75 Breezehill Avenue N

Transportation Impact Assessment (TIA) Report

FINAL

May 2025

75 Breezehill Avenue N

Transportation Impact Assessment (TIA) Report

prepared for:
The Estate of Carson Unsworth
35 Laurel St
Ottawa, ON
K1Y 4M4

prepared by:
PARSONS
1223 Michael Street North
Suite 100
Ottawa, ON K1J 7T2

May 20, 2025

477888-01000

Certification Form for Transportation Impact Assessment (TIA) Study

TIA Reports

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines and 2023 amendments.

Please note that the Certification is only required for the submission of a TIA. The Screening can be undertaken by a non-certified individual for the purpose of identifying if a TIA is needed or not.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that they meet the four criteria listed below.

CERTIFICATION

- ☑ I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines; (Update effective July 2023)
- ☑ I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
- ☑ I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
- ☑ I am either a licensed or registered[1] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☐ or transportation planning.

[1] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

City Of Ottawa
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th fl.
Ottawa, ON
K1P 1J1

Revision Date: December 2023

Dated at Ottawa (City) this 20th day of May, 20 25.

Name : Basel Ansari P.Eng

Professional title: Transportation Engineer

Signature of individual certifier that they meet the above four criteria

Office Contact Information (Please Print)
Address: 1223 Michael Street North, Suite 100
City / Postal Code: Ottawa, Ontario, K1J 7TJ
Telephone / Extension: 613-691-1581
Email Address: Basel.Ansari@parsons.com

Stamp

DOCUMENT CONTROL PAGE

CLIENT:	The Estate of Carson Unsworth
PROJECT NAME:	75 Breezehill Avenue N
REPORT TITLE:	TIA Report
PARSONS PROJECT NO:	477888 - 01000
APPLICATION TYPE:	Zoning By-Law Amendment (ZBLA) and Official Plan Amendment (OPA) Application
VERSION:	Final
DIGITAL MASTER:	\\XCCAN57FS01\Data\ISO\477888\1000\DOCS\STEP5-Final TIA\75 Breezehill - TIA Report 2025-5-19.docx
ORIGINATOR	Jordan Terada, E.I.T.
REVIEWER:	Basel Ansari, P.Eng.
AUTHORIZATION:	
CIRCULATION LIST:	Wally Dubyk, CET
HISTORY:	- TIA Step 1 Screening Form – May 23, 2023 - TIA Step 2 Scoping Report – May 23, 2023 - TIA Step 3 Forecasting Report – June 6, 2023 - TIA Step 4 Strategy Report – June 30, 2023 - TIA Step 4 Strategy Report Update – Dec 4, 2023 - TIA Step 4 Strategy Report Update – Dec 12, 2024 - TIA Final Report – May 20, 2025

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

TRANSPORTATION IMPACT ASSESSMENT REPORT

Parsons has been retained by The Estate of Carson Unsworth to prepare a Transportation Impact Assessment (TIA) Report in support of a Zoning By-Law Amendment (ZBLA) and Official Plan Amendment (OPA) application for a residential development located at 75 Breezehill Avenue N. This document follows the TIA process, as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017). The following report represents the final TIA Report.

1.0 SCREENING FORM

The Screening Form confirmed the need for a TIA Report based on the site meeting each of the trip generation and location triggers. The trip generation trigger is met due to the number of person trips anticipated to be generated by the development exceeding 60 person trips per hour. The location trigger is met due to the development being located within a Protected Major Transit Station Area (PMTSA) and Design Priority Area (DPA). Note that the safety trigger was not met. The Screening Form has been provided in **Appendix A**.

2.0 SCOPING REPORT

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

The proposed development is located at the municipal address of 75 Breezehill Ave N, which is bordered by Breezehill Ave N to the west, Laurel St to the south and the Trillium Line to the east. The site is currently zoned as General Industrial IG1 H(11). **Figure 1** illustrates the local context of the proposed site, while **Figure 2** illustrates the existing land uses and accesses of the proposed site properties, which includes various commercial businesses.

The development will consist of a 27-storey and a 29-storey high-rise building with a total of 479 apartment units and 429 m^2 (4,618 ft^2) of retail space. The site will continue to use the existing Laurel St access location in the future, while the existing Breezehill Ave N access will be removed. An underground parking garage ramp is proposed to be provided along the north end of the site driveway, with 124 vehicle parking spaces proposed in the garage and 678 bicycle parking spaces proposed on the ground floor and in the garage. **Figure 3** illustrates the latest site plan, which is expected to be constructed in a single phase with an assumed buildout date of 2026 (high quality plan provided in **Appendix A**).

2.1.2. Existing Conditions

Area Road Network

Description of roads included within the study area has been provided below.

Breezehill Ave N is a north-south municipal local roadway that extends from Somerset St W in the north to approximately 130m south of Gladstone Ave. The road consists of a two-lane cross-section with a 40km/h posted speed limit, on-street parking permitted on some sections on the east side, and an existing ROW of 20m.

Laurel St is an east-west municipal local roadway that extends from Loretta Ave N in the east to Irving Ave in the west. The road consists of a two-lane cross-section with a 40km/h posted speed limit, on-street parking permitted on both sides, and an existing ROW of 20m.

Loretta Ave N is a north-south municipal local roadway that extends from Laurel St in the north to approximately 130m south of Gladstone Ave. The road consists of a two-lane cross-section with a 40km/h posted speed limit, on-street parking permitted along some sections, and an existing ROW of 20m.

Gladstone Ave is an east-west municipal major collector roadway within the City of Ottawa, that extends from Parkdale Ave in the west to Cartier St in the east. The roadway consists of a two-lane cross-section, a posted speed limit of 40km/h, and an existing ROW of 20m west of Loretta Ave and 22m between Loretta Ave and 106m west of Preston St.

Somerset St W is an east-west municipal arterial roadway within the City of Ottawa, which extends from Queen Elizabeth Dr in the east to Garland St in the west, where it continues as Wellington St W. Within the study area, the roadway consists of a two-lane cross-section with an assumed speed limit of 50km/h and a protected ROW of 20m.

Figure 1: Local Context

Figure 2: Existing Land Uses and Accesses on Site

Figure 3: Site Plan (April 2025)

Existing Study Area Intersections

Somerset/Breezehill

The Somerset/Breezehill intersection is an unsignalized three-legged intersection with stop control on the south leg only. The south approach (Breezehill) consists of a shared left/right-turn lane. The west approach (Somerset) consists of a shared through/right-turn lane. The east approach (Somerset) consists of a shared through/left-turn lane. There are no restricted movements at this intersection. An east-west pedestrian crossing is provided on the south leg and bike lanes begin/end on Somerset Ave east leg.

Breezehill/Laurel

The Breezehill/Laurel intersection is an unsignalized four-legged intersection, with stop control on all legs of the intersection. All intersection approaches consist of an all-movement lane. Trucks are not permitted to enter the south leg of the intersection. Pedestrian crossings are provided on all legs of the intersection.

Note that a temporary access permit was issued in 2022 by the City of Ottawa ROW group to allow trucks to access the Canadian Bank Note Company via Breezehill Avenue during the Laurel Street and Loretta Avenue N Renewal project.

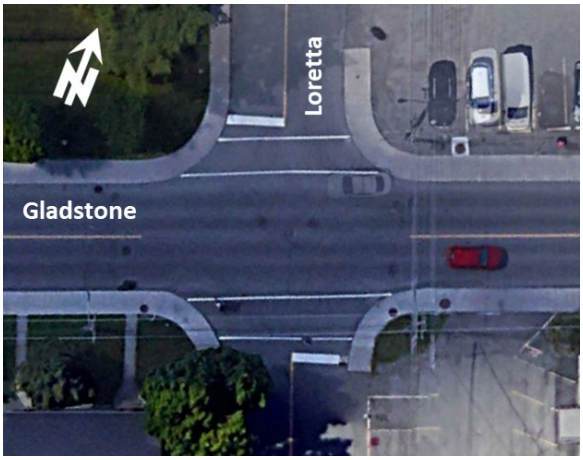
Gladstone/Breezehill

The Gladstone/Breezehill intersection is an unsignalized four-legged intersection, with stop control on the north and south legs of the intersection. All approaches of the intersection consist of an all-movement lane. Trucks are not permitted to enter the north leg of the intersection. East-west pedestrian crossings are provided on the north and south legs of the intersections.

Note that a temporary access permit was issued in 2022 by the City of Ottawa ROW group to allow trucks to access the Canadian Bank Note Company via Breezehill Avenue during the Laurel Street and Loretta Avenue N Renewal project.

Gladstone/Loretta

The Gladstone/Loretta intersection is an unsignalized four-legged intersection, with stop control on the north and south legs of the intersection. All approaches of the intersection consist of an all-movement lane. There are no restricted movements at this intersection. East-west pedestrian crossings are provided on the north and south legs of the intersections.



Existing Driveways to Adjacent Developments

Figure 4 illustrates nonresidential adjacent accesses (red lines) within 200m of the proposed future site access (blue circle) along Laurel St. It should be noted that accesses to several individual residential unit driveways are located on both sides of Laurel St (west of Breezehill Ave N only). As shown in **Figure 4**, driveway accesses on Laurel St and Loretta Ave not specific to individual residential units include the following:

Laurel St

- A north-south one-lane driveway that stretches from Somerset St W to Gladstone Ave is located midblock between Bayswater Ave and Breezehill Ave N. This driveway provides front and rear access to residential units, apartment buildings and commercial units.

Loretta Ave

- 6 east-west driveways that provide access to commercial buildings, 2 of which are on the west side of Loretta Ave and 4 on the east side.

Figure 4: Adjacent Driveways within 200m of Site Access

Existing Area Traffic Management Measures

Existing area traffic management measures within the study area include:

- Speed humps on Breezehill Ave N, Loretta Ave N, and Laurel St
- On-street parking on the local roads;
- Limited access for heavy vehicles on local roads;
- Curb extensions at intersection corners on Breezehill Ave N at both Gladstone Ave and Somerset St W; and,
- Traffic calming signs on Breezehill Ave N.

Pedestrian/Cycling Network

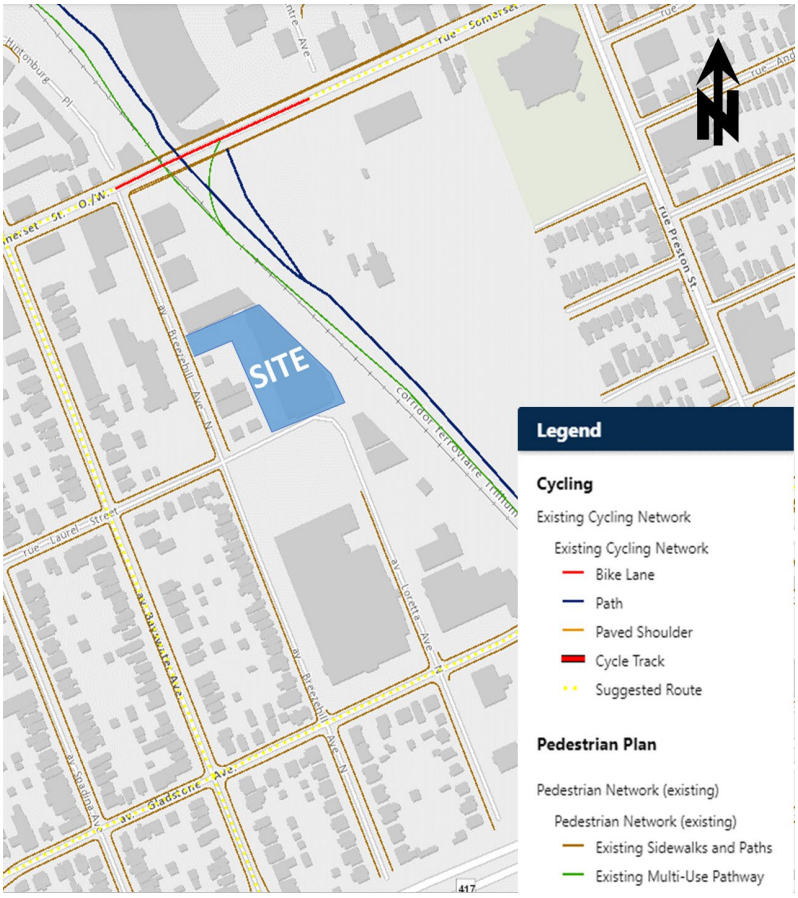
Figure 5 illustrates active transportation facilities within the study area. Sidewalks are provided on both sides of Gladstone Ave and Somerset St W within the study area. Along Breezehill Ave N, sidewalks are provided on both sides north of Laurel St and south of Gladstone Ave, and on the west side between Laurel St and Gladstone Ave. The Laurel St and Loretta Ave N renewal project was recently completed, providing new 2m concrete sidewalks along Loretta Ave N and Laurel St west of Gladstone Ave.

The Trillium Line Multi-Use Pathway (Trillium Pathway) is located east of the development site following the LRT Trillium Line on the east side. Within the study area, the Trillium Line MUP can be accessed along both Somerset St W and Gladstone Ave.

The Trillium Pathway was completed in three phases between 2012 and 2018 and is considered a key component of city's active transportation network. The Trillium Pathway was constructed from the Ottawa River Pathway MUP in the north to Prince of Wales Dr in the south, however, due to the current construction of The Ottawa Hospital (TOH) parking garage, the segment between Carling Ave and Prince of Wales Dr has been rerouted to Preston St for the duration of construction. It is estimated the Trillium Pathway serves over 1500 people per day and accommodates both pedestrians and cyclists.

Bike lanes are provided along a short 200m segment on Somerset St W east of Breezehill Ave N, with bike Sharrows pavement markings on the lanes west of Breezehill Ave N. Bayswater Ave, Gladstone Ave and Somerset St W are also suggested cycling routes. Based on the City of Ottawa Transportation Master Plan (TMP Part 1 2023), the Trillium Pathway is classified as a Cross-Town Bikeway.

Figure 5: Existing Active Transportation Facilities within Study Area



Transit Network

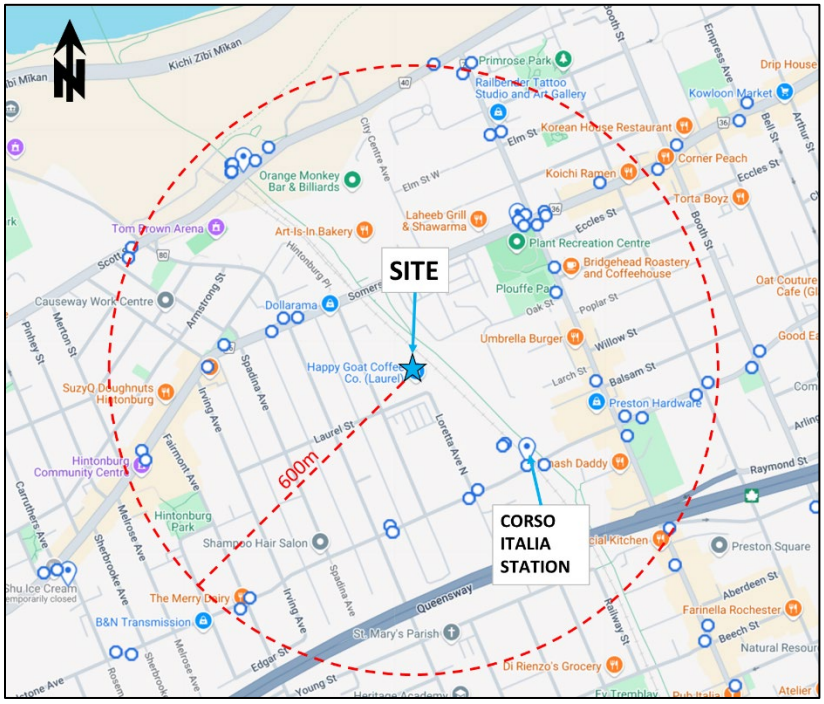
The existing transit network surrounding the proposed development site is illustrated in

Figure 6, which has come into effect on April 27, 2025 (OC Transpo 'New Ways to Bus'). The nearest bus stops to the site are along Somerset St W and Gladstone Ave (as shown in **Figure 7**). The O-Train Trillium Line (began operating recently) operates north-south, directly east of the development site. Bus Route #14, designated a "frequent route" operates along Gladstone Ave, with the nearest bus stop at Gladstone/Loretta. Bus Route #11, designated a "frequent route", operates along Somerset St W, with the nearest bus stop at Somerset/Bayswater. Transit route maps are provided in **Appendix B.**

Under existing conditions, the Corso Italia LRT station is accessible by walking 400m via Laurel St, Loretta Ave, and Gladstone Ave. However, as part of the West Downtown Core Secondary Plan (discussed in **Section 2.1.3.1**), a proposed north-south MUP along the west side of the rail corridor will provide direct access to the new station. Once the MUP is built, the station will be within approximately 330m walking distance away from the proposed development.

Figure 6: Area Transit Network

Figure 7: Adjacent Transit Stops



Peak Hour Travel Demands

The existing peak hour traffic and pedestrian volumes at the intersections within the study area were obtained from both the City of Ottawa and separately for the following intersections:

- Somerset/Breezehill – Conducted by Parsons on Thursday, June 22, 2023
- Gladstone/Breezehill – Conducted by City of Ottawa on Wednesday, July 18, 2018
- Breezehill/Laurel and Gladstone/Loretta – both were conducted on Tuesday, April 23, 2019

The traffic volumes at study area intersections are illustrated in **Figure 8**, with pedestrian and cyclist volumes illustrated in **Figure 9**. Raw traffic count data is provided in **Appendix C**. Traffic volume differences of 50 vehicles or more between intersections were balanced to the higher volume. Therefore, the westbound through movement at the intersection of Gladstone/Breezehill was increased by approximately 100 vehicles in the afternoon peak hour to balance with the westbound egress volumes at the intersection of Gladstone/Loretta. No other adjustments were made to the traffic volumes provided. Notably, the pedestrian and cyclist volumes recorded at the study area intersections are fairly high during the peak hours, which is expected given the available active transport and transit connectivity in the area.

Figure 8: Existing Peak Hour Traffic Volumes

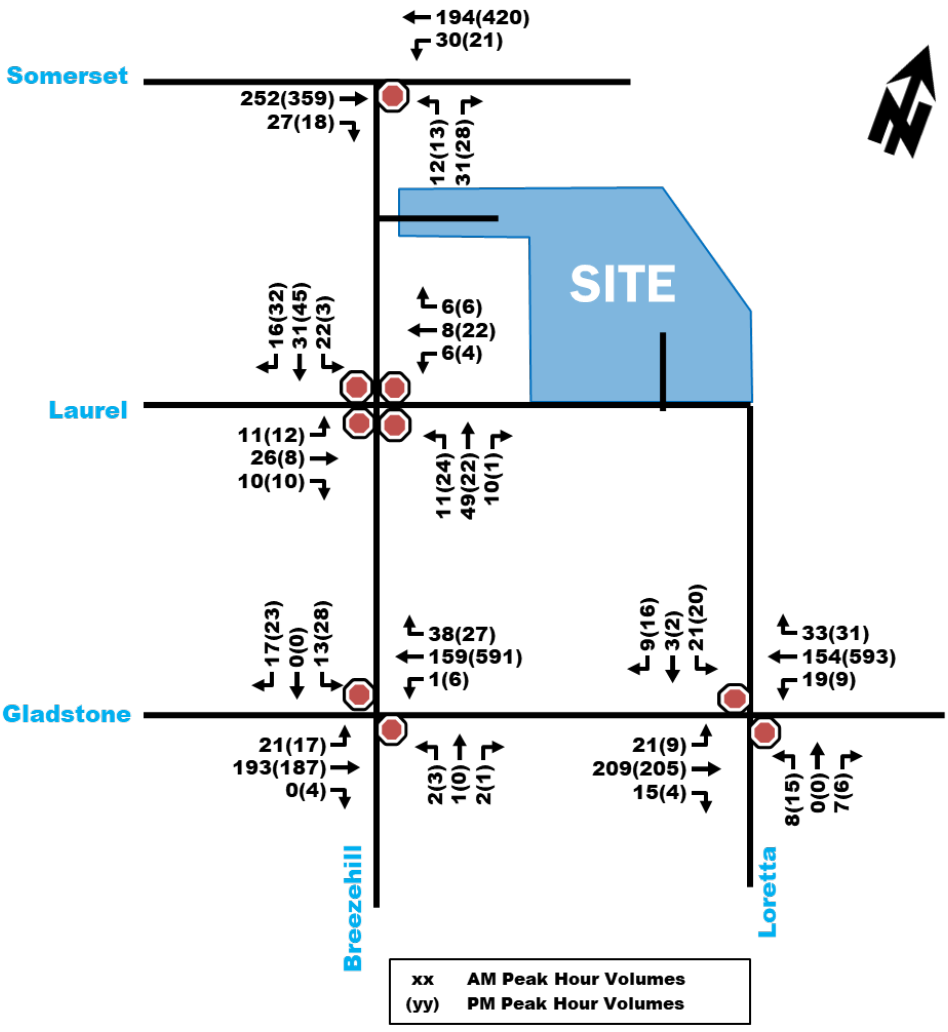
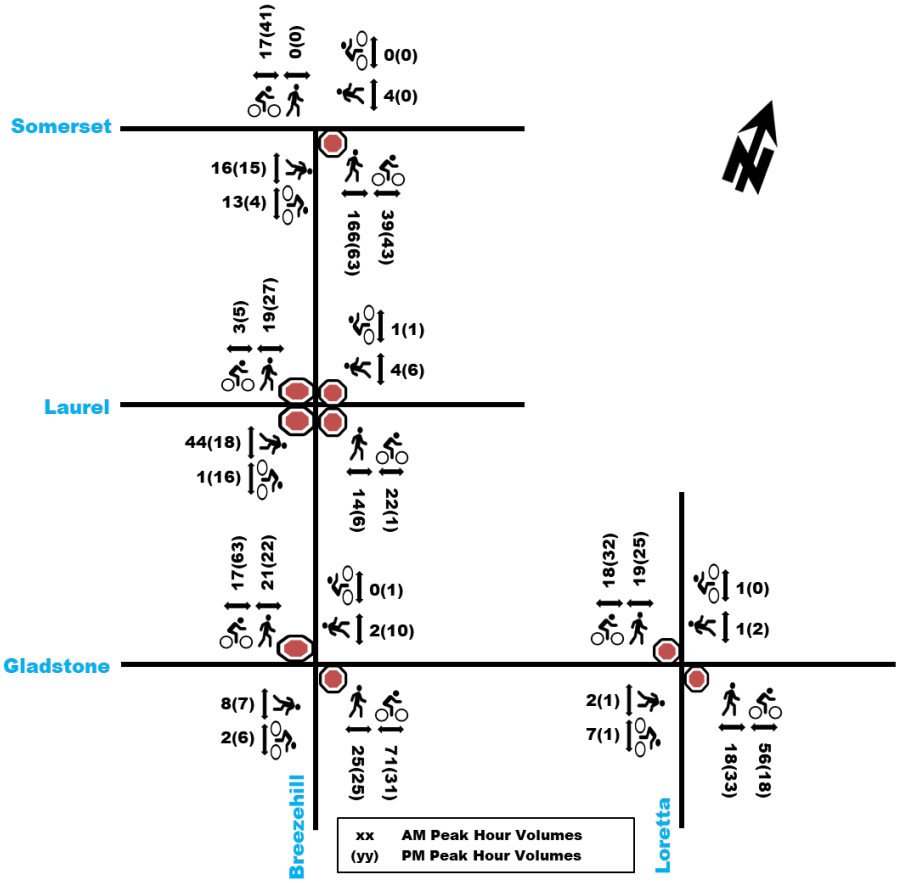


Figure 9: Existing Peak Hour Pedestrian and Cyclist Volumes



Existing Road Safety Conditions

A five-year collision history data (2015-2019, inclusive) was requested and obtained from the City of Ottawa for all intersections and road segments within the study area. Upon reviewing the collision data, the total number of collisions occurring within the study area was determined to be 9 collisions within the five-year period. Of the reported collisions, 5 resulted in property damage only and 4 resulted in non-fatal injury.

The types of impact were broken down into the following: 3 angled, 4 single motor vehicles, and 3 turning movements. None of the noted collisions involved bicycles, but one collision involved a pedestrian and resulted in a non-fatal injury. The pedestrian collision occurred at the north crosswalk of the Gladstone/Loretta intersection with an eastbound left-turning vehicle.

At study area intersections, three collisions occurred at Breezehill/Gladstone, one collision at Breezehill/Somerset, and two collisions at Gladstone/Loretta. At midblock sections of the study area, three collisions have occurred, all involving a single motor vehicle with an unattended/parked vehicle.

Using the City of Ottawa's Open Ottawa website, 2020 collision data identified one additional collision, which occurred midblock on Gladstone Ave, between Loretta Ave N and Breezehill Ave N. These collisions resulted in property damage only with an impact type labeled "other".

Based on the collision data, there are no identifiable safety concerns at intersections and road segments within the study area. The source collision data provided by the City of Ottawa is attached in **Appendix D**.

2.1.3. Planned Conditions

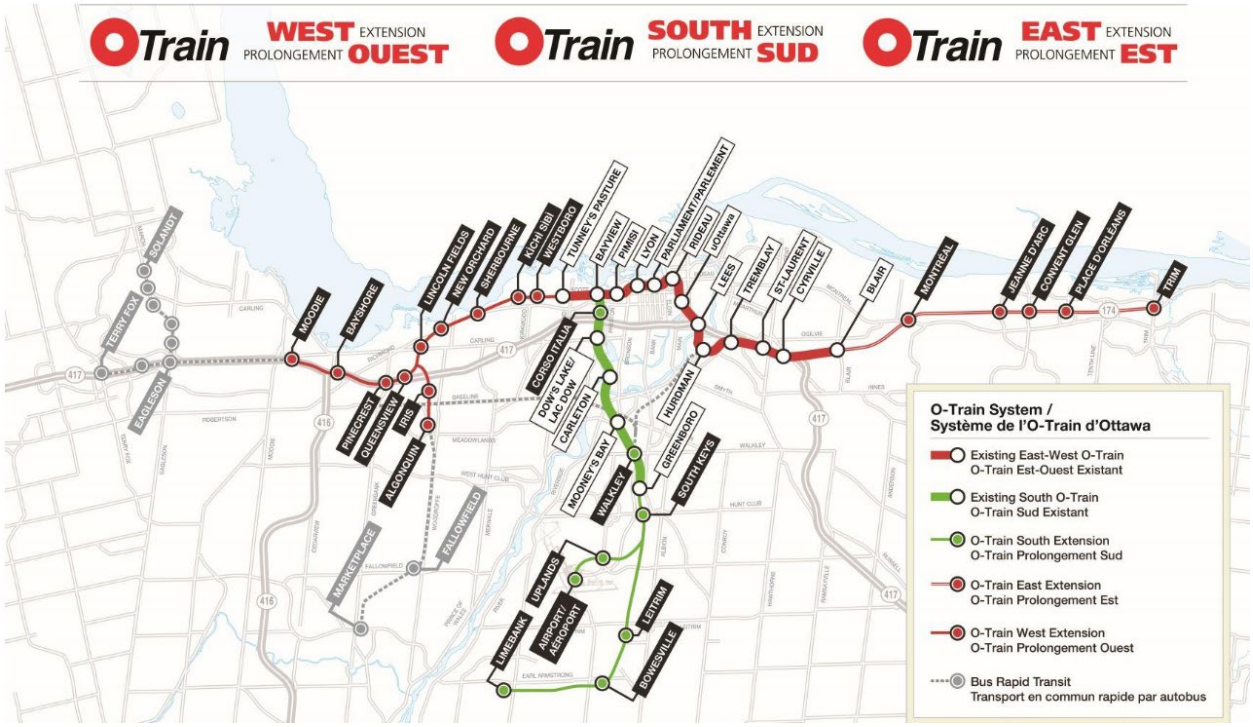
2.1.3.1. Future Transportation Network Changes

LRT Stage 2

Stage 2 of the City of Ottawa LRT system is currently under construction. Stage 2, as shown in **Figure 10**, is a combination of three extensions – south, east, and west – totaling 44 km of new rail and 24 new LRT stations. As mentioned previously, the Trillium Line is directly east of the proposed development site and has begun operating recently, which includes 8 new stations with the extension of the Trillium Line south to Limebank Rd.

As part of the Trillium Line changes, the new future Corso Italia Station is located north of Gladstone Ave within an approximately 300m radius from the proposed development. The construction of the new station will also have connectivity enhancements such as a new pedestrian and cyclist crosswalk/crossride at the MUP location along Gladstone Ave, approximately 165m west of Preston St.

Figure 10: LRT Stage 2 Plan



West Downtown Core Secondary Plan

The purpose of the Secondary Plan is to provide a "detailed area-based policy direction to guide both public and private development and investments over the next 25 years." The potential land uses within the Corso Italia Station District, as provided in the Secondary Plan, are illustrated below in **Figure 11**.

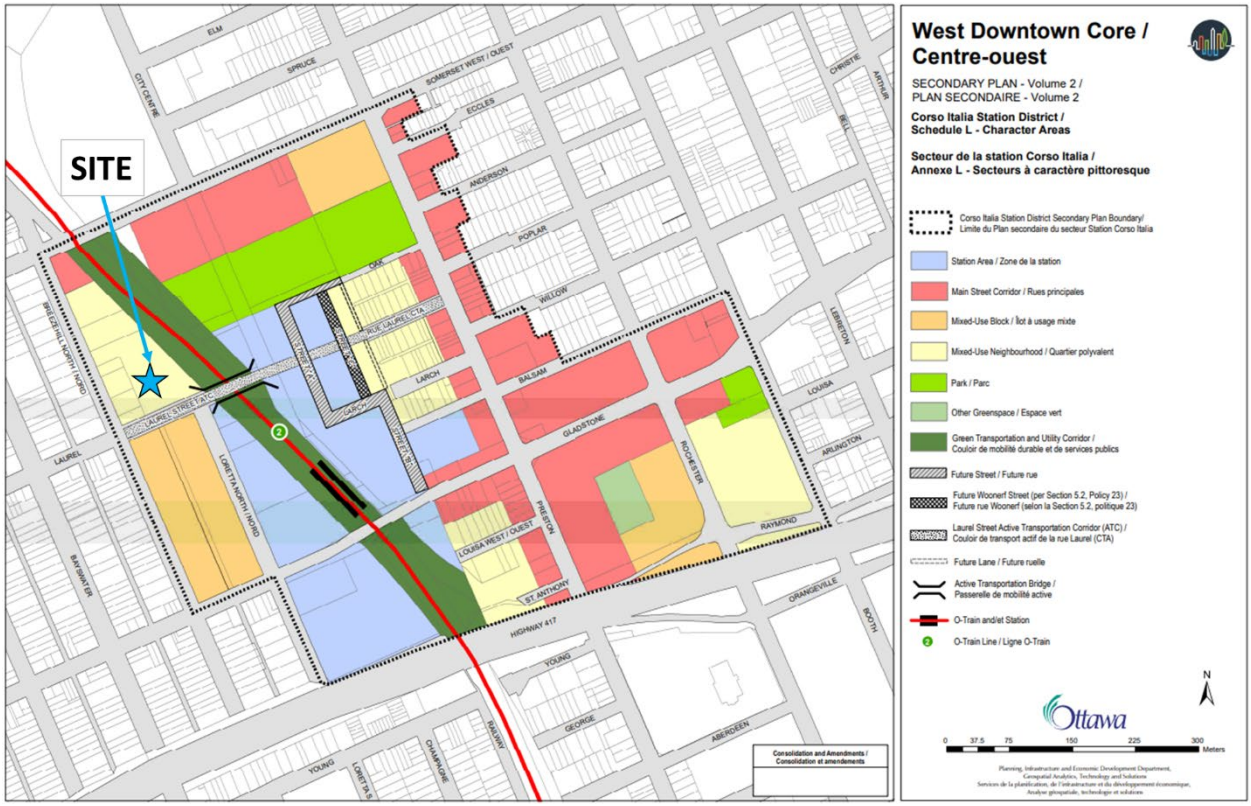
The following are some of the major considerations provided in Chapter 3: Corso Italia District of the Secondary Plan with regards to transportation, that may have an impact on the proposed 75 Breezehill Ave N development:

- A modal share target for transit, walking, and cycling to be a minimum of 85%.
- A new Laurel St Active Transportation Corridor (ATC) will connect from the dead-ends of Laurel St on the west and east sides of the Trillium Line and connect to a proposed future north-south MUP that will run parallel on the west side of the rail corridor.

All development in the Breezehill Ave N area shall support active transportation along Breezehill Ave N and Laurel St and shall provide their portion of the future MUP. As of today, there is no expected date of completion for the Laurel AT bridge and the completion date of the future MUP depends on the build-out date of the redevelopment sites along the western side of the rail corridor. The City of Ottawa TMP Part 1 (2023) indicates a feasibility study will be carried out for the purpose of assessing the proposed bridge.

- Bicycle parking is to be provided at a minimum rate of 1.0 bike parking space per residential unit.

Figure 11: Corso Italia Station District Character Areas (City of Ottawa)



1040 Somerset St W New Traffic Signal

As part of the on-going 1040 Somerset St W development, an RMA was approved for the signalization of the Breezehill Avenue N / Somerset Street W intersection. The new signal design will include pedestrian crossings on all legs, a new westbound left-turn lane, and a shortening of the westbound terminus bike lanes approximately 30m to the east.

Breezehill Ave N Renewal

Breezehill Ave N is expected to undergo renewal to replace its aging sanitary sewers and watermain between Somerset St W and Gladstone Ave. As part of the project, full road reconstruction is expected to be implemented, which will include physical design changes that promote traffic calming as part of the City's 30km/h policy. The major aspects of the design are as follows:

- 2m wide sidewalks on both sides of Breezehill Ave from Somerset St W to Laurel St and on the west side of Breezehill Ave from Laurel St to Gladstone Ave. Sidewalk on the east side of Breezehill Ave will be 1.8m from Laurel St to Gladstone Ave.
- Road narrowing to 8.5m down the entirety of Breezehill Ave between Somerset St W and Gladstone Ave except for any location with a curb extension.

- Two 1.5m wide mid-block curb extensions located between Somerset St W and Laurel St, each narrowing the road to 7m. One will be located on the east side at 53 Breezehill Ave between the property access and north property line. The other will be located 57m north of Laurel St on the west side.
- Two locations with 1.25m wide opposing mid-block curb extensions on both sides of Breezehill Ave that will narrow the road width to 6m. They will be located in front of 134 & 158 Breezehill Ave.
- Four new speed humps will be added along Breezehill Ave and will be at the following locations: in front of 134 Breezehill, 150 Breezehill Ave, 40m north of Laurel St, and 97m north of Laurel St. The existing speed hump approximately located 70m south of Somerset St W shall be maintained while the other existing speed hump approximately located 70m north of Laurel St will be removed.

Construction is expected to begin May 2025 and be completed by late fall 2025.

2.1.3.2. Other Study Area Developments

The following section outlines adjacent future developments in the study area to be considered in the TIA. The criteria for inclusion of other area developments are the proximity to the proposed development site and the potential impact to study area intersections. Developments that are either approved or have an active planning application in the City are included below and illustrated as part of the map in **Figure 12**.

1) 951 Gladstone Ave and 145 Loretta Ave N

A mixed-use development proposed by Commvesco Levinson Viner (CLV), which will consist of 849 residential units, 193,015 sq.ft. of office space and 17,611 sq.ft. of retail space. The development will be fully constructed by 2026. During the morning peak hour, the development is anticipated to generate approximately 136 vehicle trips and 645 person trips. During the afternoon peak hour, the development is anticipated to generate approximately 149 vehicle trips and 678 person trips.

3) 1010 Somerset St W

The City of Ottawa and Ottawa Community Housing is proposing a new community hub on 19 acres of land that will include facilities such as an elementary school, childcare facility, affordable housing, limited mixed-use private developments etc. The development is currently in the concept planning phase and is expected to be constructed in the long-term future. Due to there being no active development application and in the preliminary stages of planning, this development will not be considered in the analysis phase.

2) 1040 Somerset St W

Claridge Homes is proposing a 30-storey mixed-use building that will provide 268 units and 141m^2 of commercial retail space. The development will be fully constructed by the year 2025. Based on the TIA (prepared by Novatech), the proposed development is expected to generate a total of 24 and 26 vehicle trips for the morning and afternoon peak hours.

3) 1050 Somerset St W

Claridge Homes is proposing a 28-storey mixed-use building that will provide 271 condo units and 567 m2 of commercial space. The traffic analysis report provided on the Development Applications search tool appears to be outdated, having been prepared in 2012, and inconsistent with the proposed site statistics. As such, it is assumed that the application is on hold and this development will not be included in the future background volumes provided in this report.

4) Gladstone Village, 933 Gladstone Ave

The Ottawa Community Housing Corporation is proposing a large-scale development in the vacant lands directly east of the Trillium Line. Phase 1 is anticipated to be constructed in 2024, which will include 338 apartment unit in mid to high-rise buildings, along with first floor commercial space. Phase 1 is expected to generate approximately 21 new vehicle trips and 141 total person trips during peak hours. Full development buildout was

assumed to be by 2031, where the development will generate up to 118 vehicle trips and 953 person trips during peak hours.

5) 975 Gladstone Ave

The Canada Bank Note building at 975 Gladstone Ave is proposing a 347 m^2 warehouse addition near Laurel St to the existing building, along with a 177 m^2 secured loading bay. This expansion is not expected to result in any significant increase in traffic volumes.

Figure 12: Other Area Developments

2.2. Study Area and Time Periods

Full buildout of the proposed residential development is assumed to be 2026. As such, the horizon years being analyzed in this report are 2026 and 2031 (five years after full buildout) horizon years, using the weekday morning and afternoon peak hour time periods.

Proposed study area intersections and boundary roads are outlined below and highlighted in **Figure 13**.

- Somerset/Breezehill (unsignalized)
- Gladstone/Breezehill (unsignalized)
- Gladstone/Loretta (unsignalized)
- Breezehill/Laurel (unsignalized)
- Breezehill Ave N, between Laurel St and Somerset St
- Laurel St, between Breezehill Ave N and Loretta Ave N

Figure 13: Study Area Intersections

2.3. Exemption Review

The modules/elements in **Table 1** are recommended to be exempt from the TIA Report based on the City's TIA guidelines.

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 – 4.4 Design Review Component	All elements except for 4.2.1	Not required for applications involving ZBLA. However, a brief description may be provided.
4.8 Network Concept	4.8 Network Concept	Only required if proposed development is anticipated to generate more than 200 person-trips over the permitted zoning

3.0 FORECASTING REPORT

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and Mode Shares

To properly consider the impact of the proposed developments site-generated trips on the adjacent road network, the existing trips generated by the currently occupied land-uses have been considered for the purpose of estimating the net number of 'new' future trips on the adjacent road network. As such, existing trips will be calculated and deducted from future site-generated trips, as shown in the following sections.

Existing Site Trip Generation

The site is currently occupied by a two-storey building with a total building footprint of approximately 32,690 ft^2 and comprises of several commercial units including an HVAC contractor, sign shop, self-storage facility, U-Haul truck rental desk, and a coffee shop. The trips generated by the existing site were estimated using the

appropriate vehicle trips rates identified in the ITE Trip Generation Manual, 10th Edition and summarized below in **Table 2**.

ITE's "Specialty Trade Contractor" land use trip rates were assumed to be appropriate for the existing HVAC contractor and sign shop, while the "Mini-Warehouse" land use trip rates were assumed to be appropriate for the self-storage facility. Note the proposed ITE trip rates for coffee shops were deemed excessive considering the size, context and location of the existing coffee shop. Much of the ITE survey data that informs the trip rates are based on surveys conducted within suburban areas and during decades where high auto-driver mode shares are expected. For the purpose of this report, ITE's the "High Turnover (Sit-Down) Restaurants" trip rate was thought to result in a more realistic number of trips for the existing coffee shop and has therefore been used for the purpose of this analysis.

Table 2: Existing Commercial Trip Generation Rates

Land Use	Data Source	Vehicle Trip Rates	
		AM Peak Hour	PM Peak Hour
Specialty Trade Contractor	ITE 180	T = 0.09(x);	T = 0.15(x);
Mini-Warehouse	ITE 151	T = 1.66(x);	T = 1.93(x);
High Turnover (Sit-Down) Restaurant	ITE 933	T = 9.57(x);	T = 9.05(x);
Notes: *T = Average Vehicle Trip Ends* *x = 1,000 ft² GFA*			

Total person trips were then calculated by multiplying the vehicle trip rates in **Table 2** by the person trip factor of 1.28, resulting in the number of peak hour person trips generated by each use shown below in **Table 3**.

Table 3: Existing Commercial Peak Hour Person Trip Generation

Land Use	GFA (ft²)	AM Peak Hour Person Trips	PM Peak Hour Person Trips
Specialty Trade Contractor	6,910	15	4
Mini-Warehouse	20,398	2	17
High Turnover (Sit-Down) Restaurant	5,382	66	62
Total	**32,690**	**83**	**83**

Once the total number of person trips have been determined, a breakdown for different travel modes can be calculated using the appropriate mode share percentages obtained from the TRANS 2020 Trip Generation Manual for commercial developments in the "Ottawa West" district as provided below in **Table 4**.

Table 4: Existing Commercial Mode Share Percentages

Travel Mode	TRANS 2020	
	AM Mode Share	PM Mode Share
Auto Driver	55%	51%
Auto Passenger	11%	16%
Transit	11%	10%
Cycling	0%	5%
Walking	23%	18%
Total Person Trips	**100%**	**100%**

The mode shares for the morning and afternoon peak hours are then applied to the total number of person trips and are summarized in **Table 5**.

Table 5: Existing Commercial Trip Generation by Mode

Travel Mode	AM Mode Share	AM Peak (Person Trips/hr)			PM Mode Share	PM Peak (Person Trips/hr)		
		In	Out	Total		In	Out	Total
Auto Driver	55%	26	19	45	51%	24	17	41
Auto Passenger	11%	5	3	8	16%	8	5	13
Transit	11%	6	4	10	10%	5	4	9
Cycling	0%	0	0	0	5%	3	2	5
Walking	23%	11	9	20	18%	9	6	15
Total Person Trips	100%	48	35	83	100%	49	34	83

As shown in **Table 5**, there are up to 45 vehicle trips, 10 transit trips, and 20 non-motorized trips assumed to be generated by the existing development.

Future Site Trip Generation

The proposed development will consist of 479 residential units and approximately 4,618 ft^2 of ground floor commercial space, housed within two apartment buildings that are 27 and 29-storeys high. The following future site trip generation analysis for the residential and the commercial uses are conducted separately.

Residential

The appropriate trip generation rates for a high-rise apartment land use were obtained from the 2020 TRANS Trip Generation Manual. Table 3 in the Manual provides person-trip rates during the peak morning and afternoon periods (7am-9:30am and 3:30PM-6PM) and are summarized in **Table 6** below.

Table 6: Residential Trip Generation Trip Rates

Land Use	Data Source	Trip Rates	
		AM Peak Period (7-9:30am)	PM Peak Period (3:30-6pm)
High-Rise Apartments	TRANS 2020	T = 0.8(du);	T = 0.9(du);
Notes: *T = Average Vehicle Trip Ends* *du = Dwelling unit*			

Using the trip rates provided in **Table 6**, the total number of person trips generated during the morning and afternoon peak periods can be found in **Table 7**.

Table 7: Residential Units Peak Period Person Trip Generation

Land Use	Dwelling Units	AM Peak Period Person Trips	PM Peak Period Person Trips
High-Rise Apartments	479	383	431

The proposed development is anticipated to generate 383 and 431 person trips during the morning and afternoon peak periods, respectively. The total peak period person trips in **Table 7** are then divided into the different travel modes, as shown in **Table 8**, using mode share percentages obtained from the 2020 TRANS Manual for the "Ottawa West" district.

Table 8: Peak Period Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	Mode Share	PM Peak Period Person Trips
Auto Driver	29%	109	33%	142
Auto Passenger	11%	44	11%	49
Transit	41%	158	26%	111
Cycling	3%	13	7%	29
Walking	16%	60	23%	100
Total Person Trips	**100%**	**383**	**100%**	**431**

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent a worst-case scenario. In the 2020 TRANS Manual, Table 4 provides conversions rates from peak period to peak hours for different mode shares. The conversion rates for both AM and PM are provided in **Table 9** below.

Table 9: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver & Auto Passenger	0.48	0.44
Transit	0.55	0.47
Cycling	0.58	0.48
Walking	0.58	0.52

Using the conversion rates in **Table 9** and the peak period person trips for different travel modes in **Table 8**, the peak hour trips for different travel modes can be calculated as shown in **Table 10**.

Table 10: Peak Hour Trips, with Actual Mode Share Percentages

Travel Mode	AM Peak Hour Trips	PM Peak Hour Trips
Auto Driver	52	62
Auto Passenger	21	22
Transit	87	52
Cycling	7	14
Walking	35	52
Total Person Trips	**202**	**202**

As shown in **Table 10**, the proposed development is anticipated to generate a total of approximately 202 person trips during both the morning and afternoon peak hours. Vehicle trips are anticipated to be approximately 52 and 62 veh/h during the morning and afternoon peak hours, respectively. Active transportation mode shares (cycling and walking) generate 42 and 66 trips per hour while the transit mode share is expected to generate 87 and 52 trips.

However, considering that the development is located within a 400m walking distance of the Corso Italia LRT station (based on existing facilities) and a 330m walking distance once the new western MUP is constructed, the transit mode share is expected to be significantly higher. As such the TRANS mode share assumptions were adjusted to reflect the opportune location of the site with respect to LRT and the Trillium Pathway more appropriately, as shown in **Table 11**. As anticipated by the West Downtown Core Secondary Plan, an 85% non-auto driver mode share has been assumed, where the same mode share percentages were assume to occur in the morning and afternoon peak hours.

Table 11: Adjusted Mode Share Percentages and Peak Hour Trips

Travel Mode	Mode Share	AM Peak Hour Trips	PM Peak Hour Trips
Auto Driver	15%	30	30
Auto Passenger	5%	10	10
Transit	50%	102	102
Cycling	5%	10	10
Walking	25%	50	50
Total Person Trips	**100%**	**202**	**202**

Inbound and outbound percentages were obtained from Table 9 of the 2020 TRANS Manual and applied to each travel mode in **Table 11** as shown in **Table 12**.

Table 12: Residential Inbound/Outbound Person Trips by Mode

Travel Mode	Mode Shares	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	15%	9	21	30	17	13	30
Auto Passenger	5%	3	7	10	6	4	10
Transit	50%	32	70	102	59	43	102
Cycling	5%	3	7	10	6	4	10
Walking	25%	16	34	50	29	21	50
Total Person Trips	**100%**	**63**	**140**	**202**	**118**	**85**	**202**

As shown in **Table 12**, 30 new vehicular trips, 102 new transit trips and 60 new active transportation trips are forecasted to be generated in the morning and afternoon peak hours from the proposed development.

Commercial

The commercial uses of the proposed development consist of a total of 5 small retail spaces ranging between 561 ft² to 1,426 ft².The trips generated were determined by using the most appropriate vehicle trips rates identified in the ITE Trip Generation Manual, 11th Edition and summarized below in **Table 13**. Similar to the rationale for the existing site generation, a simplified trip rate was used for the proposed commercial component of the development. The latest site plan notes some of the anticipated commercial uses to be a convenience store, food retail, and a walk-in bank. However, it was found the "Convenience Store" ITE trip rates were more applicable for suburban high-auto-driver mode share locations. Therefore, the "Super Market" trip rate was considered more suitable for all the commercial retail space given the contextual location and the multi-use nature of the proposed development.

Table 13: Commercial Trip Generation Rates

Land Use	Data Source	Vehicle Trip Rates	
		AM Peak Hour	PM Peak Hour
Super Market	ITE 850	T = 2.86(x);	T = 8.95(x);
Notes: *T = Average Vehicle Trip Ends* *x = 1,000 ft² GFA*			

Person trips were then calculated by multiplying the vehicle trip rates in **Table 13** by the person trip factor of 1.28, resulting in the number of peak hour person trips generated by each use shown below in **Table 14**.

Table 14: Commercial Peak Hour Person Trips

Land Use	GFA (ft²)	AM Peak Hour Person Trips	PM Peak Hour Person Trips
Super Market	4,618	17	53

As a result, the commercial land-use component of the proposed development is anticipated to generate 17 and 53 person trips during the morning and afternoon peak hours, respectively.

Trip Internalization

It is anticipated that most of the trips attracted by the commercial uses will primarily be a result of the residents of the site. The trips generated by the commercial uses are further justified to primarily generate internal trips due to:

- The high residential density and mixed-use nature of the development
- The type of land-uses (retail food) and small GFA of each individual retail space
- The general location of the development within an established neighborhood, its offset to busier roads (Somerset St W and Gladstone Ave), and site frontage along a local road.

As a result, an 80% trip reduction factor will be applied to the proposed commercial site-generated person trips outlined in **Table 14**. The adjusted mode share percentages developed in **Table 11** were then applied to the reduced peak hour person trips, resulting in the assumed external trips and are summarized below in **Table 15**.

Table 15: Proposed Commercial Site-Generated Person Trips

Travel Mode	Mode Shares	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	15%	1	1	2	1	1	2
Auto Passenger	5%	0	0	0	0	0	0
Transit	50%	0	1	1	3	3	6
Cycling	5%	0	0	0	0	0	0
Walking	25%	0	0	0	1	2	3
Total Person Trips	**100%**	**1**	**2**	**3**	**5**	**6**	**11**

The proposed development first-floor commercial spaces are anticipated to generate up to 2 new auto-driver trips, 6 new transit trips, and 3 new walking trips.

Net Site-Generated Trips

The 'net' projected site-generated trips are then calculated by deducting the estimated existing trips in **Table 5** from the forecasted sum of the residential trips in **Table 12** and commercial trips in **Table 15**. The resulting net site-generated trips are summarized below in **Table 16**.

Table 16: 'Net' Projected Inbound/Outbound Site-Generated Person Trips

Travel Mode	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
	In	Out	Total	In	Out	Total
Auto Driver	10	22	32	18	14	32
Existing Auto Driver	*-25*	*-17*	*-42*	*-8*	*-5*	*-13*
Auto Passenger	3	7	10	6	4	10
Transit	32	71	103	62	46	108
Cycling	3	7	10	6	4	10
Walking	16	34	50	30	23	53
Total Person Trips	38	122	160	109	80	189
Total 'New' Auto Trips	**-15**	**5**	**-10**	**10**	**9**	**19**

As a result, the proposed development is forecasted to generate up to 19 new auto trips, 108 transit trips, 10 cycling trips, and 53 walking trips during both the morning and afternoon peak hours. Since the existing site generates more inbound vehicle trips during the morning peak hour compared to the future residential site given its commercial uses, this results in an overall reduction to vehicle trips in the surrounding road network, hence the negative 'new' auto trips numbers shown in **Table 16**.

3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Ottawa West district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

- 10% to/from the north via Bayview Station Rd and Somerset St W;
- 25% to/from the south via Bayswater Ave and Preston St;
- 35% to/from the east via Hwy 417, Gladstone Ave, and Somerset St W; and,
- 30% to/from the west via Hwy 417 and Scott St.

The total future site-generated traffic volumes were then assigned to the network and illustrated below in **Figure 14** and the 'net' anticipated new auto trips of the proposed development (provided in **Table 12**) are shown in **Figure 15**. The negative distributed volumes in **Figure 15** represents the difference in the existing site-generated trips and the projected future site-generated trips.

Figure 14: Future Site-Generated Traffic Volumes

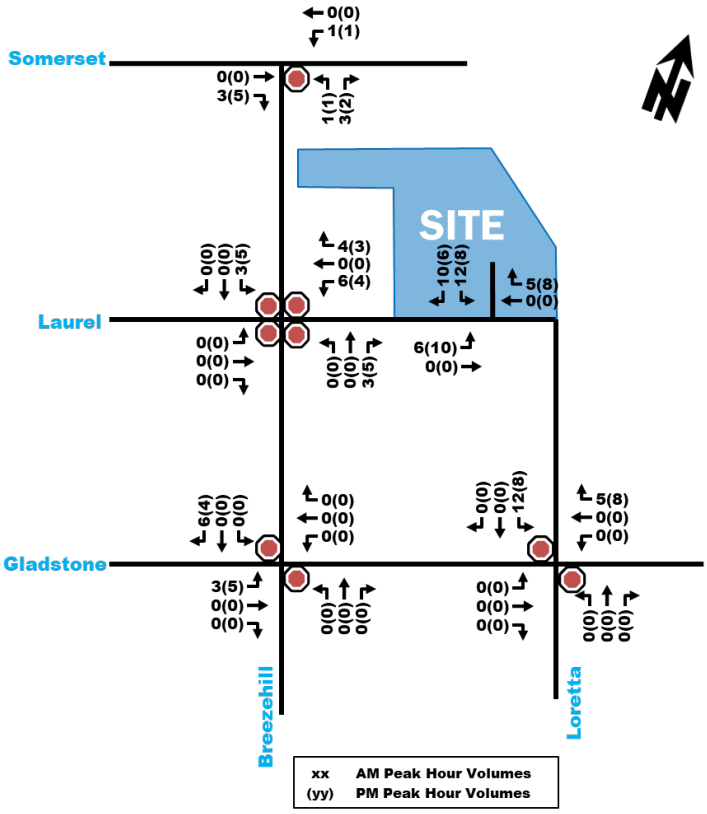
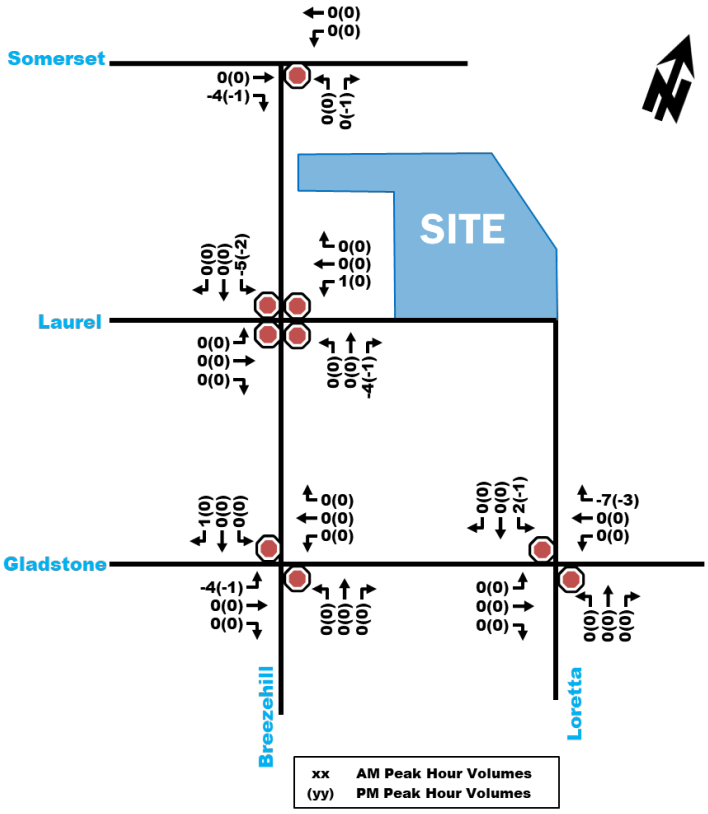


Figure 15: 'Net' Site-Generated Traffic Volumes



3.2. Background Network Traffic

3.2.1. Transportation Network Plans

Refer to **Section 2.1.3.1** for a detailed description of future transportation network changes. Major changes include the construction of the Corso Italia Station along the Trillium Line and the LRT corridor extensions which will bring 77% of all residents in the City of Ottawa within a five-kilometer radius of the rail (as cited by the City of Ottawa's LRT Stage 2 Project Overview page).

3.2.2. Background Growth

The 2021 TIA (prepared by Parsons) for the Gladstone Village Development conducted a regression analysis of historical count data that determined a 0% background growth rate to be suitable for the entirety of the study area road network including Gladstone Ave, Somerset St W, and Laurel St.

The 2018 TIA (prepared by CGH Transportation) for 951 Gladstone & 145 Loretta utilized a 0% background growth rate for all intersections based on "documented" volumes decreasing over the last 10 years.

The 2021 TIA (prepared by Novatech) for 1040 Somerset St W applied a background growth rate of 1% for Bayswater St and Somerset St; 1.5% for Gladstone Ave; and 0% for Preston St, Breezehill Ave, and Laurel Street.

With the addition of the new Corso Italia LRT station along with measures proposed through the Corso Italia Station District plans, it is expected there will be a high transit mode share within the study area that will result in an overall reduction in vehicle trips. Based on the previously mentioned studies, the proposed development being in a well-developed area near downtown Ottawa, and the proposed development's location relative to the new LRT station, it was determined that a future background traffic growth rate of 0% is suitable for the purpose of this study.

3.2.3. Other Developments

As mentioned in **Section 2.1.3.2**, five adjacent future developments with active development applications have been identified in the study area. The anticipated traffic volumes generated by the future developments at 975 Gladstone and 1050 Somerset St W will not be included in the future background traffic due to minimal site generated volumes and lack of project progress since 2012, respectively. Traffic volumes generated by the following adjacent future developments will be considered:

- 1040 Somerset St W (Full-buildout 2025)
- 951 Gladstone Ave and 145 Lorette Ave N (Full-buildout 2026)
- Gladstone Village, 933 Gladstone Ave (Full-buildout 2031)

Figures illustrating future site-generated traffic volumes of adjacent development were obtained from their respective TIA Reports and provided in **Appendix E**. The future adjacent development traffic volumes are added to existing traffic volumes to result in future background 2026 and 2031, illustrated in **Figure 16** and **Figure 17**. Since no background growth was applied to the network, the Gladstone Village (Buildout 2031) traffic volumes are the single difference between the 2026 and 2031 horizon years. The volumes for this site are very minimal, totaling an approximate 14 trips during peak hours.

Figure 16: Future Background 2026 Traffic Volumes

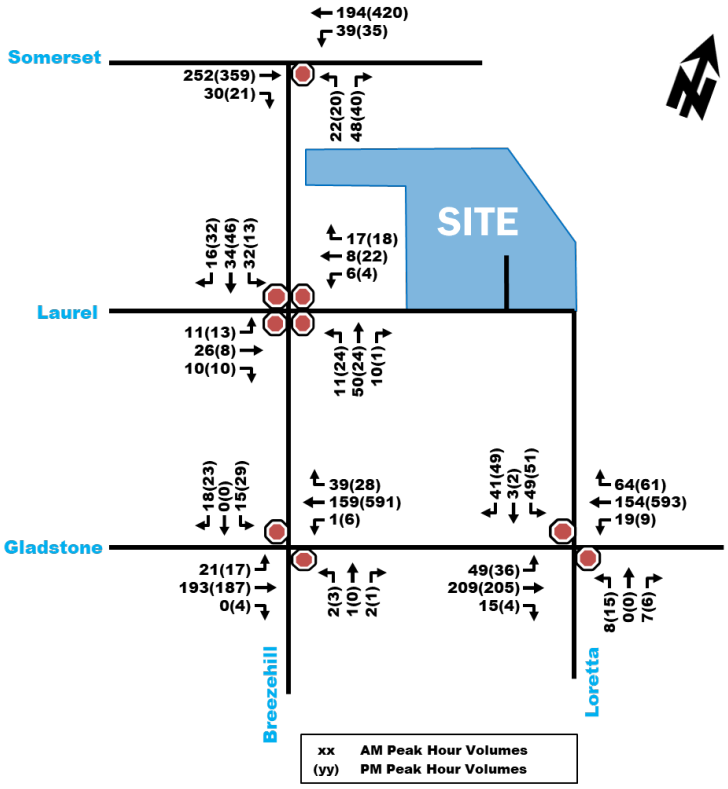
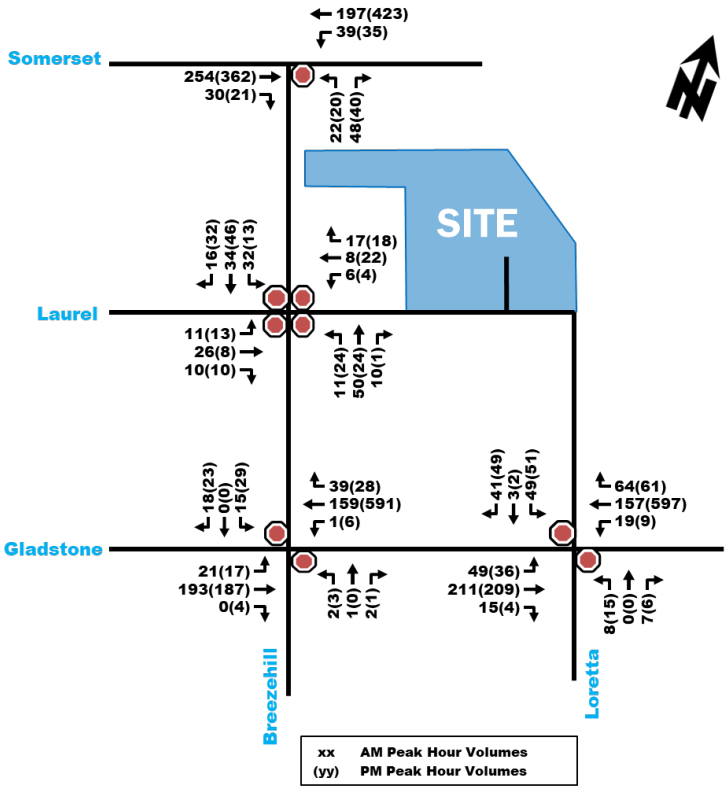


Figure 17: Future Background 2031 Traffic Volumes



3.3. Demand Rationalization

The following section indicates factors that may be used to rationalize the future travel demands in the study area and determine if there are potential capacity limitations and how they may be addressed.

The total projected 2026 and 2031 traffic volumes can be calculated by superimposing the site-generated traffic shown in **Figure 14**, onto the total future background traffic shown in **Figure 16** and **Figure 17**. As previously mentioned in **Section 3.2.3**, the total projected 2026 and 2031 traffic volumes would differ by just 14 trips during peak hours and are illustrated in **Figure 18** and **Figure 19**, respectively. The approach for this study was to proceed without applying any reductions to the study area traffic volumes, reflecting a worst-case scenario. The impact of the proposed development's site-generated traffic volumes on the study area intersections and roadways will be determined in the subsequent sections of the TIA report.

Site-Generated and Background Traffic Volumes

The proposed development is anticipated to add approximately 20 vehicle trips during peak hours (i.e. approximately 1 vehicle every 3 minutes), which is considered to be a negligible amount of traffic. The site-generated traffic volumes are not expected to result in any notable impact to the study area intersections.

Total projected traffic volumes illustrated in **Figure 18** and **Figure 19** indicate that background traffic along Somerset St W may reach approximately 400 to 450 veh/h in the peak direction, which is considered acceptable for an arterial road. Background traffic along Gladstone Ave may reach approximately 600 to 650 veh/h in the peak direction, which exceeds the ideal two-way threshold of 600 veh/h along major collector roads, as indicated by the TIA Guidelines. These volumes will be further discussed in subsequent sections of the TIA Report.

Future LRT Plans

As mentioned in previous sections, the LRT is currently undergoing expansions in various directions of the city, which will see the construction of many new LRT stations. The Trillium line, which includes the future Corso Italia Station directly adjacent to the proposed development site recently began operations. As reflected by the mode share assumptions in **Section 3.1.1**, the LRT is expected to offset most trips generated by the development through transit, thereby limiting vehicle trips generated by the site.

Additional plans by the Corso Italia District include improvements to the active transportation facilities in the area that will naturally result in increased cycling and walking, this includes:

- Constructing a new Laurel St Active Transportation Corridor (ATC) that will connect from the dead-ends of Laurel St on the west and east sides of the Trillium Line, to be used by cyclists and pedestrians only.
- A new future north-south MUP proposed to run parallel to the rail corridor, on the west side.
- Future developments in the district are required to provide bicycle parking at a minimum rate of 1.0 bike parking space per residential unit.

Therefore, the current and anticipated future improvements to transit, cycling and walking facilities in the study area are expected to result in significant reductions in vehicle traffic for new and existing developments, which includes background traffic volumes.

TDM Measures

Transportation Demand Management (TDM) Measures are measures implemented by developers to encourage residents of the future development to use alternative travel modes to personal vehicles, such as transit and active transport (walking and biking). For transit, example measures include potentially subsidizing public transport passes and having high quality walking routes to transit stations. For walking and biking, measures include providing walkable routes and sufficient bicycle parking. It is expected that the proposed development and future developments in the area will have TDM measures in place that will reduce reliance on personal vehicles and increase alternative travel modes. Proposed TDM Measures are outlined in subsequent sections as part of this report, but will be confirmed as part of future Site Plan Control Application for the development.

Figure 18: Total Projected 2026 Traffic Volumes

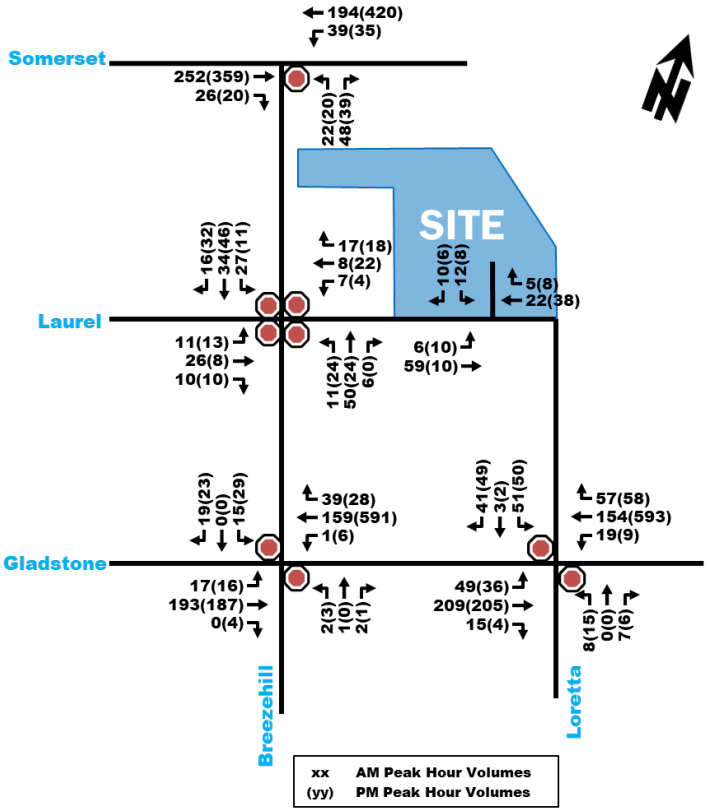
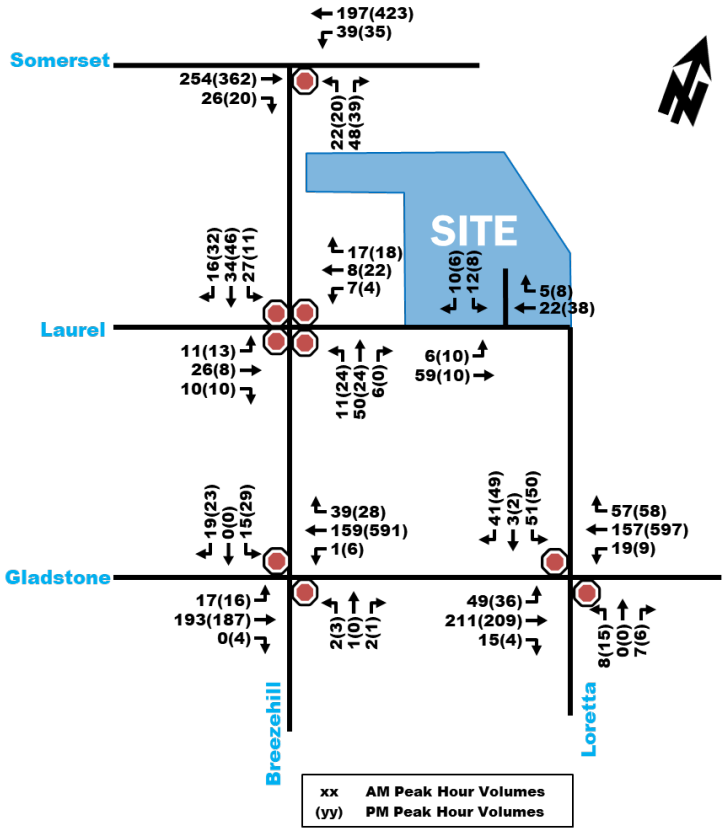


Figure 19: Total Projected 2031 Traffic Volumes



4.0 ANALYSIS

4.1. Development Design

4.1.1. Design for Sustainable Modes

The West Downtown Core Secondary Plan proposes that a new north-south MUP be provided on the west side of the Trillium Line transit corridor, between the Queensway bridge and Somerset St W. The proposed MUP will be accessible through the site with internal sidewalks. The site plan shows the new west Trillium Line MUP primarily on private property, as required by the West Downtown Core Secondary Plan. The proposed design includes 2.0m accommodated on private property which will be provided via a dedicated easement as per the policy permissions of Section 5.3.3 of the Secondary Plan and the remaining 1.5 metres along the abutting city property line. Consequently, the revised site plan includes a total width of the proposed new MUP of 3.5m to provide ample space to separate pedestrians and cyclists as per policy Section 5.3.4 of the Secondary Plan.

Additionally, the development is expected to provide 2.0m wide sidewalk along Laurel St. Pedestrian pathways are located throughout the site, providing ample connections between all building entry/exits and existing and future City of Ottawa pedestrian facilities.

The bicycle parking areas are located primarily within the underground parking garage and ground floor with approximately 7 exterior spaces along the proposed MUP adjacent to the center internal pedestrian pathway. The remainder 671 spaces are distributed evenly between the ground floor, P1 and P2 and are accessible via several direct internal pedestrian pathways from either Laurel St or the future proposed MUP.

The TDM-supportive Design and Infrastructure Checklist is provided in **Appendix F** and discussed in more detail in **Section 4.5**.

4.1.2. Circulation and Access

The site access road will expand internally to form a turnaround area at the end of the internal driveway and allow circulation for vehicles entering the site. The underground parking garage ramp will be accessible at the end of the internal driveway. In addition, the latest site plan indicates an 18.5m moving/lay-by area will be located along the east side of the internal driveway just prior to the internal turnaround area and is not expected to impede the site circulation. Garbage pickup locations are assumed to be located along the internal driveway directly adjacent to 'Building B' and at the end of the internal driveway next to the parking garage ramp, where the garbage bins will be wheeled out from each building.

Additional information and confirmation about garbage pickup routes and locations will be finalized in future site plan revisions as part of the Site Plan Control Application, including details of the specifications and geometry of the site access and circulation. Accommodation of municipal design vehicles and detailed review of their anticipated routes will also be reviewed as part of future applications.

4.2. Parking

4.2.1. Parking Supply

Based on the City of Ottawa Parking Provisions, the development site is located in "Area Z" of Schedule 1A where, according to Section 101 (2) of the Parking Provisions, the proposed development is not required to provide a minimum number of off-street motor vehicle parking spaces. Additionally, Section 102 of the Parking Provisions indicates that the required minimum visitor parking rate of 0.1 spaces per residential unit, not including the first 12 units and no more than 30 spaces per building, results in 47 required visitor parking spaces for the proposed development.

In addition to being in "Area Z" of Schedule 1A, the proposed development is located within 600m of a rapid transit station and in "Area B" of Schedule 1 of the Zoning By-Law Parking Provisions, making the site subject to

a maximum number of parking spaces. Section 103 of the Parking Provisions indicates the maximum parking rate for the proposed development is 1.75 spaces per residential unit, limiting the maximum number of permitted parking spaces (resident and visitor) to 838 spaces.

For bike parking, the West Downtown Core Secondary Plan requires a minimum rate of 1.0 spaces per residential unit, which would equate to 479 bike spaces for the 479 proposed units.

As previously mentioned in **Section 2.1.1**, the development proposes to provide a total of approximately 124 vehicle parking spaces – 47 of which will be designated for visitor parking, in an underground parking garage and approximately 678 bicycle parking spaces — 671 of which will be located indoors throughout the ground floor and parking levels, and the remaining 7 located outdoors. Therefore, all parking requirements are expected to be met.

Considering the proposed development offers a 199-bicycle parking space surplus and is within the area of the Corso Italia District of the West Downtown Core Secondary Plan, it exhibits the expectation of high transit and active transportation mode shares that are in line with the City's vision of promoting sustainable travel modes by providing significant bike parking and reduced vehicle parking.

4.3. Boundary Street Design

Exempt — see **Table 1**

4.4. Access Intersection Design

The site access is located on the north side of Laurel St, approximately 40m east of Breezehill Ave N. The access is anticipated to be stop controlled on the southbound approach. Further details of the site access design, including compliance with the City of Ottawa's Private Approach By-Law requirements, will be reviewed during the future SPC application.

4.5. Transportation Demand Management

4.5.1. Context for TDM

The proposed development is located within a Design Priority Area (DPA) and Protected Major Transit Station Areas (PMTSAs) where the future Corso Italia Station will be located. The property is owned by The Estate of Carson Unsworth.

Considering the proposed land-use of the development as a residential building, it is expected the AM peak trips will be residents leaving the site to work and returning to the site from work during the PM peak. **Sections 3.1.1** and **3.1.2** describe the anticipated site generated trips per travel mode and predicts the destinations of travelers based on the 2011 OD-Survey for Ottawa.

The development is proposing 479 apartment units within 27 and 29 storey buildings. The site plan indicates there will be 48 studio units (10%), 208 one-bedroom units (43%), 193 two-bedroom units (41%), and 30 three-bedroom units (6%).

4.5.2. Need and Opportunity

Considering the development's location in a well-developed core area of the City of Ottawa, its relative location to the nearby Corso Italia LRT station, the expected future street renewal projects, and the improvements to active transportation facilities in the area, there will be a natural increase in transit and active transportation mode shares and a decrease in auto trips.

4.5.3. TDM Program

Both the TDM Supportive Design and Infrastructure Checklist and the TDM Measures Checklist has been provided in **Appendix F**. The proposed measures are as follows:

TDM Supportive Development Design and Infrastructure Checklist

- All ten (10) required measures related to Walking and Cycling (facilities and bicycle parking) and Vehicle Parking have been satisfied.
- Nine (9) of the fourteen (14) basic measures related to Walking and Cycling, Parking and Ridesharing have been satisfied, namely:
    - Locating building close to street with no parking areas between entrance and street.
    - Locating building entrances to minimize walk distance to sidewalks and transit.
    - Locating building doors and windows to ensure visibility of pedestrians.
    - Providing safe, direct, and attractive walking routes to transit.
    - Ensuring walking routes are secure, visible, and lighted.
    - Providing lighting, landscaping and benches along walking and cycling routes.
    - Provide wayfinding signage for site accesses.
    - Provide bicycle parking spaces equivalent to the expected number of residents.
    - Provide a designated area for carpool drivers.
- Four (4) of the seven (7) better measures related to Walking and Cycling: End of trip facilities and Carsharing & Bike sharing, namely:
    - Secure bicycle parking spaces equivalent to number of units
    - Provide bike repair station adjacent to main bicycle parking area.
    - Provide up to three carshare parking spaces.
    - Provide separate areas for short-term and long-term parking.

TDM Measures Checklist

- Four (4) of the seven (7) basic measures related to the Walking and Cycling, Transit, Parking, and TDM Marketing & Communications have been recommended and are as follows:
    - Display local area maps with walking/cycling access routes.
    - Display relevant transit schedules and route maps at entrances.
    - Unbundle parking cost from monthly rent.
    - Provide a multimodal travel option information package to new residents.

It should be noted that TDM Measures checklist is yet to be finalized and will be confirmed in full during the SPC Application.

4.6. Neighbourhood Traffic Management

This module compares the maximum two-way traffic of a local or collector road during morning and afternoon peak hours, to the respective threshold provided by the City of Ottawa TIA Guidelines.

Site-generated traffic of the proposed development are expected to use local roads; Breezehill Ave, Laurel St and Loretta Ave; and the major collector road Gladstone Ave as part of their access route to/from the proposed development. The thresholds provided in the TIA Guidelines indicate an ideal maximum two-way traffic volume of 120 veh/h for local roads and 600 veh/h for major collector roads, during peak hours. **Table 17** provides a comparison of existing and total projected traffic volumes to their respective peak hour ideal thresholds. It should be noted that much of the increase in traffic volume is the result of multiple future developments in the area.

Table 17: Existing and Projected Traffic volumes Comparison to Thresholds

Roadway	Classification	Daily Threshold	Peak Hour Threshold	Peak Hour Two-Way Volumes AM (PM)	
				Existing	2031 Projected
Breezehill Ave N	Local	1,000	120	135 (120)	167 (154)
Laurel St	Local	1,000	120	78 (44)	113 (81)
Loretta Ave	Local	1,000	120	68 (78)	167 (214)
Gladstone Ave	Major Collector	5,000	600	443 (864)	523 (948)

As shown in **Table 17**, two-way peak hour traffic volumes exceed the respective ideal threshold for the existing conditions during the AM peak hour along Breezehill Ave N and the PM peak hour along Gladstone Ave. For future conditions, ideal thresholds were exceeded along Breezehill Ave N and Loretta Ave for both morning and afternoon peak hours and along Gladstone Ave for the afternoon peak hour. The following is noted:

- **Breezehill Ave N:** Although volumes exceed the 120 veh/h recommended threshold of a local road, no major concerns are identified. The future Breezehill Ave Renewal Project is expected to provide traffic calming measures such as several new curb extensions and speed humps that will deter any potential cut-through traffic and mitigate safety concerns.

- **Laurel St:** Traffic volumes are not expected to exceed the 120 veh/h threshold for a local road during peak hours, in both existing and projected conditions.

- **Loretta Ave:** The majority of traffic volumes along Loretta Ave are the result of trips generated by the future development at 951 Gladstone Ave & 145 Loretta N, which produces a significant increase in volumes along Loretta Ave, exceeding the 120veh/h recommended threshold of a local road. The future Laurel St and Loretta Ave N Project is expected to provide traffic calming measures that will significantly reduce traffic or safety concerns.

- **Gladstone Ave:** Traffic volumes during the afternoon peak hour significantly exceed the 600veh/h recommended threshold of a major collector road. However, these volumes are not unexpected, given the function of Gladstone Ave, its proximity to the Highway 417 and the major intersecting roadways throughout the corridor. If desired, the City may choose to reclassify the road to an arterial, although with the upcoming improvements to transit in the area and the City's constant advocacy for sustainable travel modes, these traffic volumes may stagnate or decrease in the future. As such, a reclassification is not considered necessary at this time.

It is important to note that the thresholds provided in the TIA Guidelines are ideal suggestions and not firm requirements for traffic volumes. If desired, the city may choose to reclassify roadways as needed, although the upcoming renewal projects of Breezehill Ave, Laurel St and Loretta Ave are expected to help mitigate many of the safety concerns on these roads. Additionally, the future Corso Italia LRT station is expected to increase transit usage within the area and result in reduced traffic in general. The intersection capacity analysis is conducted in **Section 4.9**, which will confirm if any concerns are expected for traffic operations at study area intersections.

4.7. Transit

As shown in **Table 16**, the proposed development is expected to generate up to approximately 108 transit person trips during both peak hours. The new Corso Italia Station as part the O-Train Line 2 currently operates with a 12-minute headway and provides a capacity of 420 passengers per train resulting in an hourly capacity of 2,100 passengers. Coupled with the existing bus routes in the study area, the transit network is expected to have a significant capacity surplus that can easily accommodate the future site-generated transit trips and future background ridership growth.

4.8. Review of Network Concept

Exempt – see **Table 1**.

4.9. Intersection Design

4.9.1. Intersection Control

Stop control will be provided for vehicles exiting the site onto Laurel St; the site access will permit full movements in/out of site.

4.9.2. Intersection Design

Synchro 11 Trafficware was used to analyze intersection performance of intersections within the study area. Critical movements at each of the intersections were assessed based on either the movement with the highest volume-to-capacity ratio (for signalized intersections), or the movement experiencing the highest average delay (for unsignalized intersections). It should be noted that, as per the TIA Guidelines, the Peak Hour Factor (PHF) used for analysis was 0.90 in existing conditions and 1.0 in all future scenario conditions.

Based on the 1040 Somerset St W TIA, the Somerset/Breezehill intersection will be converted into a signalized intersection with the addition of a westbound left-turn lane. See detailed roadway modification design in **Appendix G**. The intersection is expected to be upgraded the same buildout year (2025) of 1040 Somerset St W. For the purposes of this analysis, Somerset/Breezehill will be modelled as a signalized intersection for future background and total projected scenarios.

As previously mentioned in **Section 3.2.3**, the Gladstone Village site generated traffic is the single difference between the 2026 and 2031 horizon years and is expected to generate a maximum of 14 vehicle trips during the peak hours. Considering the negligible increase in trips from other developments in 2031 and the 0% growth rate applied to the background traffic, only the existing conditions, 2031 background conditions, and 2031 total projected conditions will be analyzed.

All Synchro detailed reports for existing and future conditions have been provided in **Appendix H**.

Existing Conditions

Table 18 below summarizes the intersection performance of study area intersections, based on existing traffic volumes illustrated in **Figure 8**.

Table 18: Existing Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)				
	Critical Movement			Intersection 'As a Whole'	
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS
Somerset/Breezehill (U)	B(B)	13.2(14.5)	NB(NB)	1.6(1.0)	A(A)
Gladstone/Breezehill (U)	B(C)	11.7(19.9)	NB(SB)	1.3(1.5)	A(A)
Breezehill/Laurel (U)	A(A)	7.5(7.5)	NB(NB)	7.5(7.4)	A(A)
Gladstone/Loretta (U)	B(C)	12.8(19.8)	SB(SB)	2.0(1.5)	A(A)

Note: Analysis of signalized intersections assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane.
(U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

As shown in **Table 18**, the intersections 'as a whole' all operate at a LOS 'A during the morning and afternoon peak hours with critical movements operating at a LOS 'C' or better.

Future Background 2031 Conditions

Table 19 below summarizes the Synchro traffic operations at study area intersections, based on future background 2031 traffic volumes in **Figure 17**.

Table 19: Future Background 2031 Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Somerset/Breezehill (S)	A(A)	0.30(0.29)	NBL(WBT)	5.7(5.3)	A(A)	0.23(0.29)
Gladstone/Breezehill (U)	B(C)	11.8(18.4)	NB(SB)	1.3(1.4)	A(A)	-
Breezehill/Laurel (U)	A(A)	7.6(7.5)	SB(NB)	7.5(7.4)	A(A)	
Gladstone/Loretta (U)	B(C)	14.4(23.8)	SB(SB)	3.3(3.2)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement.						

As shown in **Table 19**, the future signalized intersection of Somerset/Breezehill 'as a whole' is expected to operate at LOS 'A', with critical movements also expected to operate at LOS 'A' during both peak hours. The remaining study area intersections are expected to operate similar to existing conditions.

Total Projected 2031 Conditions

Table 20 below summarizes the Synchro traffic operations at study area intersections, based on total projected 2031 traffic volumes in **Figure 19**.

Table 20: Total Projected 2031 Conditions Traffic Volumes

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Somerset/Breezehill (S)	A(A)	0.32(0.29)	NBL(WBT)	5.7(5.3)	A(A)	0.23(0.29)
Gladstone/Breezehill (U)	B(C)	11.7(18.4)	NB(SB)	1.3(1.4)	A(A)	-
Breezehill/Laurel (U)	A(A)	7.6(7.5)	SB(NB)	7.5(7.4)	A(A)	-
Gladstone/Loretta (U)	B(D)	14.4(23.6)	SB(SB)	3.4(3.1)	A(A)	-
Laurel/Site Access (U)	A(A)	8.8(8.8)	SB(SB)	2.1(2.5)	A(A)	
Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement.						

As shown in **Table 20**, the total projected conditions operate very similar to 2031 background conditions with slight increases in intersection delays.

5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results summarized herein, the following transportation related conclusions are offered:

Proposed Development

- The Estate of Carson Unsworth is proposing a development located at 75 Breezehill Ave N. The development is anticipated to be constructed in a single phase by 2026.
- The development will consist of 479 apartment units housed in 27-storey and 29-storey residential buildings, and 429 m^2 dedicated commercial space.
- Approximately 124 vehicle parking spaces are provided in an underground parking garage. Additionally, 678 bicycle parking spaces are provided on the ground floor and in the underground parking garage.
- Access to the development will be provided through an internal driveway along the north side of Laurel Street. Stop control was assumed for vehicles exiting the site.
- The proposed development is anticipated to generate a 'net' total of 189 person trips during peak hours, which comprise of 19 vehicle trips, 10 passenger trips, 108 transit trips and 63 active transport (walking and cycling) trips. Accounting for the existing site-generated trips results in a reduction to the overall network auto-driver trips.

- The development is to be located within 400m walking distance of the new Corso Italia LRT Station based on existing conditions and a 330m walking distance once the western MUP is constructed. As a result, transit usage is expected to be very high, and active transportation modes were also expected to be high given the City's intensification policies reflected in the West Downtown Core Secondary Plan.
- A suite of TDM measures are anticipated to be adopted by the Estate of Carson Unsworth for the purpose of ensuring sustainable transit and active mode travel patterns are maintained. The comprehensive list of measures will be confirmed in the future SPC application, but is currently expected to include, but not limited to, the following:
    - Providing safe, direct and attractive walking routes to transit.
    - Designing roads for cyclist circulation.
    - Providing lighting, landscaping and benches along walking and cycling routes.
    - Providing a permanent bike repair station.

Existing and Future Background Conditions

- In existing conditions, the intersections 'as a whole' operated at a LOS 'A' or better during peak hours, while critical movements operated at a LOS 'C' or better.
- A background traffic growth rate of 0% per year was applied to the study area intersections based on anticipated future traffic trends, where transit usage and active transport are expected to increase and offset personal vehicle usage. Traffic volumes from currently active development applications were added separately.
- Given that no background growth rate was applied to study area intersections and the minimal change in volumes due to future adjacent development volumes, future background traffic volumes between horizon years 2026 and 2031 were found to be nearly similar.
- In the future background 2031 conditions, overall study area conditions were shown to operate similar to existing conditions, with some movements continuing to experience temporary congestion. The proposed traffic signal at Somerset/Breezehill is expected to operate at LOS 'A' during both peak hours.

Projected Conditions

- With regards to neighbourhood traffic management, it was determined that the current road classification for Breezehill Ave N, Laurel St, Loretta Ave, and Gladstone Ave were appropriate for the site context. The future Breezehill Ave renewal project is expected to help mitigate safety concerns along the road. Gladstone Ave traffic volumes may adjust in the future given the significant improvement in transit and active transport facilities and initiatives planned in the area.
- In the 2031 total projected conditions future vehicle/walking/cycling trips on the adjacent road network generated by the proposed development were incorporated in the Synchro model. The intersection analysis results have been summarized below:
    - All intersections within the study area operated 'as a whole' at a LOS 'A' during both peak hours. The future Somerset/Breezehill signalized intersection signal timings were optimized in Synchro, resulting in improved intersection operations.
    - Critical movements of all intersections operate at a LOS 'D' or better during both peak hours.

Future Study Area Modifications

- Stage 2 LRT will include further expansions to the east and west of the city.
- A new north-south MUP is proposed on the west side of the Trillium Line, with a new active transportation corridor connecting the east and west sides of Laurel St.

- Breezehill Ave, Laurel St, and Loretta Ave are set to undergo full road reconstructions that will implement new sidewalk facilities, speed humps, and curb extensions to improve the overall accessibility and safety for all road users.
- No additional off-site roadway modifications are triggered by the proposed development.

Overall, the proposed development as outlined in this study generates minimal traffic and can be accommodated by the adjacent road network. The development plan leverages its location in close proximity to the future Corso Italia LRT Station with abundant active transportation facilities. The proposed development is recommended to proceed from a transportation perspective.

Prepared By:

Jordan Terada, E.I.T.
Transportation Analyst

Reviewed By:

Basel Ansari, P.Eng.
Transportation Engineer

Appendix A:

Screening Form and Site Plan

Office: +1 613.738.4160
1223 Michael Street, Suite 100|Ottawa, ON K1J 7T2

City of Ottawa 2017 TIA Guidelines

TIA Screening Form

Date	12-Dec-24
Project	75 Breezehill Ave N TIA Report
Project Number	477888-01000

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	Yes
Development Satisfies the Safety Trigger	No

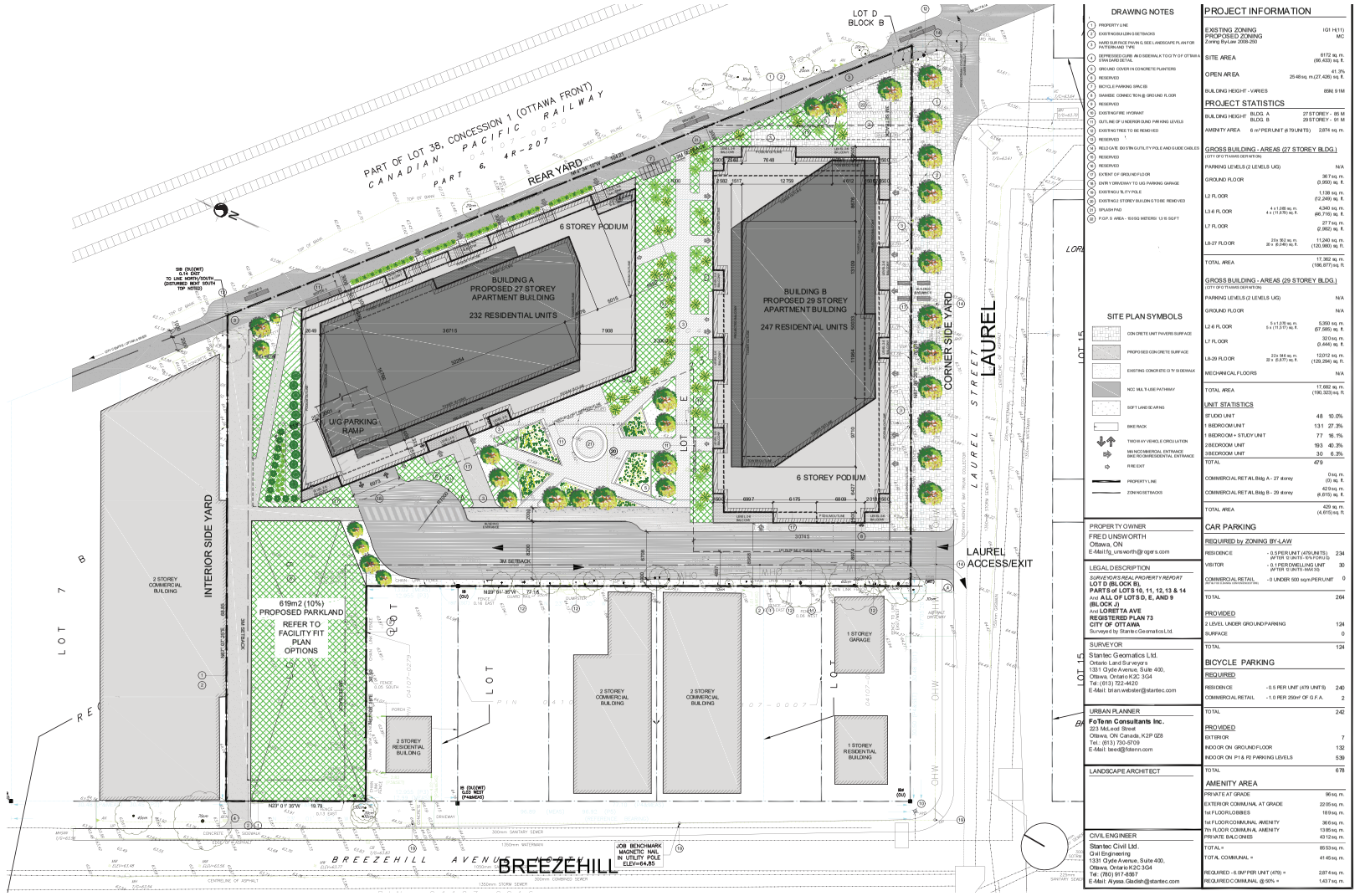
Module 1.1 - Description of Proposed Development	
Municipal Address	75 Breezehill Avenue N, Ottawa, ON K1Y 2H6
Description of location	Bounded by Larel St, Breezehill Ave and Trillium Line
Land Use	Residential apartments building
Development Size	Two high-rise buildings (27 and 29-storey), 479 units
Number of Accesses and Locations	Access along Laurel Street
Development Phasing	Single phase assumed
Buildout Year	2026
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Multi-High Rise Res (3+ Storeys)	
Development Size	479	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection?	No	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	No	
Does the development include a drive-thru facility?	No	
Safety Trigger Met?	No	

SITE PLAN



DRAWING NOTES

1. PROPERTY LINE
2. EXISTING BUILDING SETBACKS
3. HARD SURFACE PAVING SEE LANDSCAPE PLAN FOR PATTERN AND TYPE
4. DEPRESSED CURB AND SIDEWALK TO CITY OF OTTAWA STANDARD DETAIL
5. GROUND COVER IN CONCRETE PLANTERS
6. RESERVED
7. BICYCLE PARKING SPACES
8. SWMBSE CONNECTION @ GROUND FLOOR
9. RESERVED
10. EXISTING FIRE HYDRANT
11. OUTLINE OF UNDERGROUND PARKING LEVELS
12. EXISTING TREE TO BE REMOVED
13. RESERVED
14. RESERVED
15. RELOCATE EXISTING UTILITY POLE AND GUIDE CABLES
16. RESERVED
17. RESERVED
18. EXTENT OF GROUND FLOOR
19. ENTRY DRIVEWAY TO U/G PARKING GARAGE
20. EXISTING UTILITY POLE
21. EXISTING 2 STOREY BUILDING TO BE REMOVED
22. SPLASH PAD
23. P.O.P.S. AREA - 1650 METERS² 13 IS SQFT

SITE PLAN SYMBOLS

- CONCRETE UNIT PAVERS SURFACE
- PROPOSED CONCRETE SURFACE
- EXISTING CONCRETE CITY SIDEWALK
- NCC MULTI USE PATHWAY
- SOFT LANDSCAPING
- BIKE RACK
- TWO WAY VEHICLE CIRCULATION
- MAIN COMMERCIAL ENTRANCE
- MAIN RESIDENTIAL ENTRANCE
- FIRE EXIT
- PROPERTY LINE
- ZONING SETBACKS

PROPERTY OWNER

FRED UNSWORTH
Ottawa, ON
E-Mail:fg_unsworth@rogers.com

LEGAL DESCRIPTION

SURVEYOR'S REAL PROPERTY REPORT
LOT D (BLOCK B),
PARTS of LOTS 10, 11, 12, 13 & 14
And **ALL OF LOT S D, E, AND 9**
(BLOCK J)
And **LORETTA AVE**
REGISTERED PLAN 73
CITY OF OTTAWA
Surveyed by Stantec Geomatics Ltd.

SURVEYOR

Stantec Geomatics Ltd.
Ontario Land Surveyors
1331 Clyde Avenue, Suite 400,
Ottawa, Ontario K2C 3G4
Tel: (613) 722-4420
E-Mail: brian.webster@stantec.com

URBAN PLANNER

FoTenn Consultants Inc.
223 McLeod Street
Ottawa, ON Canada, K2P 0Z8
Tel.: (613) 730-5709
E-Mail: bleed@fotenn.com

LANDSCAPE ARCHITECT

CIVIL ENGINEER

Stantec Civil Ltd.
Civil Engineering
1331 Clyde Avenue, Suite 400,
Ottawa, Ontario K2C 3G4
Tel: (780) 917-8367
E-Mail: Alyssa.Gladish@stantec.com

PROJECT INFORMATION

EXISTING ZONING	IGI H(11)
PROPOSED ZONING	MC
Zoning By-Law 2008-250	
SITE AREA	6172 sq. m. (66,433) sq. ft.
OPEN AREA	41.3% 2548 sq. m (27,426) sq. ft.
BUILDING HEIGHT - VARIES	89M, 91 M

PROJECT STATISTICS

BUILDING HEIGHT	BLDG. A	27 STOREY - 89 M
	BLDG. B	29 STOREY - 91 M
AMENITY AREA	6 m² PER UNIT @ 79 UNITS)	2,874 sq. m.

GROSS BUILDING - AREAS (27 STOREY BLDG.)

(CITY OF OTTAWA'S DEFINITION)

PARKING LEVELS (2 LEVELS U/G)		N/A
GROUND FLOOR		367 sq. m. (3,950) sq. ft.
L2 FLOOR		1,138 sq. m. (12,246) sq. ft.
L3-6 FLOOR	4 x (1,085 sq. m. 4 x (11,678) sq. ft.	4,340 sq. m. (46,716) sq. ft.
L7 FLOOR		277 sq. m. (2,982) sq. ft.
L8-27 FLOOR	20 x 562 sq. m. 20 x (6,046) sq. ft.	11,240 sq. m. (120,980) sq. ft.
TOTAL AREA		17,362 sq. m. (186,877) sq. ft.

GROSS BUILDING - AREAS (29 STOREY BLDG.)

(CITY OF OTTAWA'S DEFINITION)

PARKING LEVELS (2 LEVELS U/G)		N/A
GROUND FLOOR		N/A
L2-6 FLOOR	5 x (1,070 sq. m. 5 x (11,517) sq. ft.	5,350 sq. m. (57,585) sq. ft.
L7 FLOOR		323 sq. m. (3,444) sq. ft.
L8-29 FLOOR	22 x 545 sq. m. 22 x (5,877) sq. ft.	12,012 sq. m. (129,294) sq. ft.
MECHANICAL FLOORS		N/A
TOTAL AREA		17,682 sq. m. (190,323) sq. ft.

UNIT STATISTICS

STUDIO UNIT	48	10.0%
1 BEDROOM UNIT	131	27.3%
1 BEDROOM + STUDY UNIT	77	16.1%
2 BEDROOM UNIT	193	40.3%
3 BEDROOM UNIT	30	6.3%
TOTAL	479	

COMMERCIAL RETAIL Bldg A - 27 storey	0 sq. m. (0) sq. ft.
COMMERCIAL RETAIL Bldg B - 29 storey	429 sq. m. (4,615) sq. ft.
TOTAL AREA	429 sq. m. (4,615) sq. ft.

CAR PARKING

REQUIRED by ZONING BY-LAW

RESIDENCE	- 0.5 PER UNIT (479 UNITS) (AFTER 12 UNITS - 50% FOR 1/3)	234
VISITOR	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS - MAX 30)	30
COMMERCIAL RETAIL (NOT IN 2.5 KMS CENTRETOWN)	- 0 UNDER 500 sq.m. PER UNIT	0
TOTAL		264

PROVIDED

2 LEVEL UNDER GROUND PARKING	124
SURFACE	0
TOTAL	124

BICYCLE PARKING

REQUIRED

RESIDENCE	- 0.5 PER UNIT (479 UNITS)	240
COMMERCIAL RETAIL	- 1.0 PER 250m² OF G.F.A.	2
TOTAL		242

PROVIDED

EXTERIOR	7
INDOOR ON GROUND FLOOR	132
INDOOR ON P1 & P2 PARKING LEVELS	539
TOTAL	678

AMENITY AREA

PRIVATE AT GRADE	96 sq. m.
EXTERIOR COMMUNAL AT GRADE	22.05 sq. m.
1st FLOOR LOBBIES	189 sq. m.
1st FLOOR COMMUNAL AMENITY	366 sq. m.
7th FLOOR COMMUNAL AMENITY	1185 sq. m.
PRIVATE BALCONIES	43.12 sq. m.
TOTAL =	85.53 sq. m.
TOTAL COMMUNAL =	41.45 sq. m.
REQUIRED - 6.0M² PER UNIT (479) =	2,874 sq. m.
REQUIRED COMMUNAL @ 50% =	1,437 sq. m.

Appendix B:

Transit Route Maps

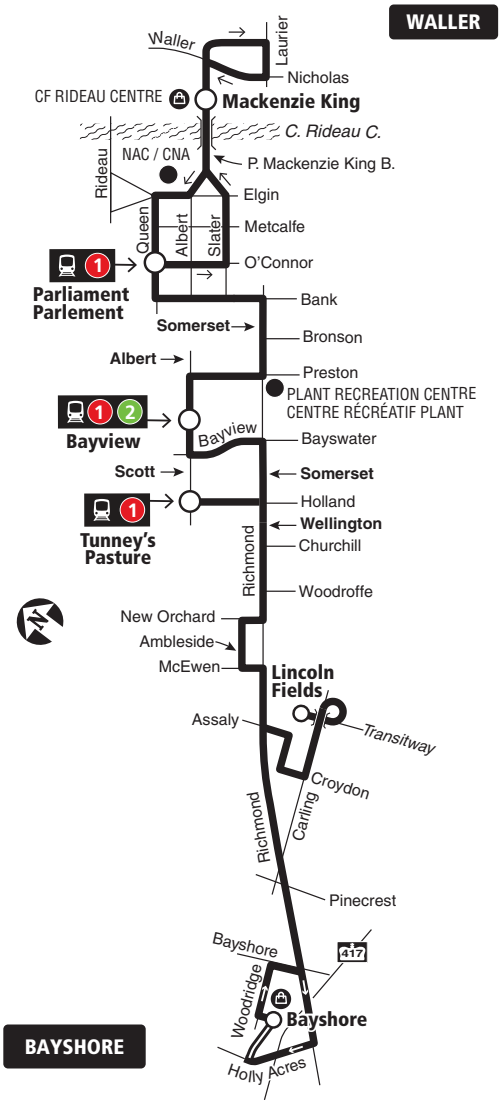

2
1
Bayview
Corso Italia
Dow's Lake
Lac Dow
Carleton
2
Mooney's Bay
Walkley
Greenboro
South Keys
4
Uplands
Airport
Aéroport
Leitrim
4
Bowesville
2
Limebank

11 Fréquent

WALLER
BAYSHORE

7 days a week / 7 jours par semaine

All day service
Service toute la journée



04.2025

Transitway & Station

Shopping Centre / Centre commercial

2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

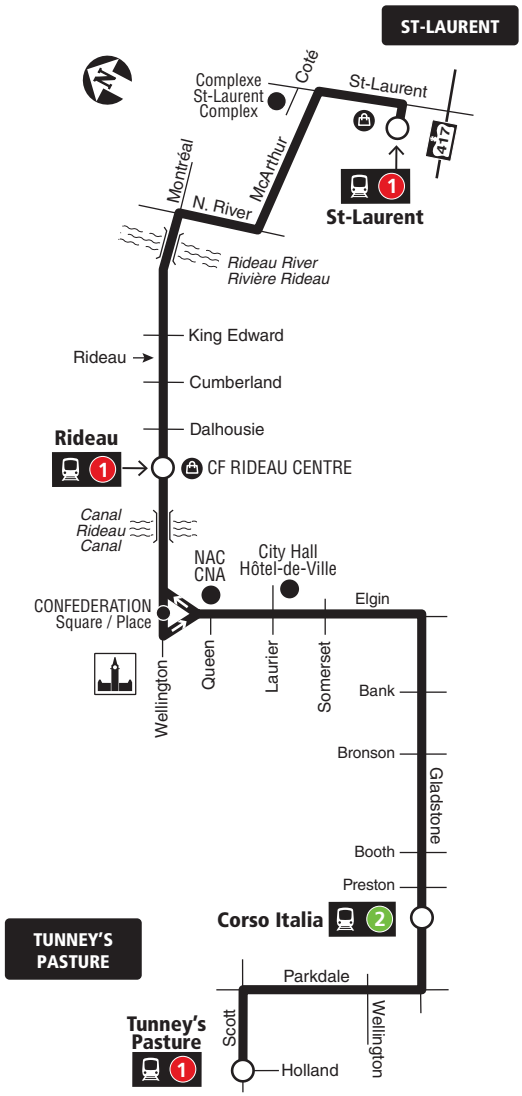
OC Transpo **octranspo.com**

14 Fréquent

ST-LAURENT
TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Station

Shopping Centre / Centre commercial

04.2025

2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**

Appendix C:

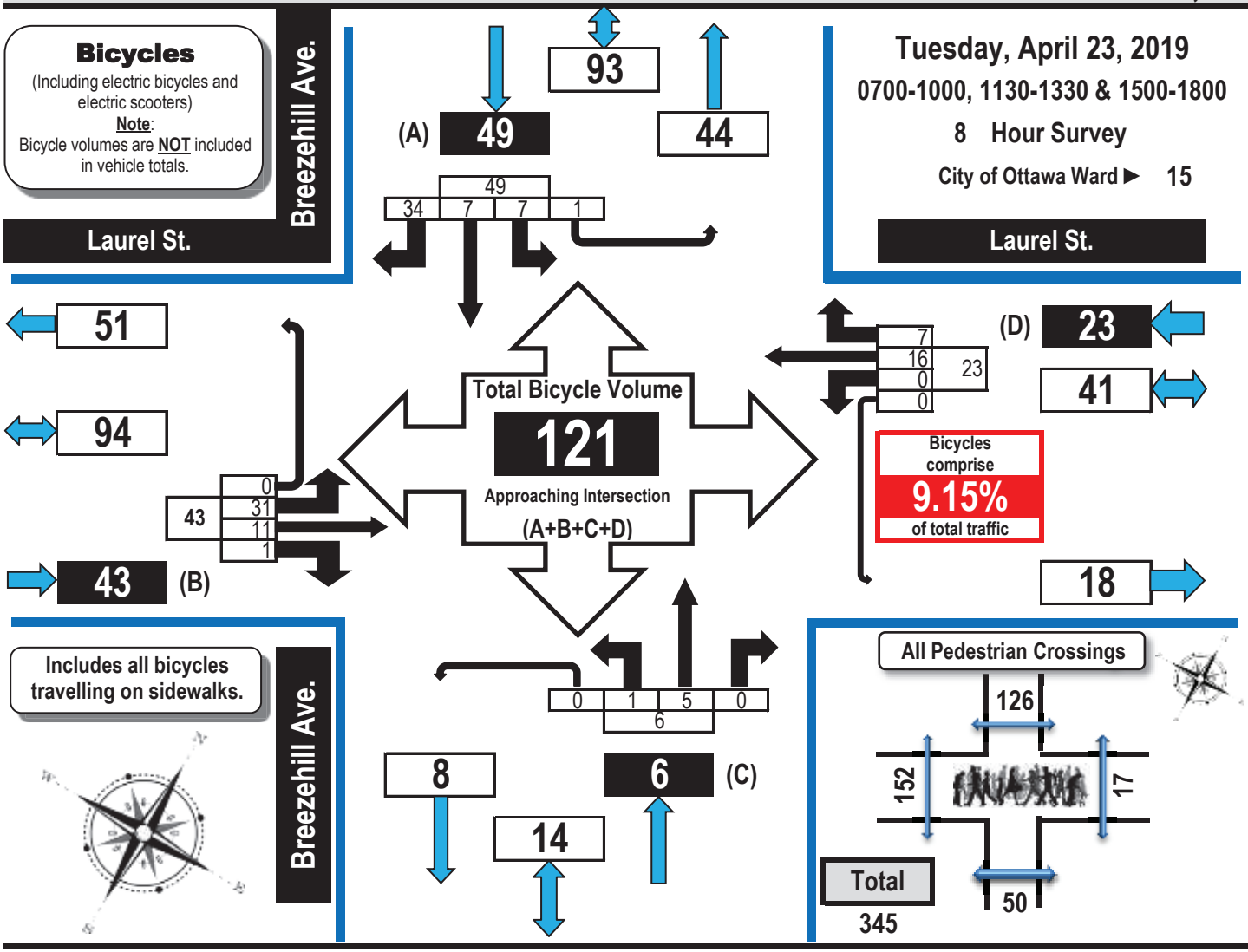
Traffic Data

Turning Movement Count
Bicycle Summary
Flow Diagram

Breezehill Avenue & Laurel Street — Ottawa, ON

Bicycles
(Including electric bicycles and electric scooters)
Note:
Bicycle volumes are **NOT** included in vehicle totals.

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



	Laurel St. Eastbound					Laurel St. Westbound					Breezehill Ave. Northbound					Breezehill Ave. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	6	1	0	0	7	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	10
0800-0900	15	6	1	0	22	0	2	1	0	3	0	1	0	0	1	1	0	0	1	2	28
0900-1000	4	1	0	0	5	0	2	0	0	2	0	0	0	0	0	2	0	0	0	2	9
1130-1230	1	1	0	0	2	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	5
1230-1330	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	4
1500-1600	3	2	0	0	5	0	3	2	0	5	0	0	0	0	0	2	1	11	0	14	24
1600-1700	1	0	0	0	1	0	4	1	0	5	0	1	0	0	1	0	2	14	0	16	23
1700-1800	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	4	9	0	13	18
Totals	31	11	1	0	43	0	16	7	0	23	1	5	0	0	6	7	7	34	1	49	121

Comments:

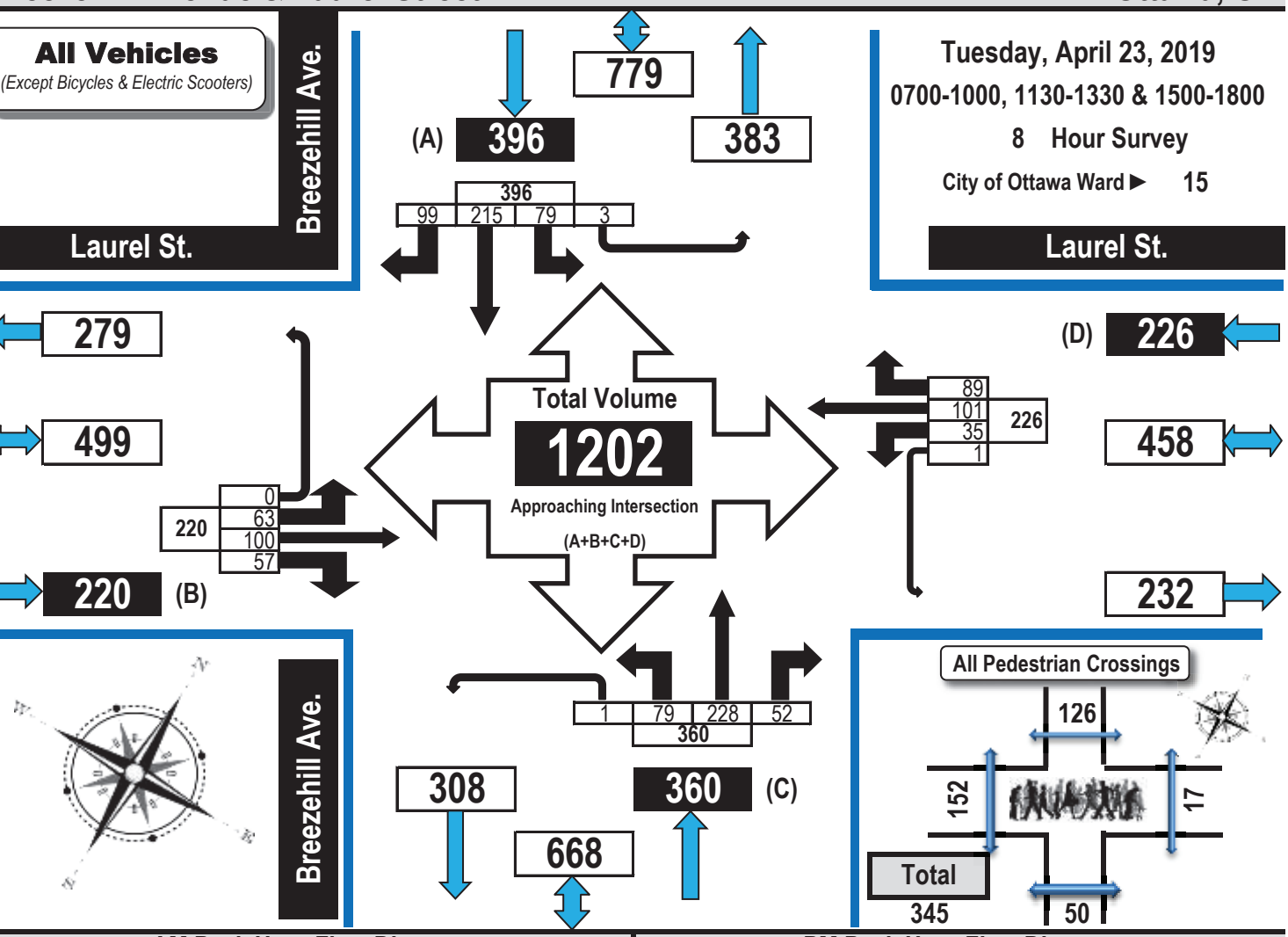
A cedar hedge growing along the property frontage on the southwest quadrant is creating a serious sightline problem. The majority of the cyclists as well as some drivers ignore the all-way stop control. Vehicles parked too close to the intersection on both Laurel Street, east of Breezehill Avenue and Breezehill Avenue, south of Laurel Street create a sightline problem. School buses comprise 8.16% of the heavy vehicle traffic.

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

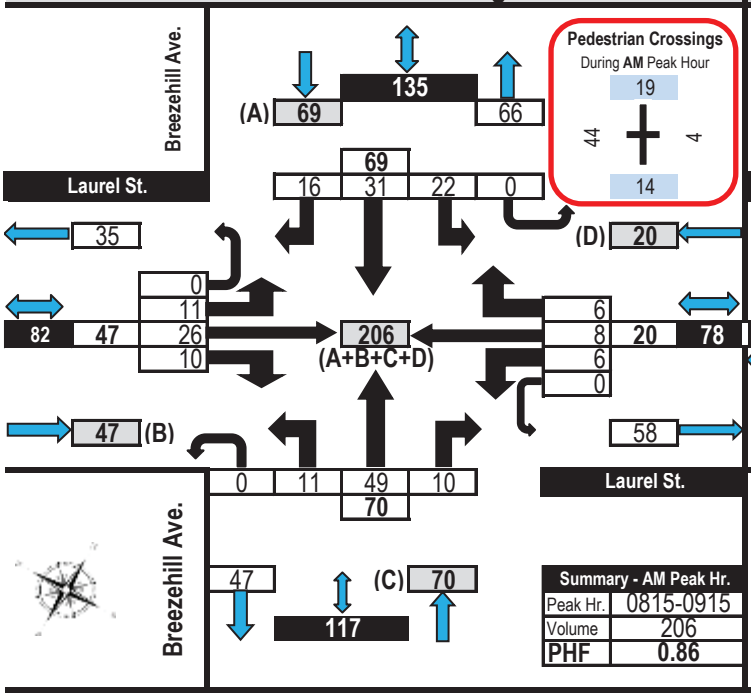
Breezehill Avenue & Laurel Street — Ottawa, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 15

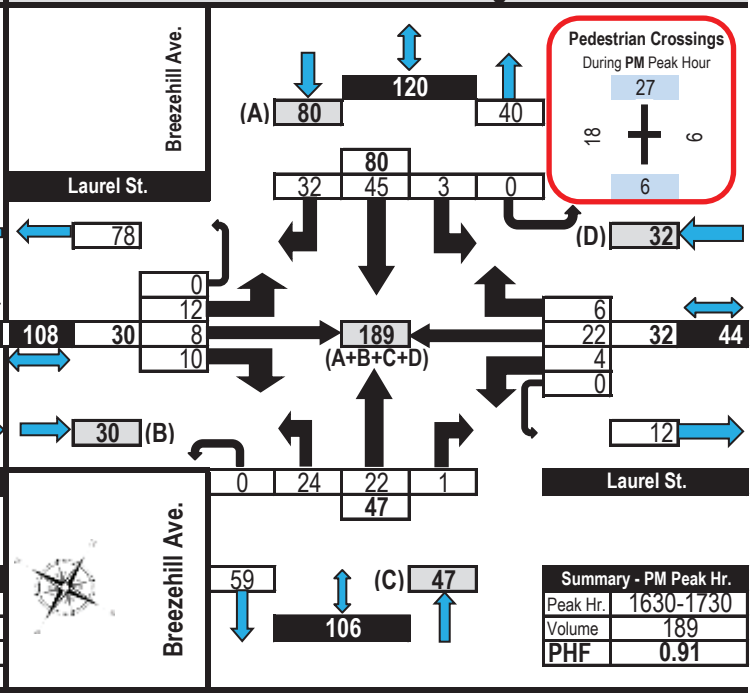


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0815-0915
Volume	206
PHF	0.86

PM Peak Hour Flow Diagram



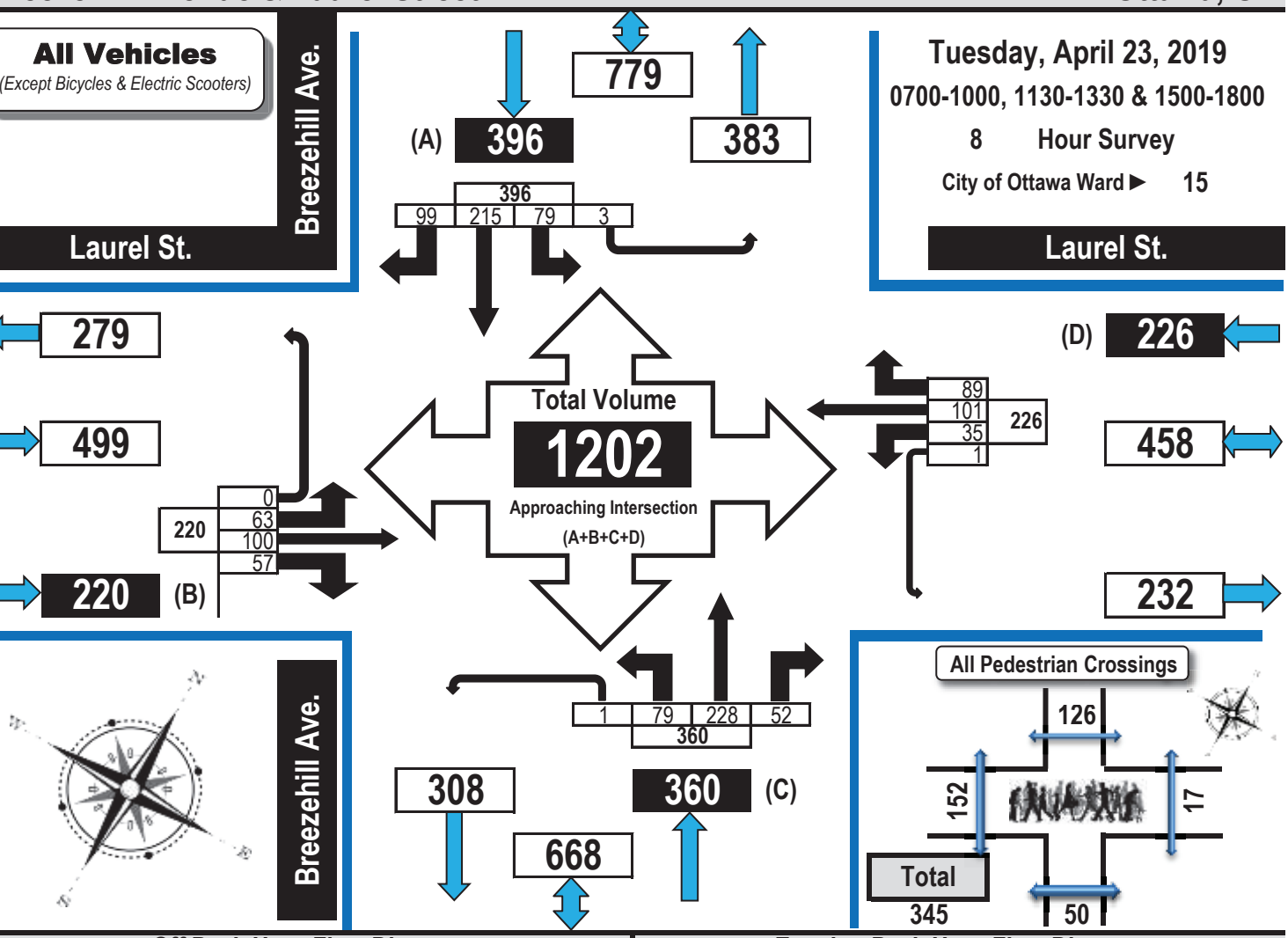
Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	189
PHF	0.91

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

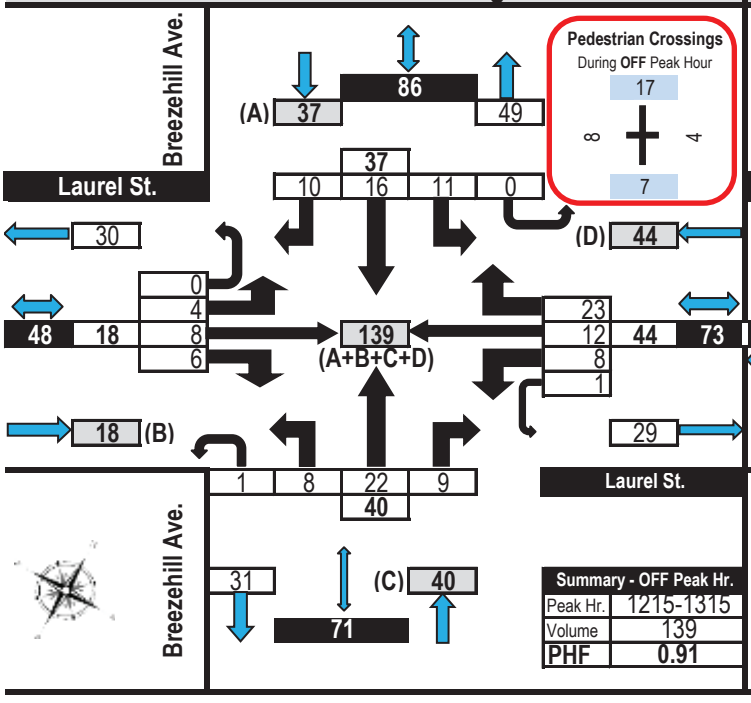
Breezehill Avenue & Laurel Street — Ottawa, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 15

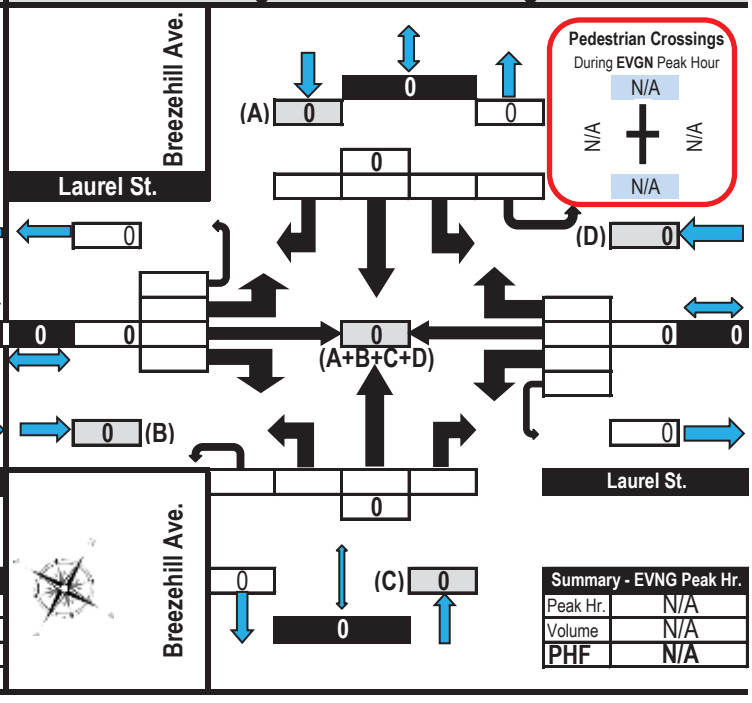


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1215-1315
Volume	139
PHF	0.91

Evening Peak Hour Flow Diagram



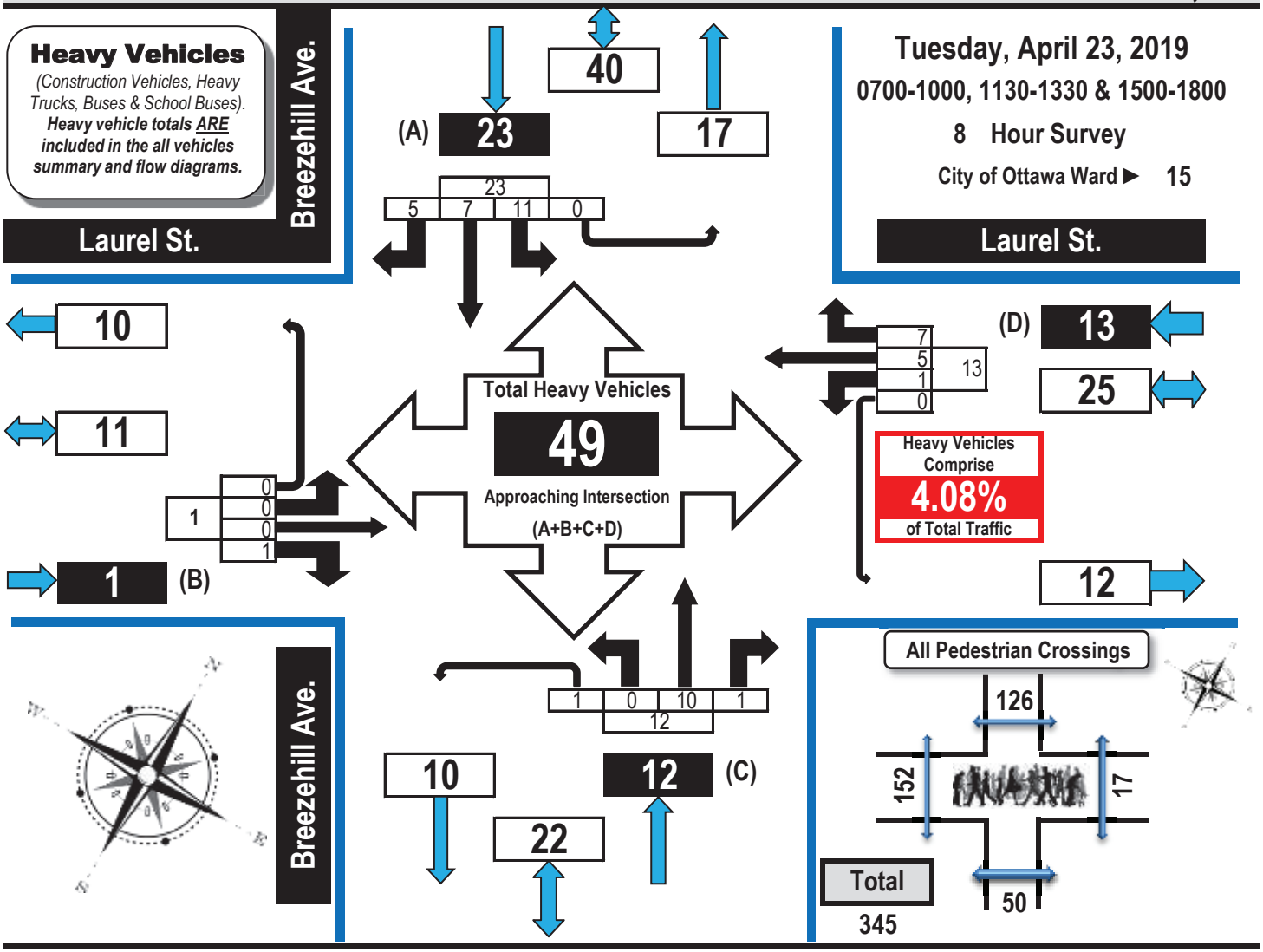
Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

Turning Movement Count
Heavy Vehicle Summary
Flow Diagram

Breezehill Avenue & Laurel Street — Ottawa, ON

Heavy Vehicles
(Construction Vehicles, Heavy Trucks, Buses & School Buses).
Heavy vehicle totals ARE included in the all vehicles summary and flow diagrams.

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



	Laurel St. Eastbound					Laurel St. Westbound					Breezehill Ave. Northbound					Breezehill Ave. Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2	0	0	0	2	4
0800-0900	0	0	0	0	0	0	0	3	0	3	0	0	1	0	1	3	0	3	0	6	10
0900-1000	0	0	1	0	1	1	2	1	0	4	0	4	0	0	4	2	2	1	0	5	14
1130-1230	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	3	0	0	4	6
1230-1330	0	0	0	0	0	0	0	1	0	1	0	2	0	1	3	0	0	0	0	0	4
1500-1600	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	1	0	1	0	2	4
1600-1700	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	3
1700-1800	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	1	1	0	0	2	4
Totals	0	0	1	0	1	1	5	7	0	13	0	10	1	1	12	11	7	5	0	23	49

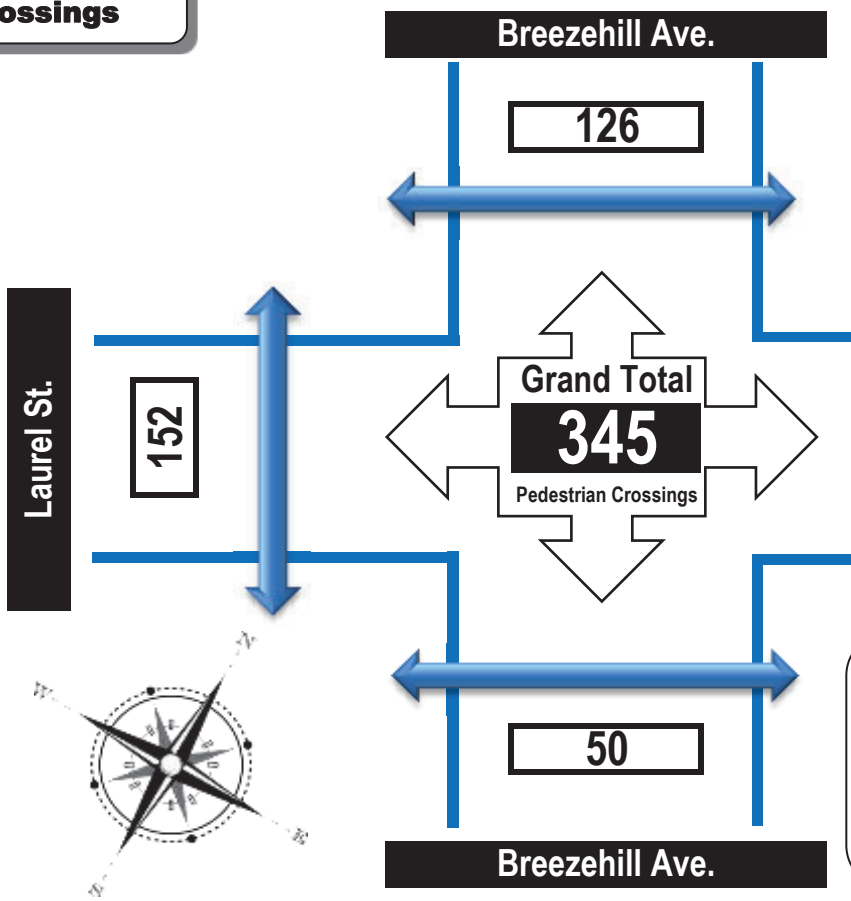
Comments:
A cedar hedge growing along the property frontage on the southwest quadrant is creating a serious sightline problem. The majority of the cyclists as well as some drivers ignore the all-way stop control. Vehicles parked too close to the intersection on both Laurel Street, east of Breezehill Avenue and Breezehill Avenue, south of Laurel Street create a sightline problem. School buses comprise 8.16% of the heavy vehicle traffic.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Breezehill Avenue & Laurel Street — Ottawa, ON

Pedestrian Crossings

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossings **NOT** the number of individual pedestrians crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Laurel St.	East Side Crossing Laurel St.	Street Total	South Side Crossing Breezehill Ave.	North Side Crossing Breezehill Ave.	Street Total	Grand Total
0700-0800	5	1	6	3	8	11	17
0800-0900	54	4	58	14	18	32	90
0900-1000	2	0	2	0	4	4	6
1130-1230	11	3	14	6	22	28	42
1230-1330	3	2	5	6	7	13	18
1500-1600	50	0	50	12	23	35	85
1600-1700	12	1	13	2	22	24	37
1700-1800	15	6	21	7	22	29	50
Totals	152	17	169	50	126	176	345

Comments:

A cedar hedge growing along the property frontage on the southwest quadrant is creating a serious sightline problem. The majority of the cyclists as well as some drivers ignore the all-way stop control. Vehicles parked too close to the intersection on both Laurel Street, east of Breezehill Avenue and Breezehill Avenue, south of Laurel Street create a sightline problem. School buses comprise 8.16% of the heavy vehicle traffic.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count

Summary Report Including Peak Hours, AADT and Expansion Factors

All Vehicles Except Bicycles

Breezehill Avenue & Laurel Street — Ottawa, ON

Survey Date: Tuesday, April 23, 2019 **Start Time:** 0700 **AADT Factor:** 0.7

Weather AM: Partly Cloudy +10° C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Overcast + 17° C **Surveyor(s):** T. Carmody

	Laurel St. Eastbound					Laurel St. Westbound						Breezehill Ave. Northbound					Breezehill Ave. Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	4	16	4	0	24	2	5	7	0	14	38	7	26	7	0	40	10	17	2	0	29	69	107
0800-0900	12	19	5	0	36	6	8	11	0	25	61	12	44	9	0	65	15	36	18	0	69	134	195
0900-1000	12	19	11	0	42	4	11	10	0	25	67	4	39	8	0	51	14	21	9	0	44	95	162
1130-1230	6	14	5	0	25	5	10	17	0	32	57	6	15	3	0	24	10	25	6	2	43	67	124
1230-1330	4	5	5	0	14	6	11	16	1	34	48	5	25	16	1	47	13	17	10	1	41	88	136
1500-1600	4	9	12	0	25	6	19	16	0	41	66	14	29	6	0	49	8	29	8	0	45	94	160
1600-1700	12	11	10	0	33	4	19	7	0	30	63	9	27	0	0	36	6	33	18	0	57	93	156
1700-1800	9	7	5	0	21	2	18	5	0	25	46	22	23	3	0	48	3	37	28	0	68	116	162
Totals	63	100	57	0	220	35	101	89	1	226	446	79	228	52	1	360	79	215	99	3	396	756	1202

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor Applicable to the Day and Month of the Turning Movement Count

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➡12 expansion factor of 1.39

Equ. 12 Hr	88	139	79	0	306	49	140	124	1	314	620	110	317	72	1	500	110	299	138	4	550	1051	1671

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.7

AADT 12-hr	61	97	55	0	214	34	98	87	1	220	434	77	222	51	1	350	77	209	96	3	385	736	1170

24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➡24 expansion factor of 1.31

AADT 24 Hr	80	127	73	0	280	45	129	113	1	288	568	101	291	66	1	459	101	274	126	4	505	964	1532

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.86												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0815-0915	11	26	10	0	47	6	8	6	0	20	67	11	49	10	0	70	22	31	16	0	69	139	206
OFF Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1215-1315	4	8	6	0	18	8	12	23	1	44	62	8	22	9	1	40	11	16	10	0	37	77	139
PM Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1630-1730	12	8	10	0	30	4	22	6	0	32	62	24	22	1	0	47	3	45	32	0	80	127	189

Comments:

A cedar hedge growing along the property frontage on the southwest quadrant is creating a serious sightline problem. The majority of the cyclists as well as some drivers ignore the all-way stop control. Vehicles parked too close to the intersection on both Laurel Street, east of Breezehill Avenue and Breezehill Avenue, south of Laurel Street create a sightline problem. School buses comprise 8.16% of the heavy vehicle traffic.

Notes:

1. Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Transportation Services - Traffic Services

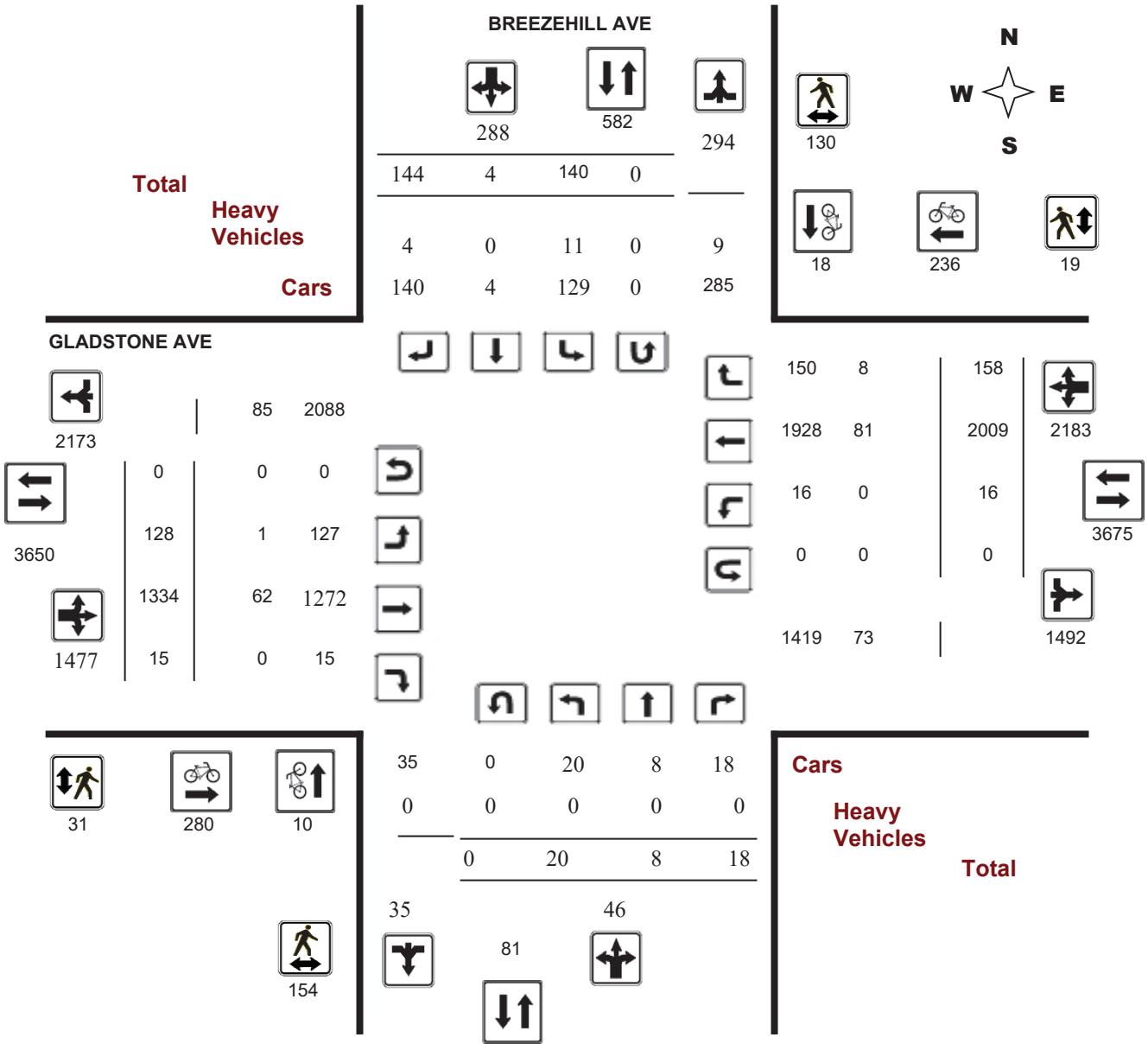
Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018
Start Time: 07:00

WO No: 37971
Device: Miovision

Full Study Diagram



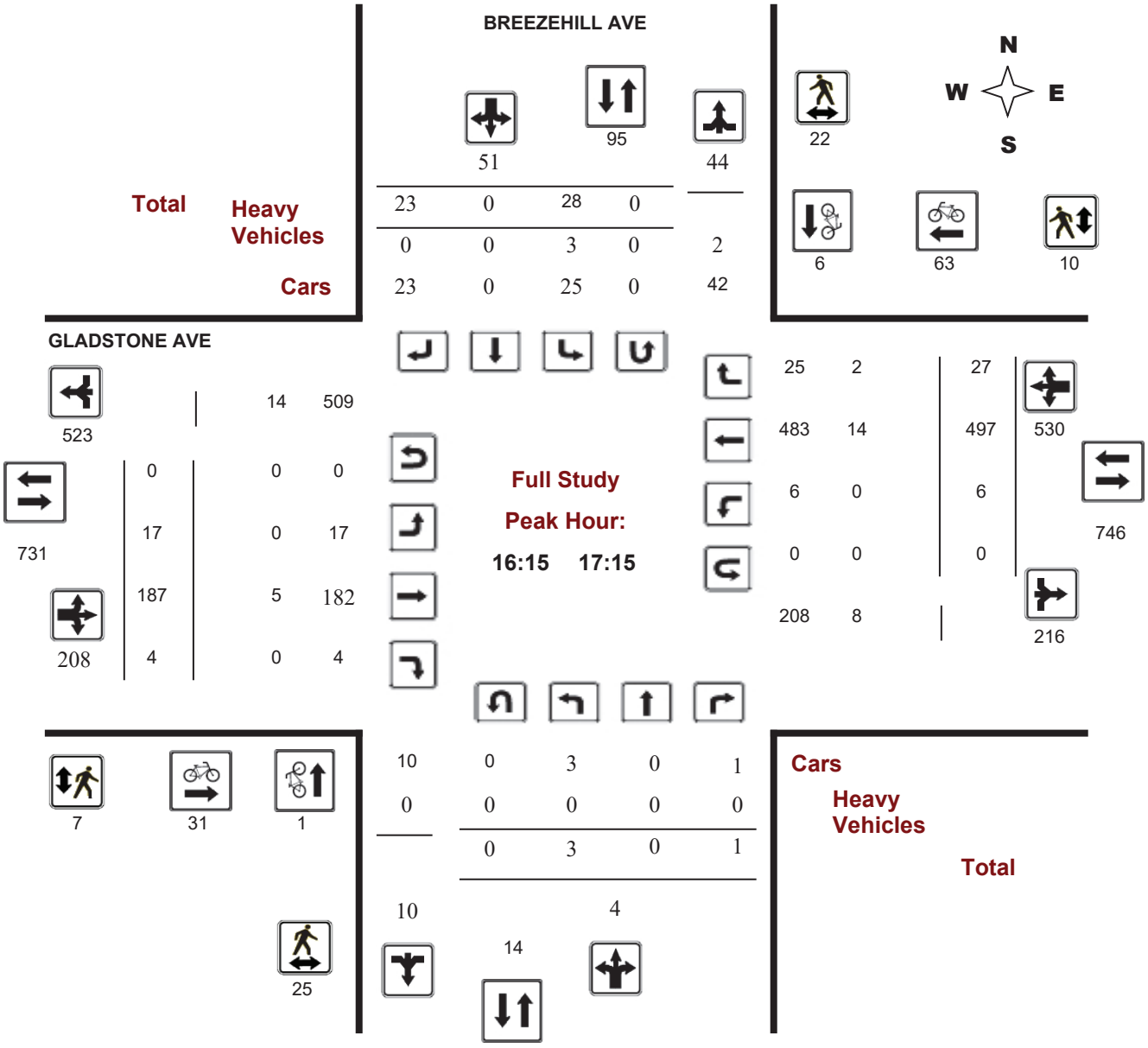
Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018
Start Time: 07:00
WO No: 37971
Device: Miovision

Full Study Peak Hour Diagram



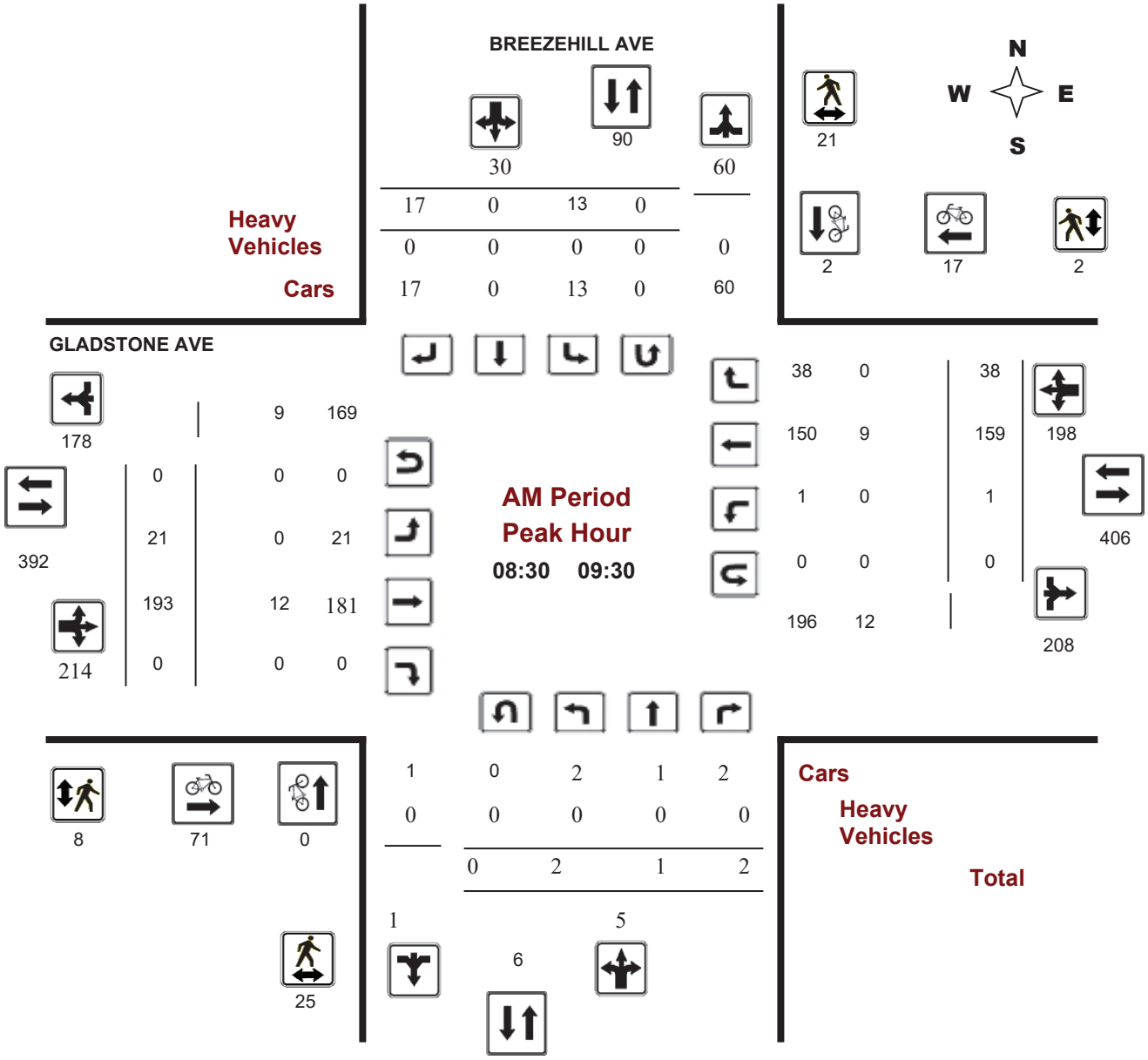
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018
Start Time: 07:00

WO No: 37971
Device: Miovision



Comments

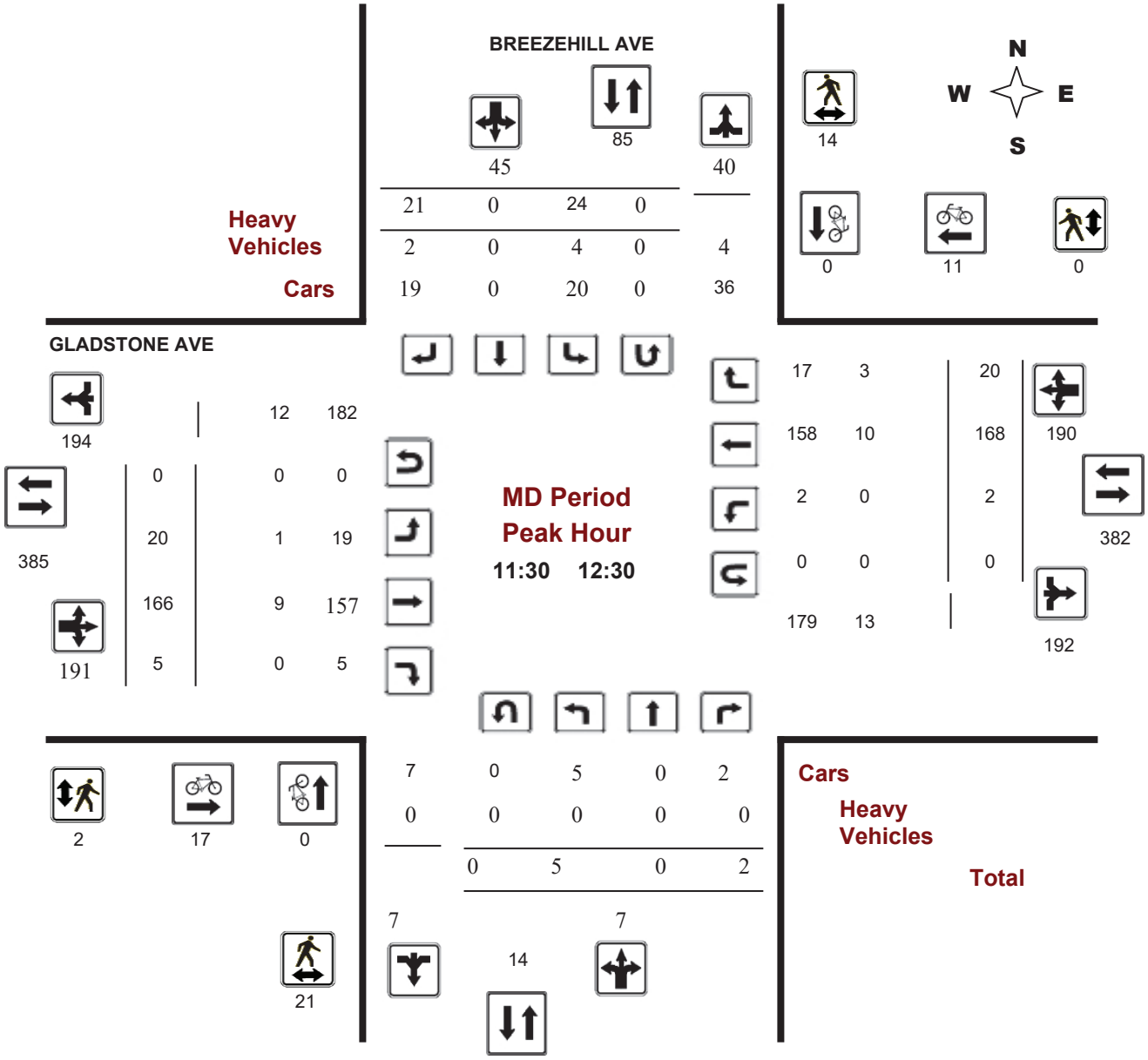
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018
Start Time: 07:00

WO No: 37971
Device: Miovision



Comments

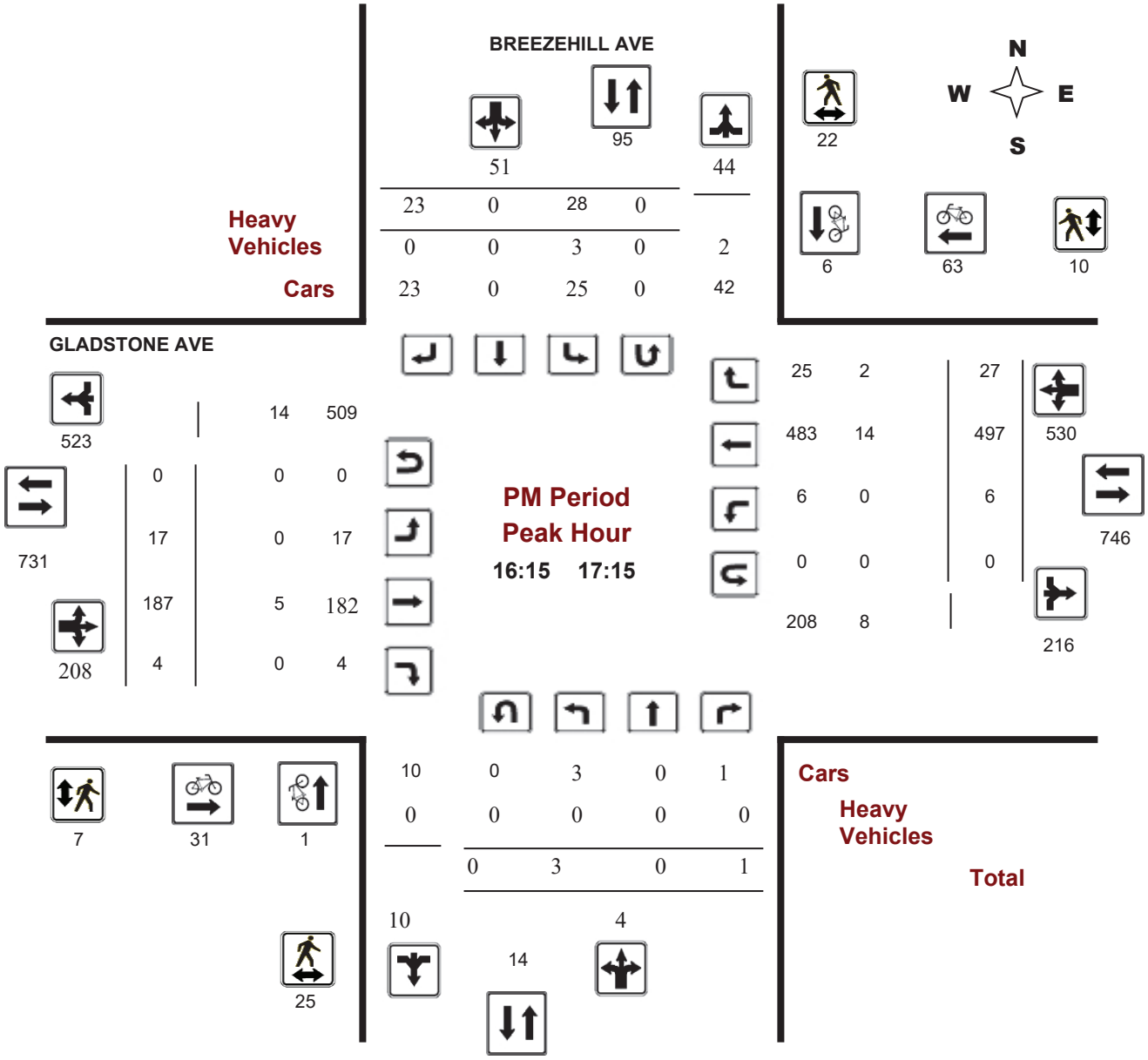
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, July 18, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

.90

	BREEZEHILL AVE									GLADSTONE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	1	2	**3**	8	1	10	**19**	**22**	17	132	0	**149**	0	101	16	**117**	**266**	**288**
08:00 09:00	1	1	3	**5**	10	0	20	**30**	**35**	23	202	0	**225**	1	156	27	**184**	**409**	**444**
09:00 10:00	3	1	1	**5**	22	0	20	**42**	**47**	24	157	0	**181**	2	143	32	**177**	**358**	**405**
11:30 12:30	5	0	2	**7**	24	0	21	**45**	**52**	20	166	5	**191**	2	168	20	**190**	**381**	**433**
12:30 13:30	1	2	3	**6**	17	2	15	**34**	**40**	13	157	1	**171**	2	175	9	**186**	**357**	**397**
15:00 16:00	4	3	3	**10**	18	0	20	**38**	**48**	8	164	1	**173**	0	347	16	**363**	**536**	**584**
16:00 17:00	1	0	1	**2**	25	0	24	**49**	**51**	17	199	5	**221**	3	478	24	**505**	**726**	**777**
17:00 18:00	5	0	3	**8**	16	1	14	**31**	**39**	6	157	3	**166**	6	441	14	**461**	**627**	**666**
Sub Total	20	8	18	**46**	140	4	144	**288**	**334**	128	1334	15	**1477**	16	2009	158	**2183**	**3660**	**3994**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	20	8	18	**46**	140	4	144	**288**	**334**	128	1334	15	**1477**	16	2009	158	**2183**	**3660**	**3994**
EQ 12Hr	28	11	25	**64**	195	6	200	**401**	**465**	178	1854	21	**2053**	22	2793	220	**3035**	**5088**	**5553**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	25	10	22	**57**	176	5	180	**361**	**418**	160	1669	19	**1848**	20	2514	198	**2732**	**4580**	**4998**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	33	13	29	**75**	231	7	236	**474**	**549**	210	2186	25	**2421**	26	3293	259	**3578**	**5999**	**6548**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		BREEZEHILL AVE									GLADSTONE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	0	2	0	1	3	**3**	3	32	0	35	0	18	2	20	**55**	**58**
07:15	07:30	0	0	0	0	1	0	3	4	**4**	4	28	0	32	0	30	8	38	**70**	**74**
07:30	07:45	0	1	1	2	0	0	3	3	**5**	3	36	0	39	0	18	4	22	**61**	**66**
07:45	08:00	0	0	1	1	5	1	3	9	**10**	7	36	0	43	0	35	2	37	**80**	**90**
08:00	08:15	0	0	1	1	4	0	4	8	**9**	4	40	0	44	0	30	4	34	**78**	**87**
08:15	08:30	0	0	1	1	1	0	7	8	**9**	10	49	0	59	0	40	8	48	**107**	**116**
08:30	08:45	1	1	0	2	3	0	8	11	**13**	4	53	0	57	0	42	7	49	**106**	**119**
08:45	09:00	0	0	1	1	2	0	1	3	**4**	5	60	0	65	1	44	8	53	**118**	**122**
09:00	09:15	1	0	1	2	2	0	2	4	**6**	4	38	0	42	0	27	14	41	**83**	**89**
09:15	09:30	0	0	0	0	6	0	6	12	**12**	8	42	0	50	0	46	9	55	**105**	**117**
09:30	09:45	0	0	0	0	9	0	7	16	**16**	3	35	0	38	2	38	8	48	**86**	**102**
09:45	10:00	2	1	0	3	5	0	5	10	**13**	9	42	0	51	0	32	1	33	**84**	**97**
11:30	11:45	2	0	1	3	5	0	5	10	**13**	3	44	0	47	1	39	4	44	**91**	**104**
11:45	12:00	1	0	0	1	7	0	4	11	**12**	9	43	1	53	1	39	2	42	**95**	**107**
12:00	12:15	1	0	0	1	7	0	7	14	**15**	7	40	1	48	0	42	6	48	**96**	**111**
12:15	12:30	1	0	1	2	5	0	5	10	**12**	1	39	3	43	0	48	8	56	**99**	**111**
12:30	12:45	0	1	0	1	8	0	3	11	**12**	5	36	0	41	0	37	4	41	**82**	**94**
12:45	13:00	0	1	3	4	5	1	5	11	**15**	5	37	0	42	1	31	1	33	**75**	**90**
13:00	13:15	0	0	0	0	2	0	4	6	**6**	2	45	0	47	0	49	2	51	**98**	**104**
13:15	13:30	1	0	0	1	2	1	3	6	**7**	1	39	1	41	1	58	2	61	**102**	**109**
15:00	15:15	2	1	0	3	2	0	6	8	**11**	2	43	1	46	0	67	5	72	**118**	**129**
15:15	15:30	1	1	1	3	4	0	3	7	**10**	0	37	0	37	0	87	4	91	**128**	**138**
15:30	15:45	1	1	0	2	7	0	4	11	**13**	2	39	0	41	0	88	2	90	**131**	**144**
15:45	16:00	0	0	2	2	5	0	7	12	**14**	4	45	0	49	0	105	5	110	**159**	**173**
16:00	16:15	0	0	0	0	2	0	6	8	**8**	4	56	1	61	0	103	5	108	**169**	**177**
16:15	16:30	1	0	1	2	10	0	10	20	**22**	2	56	2	60	2	124	5	131	**191**	**213**
16:30	16:45	0	0	0	0	6	0	2	8	**8**	8	46	2	56	0	118	9	127	**183**	**191**
16:45	17:00	0	0	0	0	7	0	6	13	**13**	3	41	0	44	1	133	5	139	**183**	**196**
17:00	17:15	2	0	0	2	5	0	5	10	**12**	4	44	0	48	3	122	8	133	**181**	**193**
17:15	17:30	1	0	2	3	4	1	2	7	**10**	0	49	1	50	2	112	3	117	**167**	**177**
17:30	17:45	2	0	1	3	1	0	6	7	**10**	2	34	2	38	1	114	2	117	**155**	**165**
17:45	18:00	0	0	0	0	6	0	1	7	**7**	0	30	0	30	0	93	1	94	**124**	**131**
Total:		20	8	18	46	140	4	144	288	**334**	128	1334	15	1477	16	2009	158	2183	**334**	**3,994**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		BREEZEHILL AVE			GLADSTONE AVE			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	11	2	**13**	**13**
07:15	07:30	1	0	**1**	7	4	**11**	**12**
07:30	07:45	1	1	**2**	13	8	**21**	**23**
07:45	08:00	2	0	**2**	8	9	**17**	**19**
08:00	08:15	2	1	**3**	24	7	**31**	**34**
08:15	08:30	0	0	**0**	19	4	**23**	**23**
08:30	08:45	0	0	**0**	36	2	**38**	**38**
08:45	09:00	0	1	**1**	19	2	**21**	**22**
09:00	09:15	0	1	**1**	14	6	**20**	**21**
09:15	09:30	0	0	**0**	2	7	**9**	**9**
09:30	09:45	0	0	**0**	7	5	**12**	**12**
09:45	10:00	0	0	**0**	6	6	**12**	**12**
11:30	11:45	0	0	**0**	3	1	**4**	**4**
11:45	12:00	0	0	**0**	3	4	**7**	**7**
12:00	12:15	0	0	**0**	7	1	**8**	**8**
12:15	12:30	0	0	**0**	4	5	**9**	**9**
12:30	12:45	0	0	**0**	2	2	**4**	**4**
12:45	13:00	0	0	**0**	1	2	**3**	**3**
13:00	13:15	0	1	**1**	3	2	**5**	**6**
13:15	13:30	0	1	**1**	1	4	**5**	**6**
15:00	15:15	1	2	**3**	3	9	**12**	**15**
15:15	15:30	0	0	**0**	9	6	**15**	**15**
15:30	15:45	0	1	**1**	10	11	**21**	**22**
15:45	16:00	0	0	**0**	4	7	**11**	**11**
16:00	16:15	0	0	**0**	4	7	**11**	**11**
16:15	16:30	0	0	**0**	10	10	**20**	**20**
16:30	16:45	1	0	**1**	8	18	**26**	**27**
16:45	17:00	0	3	**3**	6	14	**20**	**23**
17:00	17:15	0	3	**3**	7	21	**28**	**31**
17:15	17:30	2	3	**5**	9	24	**33**	**38**
17:30	17:45	0	0	**0**	11	15	**26**	**26**
17:45	18:00	0	0	**0**	9	11	**20**	**20**
Total		10	18	**28**	280	236	**516**	**544**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

	BREEZEHILL AVE			GLADSTONE AVE			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	**Total**	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	**Total**	**Grand Total**
07:00 07:15	6	5	**11**	1	0	**1**	**12**
07:15 07:30	5	3	**8**	1	1	**2**	**10**
07:30 07:45	7	3	**10**	0	2	**2**	**12**
07:45 08:00	2	3	**5**	0	2	**2**	**7**
08:00 08:15	5	4	**9**	0	0	**0**	**9**
08:15 08:30	8	2	**10**	3	0	**3**	**13**
08:30 08:45	11	6	**17**	2	1	**3**	**20**
08:45 09:00	5	9	**14**	4	0	**4**	**18**
09:00 09:15	6	3	**9**	2	1	**3**	**12**
09:15 09:30	3	3	**6**	0	0	**0**	**6**
09:30 09:45	1	2	**3**	2	0	**2**	**5**
09:45 10:00	6	3	**9**	0	0	**0**	**9**
11:30 11:45	7	7	**14**	0	0	**0**	**14**
11:45 12:00	5	1	**6**	1	0	**1**	**7**
12:00 12:15	3	4	**7**	1	0	**1**	**8**
12:15 12:30	6	2	**8**	0	0	**0**	**8**
12:30 12:45	2	5	**7**	2	0	**2**	**9**
12:45 13:00	2	2	**4**	1	0	**1**	**5**
13:00 13:15	4	3	**7**	0	0	**0**	**7**
13:15 13:30	2	3	**5**	0	0	**0**	**5**
15:00 15:15	9	3	**12**	0	0	**0**	**12**
15:15 15:30	3	1	**4**	1	0	**1**	**5**
15:30 15:45	6	3	**9**	0	0	**0**	**9**
15:45 16:00	4	7	**11**	0	0	**0**	**11**
16:00 16:15	2	7	**9**	0	0	**0**	**9**
16:15 16:30	3	7	**10**	1	5	**6**	**16**
16:30 16:45	5	6	**11**	4	3	**7**	**18**
16:45 17:00	7	3	**10**	0	1	**1**	**11**
17:00 17:15	10	6	**16**	2	1	**3**	**19**
17:15 17:30	5	7	**12**	0	1	**1**	**13**
17:30 17:45	0	2	**2**	0	1	**1**	**3**
17:45 18:00	4	5	**9**	3	0	**3**	**12**
Total	154	130	**284**	31	19	**50**	**334**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		BREEZEHILL AVE									GLADSTONE AVE									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
07:30	07:45	0	0	0	**0**	0	0	1	**1**	**1**	0	1	0	**1**	0	2	1	**3**	**4**	**5**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**6**	0	5	0	**5**	**11**	**11**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	0	**4**	**5**	**5**
08:15	08:30	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	4	0	**4**	**8**	**8**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	0	**2**	**5**	**5**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	1	0	**1**	**4**	**4**
09:00	09:15	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	4	0	**4**	**8**	**8**
09:15	09:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	4	1	**5**	**6**	**6**
09:45	10:00	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	2	0	**2**	**5**	**6**
11:30	11:45	0	0	0	**0**	2	0	1	**3**	**3**	0	4	0	**4**	0	1	0	**1**	**5**	**8**
11:45	12:00	0	0	0	**0**	0	0	1	**1**	**1**	1	2	0	**3**	0	4	0	**4**	**7**	**8**
12:00	12:15	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	3	0	**3**	**5**	**6**
12:15	12:30	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	2	3	**5**	**6**	**7**
12:30	12:45	0	0	0	**0**	0	0	1	**1**	**1**	0	1	0	**1**	0	4	0	**4**	**5**	**6**
12:45	13:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	1	0	**1**	**3**	**3**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
13:15	13:30	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	1	0	**1**	**3**	**4**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	2	0	**2**	**3**	**3**
15:30	15:45	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	1	0	**1**	**2**	**3**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	4	1	**5**	**7**	**7**
16:15	16:30	0	0	0	**0**	2	0	0	**2**	**2**	0	2	0	**2**	0	3	0	**3**	**5**	**7**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	2	1	**3**	**4**	**4**
16:45	17:00	0	0	0	**0**	1	0	0	**1**	**1**	0	2	0	**2**	0	6	1	**7**	**9**	**10**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	3	0	**3**	**3**	**3**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	1	0	**1**	**2**	**2**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	2	0	**2**	**3**	**3**
17:45	18:00	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	0	0	0	**0**	11	0	4	**15**	**15**	1	62	0	**63**	0	81	8	**89**	**152**	**167**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BREEZEHILL AVE @ GLADSTONE AVE

Survey Date: Wednesday, July 18, 2018 **WO No:** 37971

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		BREEZEHILL AVE		GLADSTONE AVE		
		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	0	0	0	**0**

DIRECTIONAL TRAFFIC FLOW

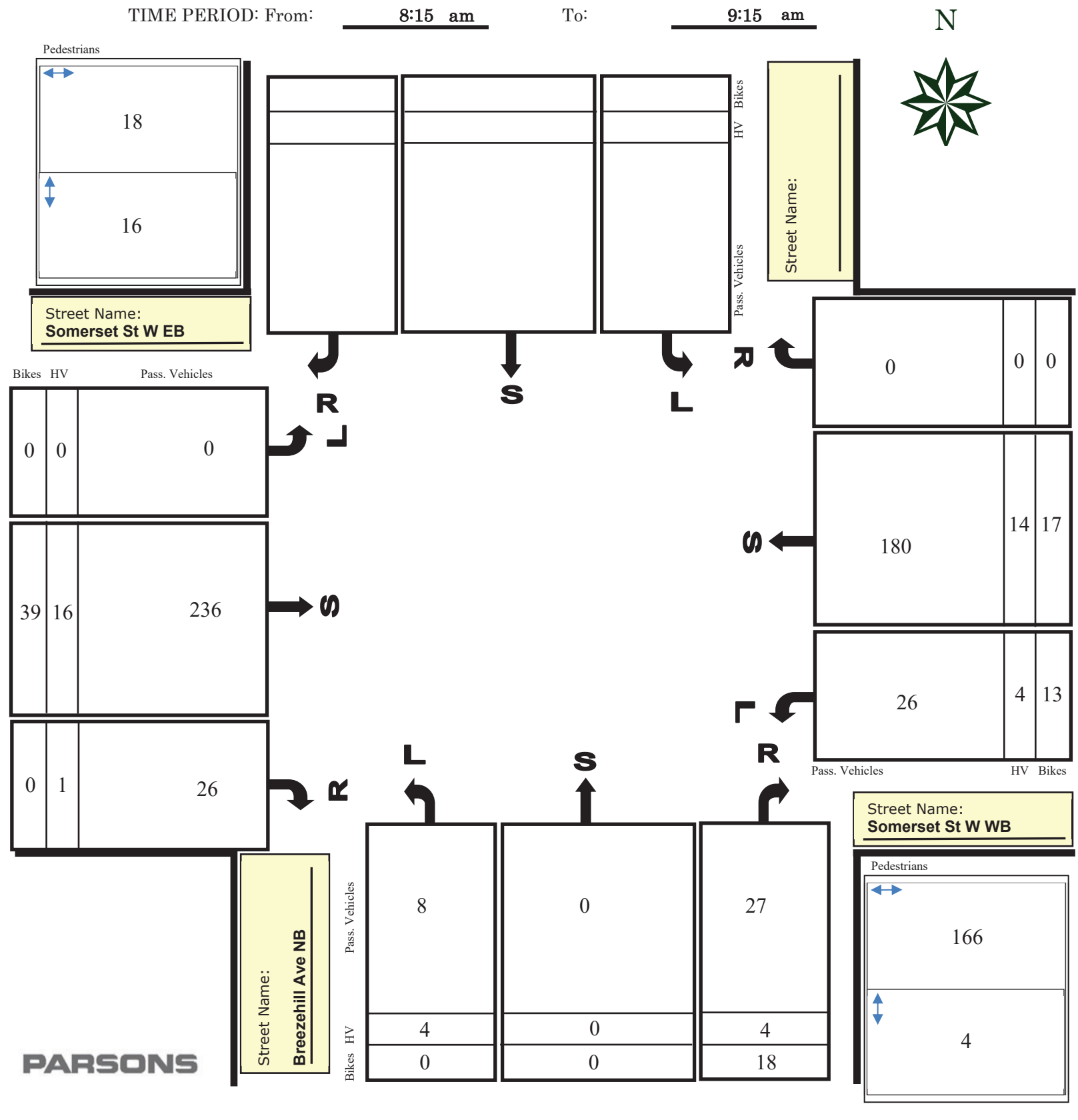
Intersection: **Somerset St W** at **Breezehill Ave**

DATE: Day: **22** Month: **6** Year: **2023** Day of Week: **Thursday**

Observer: **Jordan Terada** Weather: **Sunny**

Chkd by: ..... Date: .....

TIME PERIOD: From: **8:15 am** To: **9:15 am**



PARSONS

DIRECTIONAL TRAFFIC FLOW

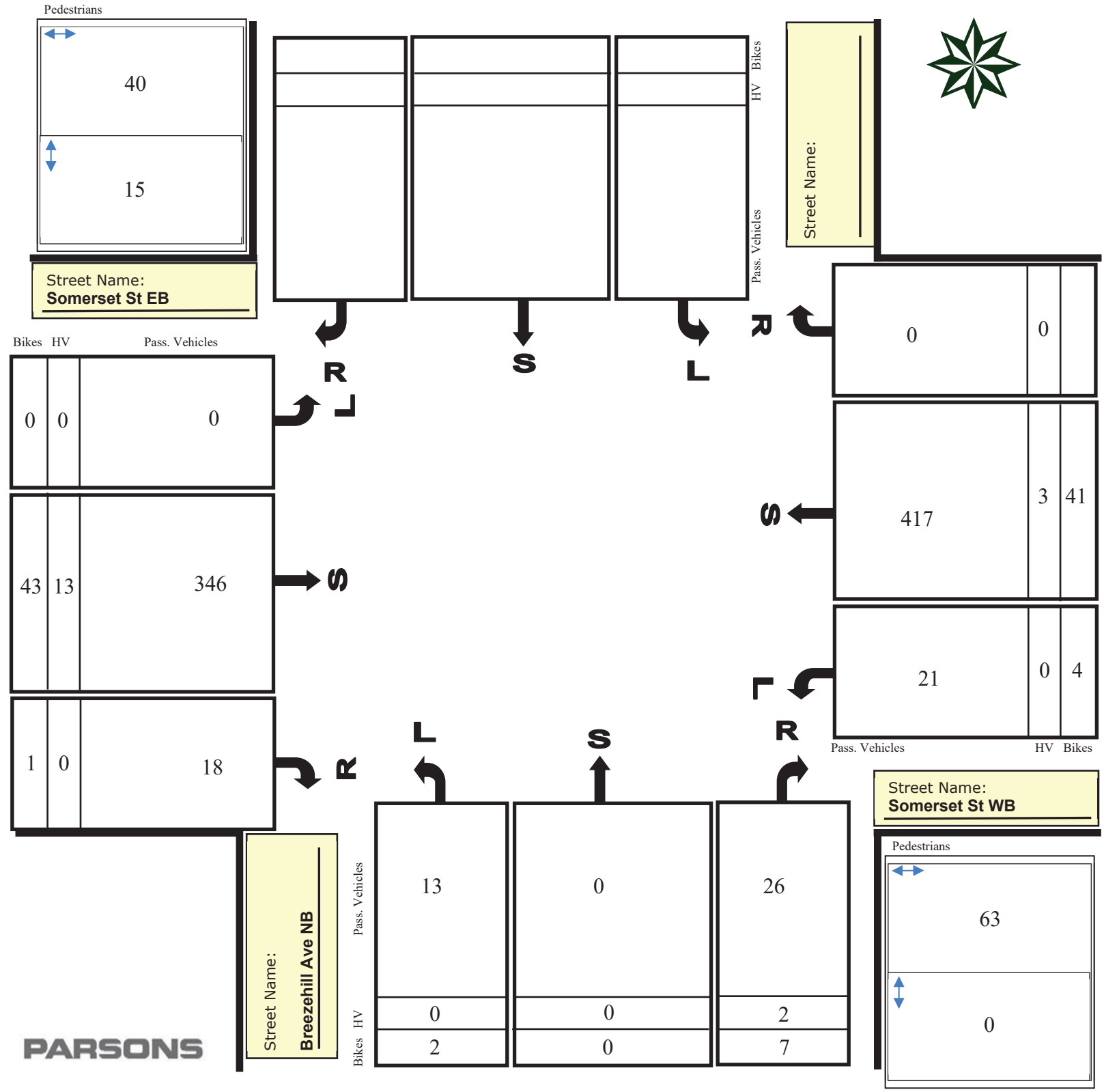
Intersection: **Somerset St W** at **Breezehill Ave**

DATE: Day: **22** Month: **June** Year: **2023** Day of Week: **Thursday**

Observer: **Jordan Terada** Weather: **Sunny**

Chkd by: _____ Date: _____

TIME PERIOD: From: **4:30: pm** To: **5:30**



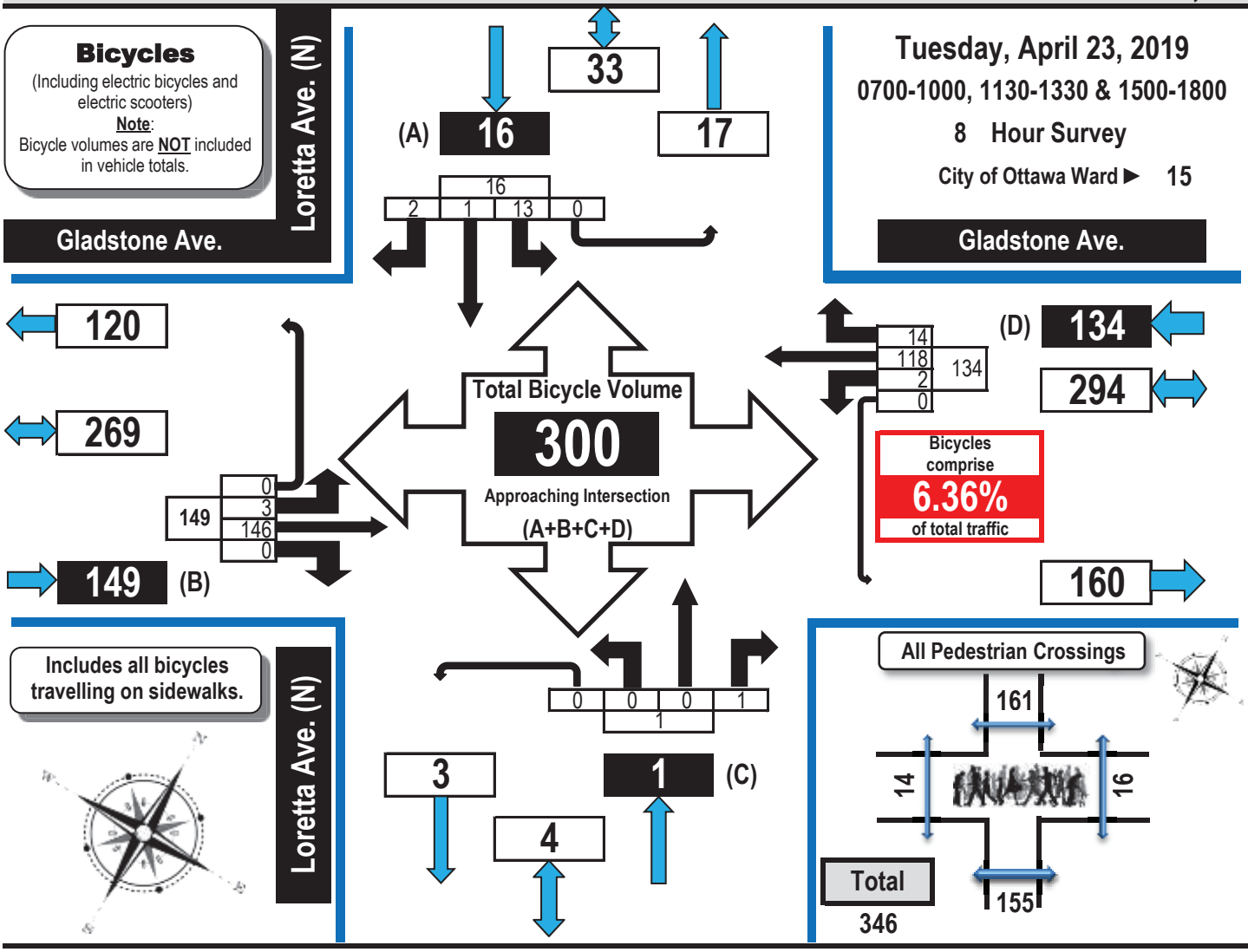
PARSONS

Turning Movement Count
Bicycle Summary
Flow Diagram

Gladstone Avenue & Loretta Avenue North — Ottawa, ON

Bicycles
(Including electric bicycles and electric scooters)
Note:
Bicycle volumes are **NOT** included in vehicle totals.

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



	Gladstone Ave. Eastbound					Gladstone Ave. Westbound					Loretta Ave. (N) Northbound					Loretta Ave. (N) Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	26	0	0	26	0	9	1	0	10	0	0	0	0	0	1	1	0	0	2	38
0800-0900	1	55	0	0	56	1	15	2	0	18	0	0	1	0	1	7	0	0	0	7	82
0900-1000	0	15	0	0	15	0	8	0	0	8	0	0	0	0	0	1	0	0	0	1	24
1130-1230	0	3	0	0	3	0	5	0	0	5	0	0	0	0	0	1	0	0	0	1	9
1230-1330	0	8	0	0	8	0	4	1	0	5	0	0	0	0	0	1	0	0	0	1	14
1500-1600	1	10	0	0	11	0	14	1	0	15	0	0	0	0	0	1	0	1	0	2	28
1600-1700	1	17	0	0	18	1	29	2	0	32	0	0	0	0	0	1	0	0	0	1	51
1700-1800	0	12	0	0	12	0	34	7	0	41	0	0	0	0	0	0	0	1	0	1	54
Totals	3	146	0	0	149	2	118	14	0	134	0	0	1	0	1	13	1	2	0	16	300

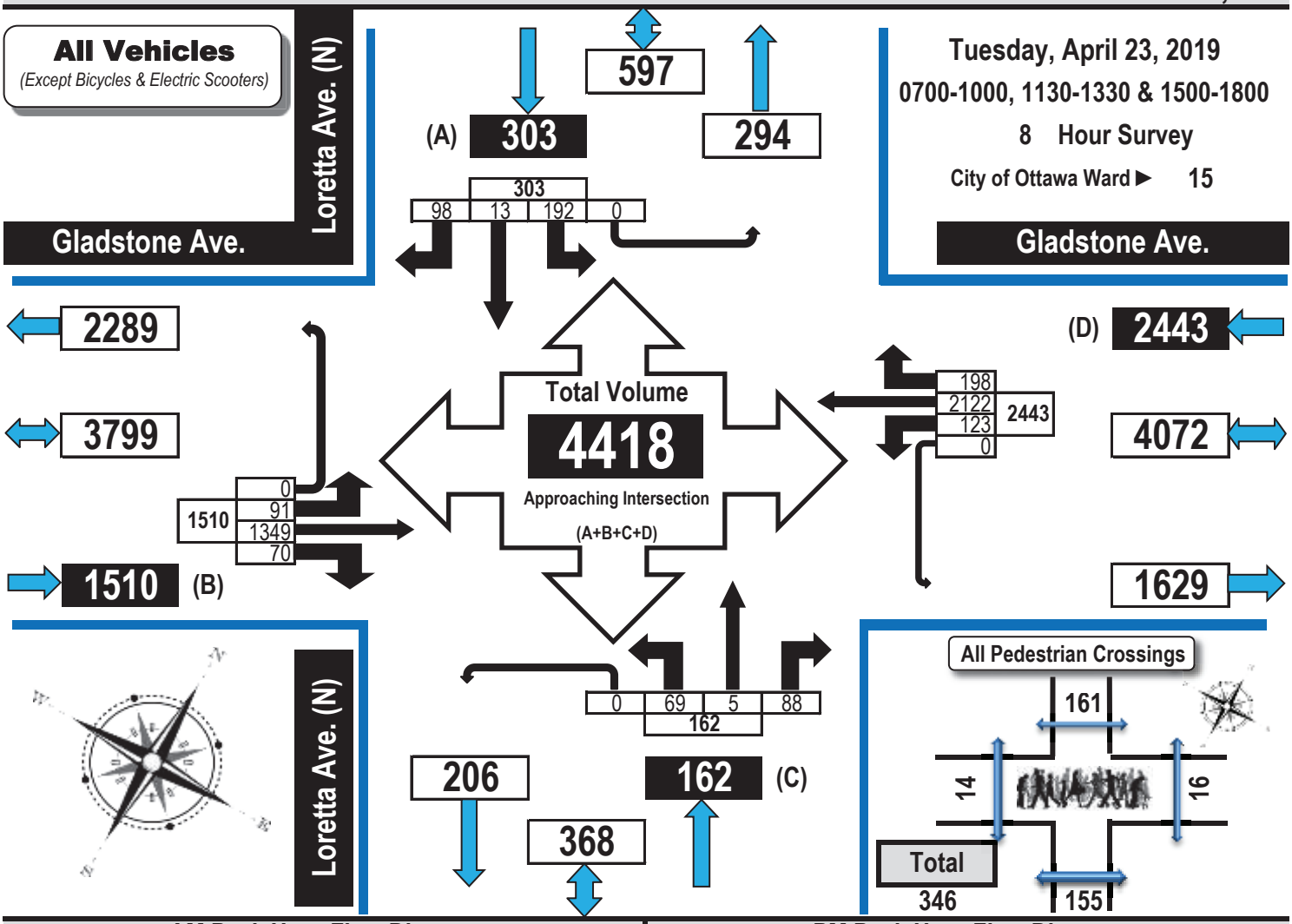
Comments:
No traffic issues noted during survey. OCTranspo and school buses comprise 41.05% of the heavy vehicle traffic.

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

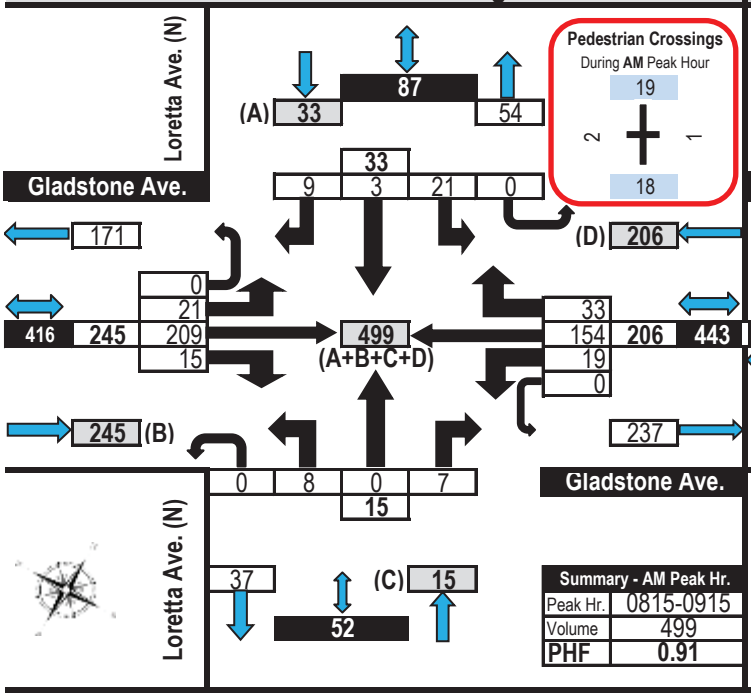
Gladstone Avenue & Loretta Avenue North — Ottawa, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 15

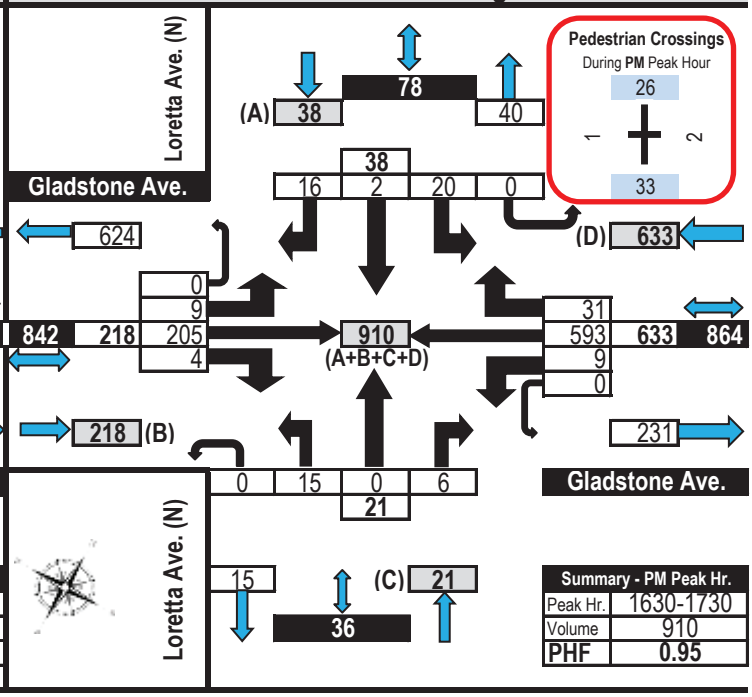


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0815-0915
Volume	499
PHF	0.91

PM Peak Hour Flow Diagram



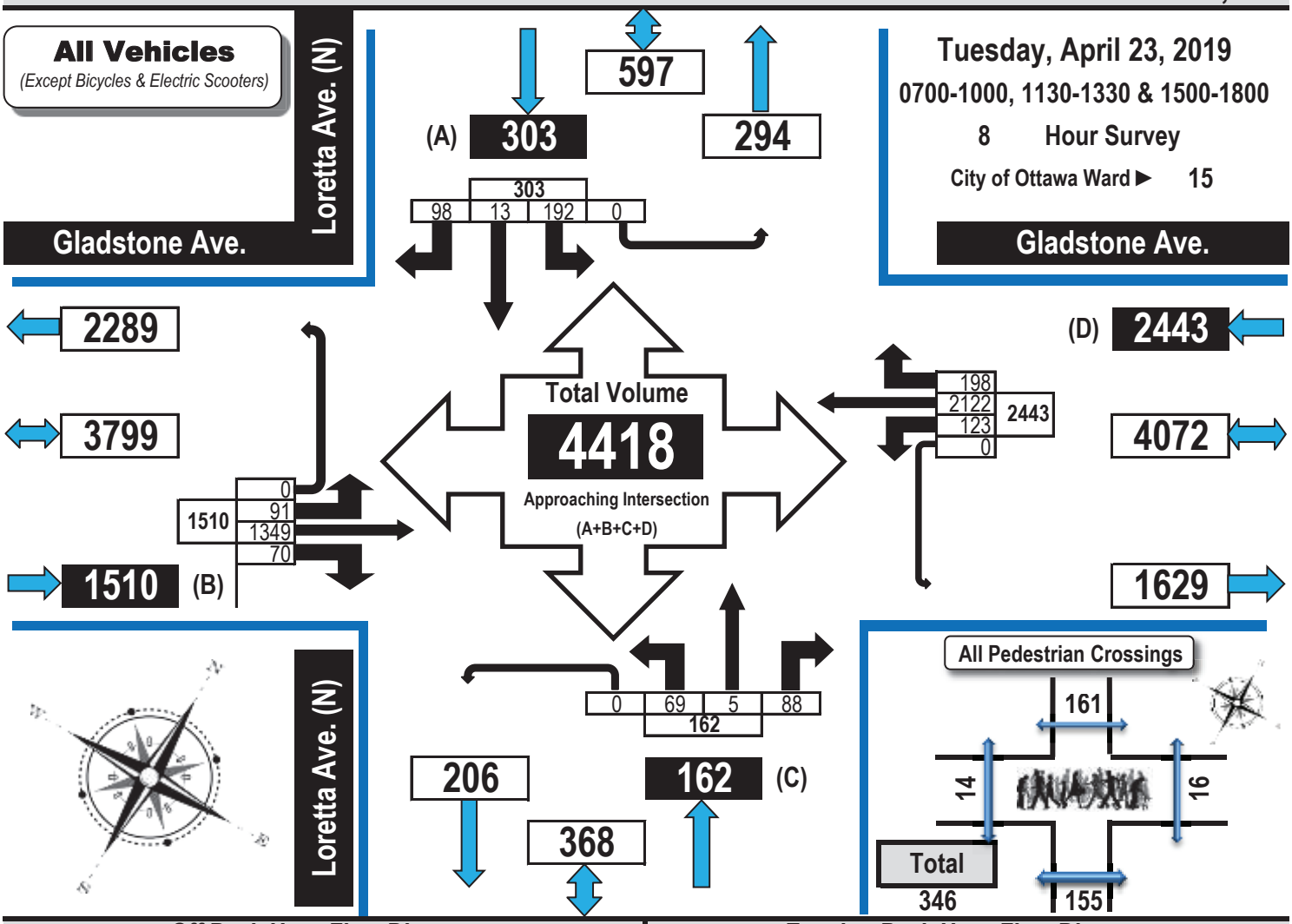
Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	910
PHF	0.95

Turning Movement Count
Summary, OFF and EVENING Peak Hour Flow Diagrams
All Vehicles Except Bicycles

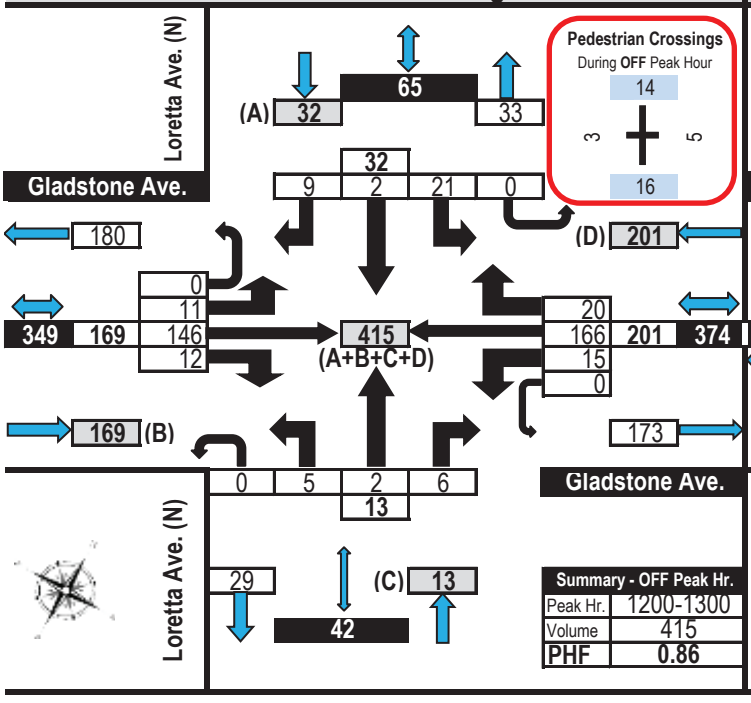
Gladstone Avenue & Loretta Avenue North — Ottawa, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ 15

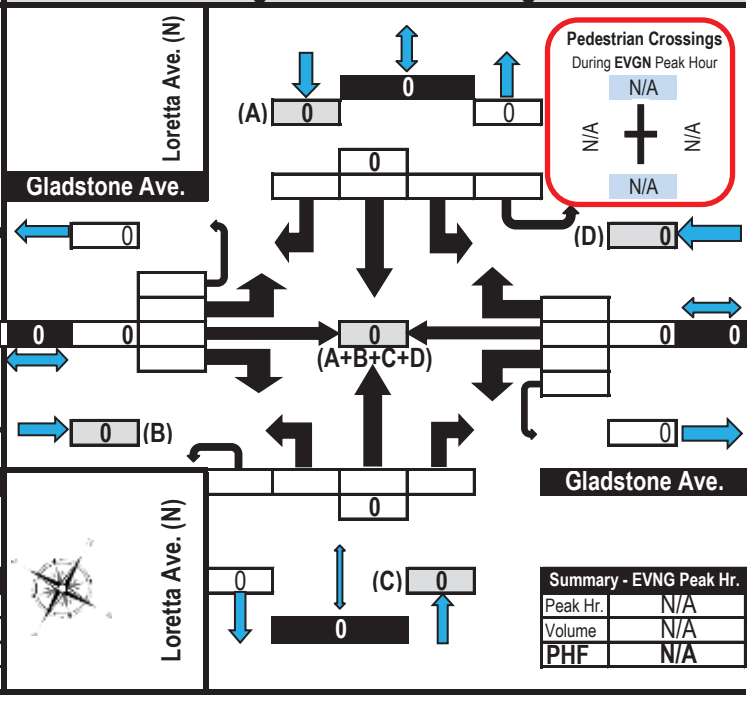


Off Peak Hour Flow Diagram



Summary - OFF Peak Hr.	
Peak Hr.	1200-1300
Volume	415
PHF	0.86

Evening Peak Hour Flow Diagram



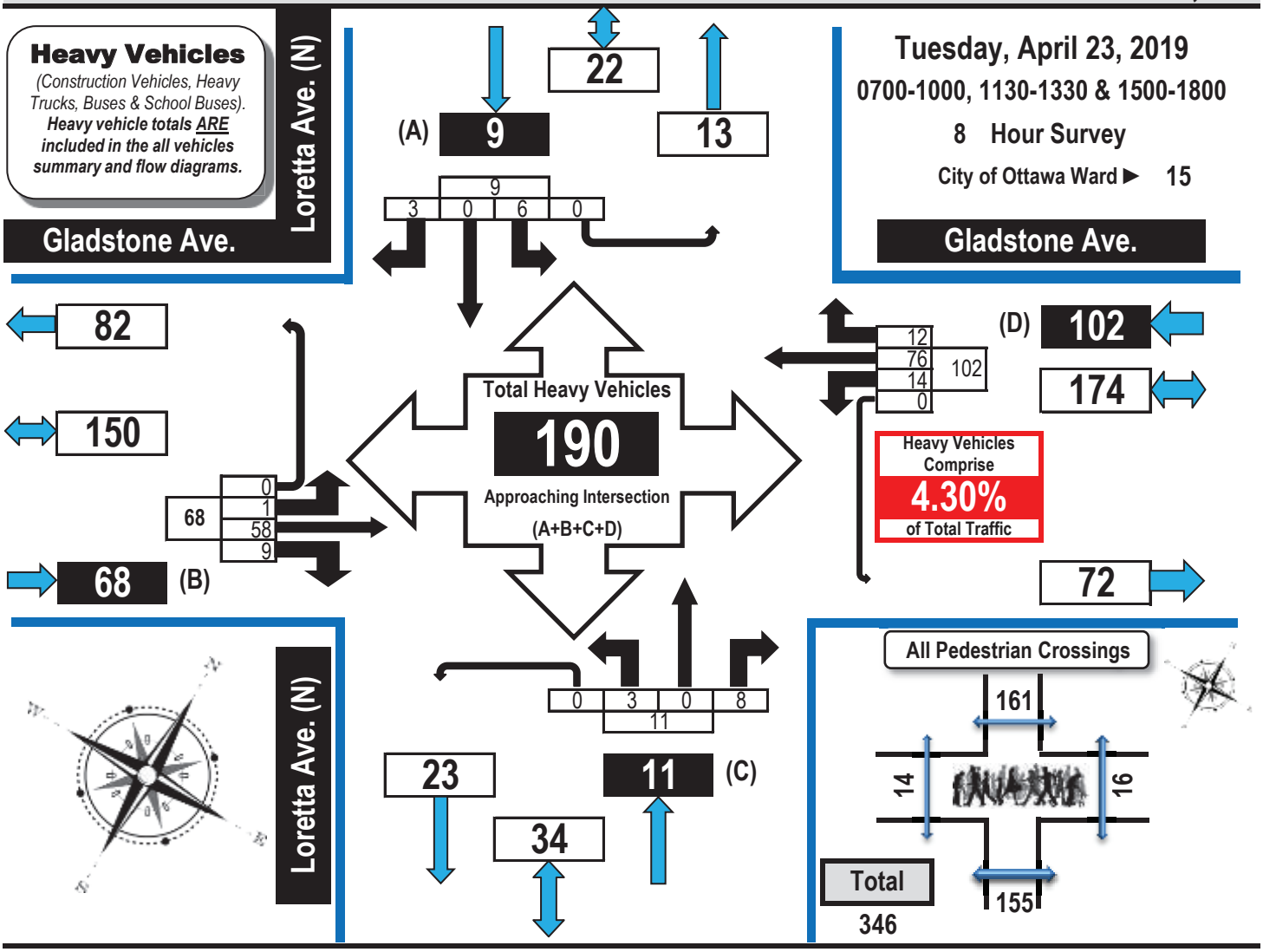
Summary - EVNG Peak Hr.	
Peak Hr.	N/A
Volume	N/A
PHF	N/A

Turning Movement Count
Heavy Vehicle Summary
Flow Diagram

Gladstone Avenue & Loretta Avenue North — Ottawa, ON

Heavy Vehicles
(Construction Vehicles, Heavy Trucks, Buses & School Buses).
Heavy vehicle totals ARE included in the all vehicles summary and flow diagrams.

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



	Gladstone Ave. Eastbound					Gladstone Ave. Westbound					Loretta Ave. (N) Northbound					Loretta Ave. (N) Southbound					
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	6	2	0	8	1	7	1	0	9	0	0	1	0	1	0	0	0	0	0	18
0800-0900	0	8	1	0	9	0	10	3	0	13	0	0	4	0	4	2	0	0	0	2	28
0900-1000	1	14	1	0	16	2	15	3	0	20	0	0	0	0	0	1	0	2	0	3	39
1130-1230	0	9	3	0	12	1	7	1	0	9	1	0	0	0	1	0	0	1	0	1	23
1230-1330	0	4	0	0	4	5	13	2	0	20	0	0	1	0	1	0	0	0	0	0	25
1500-1600	0	6	1	0	7	3	7	1	0	11	0	0	2	0	2	1	0	0	0	1	21
1600-1700	0	5	1	0	6	1	10	0	0	11	2	0	0	0	2	1	0	0	0	1	20
1700-1800	0	6	0	0	6	1	7	1	0	9	0	0	0	0	0	1	0	0	0	1	16
Totals	1	58	9	0	68	14	76	12	0	102	3	0	8	0	11	6	0	3	0	9	190

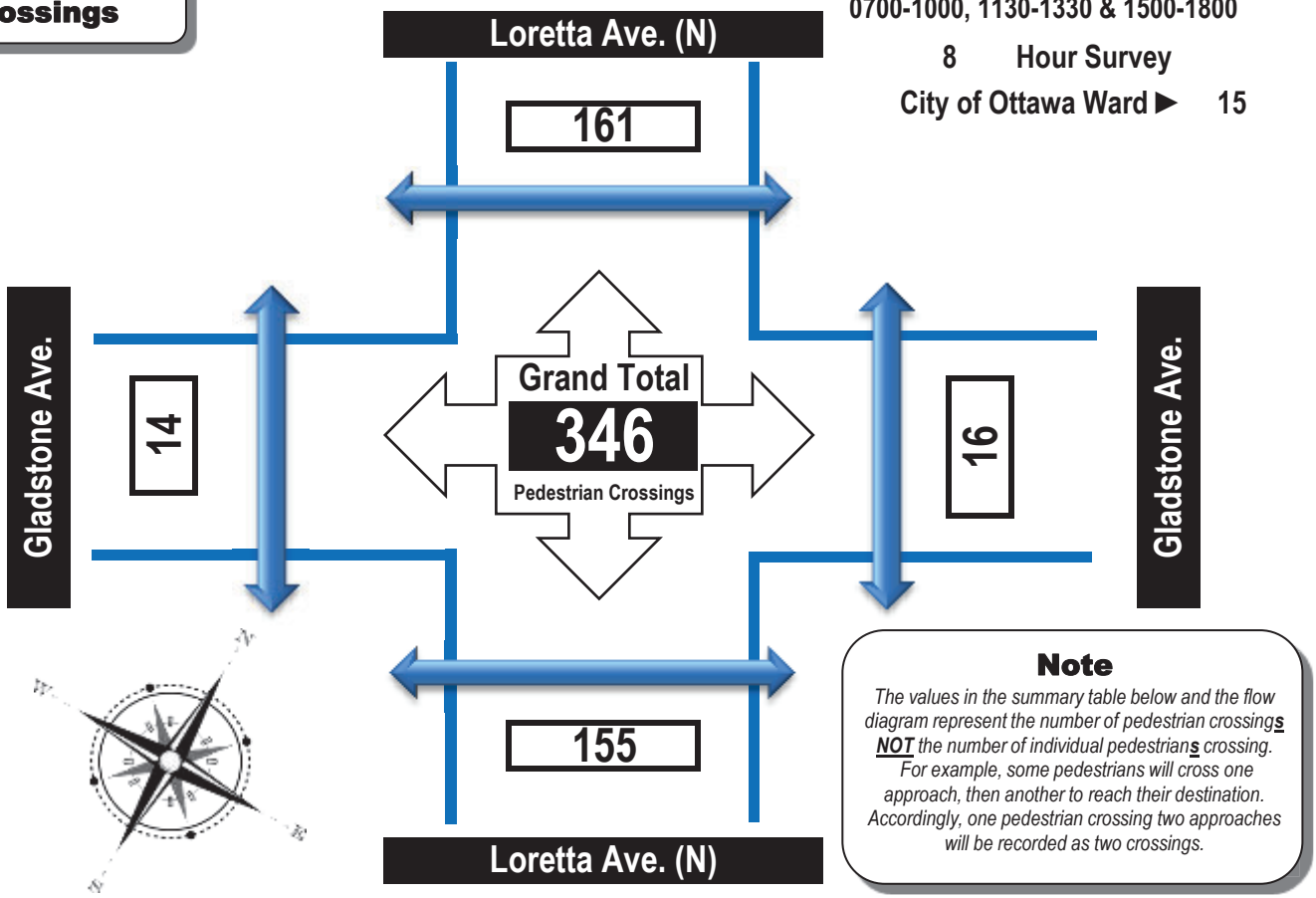
Comments:
No traffic issues noted during survey. OCTranspo and school buses comprise 41.05% of the heavy vehicle traffic.

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Gladstone Avenue & Loretta Avenue North — Ottawa, ON

Pedestrian Crossings

Tuesday, April 23, 2019
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 15



Note

*The values in the summary table below and the flow diagram represent the number of pedestrian crossing**s** **NOT** the number of individual pedestrian**s** crossing. For example, some pedestrians will cross one approach, then another to reach their destination. Accordingly, one pedestrian crossing two approaches will be recorded as two crossings.*

Time Period	West Side Crossing Gladstone Ave.	East Side Crossing Gladstone Ave.	Street Total	South Side Crossing Loretta Ave. (N)	North Side Crossing Loretta Ave. (N)	Street Total	Grand Total
0700-0800	6	2	8	13	15	28	36
0800-0900	2	2	4	14	16	30	34
0900-1000	0	0	0	16	17	33	33
1130-1230	2	3	5	15	20	35	40
1230-1330	2	5	7	12	19	31	38
1500-1600	0	1	1	24	23	47	48
1600-1700	0	0	0	27	28	55	55
1700-1800	2	3	5	34	23	57	62
Totals	14	16	30	155	161	316	346

Comments:
No traffic issues noted during survey. OCTranspo and school buses comprise 41.05% of the heavy vehicle traffic.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count

Summary Report Including Peak Hours, AADT and Expansion Factors

All Vehicles Except Bicycles

Gladstone Avenue & Loretta Avenue North — Ottawa, ON

Survey Date: Tuesday, April 23, 2019 **Start Time:** 0700 **AADT Factor:** 0.7

Weather AM: Partly Cloudy +10° C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Overcast +17° C **Surveyor(s):** T. Carmody

	Gladstone Ave. Eastbound					Gladstone Ave. Westbound						Loretta Ave. (N) Northbound					Loretta Ave. (N) Southbound						
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	6	142	18	0	**166**	22	112	24	0	**158**	**324**	1	0	6	0	**7**	13	3	4	0	**20**	**27**	**351**
0800-0900	17	214	9	0	**240**	19	140	35	0	**194**	**434**	8	0	10	0	**18**	20	2	3	0	**25**	**43**	**477**
0900-1000	16	168	11	0	**195**	24	160	27	0	**211**	**406**	2	0	7	0	**9**	14	2	11	0	**27**	**36**	**442**
1130-1230	12	137	10	0	**159**	7	164	25	0	**196**	**355**	7	1	7	0	**15**	24	0	9	0	**33**	**48**	**403**
1230-1330	11	136	11	0	**158**	25	145	19	0	**189**	**347**	3	1	9	0	**13**	26	3	15	0	**44**	**57**	**404**
1500-1600	10	174	5	0	**189**	13	358	22	0	**393**	**582**	26	1	35	0	**62**	39	1	24	0	**64**	**126**	**708**
1600-1700	9	188	2	0	**199**	4	525	18	0	**547**	**746**	11	1	10	0	**22**	37	1	20	0	**58**	**80**	**826**
1700-1800	10	190	4	0	**204**	9	518	28	0	**555**	**759**	11	1	4	0	**16**	19	1	12	0	**32**	**48**	**807**
Totals	**91**	**1349**	**70**	**0**	1510	**123**	**2122**	**198**	**0**	2443	3953	**69**	**5**	**88**	**0**	162	**192**	**13**	**98**	**0**	303	465	4418

Equivalent 12 & 24-hour Vehicle Volumes Including the Annual Average Daily Traffic (AADT) Factor Applicable to the Day and Month of the Turning Movement Count

Expansion factors are applied exclusively to standard weekday 8-hour turning movement counts conducted during the hours of 0700h - 1000h, 1130h - 1330h and 1500h - 1800h

Equivalent 12-hour vehicle volumes. These volumes are calculated by multiplying the 8-hour totals by the 8 ➡12 expansion factor of 1.39

Equ. 12 Hr	126	1875	97	0	**2099**	171	2950	275	0	**3396**	**5495**	96	7	122	0	**225**	267	18	136	0	**421**	**646**	**6141**

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 0.7

AADT 12-hr	89	1313	68	0	**1469**	120	2065	193	0	**2377**	**3846**	67	5	86	0	**158**	187	13	95	0	**295**	**452**	**4299**

24-Hour AADT. These volumes are calculated by multiplying the average daily 12-hour vehicle volumes by the 12 ➡24 expansion factor of 1.31

AADT 24 Hr	116	1719	89	0	**1925**	157	2705	252	0	**3114**	**5039**	88	6	112	0	**206**	245	17	125	0	**386**	**593**	**5631**

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.91												Highest Hourly Vehicle Volume Between 0700h & 1000h										
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0815-0915	21	209	15	0	**245**	19	154	33	0	**206**	**451**	8	0	7	0	**15**	21	3	9	0	**33**	**48**	**499**
OFF Peak Hour Factor ➡ 0.86												Highest Hourly Vehicle Volume Between 1130h & 1330h										
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1200-1300	11	146	12	0	**169**	15	166	20	0	**201**	**370**	5	2	6	0	**13**	21	2	9	0	**32**	**45**	**415**
PM Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1500h & 1800h										
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1630-1730	9	205	4	0	**218**	9	593	31	0	**633**	**851**	15	0	6	0	**21**	20	2	16	0	**38**	**59**	**910**

Comments:

No traffic issues noted during survey. OCTranspo and school buses comprise 41.05% of the heavy vehicle traffic.

Notes:

1. Includes all vehicle types except bicycles, electric bicycles, and electric scooters.
2. When expansion and AADT factors are applied, the results will differ slightly due to rounding.

Appendix D:

Collision Data

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: BREEZEHILL AVE N btwn SOMERSET ST W & LAUREL ST

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Sep-29, Thu,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	East	Unknown	Unknown	Unattended vehicle	0

Location: BREEZEHILL AVE @ GLADSTONE AVE

Traffic Control: Stop sign **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Dec-07, Wed,15:25	Clear	Turning movement	Non-fatal injury	Wet	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2018-Jun-28, Thu,16:27	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-14, Fri,23:13	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BREEZEHILL AVE @ SOMERSET ST

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Dec-14, Mon,16:00	Clear	Angle	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: GLADSTONE AVE @ LORETTA AVE

Traffic Control: Stop sign **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Nov-11, Wed,19:26	Rain	Turning movement	Non-fatal injury	Wet	East	Making "U" turn	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-15, Fri,22:14	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Pedestrian	1

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: LAUREL ST btwn BREEZEHILL AVE N & LORETTA AVE N

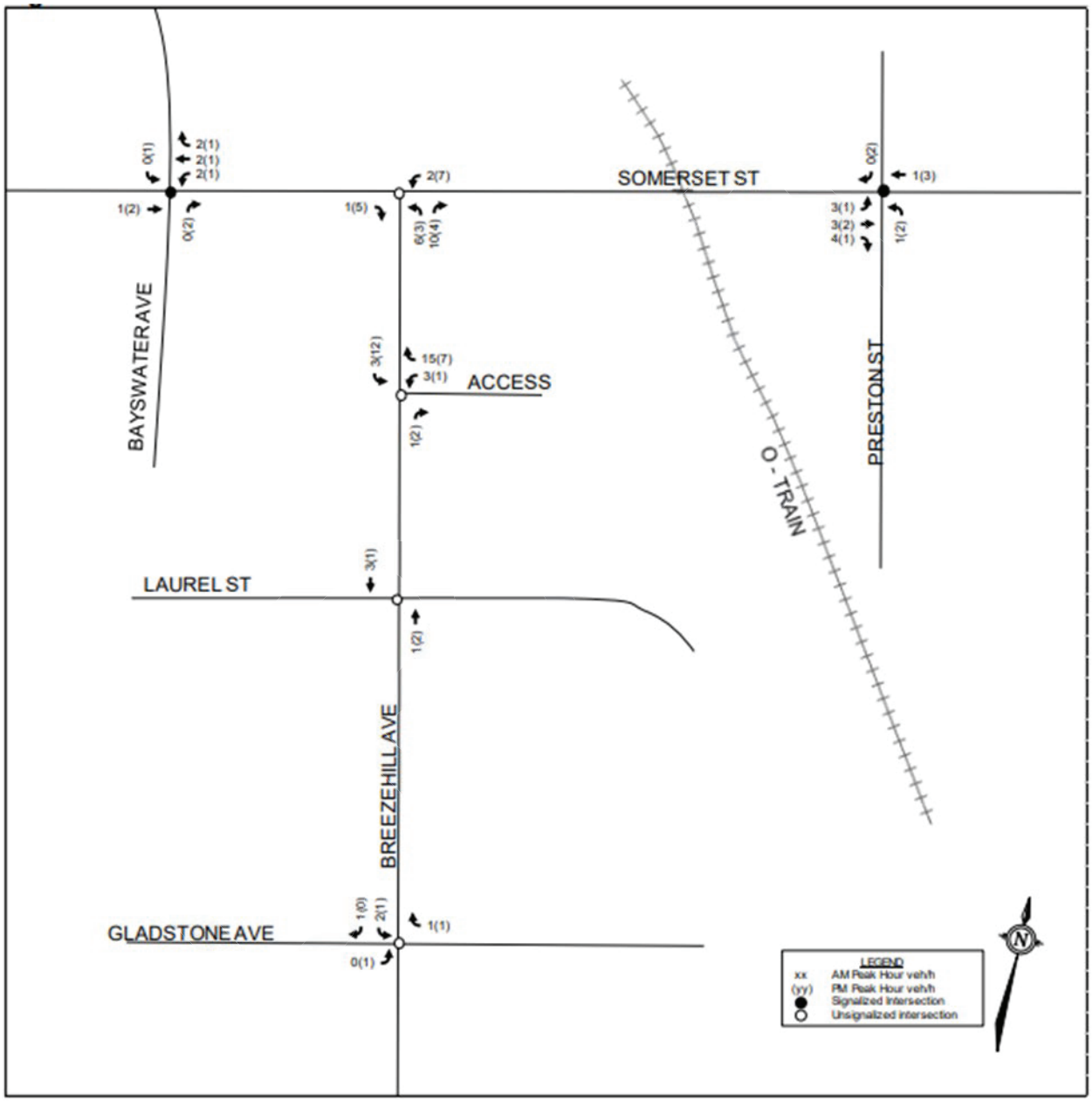
Traffic Control: No control **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jun-06, Sat,20:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2019-Feb-05, Tue,00:00	Snow	SMV unattended vehicle	P.D. only	Ice	East	Unknown	Unknown	Unattended vehicle	0

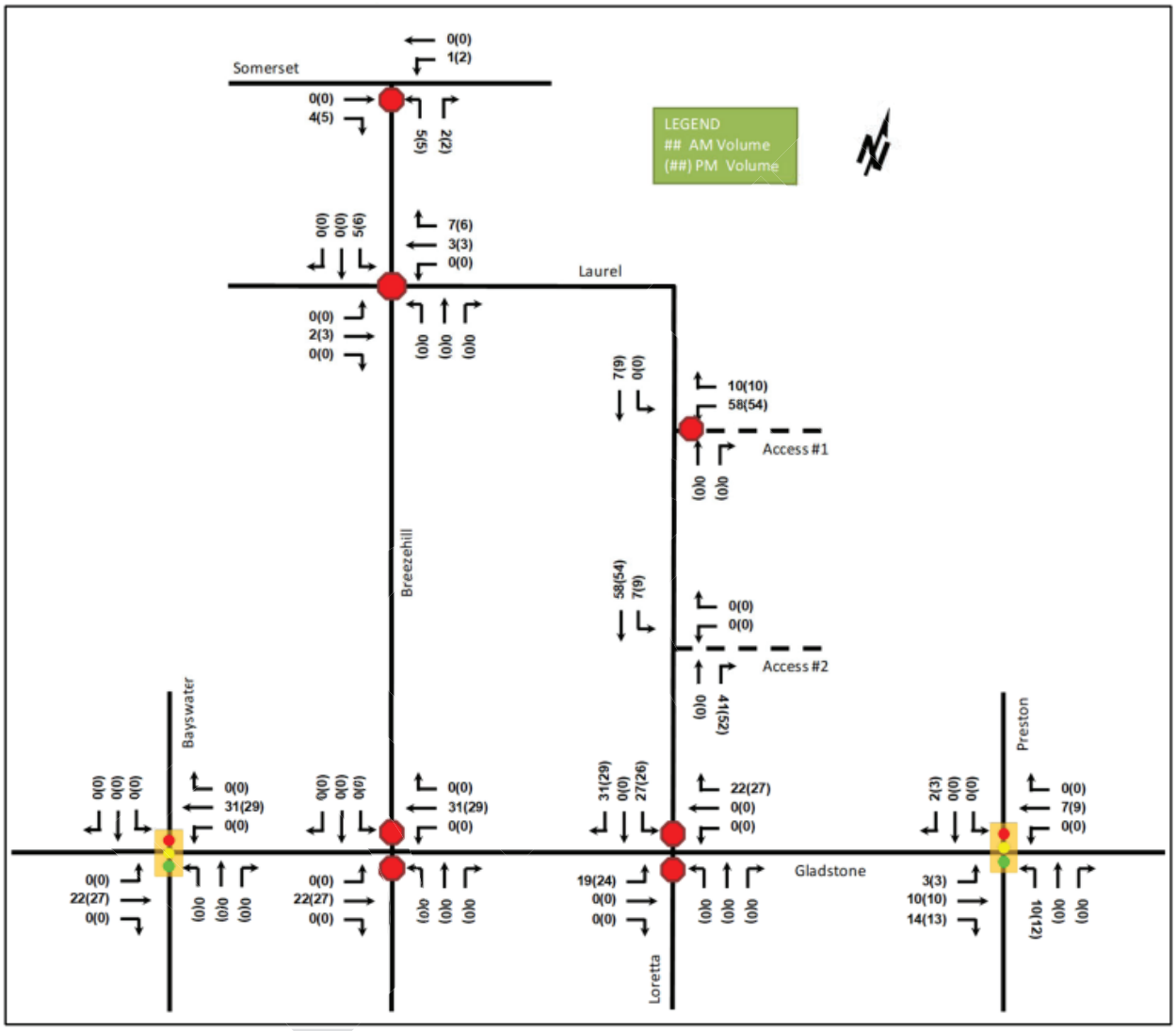
Appendix E:

Other Developments Traffic Volumes

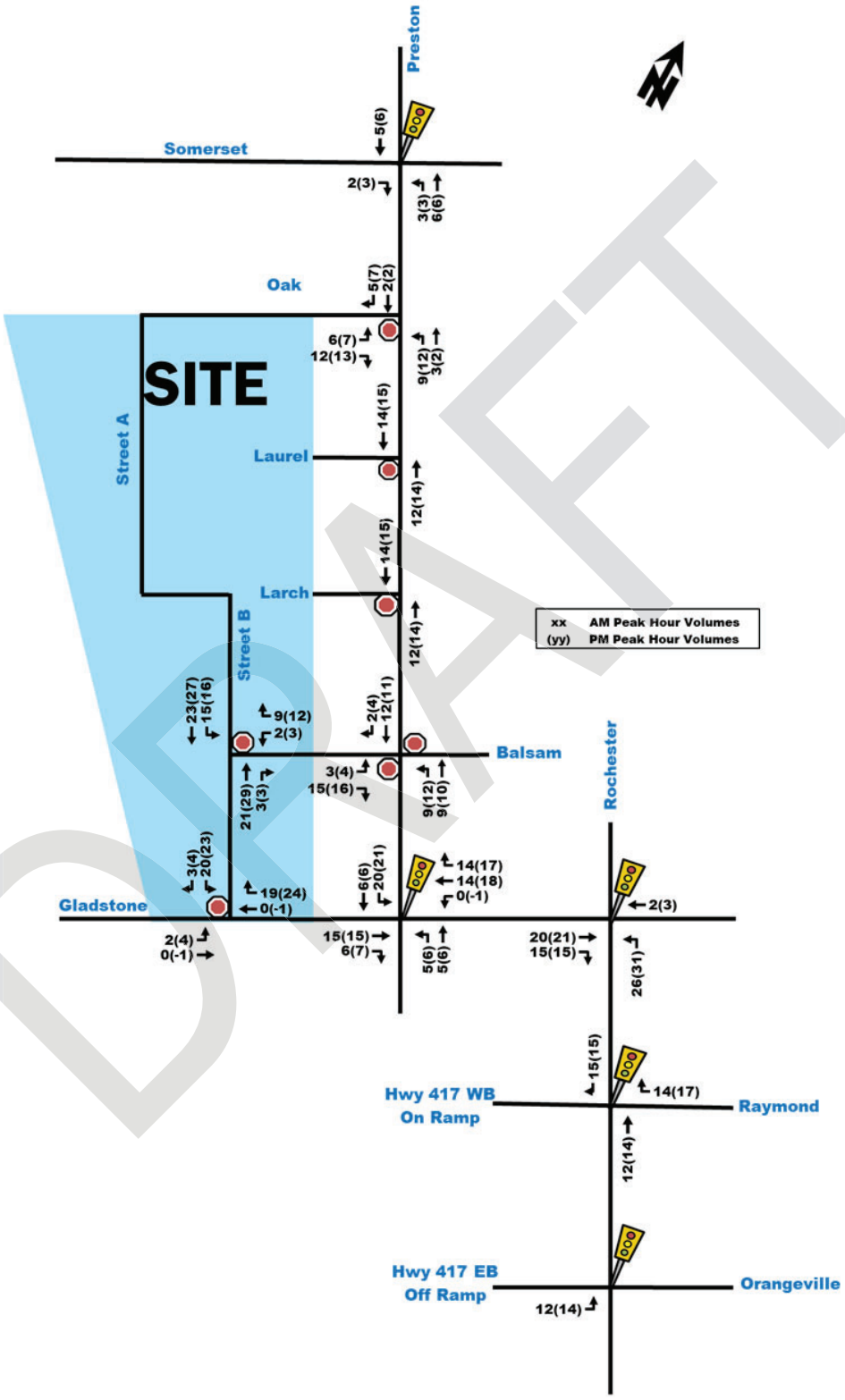
1040 Somerset St W Site Generated Traffic Volumes



951 Gladstone Ave and 145 Loretta Ave N Site Generated Traffic Volumes



Gladstone Village, 933 Gladstone Site Generated Traffic Volumes



Appendix F:

TDM Checklists

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

		TDM measures: *Residential developments*	Check if proposed & add descriptions
		1. TDM PROGRAM MANAGEMENT	
		1.1 Program coordinator	
BASIC	★ 1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2 Travel surveys	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2. WALKING AND CYCLING	
		2.1 Information on walking/cycling routes & destinations	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☑
		2.2 Bicycle skills training	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER		3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2	**Transit fare incentives**	
BASIC	★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☐
BETTER		3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
		3.3	**Enhanced public transit service**	
BETTER	★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4	**Private transit service**	
BETTER		3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4.	**CARSHARING & BIKESHARING**	
		4.1	**Bikeshare stations & memberships**	
BETTER		4.1.1	Contract with provider to install on-site bikeshare station (*multi-family)*	☐
BETTER		4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2	**Carshare vehicles & memberships**	
BETTER		4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER		4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
		5.	**PARKING**	
		5.1	**Priced parking**	
BASIC	★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☐
BASIC	★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☑

TDM measures: *Residential developments*				Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

TDM-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☑
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☑
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☑
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

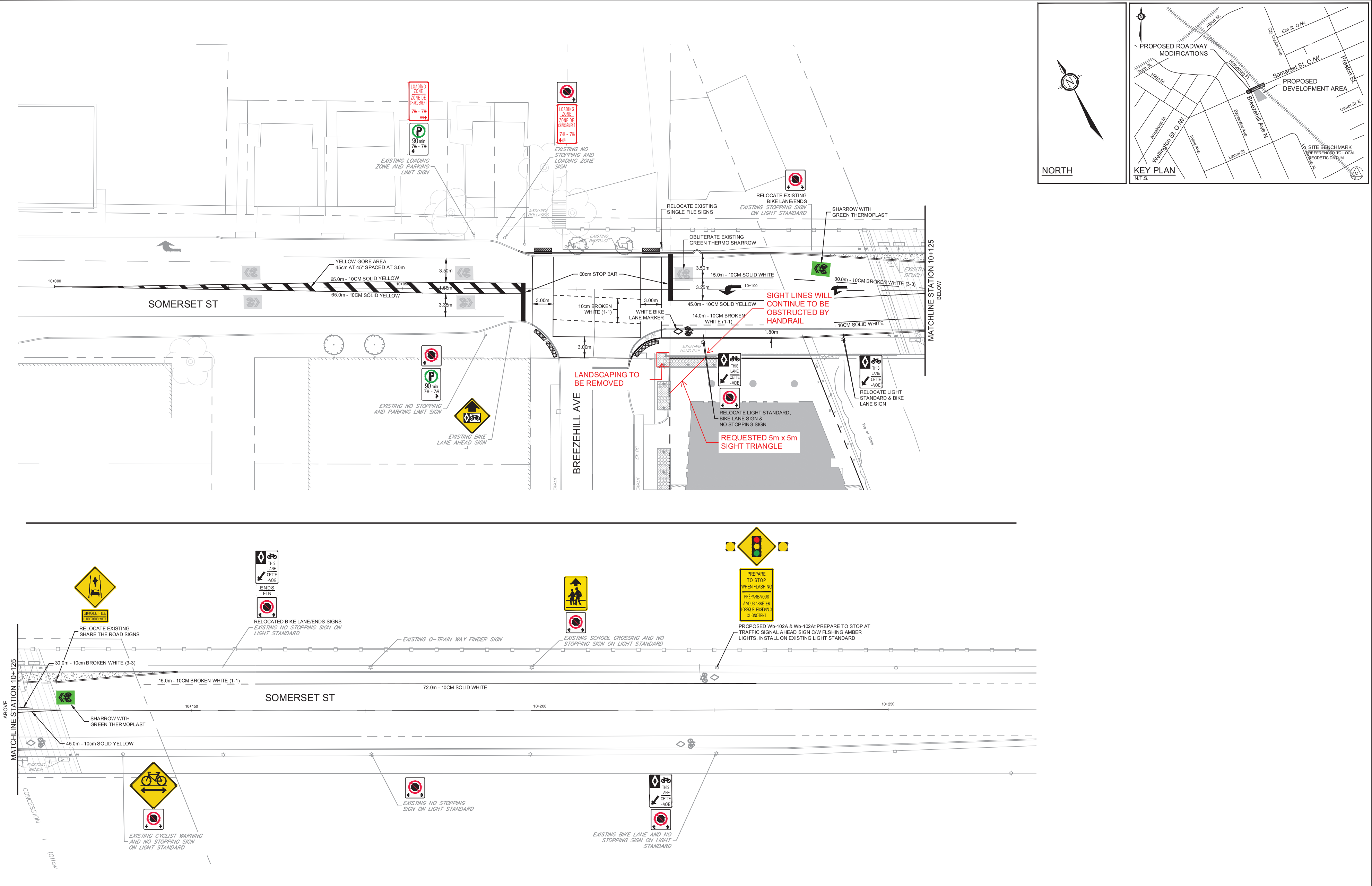
		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☑
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☑
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☑

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☑
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☑
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☑
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

	TDM-supportive design & infrastructure measures: *Residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☑
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☑
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☑

Appendix G:

Somerset/Breezehill Roadway Modification Design



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
1.	ISSUED FOR CITY REVIEW	DEC 15/22	GJM

SCALE 1:250

DESIGN RCH · CHECKED BJB · DRAWN RCH · CHECKED BJB · APPROVED GJM

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY of OTTAWA
SOMERSET STREET ROADWAY MODIFICATION

DRAWING NAME
PROPOSED PAVEMENT MARKINGS & SIGNAGE

PROJECT No. 112191
REV # 1
DRAWING No. 112191-RM-PVMK2

D07-12-13-0124

Appendix H:

Synchro Analysis Reports

Existing Conditions

Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	252	194	12
Future Volume (vph)	252	194	12
Sign Control	Free	Free	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 43.5%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	252	27	30	194	12	31
Future Volume (Veh/h)	252	27	30	194	12	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	280	30	33	216	13	34
Pedestrians	16			4	166	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	3.5			3.5	3.5	
Percent Blockage	0			0	5	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			476		759	465
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			476		759	465
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		96	94
cM capacity (veh/h)			1033		343	568

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	310	249	47
Volume Left	0	33	13
Volume Right	30	0	34
cSH	1700	1033	481
Volume to Capacity	0.18	0.03	0.10
Queue Length 95th (m)	0.0	0.8	2.5
Control Delay (s)	0.0	1.4	13.3
Lane LOS		A	B
Approach Delay (s)	0.0	1.4	13.3
Approach LOS			B

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization		43.5%	ICU Level of Service
Analysis Period (min)		15	

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	193	159	1	0
Future Volume (vph)	193	159	1	0
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.3%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	193	0	1	159	38	2	1	2	13	0	17
Future Volume (Veh/h)	21	193	0	1	159	38	2	1	2	13	0	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	23	214	0	1	177	42	2	1	2	14	0	19
Pedestrians		8			2			25			21	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	240			239			512	527	241	486	506	227
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240			239			512	527	241	486	506	227
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	97	100	98
cM capacity (veh/h)	1319			1318			446	442	792	475	454	805

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	237	220	5	33
Volume Left	23	1	2	14
Volume Right	0	42	2	19
cSH	1319	1318	539	622
Volume to Capacity	0.02	0.00	0.01	0.05
Queue Length 95th (m)	0.4	0.0	0.2	1.3
Control Delay (s)	0.9	0.0	11.7	11.1
Lane LOS	A	A	B	B
Approach Delay (s)	0.9	0.0	11.7	11.1
Approach LOS			B	B

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	39.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	26	8	49	31
Future Volume (vph)	26	8	49	31
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 26.8%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	26	10	6	8	6	11	49	10	22	31	16
Future Volume (vph)	11	26	10	6	8	6	11	49	10	22	31	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	29	11	7	9	7	12	54	11	24	34	18

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	52	23	77	76
Volume Left (vph)	12	7	12	24
Volume Right (vph)	11	7	11	18
Hadj (s)	-0.05	-0.09	-0.02	-0.04
Departure Headway (s)	4.2	4.2	4.1	4.1
Degree Utilization, x	0.06	0.03	0.09	0.09
Capacity (veh/h)	822	820	846	857
Control Delay (s)	7.5	7.3	7.5	7.5
Approach Delay (s)	7.5	7.3	7.5	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
Level of Service	A			
Intersection Capacity Utilization	26.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	209	154	0	3
Future Volume (vph)	209	154	0	3
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 28.6%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	209	15	19	154	33	8	0	7	21	3	9
Future Volume (Veh/h)	21	209	15	19	154	33	8	0	7	21	3	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	23	232	17	21	171	37	9	0	8	23	3	10
Pedestrians		2			1			18			19	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	227			267			550	574	260	546	564	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	227			267			550	574	260	546	564	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			98	100	99	95	99	99
cM capacity (veh/h)	1334			1290			421	411	775	427	416	825

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	272	229	17	36
Volume Left	23	21	9	23
Volume Right	17	37	8	10
cSH	1334	1290	536	491
Volume to Capacity	0.02	0.02	0.03	0.07
Queue Length 95th (m)	0.4	0.4	0.7	1.8
Control Delay (s)	0.8	0.9	11.9	12.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.8	0.9	11.9	12.9
Approach LOS			B	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBL
Lane Configurations			
Traffic Volume (vph)	359	420	13
Future Volume (vph)	359	420	13
Sign Control	Free	Free	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 51.4%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	359	18	21	420	13	28
Future Volume (Veh/h)	359	18	21	420	13	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	399	20	23	467	14	31
Pedestrians	15				63	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	3.5				3.5	
Percent Blockage	0				2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			482		1000	472
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			482		1000	472
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		95	95
cM capacity (veh/h)			1061		258	581

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	419	490	45
Volume Left	0	23	14
Volume Right	20	0	31
cSH	1700	1061	418
Volume to Capacity	0.25	0.02	0.11
Queue Length 95th (m)	0.0	0.5	2.7
Control Delay (s)	0.0	0.6	14.7
Lane LOS		A	B
Approach Delay (s)	0.0	0.6	14.7
Approach LOS			B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	187	591	0	0
Future Volume (vph)	187	591	0	0
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.0%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	187	4	6	591	27	3	0	1	28	0	23
Future Volume (Veh/h)	17	187	4	6	591	27	3	0	1	28	0	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	19	208	4	7	657	30	3	0	1	31	0	26
Pedestrians		7			10			25			22	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	709			237			992	996	245	967	983	701
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	709			237			992	996	245	967	983	701
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			99	100	100	86	100	94
cM capacity (veh/h)	884			1320			203	235	786	224	239	435

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	231	694	4	57
Volume Left	19	7	3	31
Volume Right	4	30	1	26
cSH	884	1320	249	288
Volume to Capacity	0.02	0.01	0.02	0.20
Queue Length 95th (m)	0.5	0.1	0.4	5.5
Control Delay (s)	1.0	0.1	19.7	20.6
Lane LOS	A	A	C	C
Approach Delay (s)	1.0	0.1	19.7	20.6
Approach LOS			C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	8	22	22	45
Future Volume (vph)	8	22	22	45
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 26.0%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	8	10	4	22	6	24	22	1	3	45	32
Future Volume (vph)	12	8	10	4	22	6	24	22	1	3	45	32
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	9	11	4	24	7	27	24	1	3	50	36

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	35	52	89
Volume Left (vph)	13	4	27	3
Volume Right (vph)	11	7	1	36
Hadj (s)	-0.09	-0.06	0.13	-0.20
Departure Headway (s)	4.1	4.2	4.3	3.9
Degree Utilization, x	0.04	0.04	0.06	0.10
Capacity (veh/h)	834	831	819	902
Control Delay (s)	7.3	7.3	7.5	7.3
Approach Delay (s)	7.3	7.3	7.5	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.4			
Level of Service	A			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	205	593	0	2
Future Volume (vph)	205	593	0	2
Sign Control	Free	Free	Stop	Stop

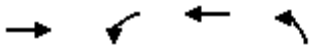
Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.1%		ICU Level of Service A
Analysis Period (min) 15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	205	4	9	593	31	15	0	6	20	2	16
Future Volume (Veh/h)	9	205	4	9	593	31	15	0	6	20	2	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	228	4	10	659	34	17	0	7	22	2	18
Pedestrians		1			2			33			25	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	718			265			999	1021	265	980	1006	702
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	718			265			999	1021	265	980	1006	702
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			92	100	99	90	99	96
cM capacity (veh/h)	877			1286			204	228	766	219	233	435

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	242	703	24	42
Volume Left	10	10	17	22
Volume Right	4	34	7	18
cSH	877	1286	259	279
Volume to Capacity	0.01	0.01	0.09	0.15
Queue Length 95th (m)	0.3	0.2	2.3	4.0
Control Delay (s)	0.5	0.2	20.3	20.2
Lane LOS	A	A	C	C
Approach Delay (s)	0.5	0.2	20.3	20.2
Approach LOS			C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		

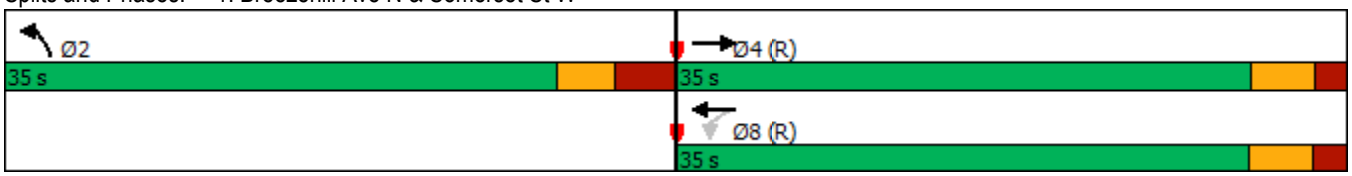
2031 Future Background Conditions

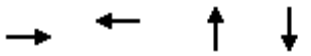


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	254	39	197	22
Future Volume (vph)	254	39	197	22
Lane Group Flow (vph)	309	42	214	76
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	5.0
Minimum Split (s)	23.1	23.2	23.2	24.2
Total Split (s)	35.0	35.0	35.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.0
All-Red Time (s)	1.8	1.9	1.9	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.2	5.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Min	C-Min	C-Min	None
Act Effct Green (s)	53.4	53.3	53.3	8.7
Actuated g/C Ratio	0.76	0.76	0.76	0.12
v/c Ratio	0.23	0.06	0.15	0.30
Control Delay	4.5	4.7	4.3	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.5	4.7	4.3	14.8
LOS	A	A	A	B
Approach Delay	4.5		4.4	14.8
Approach LOS	A		A	B
Queue Length 50th (m)	8.2	1.0	5.6	2.7
Queue Length 95th (m)	27.6	5.5	19.5	10.5
Internal Link Dist (m)	84.4		143.1	218.2
Turn Bay Length (m)		30.0		
Base Capacity (vph)	1364	663	1433	709
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.06	0.15	0.11

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 30 (43%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.30	
Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Breezehill Ave N & Somerset St W





Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	193	159	1	0
Future Volume (vph)	193	159	1	0
Lane Group Flow (vph)	233	216	5	36
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 37.9%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	21	193	0	1	159	39	2	1	2	15	0	18
Future Vol, veh/h	21	193	0	1	159	39	2	1	2	15	0	18
Conflicting Peds, #/hr	21	0	25	25	0	21	8	0	2	2	0	8
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	210	0	1	173	42	2	1	2	16	0	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	235	0	0	495	519	237	477	498	223
Stage 1	-	-	-	-	-	-	281	281	-	217	217	-
Stage 2	-	-	-	-	-	-	214	238	-	260	281	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1331	-	-	1332	-	-	485	461	802	498	474	817
Stage 1	-	-	-	-	-	-	726	678	-	785	723	-
Stage 2	-	-	-	-	-	-	788	708	-	745	678	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1303	-	-	1298	-	-	450	431	780	477	443	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	450	431	-	477	443	-
Stage 1	-	-	-	-	-	-	693	648	-	753	707	-
Stage 2	-	-	-	-	-	-	762	692	-	725	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0	11.8	11.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	536	1303	-	-	1298	-	-	609
HCM Lane V/C Ratio	0.01	0.018	-	-	0.001	-	-	0.059
HCM Control Delay (s)	11.8	7.8	0	-	7.8	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.2

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	26	8	50	34
Future Volume (vph)	26	8	50	34
Lane Group Flow (vph)	51	34	77	89
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 27.3%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	26	10	6	8	17	11	50	10	32	34	16
Future Vol, veh/h	11	26	10	6	8	17	11	50	10	32	34	16
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	28	11	7	9	18	12	54	11	35	37	17
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.2	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	23%	19%	39%
Vol Thru, %	70%	55%	26%	41%
Vol Right, %	14%	21%	55%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	47	31	82
LT Vol	11	11	6	32
Through Vol	50	26	8	34
RT Vol	10	10	17	16
Lane Flow Rate	77	51	34	89
Geometry Grp	1	1	1	1
Degree of Util (X)	0.088	0.059	0.037	0.102
Departure Headway (Hd)	4.095	4.166	3.97	4.101
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	867	847	887	867
Service Time	2.156	2.253	2.063	2.159
HCM Lane V/C Ratio	0.089	0.06	0.038	0.103
HCM Control Delay	7.6	7.5	7.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0.3

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	211	157	0	3
Future Volume (vph)	211	157	0	3
Lane Group Flow (vph)	298	262	17	101
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 40.0%		ICU Level of Service A
Analysis Period (min) 15		

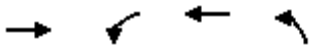
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	49	211	15	19	157	64	8	0	7	49	3	41
Future Vol, veh/h	49	211	15	19	157	64	8	0	7	49	3	41
Conflicting Peds, #/hr	19	0	18	18	0	19	2	0	1	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	229	16	21	171	70	9	0	8	53	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	260	0	0	263	0	0	635	663	256	615	636	227
Stage 1	-	-	-	-	-	-	361	361	-	267	267	-
Stage 2	-	-	-	-	-	-	274	302	-	348	369	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1304	-	-	1301	-	-	391	382	783	403	395	812
Stage 1	-	-	-	-	-	-	657	626	-	738	688	-
Stage 2	-	-	-	-	-	-	732	664	-	668	621	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1277	-	-	341	344	768	371	356	795
Mov Cap-2 Maneuver	-	-	-	-	-	-	341	344	-	371	356	-
Stage 1	-	-	-	-	-	-	614	585	-	689	662	-
Stage 2	-	-	-	-	-	-	673	639	-	629	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.6	13.1	14.4
HCM LOS			B	B

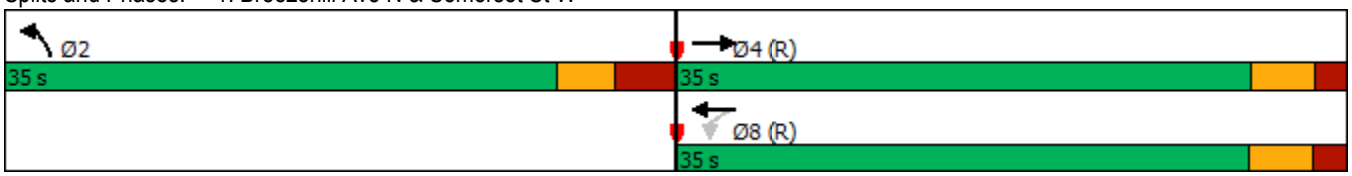
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	460	1279	-	-	1277	-	-	484
HCM Lane V/C Ratio	0.035	0.042	-	-	0.016	-	-	0.209
HCM Control Delay (s)	13.1	7.9	0	-	7.9	0	-	14.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.8

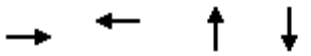


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	362	35	423	20
Future Volume (vph)	362	35	423	20
Lane Group Flow (vph)	383	35	423	60
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	5.0
Minimum Split (s)	23.1	23.2	23.2	24.2
Total Split (s)	35.0	35.0	35.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.0
All-Red Time (s)	1.8	1.9	1.9	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.2	5.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Min	C-Min	C-Min	None
Act Effct Green (s)	56.8	56.8	56.8	8.6
Actuated g/C Ratio	0.81	0.81	0.81	0.12
v/c Ratio	0.27	0.05	0.29	0.26
Control Delay	4.5	4.5	4.7	15.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.5	4.5	4.7	15.1
LOS	A	A	A	B
Approach Delay	4.5		4.6	15.1
Approach LOS	A		A	B
Queue Length 50th (m)	10.9	0.8	12.7	2.3
Queue Length 95th (m)	36.2	4.8	41.1	9.1
Internal Link Dist (m)	84.4		143.1	218.2
Turn Bay Length (m)		30.0		
Base Capacity (vph)	1426	727	1447	681
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.05	0.29	0.09

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 5.3	Intersection LOS: A
Intersection Capacity Utilization 44.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Breezehill Ave N & Somerset St W





Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	187	591	0	0
Future Volume (vph)	187	591	0	0
Lane Group Flow (vph)	208	625	4	52
Sign Control	Free	Free	Stop	Stop

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 49.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	17	187	4	6	591	28	3	0	1	29	0	23
Future Vol, veh/h	17	187	4	6	591	28	3	0	1	29	0	23
Conflicting Peds, #/hr	22	0	25	25	0	22	7	0	10	10	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	187	4	6	591	28	3	0	1	29	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	641	0	0	216	0	0	884	901	224	873	889	634
Stage 1	-	-	-	-	-	-	248	248	-	639	639	-
Stage 2	-	-	-	-	-	-	636	653	-	234	250	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	943	-	-	1354	-	-	266	278	815	271	282	479
Stage 1	-	-	-	-	-	-	756	701	-	464	470	-
Stage 2	-	-	-	-	-	-	466	464	-	769	700	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	922	-	-	1320	-	-	239	258	786	256	261	465
Mov Cap-2 Maneuver	-	-	-	-	-	-	239	258	-	256	261	-
Stage 1	-	-	-	-	-	-	721	669	-	444	456	-
Stage 2	-	-	-	-	-	-	437	451	-	744	669	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	17.6	18.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	289	922	-	-	1320	-	-	320
HCM Lane V/C Ratio	0.014	0.018	-	-	0.005	-	-	0.163
HCM Control Delay (s)	17.6	9	0	-	7.7	0	-	18.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.6

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	8	22	24	46
Future Volume (vph)	8	22	24	46
Lane Group Flow (vph)	31	44	49	91
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	25.5%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	8	10	4	22	18	24	24	1	13	46	32
Future Vol, veh/h	13	8	10	4	22	18	24	24	1	13	46	32
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	8	10	4	22	18	24	24	1	13	46	32
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.5	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	49%	42%	9%	14%
Vol Thru, %	49%	26%	50%	51%
Vol Right, %	2%	32%	41%	35%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	31	44	91
LT Vol	24	13	4	13
Through Vol	24	8	22	46
RT Vol	1	10	18	32
Lane Flow Rate	49	31	44	91
Geometry Grp	1	1	1	1
Degree of Util (X)	0.057	0.035	0.049	0.099
Departure Headway (Hd)	4.22	4.101	3.974	3.92
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	844	864	892	909
Service Time	2.27	2.17	2.04	1.964
HCM Lane V/C Ratio	0.058	0.036	0.049	0.1
HCM Control Delay	7.5	7.3	7.2	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.2	0.3

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	209	597	0	2
Future Volume (vph)	209	597	0	2
Lane Group Flow (vph)	249	667	21	102
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 52.2%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	3.2

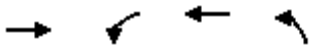
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	36	209	4	9	597	61	15	0	6	51	2	49
Future Vol, veh/h	36	209	4	9	597	61	15	0	6	51	2	49
Conflicting Peds, #/hr	25	0	33	33	0	25	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	209	4	9	597	61	15	0	6	51	2	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	683	0	0	246	0	0	988	1017	246	959	989	654
Stage 1	-	-	-	-	-	-	316	316	-	671	671	-
Stage 2	-	-	-	-	-	-	672	701	-	288	318	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	910	-	-	1320	-	-	226	238	793	237	247	467
Stage 1	-	-	-	-	-	-	695	655	-	446	455	-
Stage 2	-	-	-	-	-	-	445	441	-	720	654	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	887	-	-	1276	-	-	185	212	765	219	220	455
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	212	-	219	220	-
Stage 1	-	-	-	-	-	-	641	604	-	415	439	-
Stage 2	-	-	-	-	-	-	391	425	-	680	603	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	21.7	23.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	236	887	-	-	1276	-	-	292
HCM Lane V/C Ratio	0.089	0.041	-	-	0.007	-	-	0.349
HCM Control Delay (s)	21.7	9.2	0	-	7.8	0	-	23.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.5

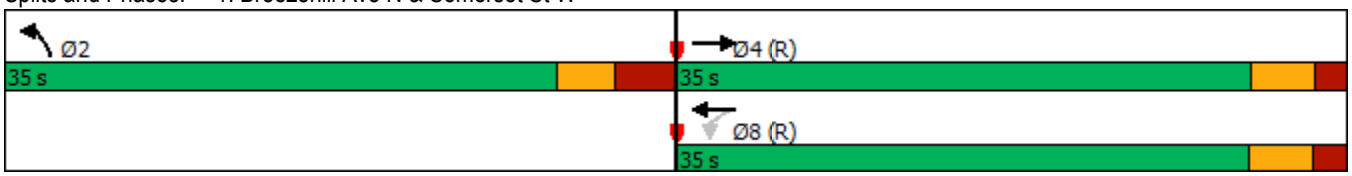
2031 Total Projected Conditions



Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	254	39	197	22
Future Volume (vph)	254	39	197	22
Lane Group Flow (vph)	304	42	214	76
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	5.0
Minimum Split (s)	23.1	23.2	23.2	24.2
Total Split (s)	35.0	35.0	35.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.0
All-Red Time (s)	1.8	1.9	1.9	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.2	5.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Min	C-Min	C-Min	None
Act Effct Green (s)	53.4	53.3	53.3	8.7
Actuated g/C Ratio	0.76	0.76	0.76	0.12
v/c Ratio	0.22	0.06	0.15	0.30
Control Delay	4.5	4.7	4.3	14.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.5	4.7	4.3	14.8
LOS	A	A	A	B
Approach Delay	4.5		4.4	14.8
Approach LOS	A		A	B
Queue Length 50th (m)	8.1	1.0	5.6	2.7
Queue Length 95th (m)	27.3	5.5	19.5	10.5
Internal Link Dist (m)	84.4		143.1	218.2
Turn Bay Length (m)		30.0		
Base Capacity (vph)	1374	664	1433	709
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.06	0.15	0.11

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 30 (43%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.30	
Intersection Signal Delay: 5.7	Intersection LOS: A
Intersection Capacity Utilization 43.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Breezehill Ave N & Somerset St W



Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	193	159	1	0
Future Volume (vph)	193	159	1	0
Lane Group Flow (vph)	228	216	5	37
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 34.9%		ICU Level of Service A
Analysis Period (min) 15		

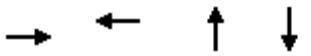
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	17	193	0	1	159	39	2	1	2	15	0	19
Future Vol, veh/h	17	193	0	1	159	39	2	1	2	15	0	19
Conflicting Peds, #/hr	21	0	25	25	0	21	8	0	2	2	0	8
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	210	0	1	173	42	2	1	2	16	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	235	0	0	486	509	237	467	488	223
Stage 1	-	-	-	-	-	-	271	271	-	217	217	-
Stage 2	-	-	-	-	-	-	215	238	-	250	271	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1331	-	-	1332	-	-	492	467	802	506	480	817
Stage 1	-	-	-	-	-	-	735	685	-	785	723	-
Stage 2	-	-	-	-	-	-	787	708	-	754	685	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1303	-	-	1298	-	-	457	438	780	486	450	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	457	438	-	486	450	-
Stage 1	-	-	-	-	-	-	705	657	-	756	707	-
Stage 2	-	-	-	-	-	-	760	692	-	737	657	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0	11.7	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	542	1303	-	-	1298	-	-	620
HCM Lane V/C Ratio	0.01	0.014	-	-	0.001	-	-	0.06
HCM Control Delay (s)	11.7	7.8	0	-	7.8	0	-	11.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2



Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	26	8	50	34
Future Volume (vph)	26	8	50	34
Lane Group Flow (vph)	51	35	73	83
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 27.0%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	26	10	7	8	17	11	50	6	27	34	16
Future Vol, veh/h	11	26	10	7	8	17	11	50	6	27	34	16
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	28	11	8	9	18	12	54	7	29	37	17
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.2	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	16%	23%	22%	35%
Vol Thru, %	75%	55%	25%	44%
Vol Right, %	9%	21%	53%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	47	32	77
LT Vol	11	11	7	27
Through Vol	50	26	8	34
RT Vol	6	10	17	16
Lane Flow Rate	73	51	35	84
Geometry Grp	1	1	1	1
Degree of Util (X)	0.083	0.059	0.038	0.095
Departure Headway (Hd)	4.125	4.15	3.968	4.084
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	862	852	888	870
Service Time	2.185	2.231	2.056	2.141
HCM Lane V/C Ratio	0.085	0.06	0.039	0.097
HCM Control Delay	7.6	7.5	7.2	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0.3

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	211	157	0	3
Future Volume (vph)	211	157	0	3
Lane Group Flow (vph)	298	254	17	103
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 39.9%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	49	211	15	19	157	57	8	0	7	51	3	41
Future Vol, veh/h	49	211	15	19	157	57	8	0	7	51	3	41
Conflicting Peds, #/hr	19	0	18	19	0	18	2	0	1	1	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	53	229	16	21	171	62	9	0	8	55	3	45

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	264	0	0	632	656	257	611	633	223
Stage 1	-	-	-	-	-	-	362	362	-	263	263	-
Stage 2	-	-	-	-	-	-	270	294	-	348	370	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1313	-	-	1300	-	-	393	385	782	406	397	817
Stage 1	-	-	-	-	-	-	657	625	-	742	691	-
Stage 2	-	-	-	-	-	-	736	670	-	668	620	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1288	-	-	1275	-	-	342	346	766	374	357	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	342	346	-	374	357	-
Stage 1	-	-	-	-	-	-	614	584	-	693	665	-
Stage 2	-	-	-	-	-	-	677	645	-	629	579	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.6	13.1	14.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	461	1288	-	-	1275	-	-	485
HCM Lane V/C Ratio	0.035	0.041	-	-	0.016	-	-	0.213
HCM Control Delay (s)	13.1	7.9	0	-	7.9	0	-	14.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.8

Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	59	22	12
Future Volume (vph)	59	22	12
Lane Group Flow (vph)	65	27	22
Sign Control	Free	Free	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	18.1%	ICU Level of Service A
Analysis Period (min)	15	

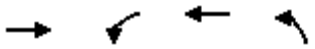
Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	6	59	22	5	12	10
Future Vol, veh/h	6	59	22	5	12	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	59	22	5	12	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	27	0	-	0	96	25
Stage 1	-	-	-	-	25	-
Stage 2	-	-	-	-	71	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1587	-	-	-	903	1051
Stage 1	-	-	-	-	998	-
Stage 2	-	-	-	-	952	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1587	-	-	-	899	1051
Mov Cap-2 Maneuver	-	-	-	-	899	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.8
HCM LOS			A

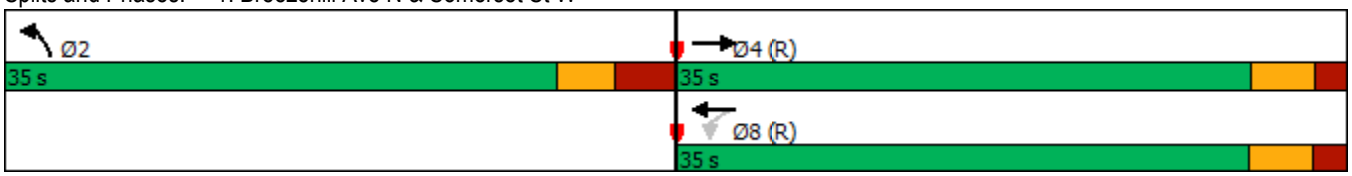
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1587	-	-	-	962
HCM Lane V/C Ratio	0.004	-	-	-	0.023
HCM Control Delay (s)	7.3	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Traffic Volume (vph)	362	35	423	20
Future Volume (vph)	362	35	423	20
Lane Group Flow (vph)	382	35	423	59
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	5.0
Minimum Split (s)	23.1	23.2	23.2	24.2
Total Split (s)	35.0	35.0	35.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.3	3.3	3.3	3.0
All-Red Time (s)	1.8	1.9	1.9	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.1	5.2	5.2	6.2
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Min	C-Min	C-Min	None
Act Effct Green (s)	56.8	56.8	56.8	8.6
Actuated g/C Ratio	0.81	0.81	0.81	0.12
v/c Ratio	0.27	0.05	0.29	0.26
Control Delay	4.4	4.5	4.7	15.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	4.4	4.5	4.7	15.3
LOS	A	A	A	B
Approach Delay	4.4		4.6	15.3
Approach LOS	A		A	B
Queue Length 50th (m)	10.9	0.8	12.7	2.3
Queue Length 95th (m)	36.2	4.8	41.1	9.1
Internal Link Dist (m)	84.4		143.1	218.2
Turn Bay Length (m)		30.0		
Base Capacity (vph)	1427	727	1447	680
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.05	0.29	0.09

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 5.3	Intersection LOS: A
Intersection Capacity Utilization 44.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: Breezehill Ave N & Somerset St W



Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	187	591	0	0
Future Volume (vph)	187	591	0	0
Lane Group Flow (vph)	207	625	4	52
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 49.1%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	16	187	4	6	591	28	3	0	1	29	0	23
Future Vol, veh/h	16	187	4	6	591	28	3	0	1	29	0	23
Conflicting Peds, #/hr	22	0	25	25	0	22	7	0	10	10	0	7
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	187	4	6	591	28	3	0	1	29	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	641	0	0	216	0	0	882	899	224	871	887	634
Stage 1	-	-	-	-	-	-	246	246	-	639	639	-
Stage 2	-	-	-	-	-	-	636	653	-	232	248	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	943	-	-	1354	-	-	267	279	815	271	283	479
Stage 1	-	-	-	-	-	-	758	703	-	464	470	-
Stage 2	-	-	-	-	-	-	466	464	-	771	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	922	-	-	1320	-	-	241	259	786	257	263	465
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	259	-	257	263	-
Stage 1	-	-	-	-	-	-	725	672	-	445	456	-
Stage 2	-	-	-	-	-	-	437	451	-	748	670	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.1	17.5	18.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	292	922	-	-	1320	-	-	320
HCM Lane V/C Ratio	0.014	0.017	-	-	0.005	-	-	0.163
HCM Control Delay (s)	17.5	9	0	-	7.7	0	-	18.4
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.6

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	8	22	24	46
Future Volume (vph)	8	22	24	46
Lane Group Flow (vph)	31	44	48	89
Sign Control	Stop	Stop	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 25.4%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	8	10	4	22	18	24	24	0	11	46	32
Future Vol, veh/h	13	8	10	4	22	18	24	24	0	11	46	32
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	8	10	4	22	18	24	24	0	11	46	32
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.5	7.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	50%	42%	9%	12%
Vol Thru, %	50%	26%	50%	52%
Vol Right, %	0%	32%	41%	36%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	31	44	89
LT Vol	24	13	4	11
Through Vol	24	8	22	46
RT Vol	0	10	18	32
Lane Flow Rate	48	31	44	89
Geometry Grp	1	1	1	1
Degree of Util (X)	0.056	0.035	0.048	0.097
Departure Headway (Hd)	4.233	4.096	3.968	3.91
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	842	865	893	912
Service Time	2.28	2.164	2.034	1.953
HCM Lane V/C Ratio	0.057	0.036	0.049	0.098
HCM Control Delay	7.5	7.3	7.2	7.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.2	0.3

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	209	597	0	2
Future Volume (vph)	209	597	0	2
Lane Group Flow (vph)	249	664	21	101
Sign Control	Free	Free	Stop	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 51.9%		ICU Level of Service A
Analysis Period (min) 15		

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	36	209	4	9	597	58	15	0	6	50	2	49
Future Vol, veh/h	36	209	4	9	597	58	15	0	6	50	2	49
Conflicting Peds, #/hr	25	0	33	33	0	25	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	209	4	9	597	58	15	0	6	50	2	49

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	246	0	0	987	1014	246	957	987	652
Stage 1	-	-	-	-	-	-	316	316	-	669	669	-
Stage 2	-	-	-	-	-	-	671	698	-	288	318	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1320	-	-	226	239	793	237	247	468
Stage 1	-	-	-	-	-	-	695	655	-	447	456	-
Stage 2	-	-	-	-	-	-	446	442	-	720	654	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	889	-	-	1276	-	-	185	212	765	219	220	456
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	212	-	219	220	-
Stage 1	-	-	-	-	-	-	641	604	-	416	440	-
Stage 2	-	-	-	-	-	-	392	426	-	680	603	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	21.7	23.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	236	889	-	-	1276	-	-	293
HCM Lane V/C Ratio	0.089	0.04	-	-	0.007	-	-	0.345
HCM Control Delay (s)	21.7	9.2	0	-	7.8	0	-	23.6
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0	-	-	1.5

Lane Group	EBT	WBT	SBL
Lane Configurations			
Traffic Volume (vph)	10	38	8
Future Volume (vph)	10	38	8
Lane Group Flow (vph)	20	46	14
Sign Control	Free	Free	Stop

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization	17.7%	ICU Level of Service A
Analysis Period (min)	15	

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑		↱	
Traffic Vol, veh/h	10	10	38	8	8	6
Future Vol, veh/h	10	10	38	8	8	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	38	8	8	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	46	0	-	0	72	42
Stage 1	-	-	-	-	42	-
Stage 2	-	-	-	-	30	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1562	-	-	-	932	1029
Stage 1	-	-	-	-	980	-
Stage 2	-	-	-	-	993	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1562	-	-	-	926	1029
Mov Cap-2 Maneuver	-	-	-	-	926	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	SB
HCM Control Delay, s	3.7	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1562	-	-	-	968
HCM Lane V/C Ratio	0.006	-	-	-	0.014
HCM Control Delay (s)	7.3	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0