	11.5
95th Queue (m)	21.7	50.2	13.4	21.8	23.3	19.3	20.4	21.8
Link Distance (m)	52.1	238.3	238.3	27.6	27.6		48.2	48.2
Upstream Blk Time (%)				0	0			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					13	15		
Queuing Penalty (veh)					32	25		

Intersection: 3: Secondary Access

Movement	EB
Directions Served	R
Maximum Queue (m)	11.4
Average Queue (m)	5.5
95th Queue (m)	12.7
Link Distance (m)	51.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 67

2030 Future Total Traffic A.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	456	146	80	400	15	113	91	152	9	60	7
Future Volume (vph)	16	456	146	80	400	15	113	91	152	9	60	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3432	0	1805	1900	1615	1805	1900	1615	0	1857	0
Flt Permitted		0.939		0.305			0.655				0.949	
Satd. Flow (perm)	0	3225	0	577	1900	1543	1219	1900	1615	0	1770	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60				102			165			7
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	672	0	87	435	16	123	99	165	0	83	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		29.4		39.3	37.3	37.3	20.2	18.2	18.2		10.3	
Actuated g/C Ratio		0.44		0.58	0.55	0.55	0.30	0.27	0.27		0.15	
v/c Ratio		0.47		0.20	0.41	0.02	0.30	0.19	0.30		0.30	
Control Delay		15.1		8.3	11.1	0.1	19.0	19.0	5.0		27.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		15.1		8.3	11.1	0.1	19.0	19.0	5.0		27.3	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		15.1			10.3			13.0			27.3	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		32.0		4.9	32.6	0.0	11.7	9.8	0.0		9.2	
Queue Length 95th (m)		48.7		11.1	55.1	0.0	23.3	20.3	12.1		21.0	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1440		445	1050	898	416	760	744		450	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2030 Future Total Traffic A.M.
 1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.47		0.20	0.41	0.02	0.30	0.13	0.22		0.18	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 67.5

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 13.7

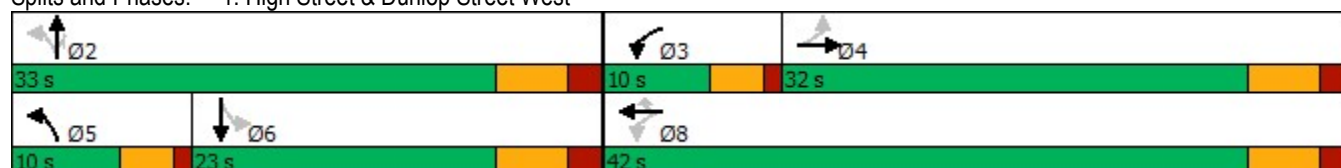
Intersection LOS: B

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2030 Future Total Traffic A.M.

2: Site Access/Simcoe Street

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	17	0	253	9	76	19	331	241	47	234	30
Future Volume (vph)	59	17	0	253	9	76	19	331	241	47	234	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1787	1618	0	0	3595	1615	0	3524	0
Flt Permitted		0.730		0.704				0.927			0.853	
Satd. Flow (perm)	0	1360	0	1321	1618	0	0	3343	1577	0	3024	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					83				251			20
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.2			254.6			50.7			68.6	
Travel Time (s)		4.6			18.3			3.7			4.9	
Confl. Peds. (#/hr)				3		5			16	16		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	275	93	0	0	381	262	0	338	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		17.3		17.3	17.3			30.3	30.3		30.3	
Actuated g/C Ratio		0.29		0.29	0.29			0.51	0.51		0.51	
v/c Ratio		0.21		0.72	0.18			0.22	0.28		0.22	
Control Delay		16.5		29.8	5.6			9.8	2.9		9.3	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		16.5		29.8	5.6			9.8	2.9		9.3	
LOS		B		C	A			A	A		A	
Approach Delay		16.5			23.7			7.0			9.3	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		7.0		27.9	0.8			11.6	0.6		9.6	
Queue Length 95th (m)		15.7		50.3	8.9			25.2	12.8		21.7	
Internal Link Dist (m)		40.2			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		689		669	861			1694	923		1542	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 3

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.12		0.41	0.11			0.22	0.28		0.22	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 59.7

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 12.4

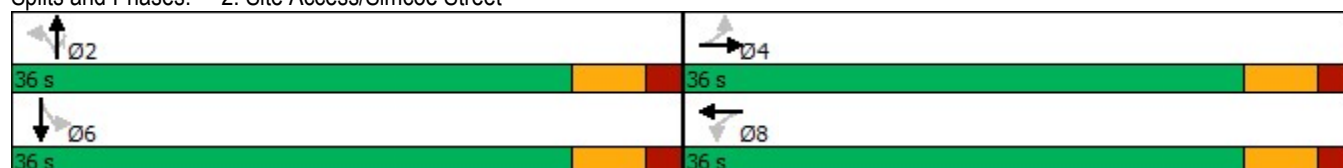
Intersection LOS: B

Intersection Capacity Utilization 73.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Site Access/Simcoe Street



						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	37	0	49	10	0
Future Volume (Veh/h)	0	37	0	49	10	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	40	0	53	11	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)					51	
pX, platoon unblocked						
vC, conflicting volume	38	6	11			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38	6	11			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	970	1076	1607			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	40	26	26	7	4	
Volume Left	0	0	0	0	0	
Volume Right	40	0	0	0	0	
cSH	1076	1700	1700	1700	1700	
Volume to Capacity	0.04	0.02	0.02	0.00	0.00	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.5	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	B5	SB
Directions Served	LT	TR	L	T	R	L	T	T	LTR
Maximum Queue (m)	52.0	40.5	29.1	70.0	9.0	55.6	49.3	2.2	42.8
Average Queue (m)	42.6	25.7	15.8	40.1	2.4	34.3	26.3	0.4	27.2
95th Queue (m)	60.1	48.7	31.9	76.4	9.0	69.9	49.6	3.2	53.6
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	48.2	166.4
Upstream Blk Time (%)				1		5	1		
Queuing Penalty (veh)				0		11	3		
Storage Bay Dist (m)			30.0		20.0				
Storage Blk Time (%)				14					
Queuing Penalty (veh)				22					

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	13.9	84.3	9.6	25.0	27.7	17.5	32.5	28.9
Average Queue (m)	9.9	50.1	4.2	16.2	20.5	16.9	21.2	17.5
95th Queue (m)	16.8	87.0	10.3	26.7	29.7	18.5	35.3	31.4
Link Distance (m)	69.0	238.3	238.3	27.5	27.5		48.2	48.2
Upstream Blk Time (%)				1	3			
Queuing Penalty (veh)				0	1			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					28	20		
Queuing Penalty (veh)					99	51		

Intersection: 3: Secondary Acces

Movement	EB
Directions Served	R
Maximum Queue (m)	10.9
Average Queue (m)	6.2
95th Queue (m)	13.9
Link Distance (m)	68.3
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 187

2030 Future Total Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	641	129	131	491	23	176	161	178	13	125	15
Future Volume (vph)	6	641	129	131	491	23	176	161	178	13	125	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3497	0	1787	1900	1615	1805	1900	1615	0	1859	0
Flt Permitted		0.951		0.227			0.414				0.958	
Satd. Flow (perm)	0	3324	0	425	1900	1467	770	1900	1615	0	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28				85			193			5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	844	0	142	534	25	191	175	193	0	166	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effct Green (s)		38.5		53.1	51.1	51.1	25.1	23.1	23.1		13.1	
Actuated g/C Ratio		0.45		0.62	0.59	0.59	0.29	0.27	0.27		0.15	
v/c Ratio		0.56		0.36	0.47	0.03	0.65	0.34	0.34		0.60	
Control Delay		19.6		10.1	12.2	0.0	35.7	27.3	5.5		42.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		19.6		10.1	12.2	0.0	35.7	27.3	5.5		42.6	
LOS		B		B	B	A	D	C	A		D	
Approach Delay		19.6			11.3			22.7			42.6	
Approach LOS		B			B			C			D	
Queue Length 50th (m)		52.5		9.2	47.8	0.0	26.1	24.4	0.0		26.4	
Queue Length 95th (m)		81.7		19.1	80.8	0.0	44.3	42.0	15.1		46.4	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1498		514	1125	903	296	596	638		356	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

2030 Future Total Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.56		0.28	0.47	0.03	0.65	0.29	0.30		0.47	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.2

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 19.5

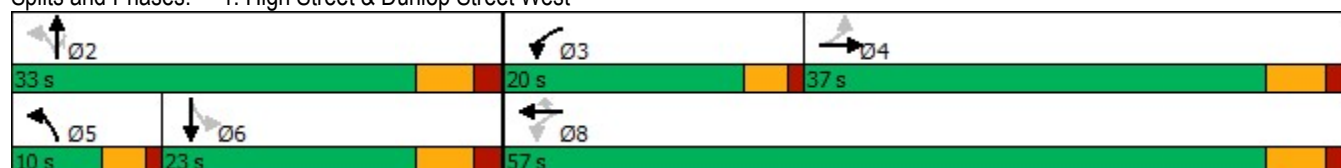
Intersection LOS: B

Intersection Capacity Utilization 89.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2030 Future Total Traffic P.M.

2: Site Access/Simcoe Street

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	12	0	416	17	70	37	506	347	54	368	59
Future Volume (vph)	47	12	0	416	17	70	37	506	347	54	368	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1805	1644	0	0	3594	1615	0	3515	0
Flt Permitted		0.765		0.715				0.889			0.827	
Satd. Flow (perm)	0	1425	0	1352	1644	0	0	3205	1571	0	2922	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					76				234			26
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		81.1			254.6			50.7			68.6	
Travel Time (s)		5.8			18.3			3.7			4.9	
Confl. Peds. (#/hr)				6		3			22	22		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	452	94	0	0	590	377	0	523	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		25.9		25.9	25.9			30.2	30.2		30.2	
Actuated g/C Ratio		0.38		0.38	0.38			0.44	0.44		0.44	
v/c Ratio		0.12		0.88	0.14			0.42	0.46		0.40	
Control Delay		13.7		40.1	5.4			14.9	7.7		14.1	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		13.7		40.1	5.4			14.9	7.7		14.1	
LOS		B		D	A			B	A		B	
Approach Delay		13.7			34.1			12.1			14.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)		5.4		54.3	1.5			30.0	12.4		24.8	
Queue Length 95th (m)		12.5		#105.1	9.4			43.8	33.1		37.7	
Internal Link Dist (m)		57.1			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		630		598	770			1419	826		1308	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.10		0.76	0.12			0.42	0.46		0.40	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 68.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 91.7%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Site Access/Simcoe Street

 Ø2	 Ø4
36 s	36 s
 Ø6	 Ø8
36 s	36 s

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (veh/h)	0	31	0	94	5	0
Future Volume (Veh/h)	0	31	0	94	5	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	0	102	5	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)					51	
pX, platoon unblocked						
vC, conflicting volume	56	2	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56	2	5			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	945	1080	1615			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	34	51	51	3	2	
Volume Left	0	0	0	0	0	
Volume Right	34	0	0	0	0	
cSH	1080	1700	1700	1700	1700	
Volume to Capacity	0.03	0.03	0.03	0.00	0.00	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.4	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	71.5	46.5	37.3	78.9	9.0	28.2	30.6	28.1
Average Queue (m)	34.0	19.9	12.1	31.3	1.3	12.3	13.1	14.7
95th Queue (m)	58.0	38.6	26.3	59.0	6.4	24.3	25.4	26.7
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	12				
Queuing Penalty (veh)			0	11				

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	SB	SB
Directions Served	L	R	T	T	R	T	LT	T
Maximum Queue (m)	47.7	27.1	35.0	47.6	17.5	5.2	37.2	30.5
Average Queue (m)	25.1	10.6	18.0	20.7	15.3	0.2	22.2	13.8
95th Queue (m)	42.1	21.1	31.7	41.0	20.3	2.1	35.2	27.3
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	48.8	48.8
Upstream Blk Time (%)			2	3				
Queuing Penalty (veh)			0	0				
Storage Bay Dist (m)					10.0			
Storage Blk Time (%)				19	14			
Queuing Penalty (veh)				48	31			

Network Summary

Network wide Queuing Penalty: 90

2035 Future Background Traffic A.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	525	128	71	456	15	80	94	135	9	65	7
Future Volume (vph)	16	525	128	71	456	15	80	94	135	9	65	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3456	0	1805	1900	1615	1805	1900	1615	0	1860	0
Flt Permitted		0.939		0.291			0.616				0.943	
Satd. Flow (perm)	0	3248	0	550	1900	1543	1146	1900	1615	0	1761	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				102			147			6
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	727	0	77	496	16	87	102	147	0	89	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		33.3		41.7	41.0	41.0	18.6	18.1	18.1		10.4	
Actuated g/C Ratio		0.50		0.63	0.62	0.62	0.28	0.27	0.27		0.16	
v/c Ratio		0.44		0.17	0.42	0.02	0.23	0.20	0.27		0.32	
Control Delay		15.3		8.1	11.0	0.0	17.9	19.0	5.1		27.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		15.3		8.1	11.0	0.0	17.9	19.0	5.1		27.9	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		15.3			10.3			12.6			27.9	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		36.8		4.3	38.9	0.0	8.1	10.1	0.0		10.1	
Queue Length 95th (m)		55.4		10.2	65.8	0.0	17.5	20.8	11.5		22.5	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1657		461	1179	996	384	780	749		459	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2035 Future Background Traffic A.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.44		0.17	0.42	0.02	0.23	0.13	0.20		0.19	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 66.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 13.7

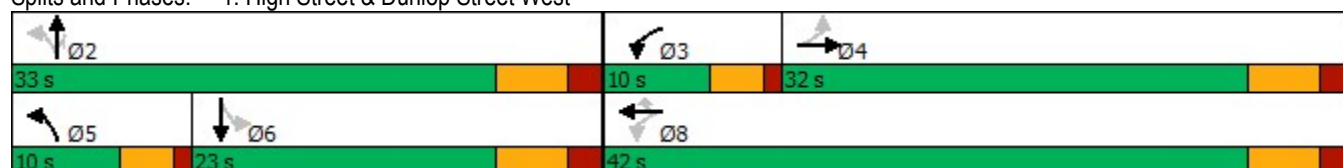
Intersection LOS: B

Intersection Capacity Utilization 71.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Background Traffic A.M.

2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	253	186	434	256	107	271
Future Volume (vph)	253	186	434	256	107	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1787	1615	3610	1615	0	3559
Flt Permitted	0.950					0.725
Satd. Flow (perm)	1782	1588	3610	1577	0	2613
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		202		216		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	3	5		16	16	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	275	202	472	278	0	411
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	13.9	13.9	30.1	30.1		30.1
Actuated g/C Ratio	0.25	0.25	0.54	0.54		0.54
v/c Ratio	0.62	0.37	0.24	0.29		0.29
Control Delay	25.2	5.1	7.9	3.4		8.5
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	25.2	5.1	7.9	3.4		8.5
LOS	C	A	A	A		A
Approach Delay	16.7		6.2			8.5
Approach LOS	B		A			A
Queue Length 50th (m)	26.0	0.0	12.4	2.8		11.1
Queue Length 95th (m)	46.3	12.4	24.5	14.7		23.1
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	956	946	1938	946		1403
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

8:00 am Baseline

Synchro 10 Report
Page 3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.29	0.21	0.24	0.29		0.29

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 56.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 9.8

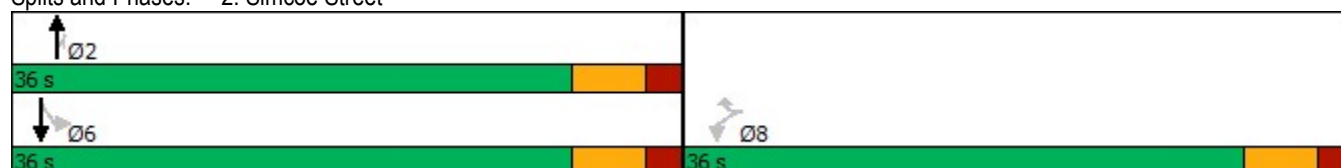
Intersection LOS: A

Intersection Capacity Utilization 79.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	87.0	72.6	37.4	94.4	21.4	52.1	56.8	49.3
Average Queue (m)	52.3	34.9	19.2	46.1	2.7	23.6	26.0	27.2
95th Queue (m)	78.9	61.6	37.0	82.7	12.0	40.8	46.8	45.8
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	1	0		0		0	0	
Queuing Penalty (veh)	0	0		0		0	1	
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	18	0			
Queuing Penalty (veh)			3	25	0			

Intersection: 2: Simcoe Street

Movement	WB	WB	NB	NB	NB	B3	B3	SB	SB
Directions Served	L	R	T	T	R	T	T	LT	T
Maximum Queue (m)	79.0	22.2	45.7	49.4	17.5	35.0	64.8	56.4	45.9
Average Queue (m)	45.7	7.9	23.6	37.1	16.7	1.5	11.4	36.2	27.4
95th Queue (m)	71.7	16.9	40.1	58.6	18.8	14.9	43.1	49.9	44.9
Link Distance (m)	238.3	238.3	28.0	28.0		171.8	171.8	48.8	48.8
Upstream Blk Time (%)			5	17				2	0
Queuing Penalty (veh)			0	0				3	0
Storage Bay Dist (m)					10.0				
Storage Blk Time (%)				33	20				
Queuing Penalty (veh)				116	61				

Network Summary

Network wide Queuing Penalty: 209

2035 Future Background Traffic P.M.

1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	735	96	114	564	23	147	178	166	13	133	15
Future Volume (vph)	6	735	96	114	564	23	147	178	166	13	133	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3533	0	1787	1900	1615	1805	1900	1615	0	1861	0
Flt Permitted		0.950		0.202			0.398				0.958	
Satd. Flow (perm)	0	3355	0	378	1900	1467	740	1900	1615	0	1789	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				85			180			5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	910	0	124	613	25	160	193	180	0	175	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		38.8		53.1	51.1	51.1	25.4	23.4	23.4		13.4	
Actuated g/C Ratio		0.45		0.61	0.59	0.59	0.29	0.27	0.27		0.15	
v/c Ratio		0.60		0.34	0.55	0.03	0.55	0.38	0.32		0.62	
Control Delay		20.4		10.1	13.5	0.0	31.6	27.8	5.5		43.4	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		20.4		10.1	13.5	0.0	31.6	27.8	5.5		43.4	
LOS		C		B	B	A	C	C	A		D	
Approach Delay		20.4			12.5			21.4			43.4	
Approach LOS		C			B			C			D	
Queue Length 50th (m)		59.0		8.1	59.2	0.0	21.5	27.2	0.0		28.0	
Queue Length 95th (m)		89.6		16.9	98.0	0.0	37.7	45.9	14.7		48.9	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1514		492	1121	901	291	594	628		356	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

5:00 pm Baseline

Synchro 10 Report
Page 1

2035 Future Background Traffic P.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.60		0.25	0.55	0.03	0.55	0.32	0.29		0.49	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.5

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 19.8

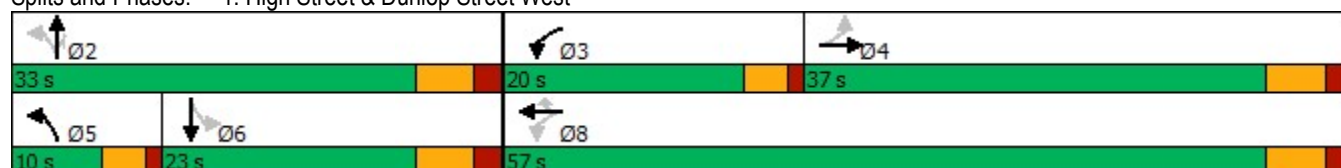
Intersection LOS: B

Intersection Capacity Utilization 94.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Background Traffic P.M.

2: Simcoe Street

02-15-2022

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	416	140	621	357	164	426
Future Volume (vph)	416	140	621	357	164	426
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		10.0	0.0	
Storage Lanes	1	1		1	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1805	1615	3610	1615	0	3559
Flt Permitted	0.950					0.636
Satd. Flow (perm)	1795	1591	3610	1571	0	2292
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		111		211		
Link Speed (k/h)	50		50			50
Link Distance (m)	254.6		50.7			68.6
Travel Time (s)	18.3		3.7			4.9
Confl. Peds. (#/hr)	6	3		22	22	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	452	152	675	388	0	641
Turn Type	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Total Split (s)	36.0	36.0	36.0	36.0	36.0	36.0
Total Lost Time (s)	6.0	6.0	6.0	6.0		6.0
Act Effct Green (s)	20.6	20.6	30.2	30.2		30.2
Actuated g/C Ratio	0.33	0.33	0.48	0.48		0.48
v/c Ratio	0.77	0.26	0.39	0.45		0.58
Control Delay	28.4	6.4	12.4	7.7		15.8
Queue Delay	0.0	0.0	0.0	0.0		0.0
Total Delay	28.4	6.4	12.4	7.7		15.8
LOS	C	A	B	A		B
Approach Delay	22.8		10.6			15.8
Approach LOS	C		B			B
Queue Length 50th (m)	48.4	3.4	25.6	11.7		27.4
Queue Length 95th (m)	77.5	13.8	49.0	38.4		56.1
Internal Link Dist (m)	230.6		26.7			44.6
Turn Bay Length (m)				10.0		
Base Capacity (vph)	863	822	1736	864		1102
Starvation Cap Reductn	0	0	0	0		0
Spillback Cap Reductn	0	0	0	0		0
Storage Cap Reductn	0	0	0	0		0

5:00 pm Baseline



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Reduced v/c Ratio	0.52	0.18	0.39	0.45		0.58

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 62.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.3

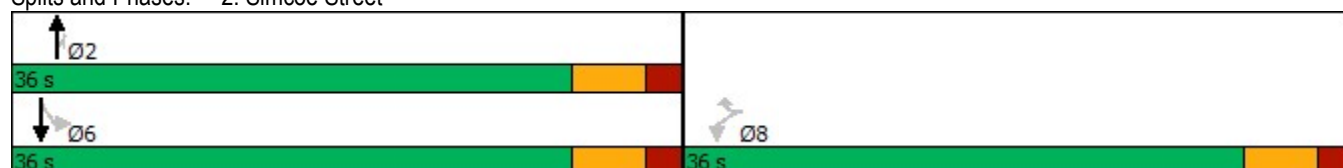
Intersection LOS: B

Intersection Capacity Utilization 88.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Simcoe Street



Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	61.9	55.2	36.9	78.8	27.2	41.3	32.2	34.1
Average Queue (m)	36.2	21.1	12.2	30.1	2.8	16.0	13.9	13.5
95th Queue (m)	55.3	41.6	26.5	54.8	14.4	31.0	26.5	26.6
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)				0				
Queuing Penalty (veh)				0				
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	14	0			
Queuing Penalty (veh)			0	13	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	27.0	50.2	28.9	26.3	27.1	17.5	35.1	31.6
Average Queue (m)	10.8	30.1	11.8	15.0	16.1	15.1	19.8	13.6
95th Queue (m)	23.1	49.6	22.6	23.7	26.4	18.5	32.2	26.7
Link Distance (m)	52.1	238.3	238.3	27.6	27.6		48.2	48.2
Upstream Blk Time (%)				0	1			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					14	14		
Queuing Penalty (veh)					36	30		

Intersection: 3: Secondary Access

Movement	EB	NB
Directions Served	R	T
Maximum Queue (m)	16.3	3.0
Average Queue (m)	6.8	0.1
95th Queue (m)	14.5	1.7
Link Distance (m)	51.4	172.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 79

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	75.4	45.7	37.2	78.9	21.3	36.6	28.4	32.5
Average Queue (m)	36.3	20.7	11.7	36.8	2.6	16.6	14.3	13.1
95th Queue (m)	58.5	41.5	23.8	67.6	12.9	29.6	26.2	23.4
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	0			0				
Queuing Penalty (veh)	0			0				
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	17	0			
Queuing Penalty (veh)			1	16	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	26.4	49.9	27.0	26.6	25.2	17.5	36.5	30.3
Average Queue (m)	10.1	27.5	11.3	16.2	16.2	15.4	18.6	14.3
95th Queue (m)	21.6	43.5	21.7	24.5	26.1	18.7	31.6	26.2
Link Distance (m)	52.1	238.3	238.3	27.6	27.6		48.2	48.2
Upstream Blk Time (%)				1	0			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					15	14		
Queuing Penalty (veh)					38	31		

Intersection: 3: Secondary Access

Movement	EB
Directions Served	R
Maximum Queue (m)	15.2
Average Queue (m)	6.8
95th Queue (m)	13.8
Link Distance (m)	51.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 86

2035 Future Total Traffic A.M. Optimized

1: High Street & Dunlop Street West

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	525	145	80	456	15	112	103	151	9	69	7
Future Volume (vph)	16	525	145	80	456	15	112	103	151	9	69	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3444	0	1805	1900	1615	1805	1900	1615	0	1862	0
Flt Permitted		0.939		0.268			0.641				0.953	
Satd. Flow (perm)	0	3236	0	507	1900	1543	1193	1900	1615	0	1780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48				102			164			6
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	746	0	87	496	16	122	112	164	0	93	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	31.0	31.0		9.0	40.0	40.0	9.0	35.0	35.0	26.0	26.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		27.8		36.9	34.9	34.9	19.4	17.4	17.4		10.3	
Actuated g/C Ratio		0.43		0.57	0.54	0.54	0.30	0.27	0.27		0.16	
v/c Ratio		0.52		0.22	0.48	0.02	0.30	0.22	0.29		0.32	
Control Delay		15.6		8.5	11.9	0.1	18.2	18.6	5.0		26.5	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		15.6		8.5	11.9	0.1	18.2	18.6	5.0		26.5	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		15.6			11.1			12.9			26.5	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		35.6		4.7	37.3	0.0	11.1	10.6	0.0		10.0	
Queue Length 95th (m)		54.2		11.0	63.9	0.0	22.3	21.7	11.9		22.2	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1425		391	1029	883	407	858	819		558	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2035 Future Total Traffic A.M. Optimized
1: High Street & Dunlop Street West

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.52		0.22	0.48	0.02	0.30	0.13	0.20		0.17	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 64.3

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 14.1

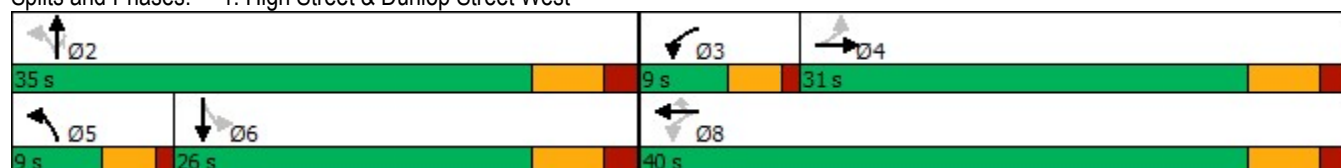
Intersection LOS: B

Intersection Capacity Utilization 71.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Total Traffic A.M. Optimized

2: Site Access/Simcoe Street

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	16	0	253	9	186	18	434	256	107	271	29
Future Volume (vph)	56	16	0	253	9	186	18	434	256	107	271	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1787	1602	0	0	3600	1615	0	3519	0
Flt Permitted		0.663		0.706				0.930			0.724	
Satd. Flow (perm)	0	1235	0	1325	1602	0	0	3355	1578	0	2577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					202				242			16
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.2			254.6			50.7			68.6	
Travel Time (s)		4.6			18.3			3.7			4.9	
Confl. Peds. (#/hr)				3		5			16	16		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	275	212	0	0	492	278	0	443	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	30.0	30.0		30.0	30.0		40.0	40.0	40.0	40.0	40.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		17.6		17.6	17.6			34.2	34.2		34.2	
Actuated g/C Ratio		0.28		0.28	0.28			0.54	0.54		0.54	
v/c Ratio		0.23		0.76	0.36			0.27	0.29		0.32	
Control Delay		19.0		34.8	5.2			9.5	3.1		9.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		19.0		34.8	5.2			9.5	3.1		9.7	
LOS		B		C	A			A	A		A	
Approach Delay		19.0			21.9			7.2			9.7	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		7.4		30.9	0.9			16.3	2.0		14.5	
Queue Length 95th (m)		16.8		55.5	14.1			29.8	14.1		27.8	
Internal Link Dist (m)		40.2			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		466		500	731			1797	957		1387	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.17		0.55	0.29			0.27	0.29		0.32	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 63.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 12.4

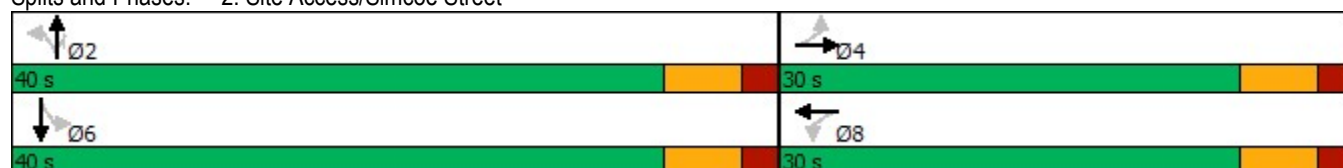
Intersection LOS: B

Intersection Capacity Utilization 93.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Site Access/Simcoe Street



2035 Future Total Traffic A.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	525	146	80	456	15	113	103	152	9	69	7
Future Volume (vph)	16	525	146	80	456	15	113	103	152	9	69	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3444	0	1805	1900	1615	1805	1900	1615	0	1862	0
Flt Permitted		0.939		0.266			0.631				0.953	
Satd. Flow (perm)	0	3236	0	503	1900	1543	1174	1900	1615	0	1780	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50				102			165		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		97.7			110.1			80.8			180.5	
Travel Time (s)		7.0			7.9			5.8			13.0	
Confl. Peds. (#/hr)	16		17	17		16	20			18		20
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	747	0	87	496	16	123	112	165	0	93	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	32.0	32.0		10.0	42.0	42.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		29.0		38.8	36.8	36.8	20.2	18.2	18.2		10.4	
Actuated g/C Ratio		0.43		0.58	0.55	0.55	0.30	0.27	0.27		0.15	
v/c Ratio		0.52		0.21	0.48	0.02	0.30	0.22	0.30		0.33	
Control Delay		16.3		8.6	12.0	0.1	18.9	19.3	5.0		28.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		16.3		8.6	12.0	0.1	18.9	19.3	5.0		28.2	
LOS		B		A	B	A	B	B	A		C	
Approach Delay		16.3			11.2			13.3			28.2	
Approach LOS		B			B			B			C	
Queue Length 50th (m)		37.6		4.9	38.9	0.0	11.7	11.1	0.0		10.6	
Queue Length 95th (m)		57.2		11.3	66.3	0.0	23.3	22.4	12.1		23.2	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1427		407	1043	893	410	766	749		456	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

8:00 am Baseline

Synchro 10 Report
Page 1

2035 Future Total Traffic A.M.
1: High Street & Dunlop Street West

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.52		0.21	0.48	0.02	0.30	0.15	0.22		0.20	

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 67.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 14.6

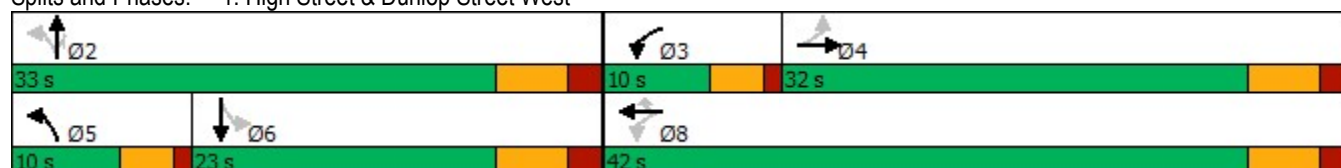
Intersection LOS: B

Intersection Capacity Utilization 71.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Total Traffic A.M.

2: Site Access/Simcoe Street

02-15-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	17	0	253	9	186	19	434	256	107	271	30
Future Volume (vph)	59	17	0	253	9	186	19	434	256	107	271	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1787	1601	0	0	3600	1615	0	3519	0
Flt Permitted		0.664		0.704				0.927			0.724	
Satd. Flow (perm)	0	1237	0	1321	1601	0	0	3344	1577	0	2577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					202				207			14
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.2			254.6			50.7			68.6	
Travel Time (s)		4.6			18.3			3.7			4.9	
Confl. Peds. (#/hr)				3		5			16	16		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	1%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	0	275	212	0	0	493	278	0	444	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		17.5		17.5	17.5			30.3	30.3		30.3	
Actuated g/C Ratio		0.29		0.29	0.29			0.51	0.51		0.51	
v/c Ratio		0.23		0.71	0.35			0.29	0.31		0.34	
Control Delay		16.8		29.5	4.6			10.4	4.5		10.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		16.8		29.5	4.6			10.4	4.5		10.7	
LOS		B		C	A			B	A		B	
Approach Delay		16.8			18.7			8.2			10.7	
Approach LOS		B			B			A			B	
Queue Length 50th (m)		7.0		27.9	0.8			15.6	3.8		13.9	
Queue Length 95th (m)		15.8		50.0	12.7			33.6	19.2		31.5	
Internal Link Dist (m)		40.2			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		625		668	909			1691	899		1310	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.13		0.41	0.23			0.29	0.31		0.34	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 59.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 12.1

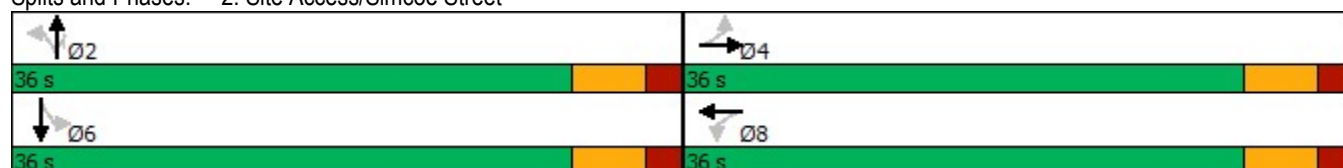
Intersection LOS: B

Intersection Capacity Utilization 93.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Site Access/Simcoe Street



2035 Future Total Traffic A.M. Optimized

3: Secondary Access

02-22-2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	35	0	113	10	0
Future Volume (Veh/h)	0	35	0	113	10	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	38	0	123	11	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)					51	
pX, platoon unblocked						
vC, conflicting volume	72	6	11			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	6	11			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	923	1076	1607			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	38	62	62	7	4	
Volume Left	0	0	0	0	0	
Volume Right	38	0	0	0	0	
cSH	1076	1700	1700	1700	1700	
Volume to Capacity	0.04	0.04	0.04	0.00	0.00	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.5	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				 	 	
Traffic Volume (veh/h)	0	37	0	114	10	0
Future Volume (Veh/h)	0	37	0	114	10	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	40	0	124	11	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)					51	
pX, platoon unblocked						
vC, conflicting volume	73	6	11			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	73	6	11			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	922	1076	1607			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	40	62	62	7	4	
Volume Left	0	0	0	0	0	
Volume Right	40	0	0	0	0	
cSH	1076	1700	1700	1700	1700	
Volume to Capacity	0.04	0.04	0.04	0.00	0.00	
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.5	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

Queuing and Blocking Report

Baseline

02-22-2022

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	82.9	68.3	37.3	92.0	26.7	54.4	53.8	58.3
Average Queue (m)	53.6	41.0	19.9	47.8	3.0	25.5	24.2	24.3
95th Queue (m)	80.0	68.0	38.3	82.7	14.1	45.8	43.9	43.4
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	1			0		0	0	
Queuing Penalty (veh)	0			0		0	0	
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			0	23	0			
Queuing Penalty (veh)			2	35	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	18.3	83.2	26.6	27.5	31.5	17.5	58.0	47.1
Average Queue (m)	8.3	48.0	9.6	19.6	22.1	16.8	35.0	27.6
95th Queue (m)	16.3	74.5	20.7	27.0	29.5	18.5	49.2	43.8
Link Distance (m)	69.0	238.3	238.3	27.5	27.5		48.2	48.2
Upstream Blk Time (%)				2	3		1	0
Queuing Penalty (veh)				1	2		2	0
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					32	24		
Queuing Penalty (veh)					115	73		

Intersection: 3: Secondary Acces

Movement	EB	NB	NB
Directions Served	R	T	T
Maximum Queue (m)	11.4	7.9	17.5
Average Queue (m)	5.3	0.4	1.0
95th Queue (m)	12.6	3.9	7.1
Link Distance (m)	68.3	172.1	172.1
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 233

Intersection: 1: High Street & Dunlop Street West

Movement	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	LT	TR	L	T	R	L	T	LTR
Maximum Queue (m)	85.6	68.0	37.4	95.2	27.4	67.8	50.6	61.9
Average Queue (m)	52.4	34.2	20.7	48.3	3.7	31.4	26.0	29.1
95th Queue (m)	81.2	60.9	39.3	85.1	16.3	55.2	45.5	51.4
Link Distance (m)	83.7	83.7		99.5		56.9	56.9	166.4
Upstream Blk Time (%)	0			1		1	0	
Queuing Penalty (veh)	0			0		2	0	
Storage Bay Dist (m)			30.0		20.0			
Storage Blk Time (%)			1	21	0			
Queuing Penalty (veh)			3	32	0			

Intersection: 2: Site Access/Simcoe Street

Movement	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	T	R	LT	TR
Maximum Queue (m)	21.8	75.6	22.3	31.2	31.5	17.5	55.1	48.9
Average Queue (m)	8.0	44.1	9.9	19.3	22.2	17.0	34.1	27.7
95th Queue (m)	19.0	66.9	18.9	28.1	29.7	18.8	50.1	45.1
Link Distance (m)	69.0	238.3	238.3	27.5	27.5		48.2	48.2
Upstream Blk Time (%)				3	3		1	0
Queuing Penalty (veh)				2	2		2	1
Storage Bay Dist (m)						10.0		
Storage Blk Time (%)					32	23		
Queuing Penalty (veh)					114	72		

Intersection: 3: Secondary Acces

Movement	EB	NB	NB
Directions Served	R	T	T
Maximum Queue (m)	17.6	10.0	11.3
Average Queue (m)	6.1	0.6	0.7
95th Queue (m)	13.9	5.3	5.3
Link Distance (m)	68.3	172.1	172.1
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 231

2035 Future Total Traffic P.M. Optimized

1: High Street & Dunlop Street West

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	735	128	130	564	23	174	185	177	13	142	15
Future Volume (vph)	6	735	128	130	564	23	174	185	177	13	142	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3510	0	1787	1900	1615	1805	1900	1615	0	1862	0
Flt Permitted		0.950		0.169			0.400				0.961	
Satd. Flow (perm)	0	3334	0	316	1900	1467	744	1900	1615	0	1795	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				85			192			5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	945	0	141	613	25	189	201	192	0	184	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	40.0	40.0		12.0	52.0	52.0	12.0	38.0	38.0	26.0	26.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effect Green (s)		34.3		48.1	46.0	46.0	27.8	25.8	25.8		13.8	
Actuated g/C Ratio		0.41		0.57	0.55	0.55	0.33	0.31	0.31		0.16	
v/c Ratio		0.69		0.45	0.59	0.03	0.54	0.34	0.30		0.62	
Control Delay		23.5		13.7	16.2	0.1	27.2	24.1	4.7		40.8	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		23.5		13.7	16.2	0.1	27.2	24.1	4.7		40.8	
LOS		C		B	B	A	C	C	A		D	
Approach Delay		23.5			15.2			18.7			40.8	
Approach LOS		C			B			B			D	
Queue Length 50th (m)		65.0		10.0	63.3	0.0	23.5	26.0	0.0		28.3	
Queue Length 95th (m)		97.3		21.7	110.9	0.0	40.0	43.4	13.8		48.9	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1379		321	1042	843	348	725	735		432	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

5:00 pm Baseline

Synchro 10 Report
Page 1

2035 Future Total Traffic P.M. Optimized
1: High Street & Dunlop Street West

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.69		0.44	0.59	0.03	0.54	0.28	0.26		0.43	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 83.9

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 21.1

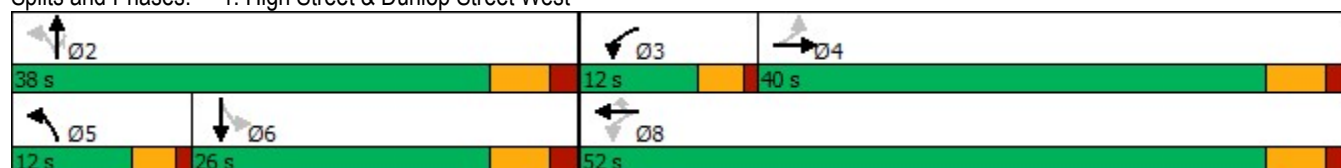
Intersection LOS: C

Intersection Capacity Utilization 96.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Total Traffic P.M. Optimized

2: Site Access/Simcoe Street

02-22-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	11	0	416	16	140	35	621	357	164	426	56
Future Volume (vph)	44	11	0	416	16	140	35	621	357	164	426	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1805	1619	0	0	3595	1615	0	3511	0
Flt Permitted		0.731		0.718				0.885			0.622	
Satd. Flow (perm)	0	1362	0	1358	1619	0	0	3191	1571	0	2209	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					119				210			18
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		81.1			254.6			50.7			68.6	
Travel Time (s)		5.8			18.3			3.7			4.9	
Confl. Peds. (#/hr)				6		3			22	22		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	452	169	0	0	713	388	0	702	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Total Split (s)	34.0	34.0		34.0	34.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		25.1		25.1	25.1			30.1	30.1		30.1	
Actuated g/C Ratio		0.37		0.37	0.37			0.45	0.45		0.45	
v/c Ratio		0.12		0.89	0.25			0.50	0.47		0.70	
Control Delay		14.1		42.2	6.1			15.4	8.5		20.0	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		14.1		42.2	6.1			15.4	8.5		20.0	
LOS		B		D	A			B	A		C	
Approach Delay		14.1			32.4			12.9			20.0	
Approach LOS		B			C			B			C	
Queue Length 50th (m)		5.0		54.3	4.1			36.5	15.2		39.6	
Queue Length 95th (m)		12.1		#106.1	15.4			51.8	36.5		60.5	
Internal Link Dist (m)		57.1			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		569		567	746			1428	819		999	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.11		0.80	0.23			0.50	0.47		0.70	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 67.2

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 101.4%

ICU Level of Service G

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Site Access/Simcoe Street

					
Ø2			Ø4		
36 s			34 s		
					
Ø6			Ø8		
36 s			34 s		

2035 Future Total Traffic P.M.
1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	735	129	131	564	23	176	185	178	13	143	15
Future Volume (vph)	6	735	129	131	564	23	176	185	178	13	143	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		20.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	1		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	3510	0	1787	1900	1615	1805	1900	1615	0	1862	0
Flt Permitted		0.950		0.184			0.381				0.960	
Satd. Flow (perm)	0	3334	0	345	1900	1467	709	1900	1615	0	1793	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				85			193			5
Link Speed (k/h)		50			50			50				50
Link Distance (m)		97.7			110.1			80.8				180.5
Travel Time (s)		7.0			7.9			5.8				13.0
Confl. Peds. (#/hr)	39		25	25		39	24			7		24
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	946	0	142	613	25	191	201	193	0	185	0
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Total Split (s)	37.0	37.0		20.0	57.0	57.0	10.0	33.0	33.0	23.0	23.0	
Total Lost Time (s)		6.0		4.0	6.0	6.0	4.0	6.0	6.0		6.0	
Act Effct Green (s)		38.4		53.1	51.1	51.1	25.7	23.7	23.7		13.7	
Actuated g/C Ratio		0.44		0.61	0.59	0.59	0.30	0.27	0.27		0.16	
v/c Ratio		0.64		0.40	0.55	0.03	0.67	0.39	0.33		0.64	
Control Delay		21.5		11.1	13.6	0.0	37.2	27.9	5.5		44.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	
Total Delay		21.5		11.1	13.6	0.0	37.2	27.9	5.5		44.2	
LOS		C		B	B	A	D	C	A		D	
Approach Delay		21.5			12.7			23.6			44.2	
Approach LOS		C			B			C			D	
Queue Length 50th (m)		63.4		9.6	60.1	0.0	26.1	28.5	0.0		29.8	
Queue Length 95th (m)		95.4		19.1	98.0	0.0	#44.4	47.6	15.1		51.4	
Internal Link Dist (m)		73.7			86.1			56.8			156.5	
Turn Bay Length (m)				30.0		20.0						
Base Capacity (vph)		1486		477	1118	898	285	592	635		355	
Starvation Cap Reductn		0		0	0	0	0	0	0		0	
Spillback Cap Reductn		0		0	0	0	0	0	0		0	
Storage Cap Reductn		0		0	0	0	0	0	0		0	

Baseline

Synchro 10 Report
Page 1

2035 Future Total Traffic P.M.
1: High Street & Dunlop Street West

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.64		0.30	0.55	0.03	0.67	0.34	0.30		0.52	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 86.8

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 20.9

Intersection LOS: C

Intersection Capacity Utilization 96.4%

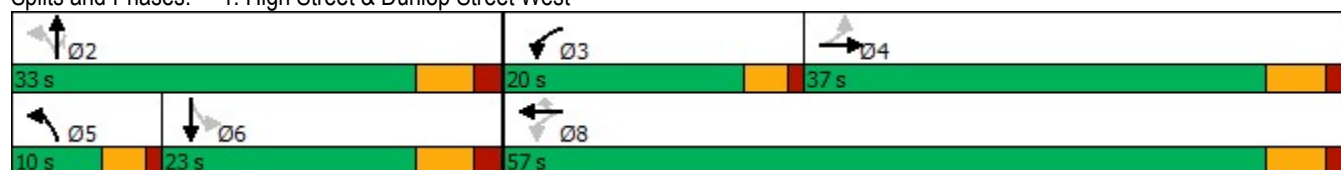
ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: High Street & Dunlop Street West



2035 Future Total Traffic P.M.

2: Site Access/Simcoe Street

02-16-2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	12	0	416	17	140	37	621	357	164	426	59
Future Volume (vph)	47	12	0	416	17	140	37	621	357	164	426	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		10.0	0.0		0.0
Storage Lanes	0		0	1		0	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1792	0	1805	1620	0	0	3595	1615	0	3510	0
Flt Permitted		0.728		0.715				0.880			0.621	
Satd. Flow (perm)	0	1356	0	1352	1620	0	0	3173	1571	0	2203	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					111				199			18
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		81.1			254.6			50.7			68.6	
Travel Time (s)		5.8			18.3			3.7			4.9	
Confl. Peds. (#/hr)				6		3			22	22		
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	452	170	0	0	715	388	0	705	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		
Total Split (s)	36.0	36.0		36.0	36.0		36.0	36.0	36.0	36.0	36.0	
Total Lost Time (s)		6.0		6.0	6.0			6.0	6.0		6.0	
Act Effect Green (s)		25.9		25.9	25.9			30.2	30.2		30.2	
Actuated g/C Ratio		0.38		0.38	0.38			0.44	0.44		0.44	
v/c Ratio		0.12		0.88	0.25			0.51	0.48		0.72	
Control Delay		13.8		40.1	6.5			16.1	9.3		21.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		13.8		40.1	6.5			16.1	9.3		21.2	
LOS		B		D	A			B	A		C	
Approach Delay		13.8			30.9			13.7			21.2	
Approach LOS		B			C			B			C	
Queue Length 50th (m)		5.4		54.3	4.9			38.2	16.9		41.6	
Queue Length 95th (m)		12.6		#105.1	16.1			54.8	40.1		64.2	
Internal Link Dist (m)		57.1			230.6			26.7			44.6	
Turn Bay Length (m)									10.0			
Base Capacity (vph)		600		598	779			1405	806		985	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio		0.11		0.76	0.22			0.51	0.48		0.72	

Intersection Summary

Area Type: Other

Cycle Length: 72

Actuated Cycle Length: 68.1

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 20.1

Intersection LOS: C

Intersection Capacity Utilization 101.4%

ICU Level of Service G

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Site Access/Simcoe Street

 Ø2	 Ø4
36 s	36 s
 Ø6	 Ø8
36 s	36 s

2035 Future Total Traffic P.M. Optimized

3: Secondary Acces

02-22-2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	30	0	137	5	0
Future Volume (Veh/h)	0	30	0	137	5	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	33	0	149	5	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)					51	
pX, platoon unblocked						
vC, conflicting volume	80	2	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	2	5			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	914	1080	1615			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	33	74	74	3	2	
Volume Left	0	0	0	0	0	
Volume Right	33	0	0	0	0	
cSH	1080	1700	1700	1700	1700	
Volume to Capacity	0.03	0.04	0.04	0.00	0.00	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.4	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	31	0	139	5	0
Future Volume (Veh/h)	0	31	0	139	5	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	34	0	151	5	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)					51	
pX, platoon unblocked						
vC, conflicting volume	80	2	5			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	2	5			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	913	1080	1615			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	34	76	76	3	2	
Volume Left	0	0	0	0	0	
Volume Right	34	0	0	0	0	
cSH	1080	1700	1700	1700	1700	
Volume to Capacity	0.03	0.04	0.04	0.00	0.00	
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	8.4	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

FIGURES

Gross Areas

PARKING GFA TOTAL: 132, 741 ft²
RESIDENTIAL TOTAL: 667, 400 ft²
- UNIT TOTAL: 458, 743 ft²
FREE STREETS/COMMERCIAL TOTAL: 3,859 ft²

TOTAL GFA: 804, 000 ft²
NET LEASABLE TOTAL: 462, 602 ft²

Typ. Floor Plate Efficiency: 86% PER FLOOR
8,592 ft² (Leaseable) / 10,021 ft² (Gross Floor Area) = 86%

Phase 1 Area: 161,257 ft² (3.702 ACRES)
Future Phase Area: 145,761 ft² (3.346 ACRES)
Total Site Area: 307,018 ft² (7.048 ACRES)

Units

Building	1-BR	2-BR	Free Sts.	Unit Count
Podium	24	86	3	113
Tower 1	188	96	0	284
Tower 2	156	80	0	236

Total Units	368	255	3	626
Total Beds	368	510	0	878

Residential Units: 630

Parking

	Surface	Podium	Total
Residential	107	384	491

Residential Parking Ratio 0.78/ Unit

Storage Lockers

L3	132
L4	132
L5	30
L6	30
Total	324

Zoning Setbacks

Zone: C1-2
Front Yard: None
Rear Yard: None
-Minimum building height of 4.5 metres and maximum building height of 22 metres within the first 5 metres of **Simcoe Extension**
-Minimum building height of 4.5 metres and a maximum building height of 22 metres within the first 5 metres for the **Bradford lot line**

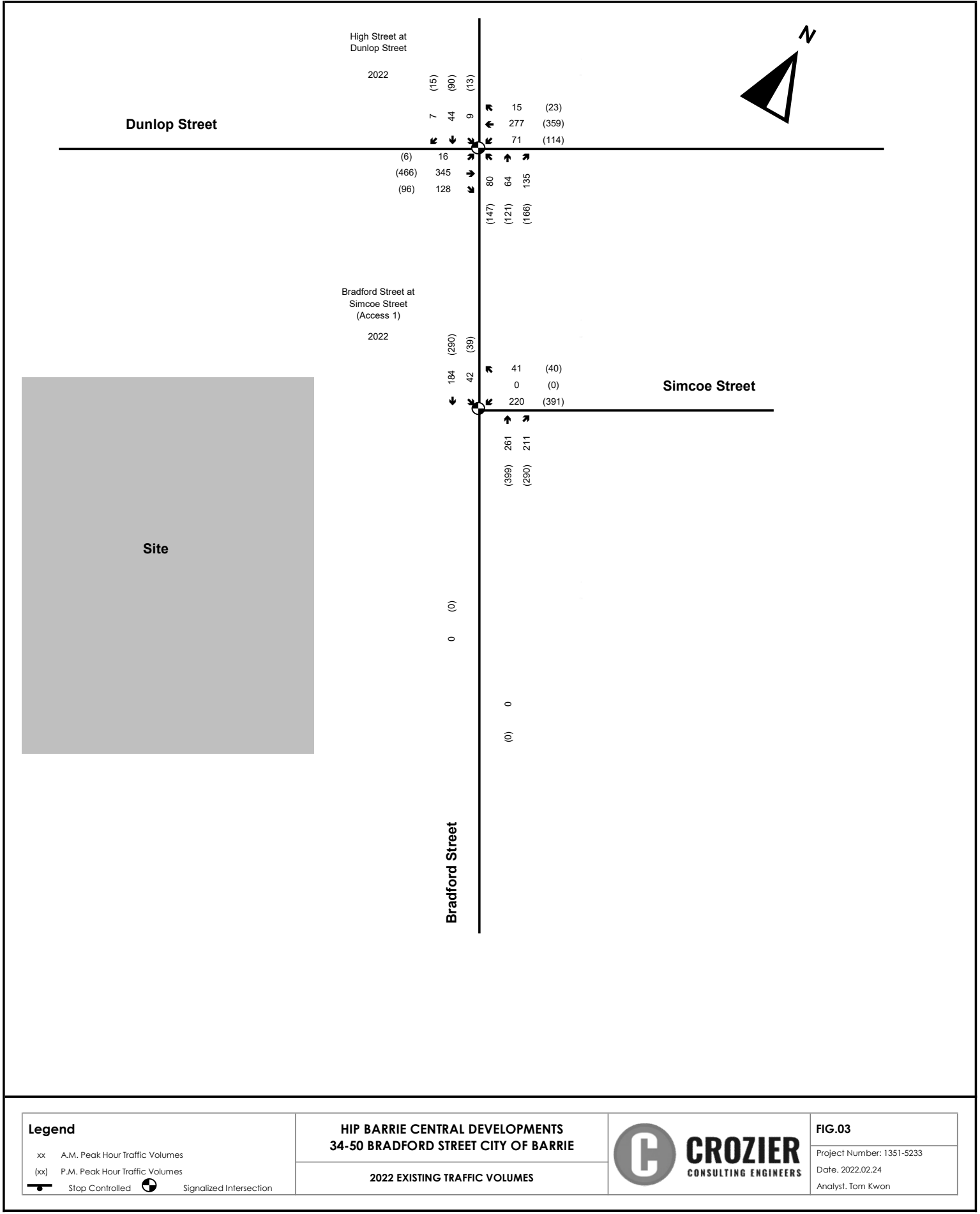
Commercial Parking Req:*

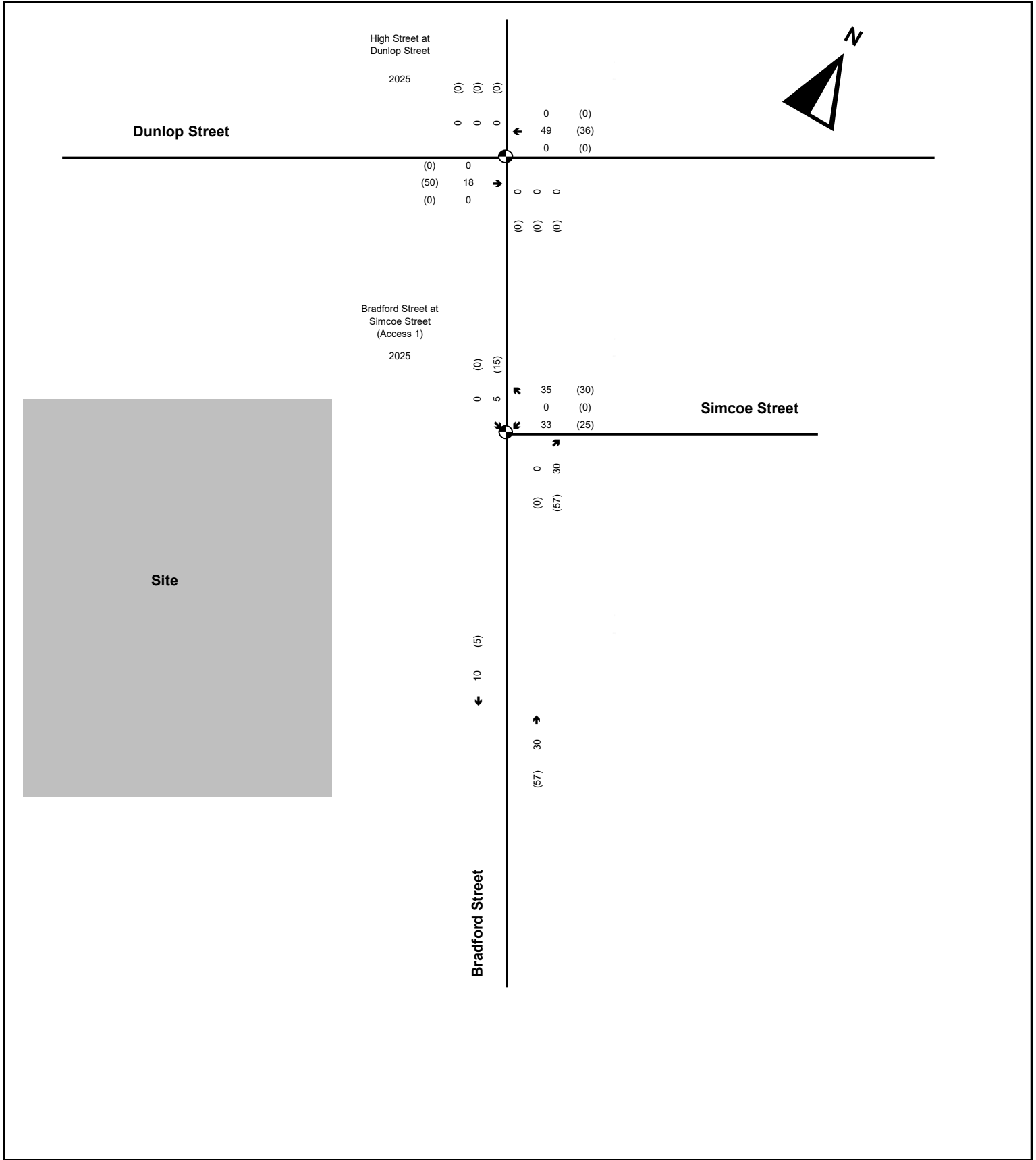
*None required per Section 6.3.6.1 of the City Bylaw

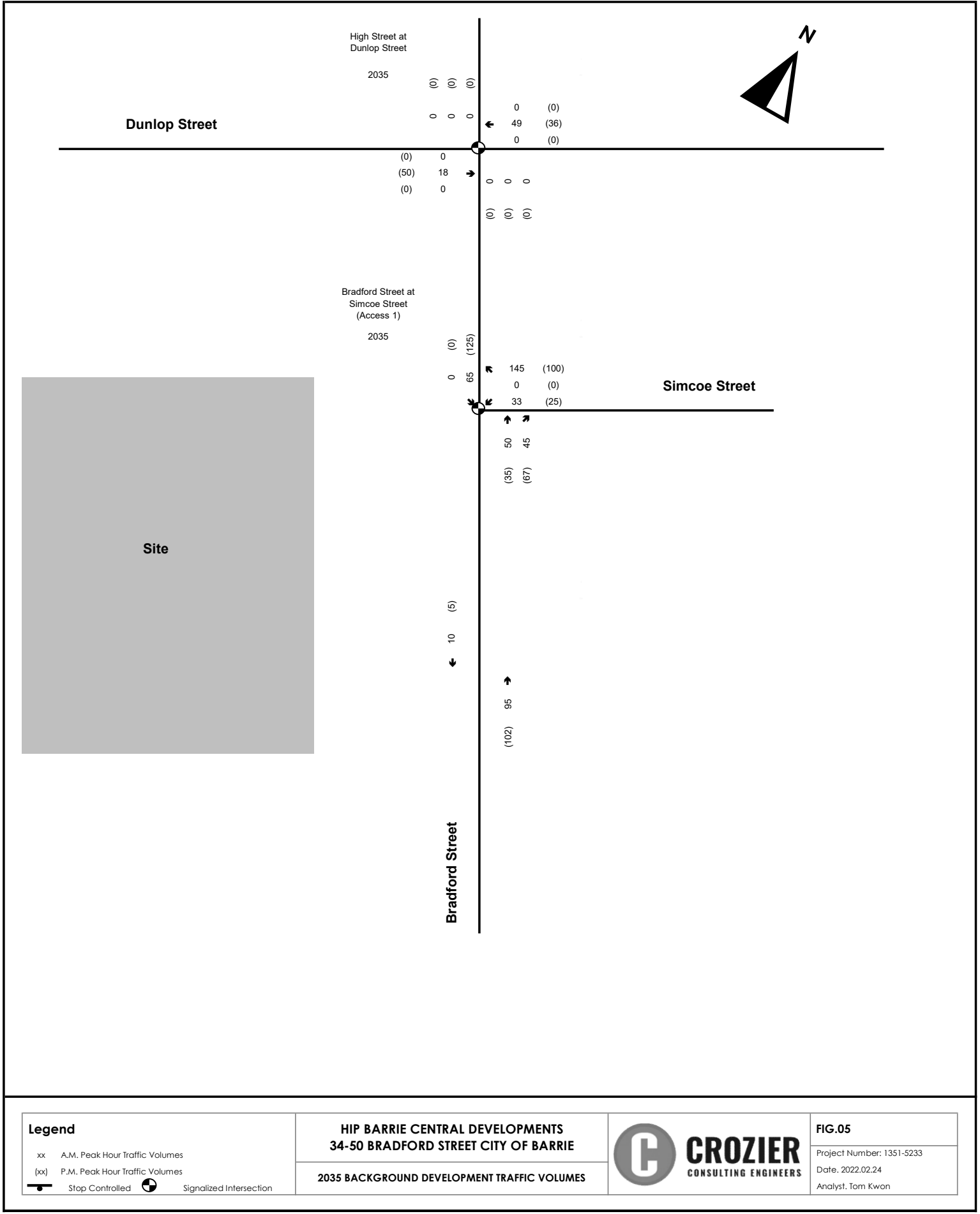


PHASE 1 - Site Plan
Scale 1:1200









Dunlop Street

High Street at
Dunlop Street

2035

(0) (0) (0)

0 0 0

0 (0)

49 (36)

0 (0)

(0) 0

(50) 18

(0) 0

0 0 0

(0) (0) (0)

Bradford Street at
Simcoe Street
(Access 1)

2035

(0) (125)

0 65

145 (100)

0 (0)

33 (25)

Simcoe Street

50 45

(35) (67)

(5)

10

←

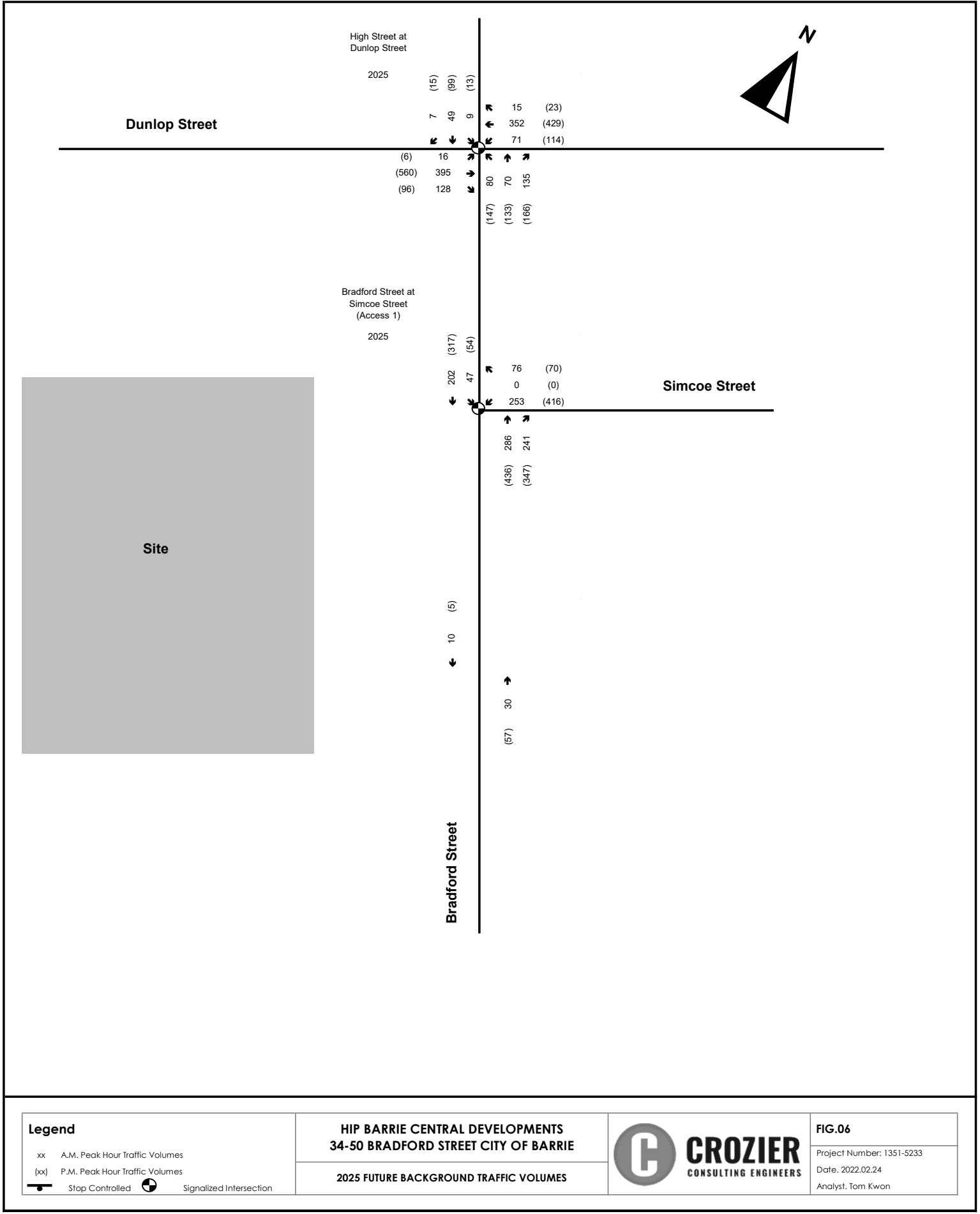
→

95

(102)

Bradford Street

Site



High Street at
Dunlop Street

2025

Dunlop Street

Bradford Street at
Simcoe Street
(Access 1)

2025

Simcoe Street

Bradford Street

Site

Legend

xx A.M. Peak Hour Traffic Volumes

(xx) P.M. Peak Hour Traffic Volumes

Stop Controlled

Signalized Intersection

HIP BARRIE CENTRAL DEVELOPMENTS
34-50 BRADFORD STREET CITY OF BARRIE

2025 FUTURE BACKGROUND TRAFFIC VOLUMES



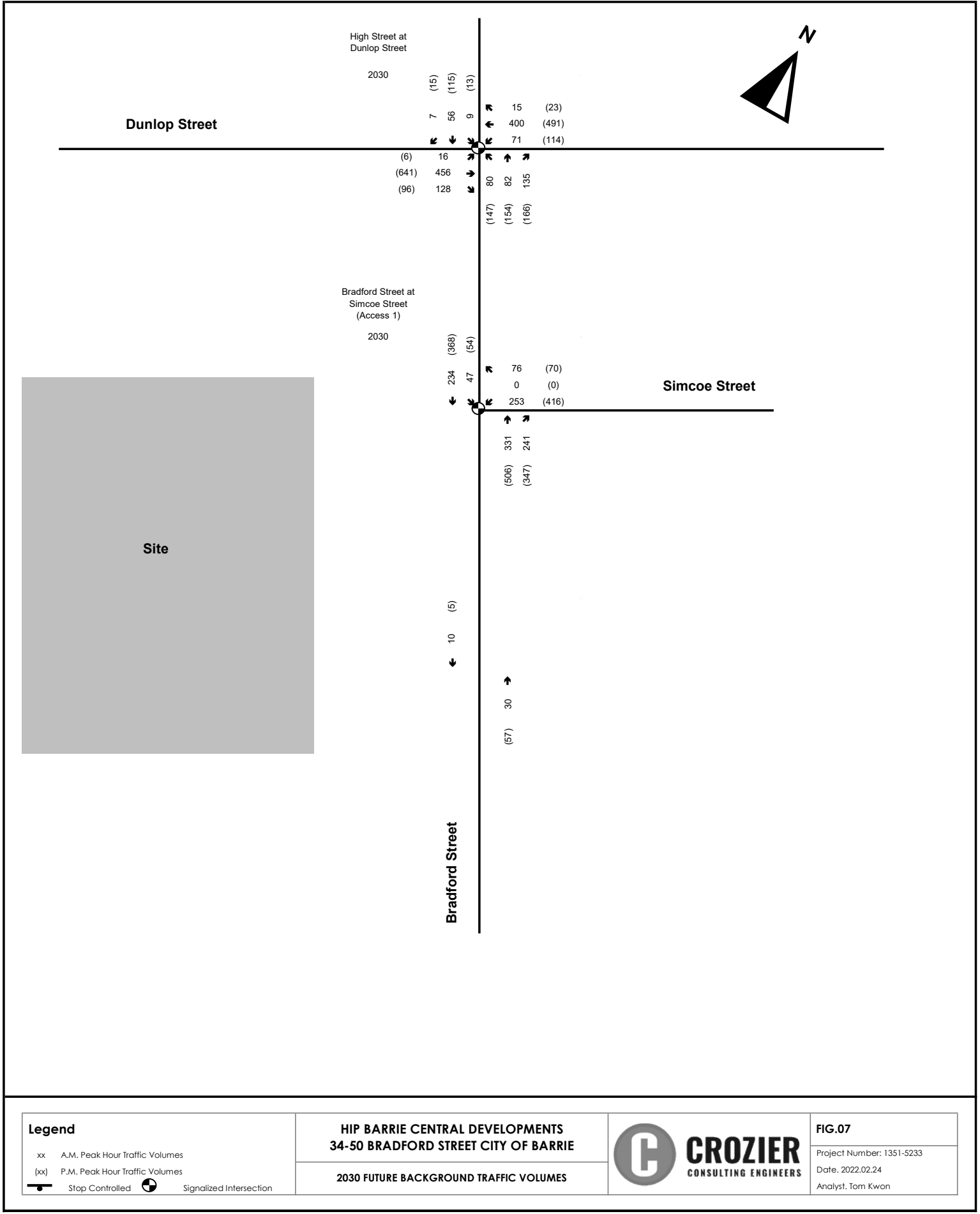
CROZIER
CONSULTING ENGINEERS

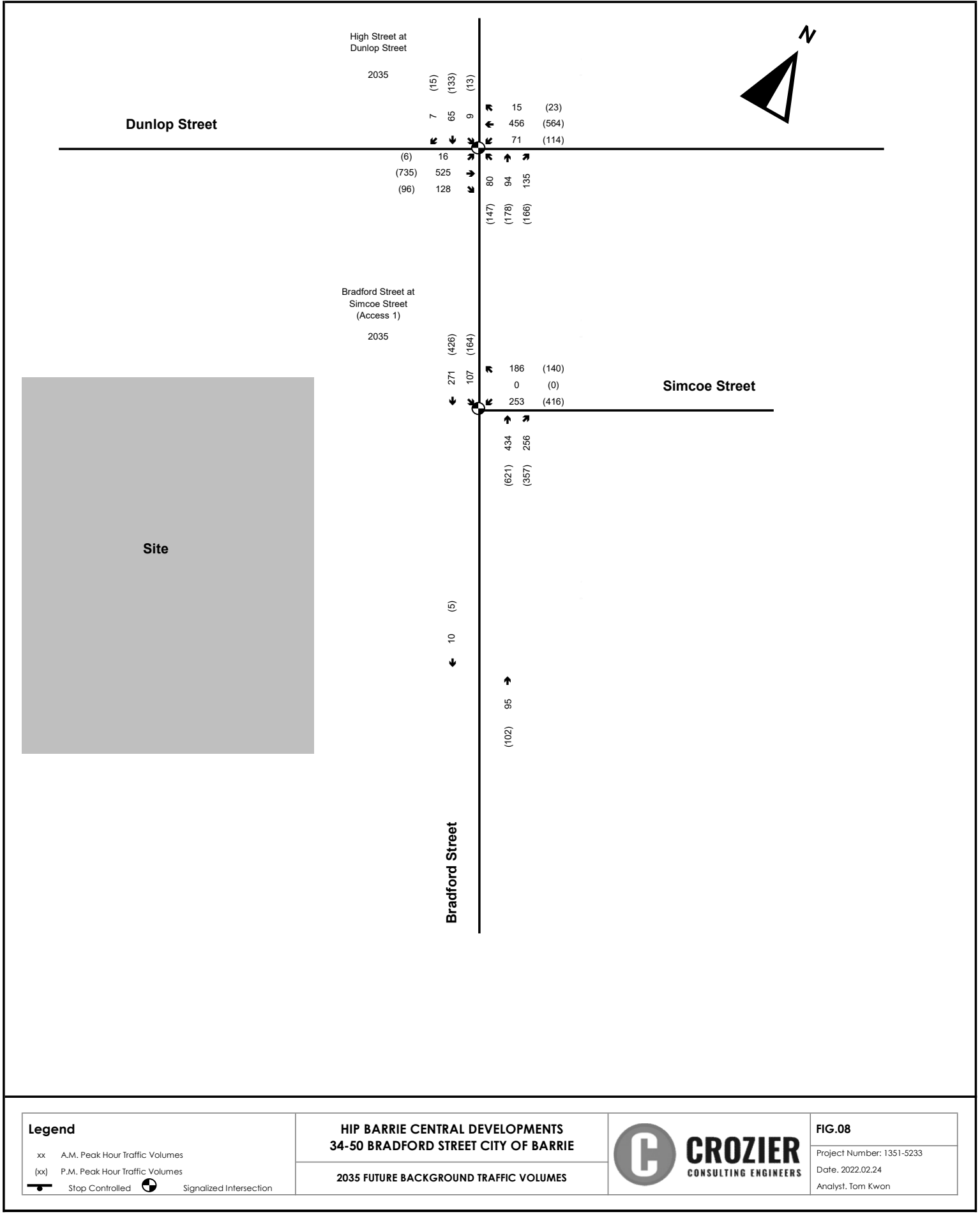
FIG.06

Project Number: 1351-5233

Date: 2022.02.24

Analyst: Tom Kwon





Dunlop Street

High Street at
Dunlop Street

2035

7 (15)
65 (133)
9 (13)

15 (23)
456 (564)
71 (114)

(6) 16
(735) 525
(96) 128

80
94
135
(147)
(178)
(166)

Bradford Street at
Simcoe Street
(Access 1)

2035

271 (426)
107 (164)

186 (140)
0 (0)
253 (416)

Simcoe Street

434
256
(621)
(357)

Site

Bradford Street

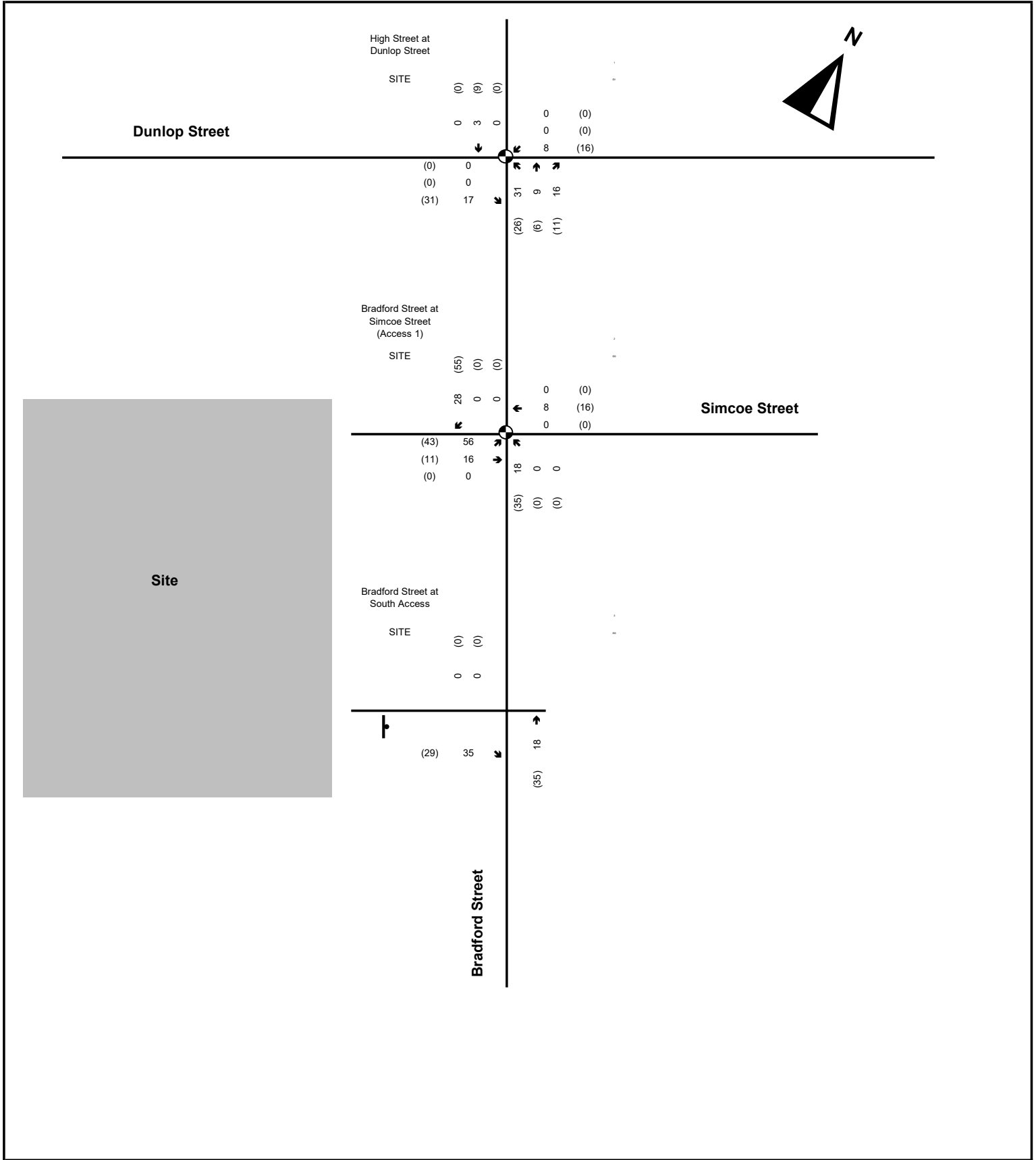
(5)

10

95

(102)

N



Legend

xx	A.M. Peak Hour Traffic Volumes
{xx}	P.M. Peak Hour Traffic Volumes
	Stop Controlled
	Signalized Intersection

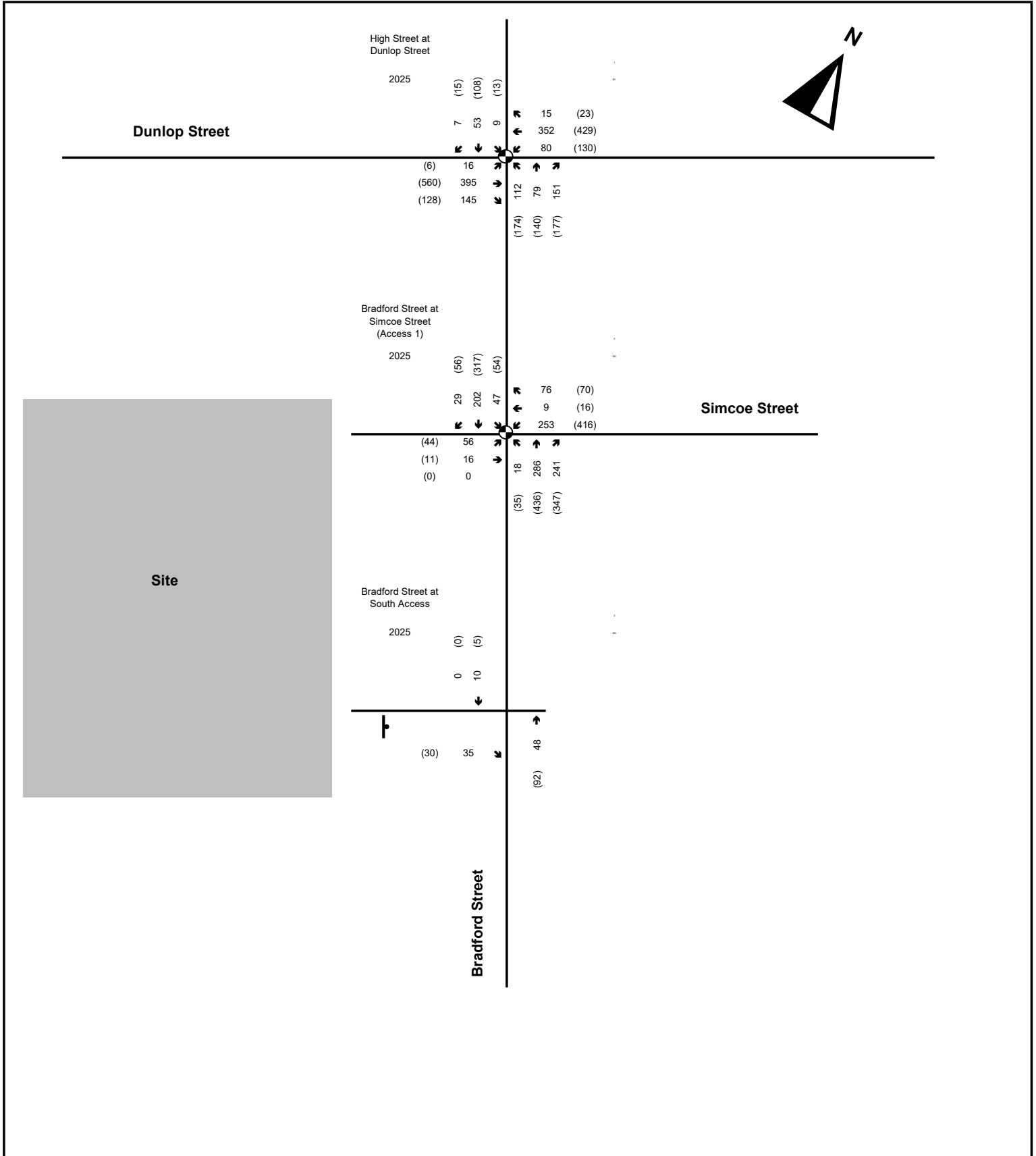
HIP BARRIE CENTRAL DEVELOPMENTS 34-50 BRADFORD STREET CITY OF BARRIE

SITE TRAFFIC VOLUMES



FIG.09

Project Number: 1351-5233
Date: 2022.02.24
Analyst: Tom Kwon



**HIP BARRIE CENTRAL DEVELOPMENTS
34-50 BRADFORD STREET CITY OF BARRIE**

2025 FUTURE TOTAL TRAFFIC VOLUMES

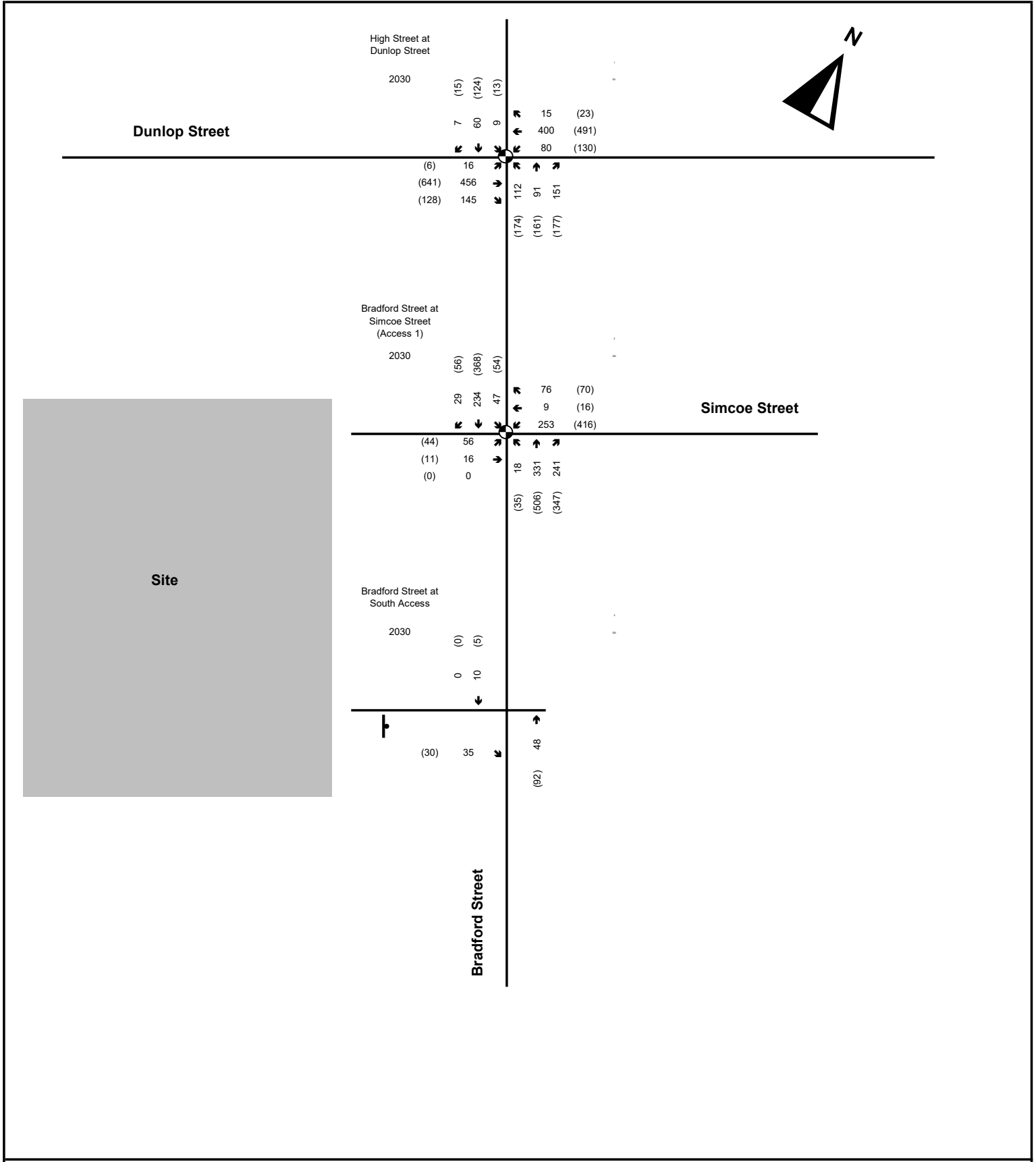


FIG.10

Project Number: 1351-5233

Date: 2022.02.24

Analyst: Tom Kwon



**HIP BARRIE CENTRAL DEVELOPMENTS
34-50 BRADFORD STREET CITY OF BARRIE**

2030 FUTURE TOTAL TRAFFIC VOLUMES



FIG.11

Project Number: 1351-5233

Date: 2022.02.24

Analyst: Tom Kwon

