

70 Nicholas Street

Rideau Centre

Transportation Impact Assessment Report

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Transportation Impact Assessment

Parsons has been retained by Cadillac Fairview Corporation Ltd. to prepare a Transportation Impact Assessment (TIA) in support of minor rezoning and Site Plan Control applications for a mixed-use development located at 70 Nicholas Street Drive. This document follows the TIA process, as outlined in the City Transportation Impact Assessment (TIA) Guidelines (2017).

1. Screening Form

The screening form confirmed the need for a TIA Report based on the site meeting the trip generation, location, and safety 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 Transit Oriented Development Zone (TOD) and Design Priority Area (DPA). The safety trigger is met due to the proximity of the proposed site driveway within 150m of a signalized intersection. The Screening Form has been provided in Appendix A.

2. Scoping Report

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

Figure 1 illustrates the approximate location of the proposed 70 Nicholas Street mixed-use development proposal. It is understood that the development proposes a 21-storey residential building with ground-floor retail that includes approximately 286 units and 4,900 sq. ft of commercial space. Approximately 130 vehicle parking spaces will be provided through an underground lot. Bicycle parking is mostly provided indoors, with approximately 254 bicycle parking spaces available for use. The development is assumed to be constructed in a single phase by 2025 and is considered an extension on the Rideau Centre. The site is currently zoned as MD [1425] S55,56,57,64. The site is currently occupied by the City Registry Office which will be maintained and relocated within the new development lot.

Figure 1: Local Context



Figure 2: Proposed Site Plan, April 2022

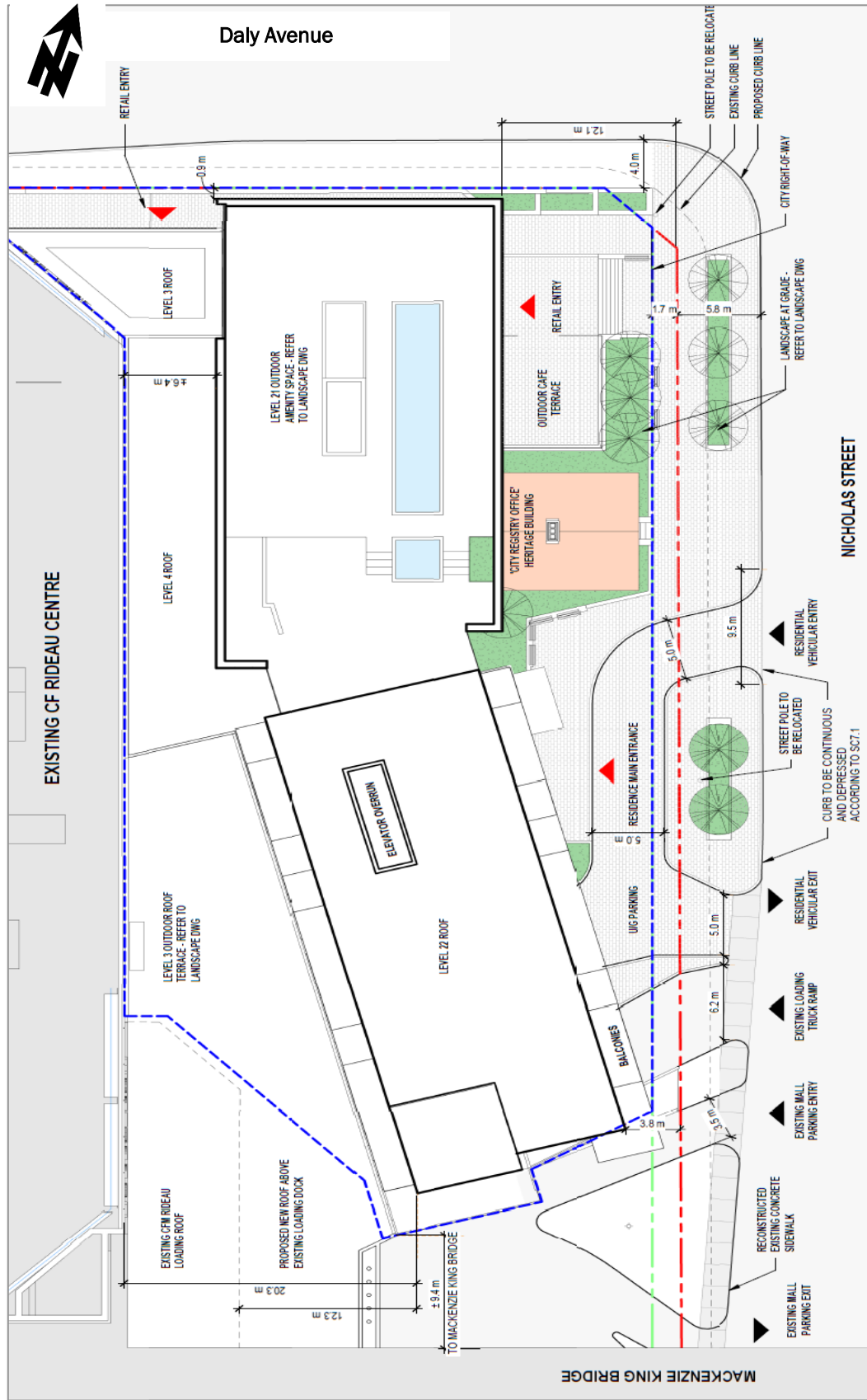


Figure 2 illustrates the current Site Plan of the proposed development, located at the southwest quadrant of the Daly/Nicholas intersection. The site proposes two, one-way accesses forming a drop-off area along Nicholas Street. The site would also re-configure the existing loading ramp further to the west to provide separation to the proposed garage egress. The figure also illustrates (in blue) the proposed Nicholas Street ROW dedicated as part of this application.

2.1.2. Existing Conditions

Area Road Network

Colonel By Drive is a north-south federal road that extends from Hogbacks Road in the south to Rideau Street in the north where it continues as Sussex Drive. Colonel By Drive operates as a two-way roadway with a two-lane cross-section. The posted speed limit within the study area is 40km/h.

Nicholas Street is a north-south municipal arterial road that extends from the HWY-417 WB Off-Ramp in the south to Besserer Street in the north. Nicholas Street operates as a two-way roadway with a four-lane divided cross-section from the highway to Laurier Street. North of Laurier Street, Nicholas Street separates where the northbound lanes continue northeast to Mackenzie King Bridge. Nicholas Street is southbound from Besserer Street to Laurier Avenue. The posted speed limit within the study area is 50 km/h.

Waller Street is a north-south two-way municipal arterial road that extends from Nicholas Street in the south to Rideau Street in the north. From Nicholas Street to Besserer Street, Waller Street has a 5-lane cross-section (3 northbound lanes and 2 southbound lanes). From Besserer Street to Rideau Street, Waller Street has a 3-lane cross section (1 northbound and 2 southbound lanes). The unposted speed limit is assumed to be 50km/h.

Mackenzie King Bridge is an east-west municipal arterial road that extends from Nicholas Street in the east to Elgin Street in the west where it splits in the westbound Albert Street and eastbound Slater Street. Mackenzie King Bridge operates as a two-way roadway with a 4-lane cross-section and curbside transit lanes. The unposted speed limit is assumed to be 50km/h.

Besserer Street is an east-west municipal arterial road that extends from Nicholas Street in the west to Wurtemberg Street in the east. Within the study area, Besserer Street operates as a two-way roadway with a 3-lane cross-section. The unposted speed limit is assumed to be 50km/h, with on-street parking permitted on the north side of the roadway.

Laurier Avenue is an east-west municipal arterial road that extends from Bronson Avenue in the west to Charlotte Street in the east. Within the study area, Laurier Avenue operates as a 4-lane undivided two-way roadway with east and west cycle tracks provided for cyclists. The unposted speed limit is assumed to be 50km/h.

Daly Avenue is an east-west municipal local road that extends from Colonel By Drive in the west to Wurtemberg Street in the east. It is noted however that there is a permanent roadblock located on Daly Avenue preventing vehicles crossing through Waller Street. Within the study area, Daly Avenue operates as a two-way roadway and the unposted speed limit is assumed to be 50km/h.

Existing Study Area Intersections

The following describes the existing physical geometry of the study area intersections.

Colonel By/Daly

The Colonel By/Daly intersection is a signalized four-legged intersection. The northbound approach consists of a through lane and shared through right-turn lane. The southbound approach consists of a left-turn lane and a through lane. The westbound approach consists of a single all-movement lane. The eastbound approach is a private driveway accessing the Senate Building of Canada. The eastbound through movement is prohibited except for authorized vehicles. Other prohibited movements include the following:

- Northbound left-turn
- Southbound u-turn
- Eastbound and northbound right-turn on red

Painted crosswalks are provided on the east and north legs with an interlock crosswalk provided on the south leg of this intersection. Note the eastbound curbside lane is reserved as a taxi stand for the Westin Hotel.



Nicholas/Daly

The Nicholas/Daly intersection is a signalized four-legged intersection. Nicholas Street transitions from a two-way on the north leg to a one-way street on the south leg where it becomes southbound only. The eastbound approach consists of a through lane and right-turn lane. The eastbound right-turn on red is prohibited 7am – 7pm Mon. to Fri. The westbound approach consists of a left-through lane. The southbound approach consists of a through/left-turn lane, through lane, and a through/right-turn lane. Painted crosswalks are provided on all legs.



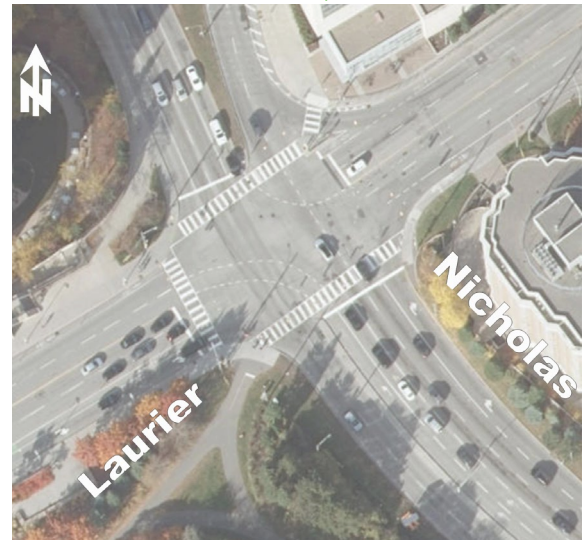
Waller/Daly

The Waller/Daly intersection is a signalized “T” intersection. The northbound approach consists of a left-through lane and two through lanes. The southbound approach consists of a through lane and a through-right turn lane. The eastbound approach consists of a left-turn lane and a right-turn lane. All movements are permitted at this location. Painted crosswalks are provided on all legs.



Laurier/Nicholas

The Laurier/Nicholas intersection is a signalized four-legged intersection. The northbound approach consists of dual left-turn lane, two through lanes and a right-turn lane. The southbound approach consists of a left-turn lane, two through lanes, and a right-turn lane. The eastbound approach consists of two through lanes and a right-turn lane. The westbound approach consists of two through lanes and a channelized right-turn lane. The east and westbound left-turn movements are prohibited at this location. Painted crosswalks are provided on the north, south, and west legs of the intersection. Eastbound and westbound cycle lanes are provided.



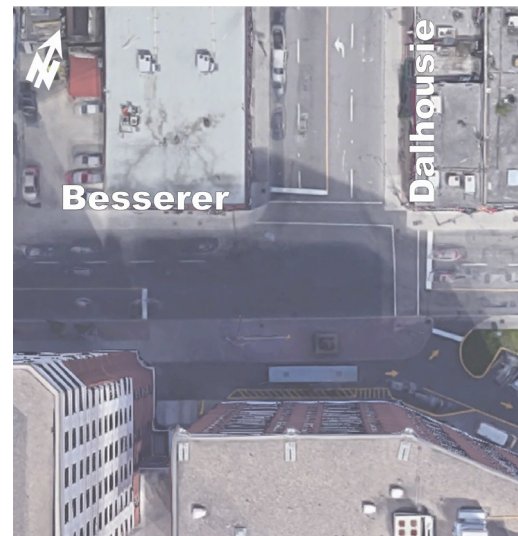
Nicholas/Besserer

The Nicholas/Besserer intersection is a signalized “T” intersection with no north leg. Note the west leg (eastbound approach) of the intersection is the entrance/egress to the Rideau Centre parking garage. The northbound approach consists of a shared left-right turn lane. The westbound approach consists of a left-turn lane and a shared left-through lane. The eastbound approach consists of a through lane and a right-turn lane. Painted crosswalks are provided on all legs.



Dalhousie/Besserer

The Dalhousie/Besserer intersection is a signalized “T” intersection. The southbound approach consists of a left-turn lane and a right-turn lane. The eastbound approach consists of a shared left-through lane. The westbound approach consists of a through lane and a through-right turn lane. The southbound right-turn on red is prohibited for all users except bicycles. Painted crosswalks are provided on the north and east legs.



Waller/Besserer

The Waller/Besserer intersection is a signalized four-legged intersection. The northbound approach consists of dual left-turn lane, a through lane and a right-turn lane. The southbound approach consists of a through lane and a through-right turn lane. The westbound approach consists of a single all-movement lane. Note Besserer continues as a one-way east street east of Waller and as such there is no westbound approach. The northbound right-turn on red is prohibited and southbound left-turn is prohibited. Painted crosswalks are provided on the north, east, and west legs of the intersection.



Existing Driveways to Adjacent Developments

As shown in Figure 3 (Note: Property not to scale), there are 9 driveways within 200m of the proposed site access. They provide access to the following developments:

- Driveways 1 & 2: Rideau Centre Parking Garage Access
- Driveways 3 & 6: Ottawa Convention Centre Loading Dock
- Driveways 4 & 5: Rideau Centre and Shaw Centre Parking Garage Access
- Driveway 6: Underground parking access
- Driveways 7 & 8: National Defense Surface Parking Access
- Driveway 9: Surface Parking Lot Access

Figure 3: Existing Driveways



Existing Area Traffic Management Measures

Existing area traffic management measures within the study area include:

- On-street parking;
- Sidewalks;
- Zebra-stripe crosswalks; and,
- Curb extensions in some locations.

Pedestrian/Cycling Network

Figure 4 illustrates active transportation facilities within the study area. Sidewalks are provided on both sides of roadways throughout the study area. An east and west cycle track is available along Laurier Avenue and east and west bike lanes are provided along Mackenzie King Bridge. A MUP along the Rideau Canal starts just south of the Colonel By/Daly

intersection and extends to Mooney's Bay in the south. Based on the City of Ottawa Transportation Master Plan (TMP), Colonel By Drive, Mackenzie King Bridge, Laurier Avenue, and Waller Street south of Stewart Street are classified as spine routes with regards to the overall cycling network. Additionally, within the study area, Laurier Avenue is classified as part of the Crosstown Bikeway.

Figure 4: Existing Pedestrian and Cycling Network



Transit Network

The existing transit network surrounding the proposed development site is illustrated in Figure 5. Transit stop locations are shown highlighted in blue in Figure 6. Given that the site is located in a very downtown type setting, only routes within 400 meters were considered and have been summarized based on their active stop locations:

- O-Train Confederation Line 1: an east-west 12.5km Light-Rail Transit (LRT) that runs from Blair Station in the east to Tunney's Pasture in the west, providing service to 13 stations. During peak hours, service is provided every 5 minutes or less and every 15 minutes or less at all other times. The nearest LRT station is located at approximately 200 meters walk on Rideau Street north of the site.
- Bus stop ID #7486 (Daly/Nicholas), located across the street from the site on the north side of Daly:
 - Route #9 (Rideau <-> Hurdman): identified by OC Transpo as a "Local Route", this route operates on customized routing and schedules, to serve local destinations with connection to the Confederation LRT Line at Rideau and Hurdman Station and provides service down Vanier Parkway and Sussex Drive.
- Bus stop ID #3000 (Mackenzie King Station), located approximately 150 meters from the site:
 - Route #11 (Parliament <-> Bayshore): identified by OC Transpo as a "Frequent Route", this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #11 provides connection to the Confederation LRT Line 1, Lincoln Fields major BRT station and provides connection to Bayshore Shopping Center.

- Routes #16 and #19: identified by OC Transpo as a “Local Route”, these routes operate on customized routing and schedules, to serve local destinations with connection to the Confederation LRT Line 1, the Trillium LRT Line 2, Westboro, St. Laurent Shopping Center, Trainyards and Parliament/downtown.
- Bus stop ID #3009 (Rideau Station), located approximately 300 to 400 meters from the site on Rideau Street.
Note that all these routes have connection to the Confederation LRT Line 1 at Rideau Station:
 - Routes #57, #61, and #75: although these routes are identified by OC Transpo as a “Rapid Route”, operating 7 days a week at all time periods, these routes are not available from this bus stop unless it is after hours and the LRT is shut down for night maintenance. These routes provide long-haul access to destinations such as Kanata, Stittsville and Barrhaven.
 - Route #6 (Greenboro <-> Rockcliffe): identified by OC Transpo as a “Frequent Route”, this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #6 provides connection to the Trillium LRT Line 2, Billings Bridge, Lansdowne and Rockcliffe community.
 - Route #7 (Carleton <-> St. Laurent): identified by OC Transpo as a “Frequent Route”, this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #7 provides connection to the Trillium LRT Line 2, Carleton University and St. Laurent Shopping Center.
 - Route #14 (St. Laurent <-> Tunney’s Pasture): identified by OC Transpo as a “Frequent Route”, this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #14 provides connection to the St. Laurent Shopping Center, Tunney’s Pasture and along Gladstone Avenue.
 - Route #15 (Parliament <-> Blair): identified by OC Transpo as a “Frequent Route”, this route operates at a frequency of every 15 minutes or less on weekdays and operates 7 days a week. Route #15 provides connection to the Blair Shopping Center, Montford Hospital, City of Gatineau and along Montreal Road.
 - Routes #5, #18 and #114: identified by OC Transpo as a “Local Route”, these routes operate on customized routing and schedules, to serve local destinations with connection to the Civic Hospital, Carlington, St. Laurent Shopping Center, Saint Paul University and Billings Bridge Shopping Center.

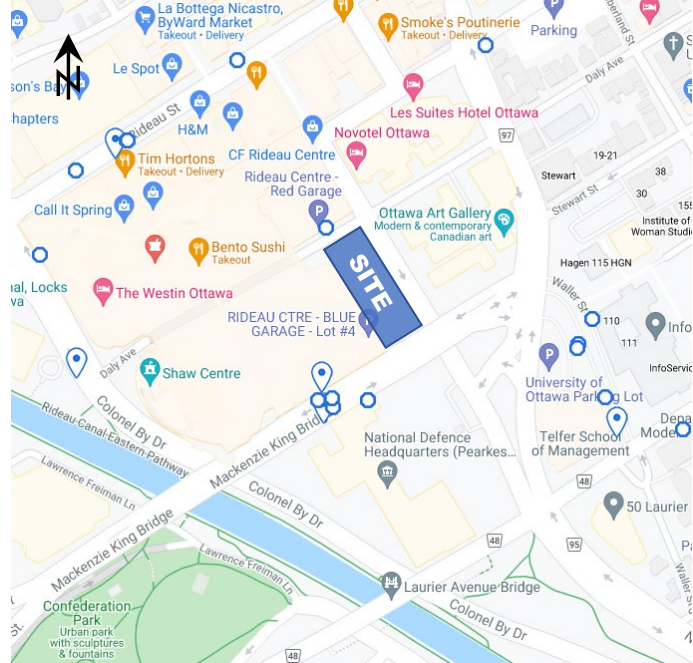
In addition to OC-Transpo Routes, there are a few STO routes with service to/from Gatineau, including:

- STO Route #23 from Rideau Center to le Plateau
- STO Route #24 from King Edward/St. Patrick to le Plateau, passing by Rideau Center
- STO Route #31 passing by Rideau Center with destination at Boulevard de la Cite-des-Jeunes
- STO Route #31 passing by Rideau Center with destination at Boulevard Saint-Joseph
- STO Route #34 from Rideau Center to le Plateau
- STO Route #36 from Rideau Center to Boulevard de la Cite-des-Jeunes
- STO Route #38 passing by Rideau Center with destination at Boulevard Saint-Joseph
- STO Route #55 from Rideau Center to Aylmer
- STO Route #59 from Rideau Center to Aylmer
- STO Route #67 from Rideau Center to Avenue Malony
- STO Route #87 from King Edward/St. Patrick to Avenue Malony, passing by Rideau Center
- STO Route #134 from Rideau Center to le Plateau
- STO Route #400 rapid transit from Rideau Center to Avenue Malony

Figure 5: Area Transit Network



Figure 6: Area Transit Stop Locations



Peak Hour Travel Demands

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

- Colonel By/Daly – conducted Jan. 16, 2020.
- Nicholas/Daly – conducted Dec. 12, 2018.
- Waller/Daly – conducted May 9, 2017.
- Laurier/Nicholas – conducted Feb. 12, 2020.
- Nicholas/Besserer – conducted Nov. 2016
- Dalhousie/Besserer – conducted Mar. 28, 2018.
- Waller/Besserer – conducted May 9, 2017.

Figure 7 displays the existing vehicle traffic volumes while Figure 8 shows the existing pedestrian and cyclist volumes. Peak hour count data is provided in Appendix B.

Figure 7: Existing Peak Hour Vehicle Traffic Volumes

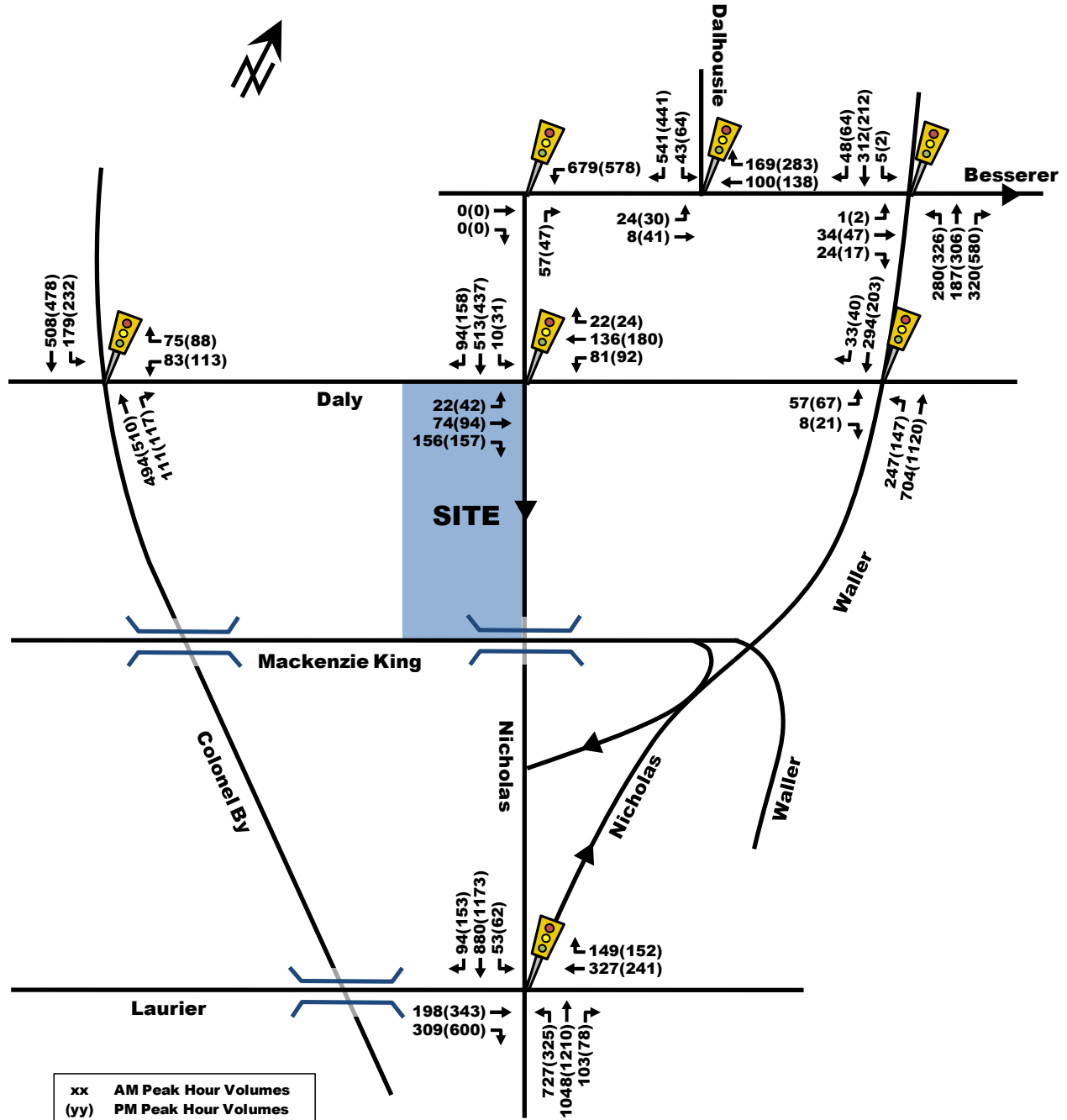
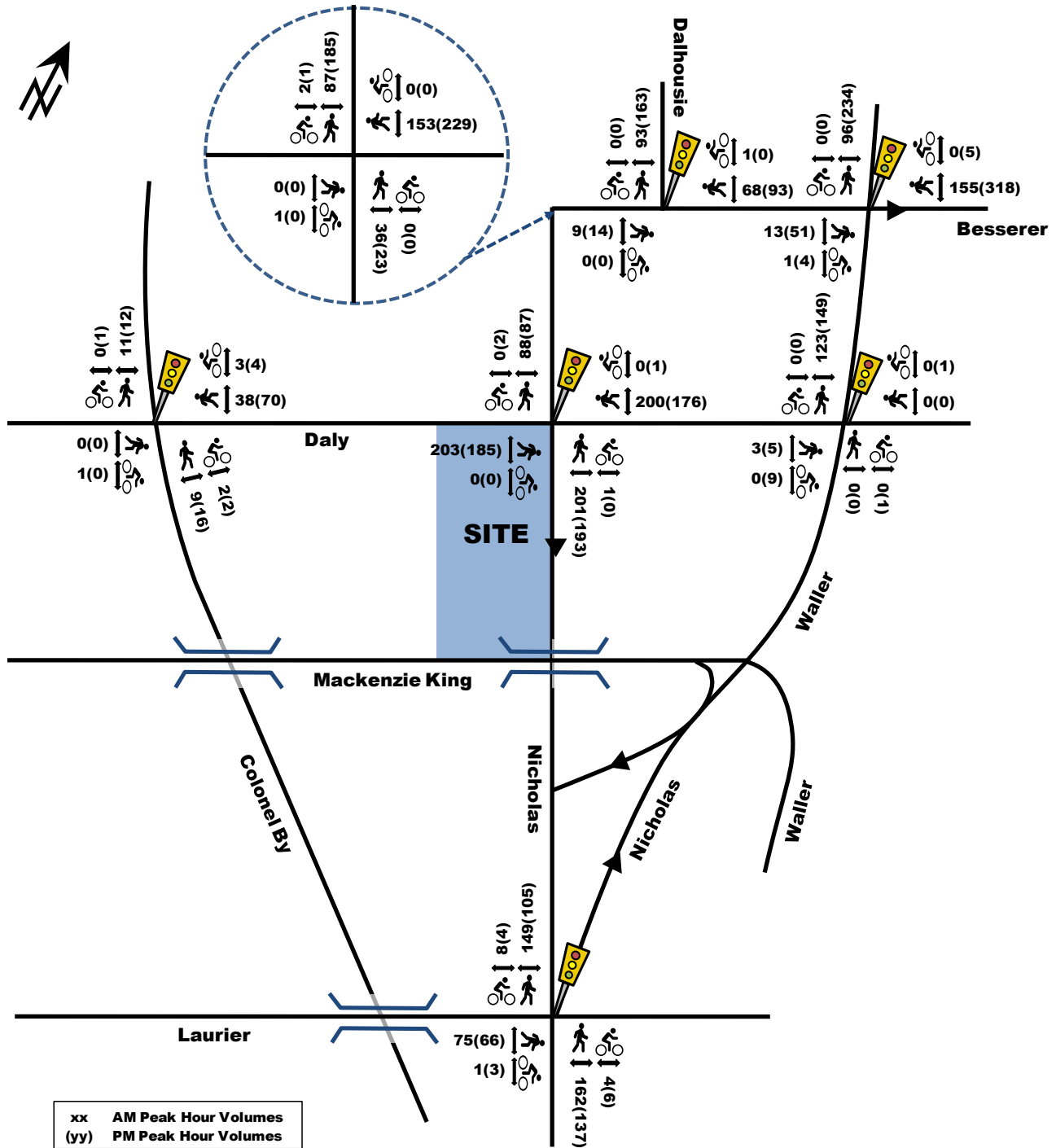


Figure 8: Existing Peak Hour Pedestrian and Cyclist Volumes



Existing Road Safety Conditions

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 analyzing the collision data, the total number of collisions occurring within the study area was determined to be 456 collisions within the past five-years. Of the reported collisions, 402 (88%) resulted in property damage, 51 (11%) resulted in non-fatal injury, and 3 (1%) were non-reportable. The types of impact were broken down into the following: 198 (43%) sideswipe, 128 (28%) rear-end, 55 (12%) turning movement, 29 (6%) angle, 26 (6%) single vehicle (other), and 7 (2%) single vehicle (unattended vehicle). It is noted that of the total

collisions, 18 collisions involved a pedestrian and 9 involved a cyclist. These resulted in property damage or non-fatal injuries.

To help quantify the relative safety risk at intersections within the study area, an industry standard unit of measure for assessing collisions at an intersection was used based on the number of collisions per million entering vehicles (MEV). An MEV value greater than 1.00 indicates a relatively high frequency of collisions. Furthermore, the City of Ottawa TIA Guidelines identifies more than six collisions of the same nature occurring within a five-year period to be a collision pattern. Reported collisions have historically taken place at a rate of:

- Besserer/Dalhousie: 1.40 collisions/MEV, with a total of 32 collisions occurring within the five-year period. 21 collisions were recorded as sideswipes, suggesting a collision pattern.
- Besserer/Waller: 2.80 collisions/MEV, with a total of 85 collisions occurring within the five-year period. 54 collisions were recorded as sideswipes, 15 collisions recorded as turning movements, and 9 collisions recorded as rear-ends, suggesting multiple collision patterns.
- Besserer/Nicholas: 1.76 collisions/MEV, with a total of 26 collisions occurring within the five-year period. 13 collisions were recorded as sideswipes, suggesting a collision pattern.
- Colonel By/Daly: 0.92 collisions/MEV, with a total of 32 collisions occurring within the five-year period. 21 collisions were recorded as rear-ends and 9 collisions recorded as sideswipe, suggesting multiple collision patterns.
- Nicholas/Daly: 1.59 collisions/MEV, with a total of 46 collisions occurring within the five-year period. 15 collisions were recorded as sideswipes, 10 collisions recorded as turning movements, and 12 collisions recorded as rear-ends, suggesting multiple collision patterns.
- Waller/Daly: 0.86 collisions/MEV, with a total of 28 collisions occurring within the five-year period. 7 collisions were recorded as sideswipes and 9 collisions recorded as rear-ends, suggesting multiple collision patterns.
- Laurier/Nicholas: 1.32 collisions/MEV, with a total of 130 collisions occurring within the five-year period. 43 collisions were recorded as sideswipes, 10 collisions recorded as turning movements, 56 collisions recorded as rear-ends, and 11 collisions recorded as angle, suggesting multiple collision patterns.

With regards to road segments within the study area, the following collision data is identified:

- Daly Street, between Colonel By Drive and Nicholas Street: a total of 20 collisions occurred along this road segment within the past five-years. No collision pattern is present.
- Nicholas Street Southbound, between Besserer Street and Laurier Avenue: a total of 26 collisions occurred along this road segment within the past five-years. 14 collisions were recorded as sideswipe suggesting a collision pattern is present.
- Nicholas Street/Waller Street, between Laurier Avenue and Daly Street: a total of 30 collisions occurred along this road segment within the past five-years. 19 collisions were recorded as sideswipe suggesting a collision pattern is present.

The source collision data as provided by the City of Ottawa and related analysis are provided as Appendix C.

2.1.3. Planned Conditions

Planned Study Area Transportation Network Changes

Mackenzie King Bridge – Functional Design Study

The Mackenzie King Bridge Functional Design Study was completed to assess the structural implications of removing the median, constructing raised cycle tracks, and facilitating the transition to median cycle tracks east of the Rideau Centre. Figure 9 below illustrates the Functional Plan for the roadway.



Figure 10: Stage 2 LRT System Map



Figure 11: ByWard Market Public Realm Plan Boundaries



Source: https://documents.ottawa.ca/sites/documents/files/byward_publicrealm_en_0.pdf

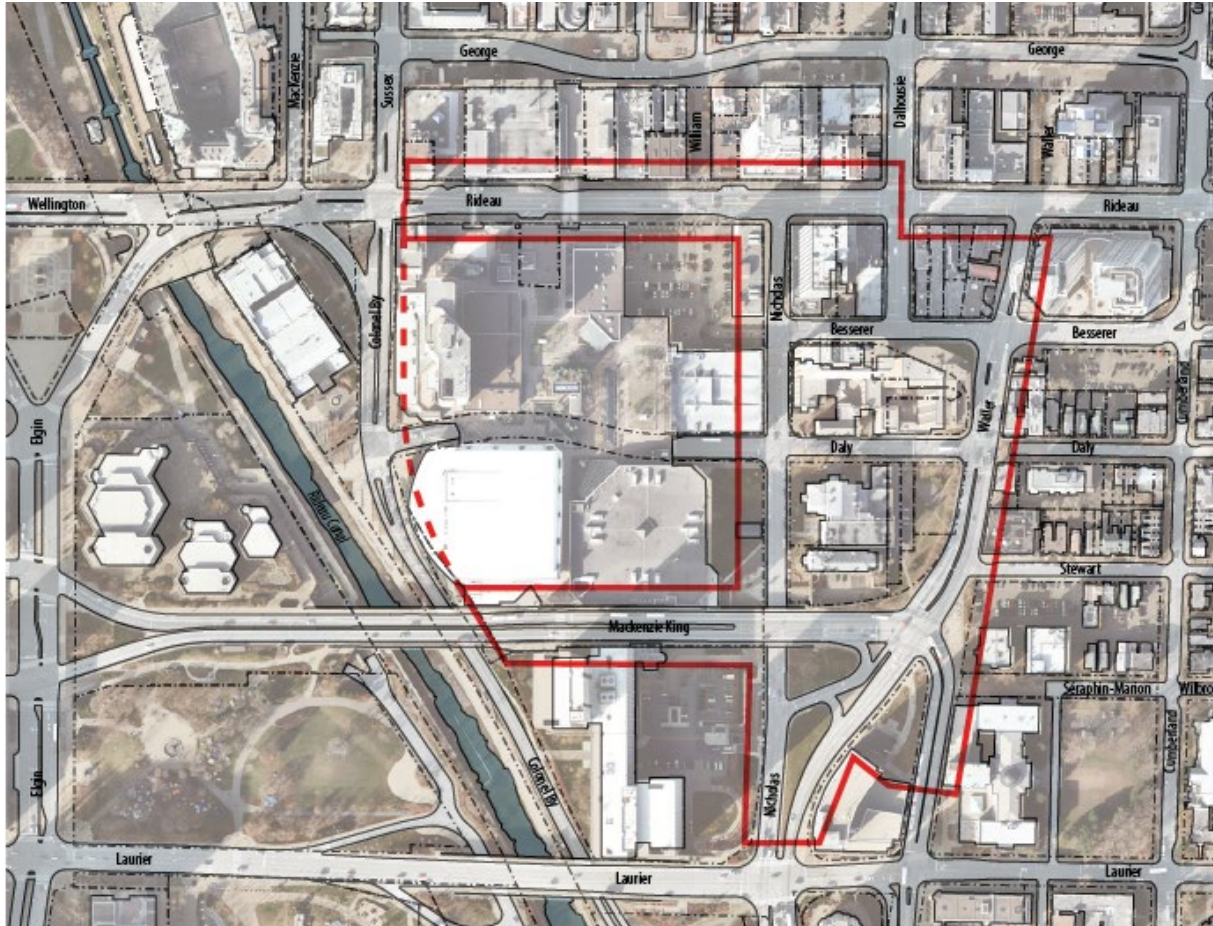
Rideau/Arts Precinct Public Realm Plan (PRP)

The Rideau/Arts Precinct PRP, prepared by the City of Ottawa in 2014, provides policy guidelines for public and private development within the ByWard Market. The district includes the lands bounded by Rideau Street to the north, Waller Street to the east, Laurier Avenue to the south and Colonel By Drive to the west, as shown in Figure 8. Outlined in the PRP are demonstrations to renew the area street as “complete streets”. Below is a list of various principles for study area roadways:

- Nicholas Street (north of Besserer Street): create a pedestrian plaza in the block between Rideau Street and Besserer Street by closing it to vehicles. [COMPLETED]
- Nicholas Street (south of Besserer Street): be a vital pedestrian connection between Besserer Street and Laurier Avenue.
- Dalhousie Street: Create wider sidewalks and plant trees on the east side of the roadway.

- Besserer Street: Widen sidewalks and reduce travel lanes to one in each direction. Introduce on-street parking bays.
- Daly Street: Improve the pedestrian and cycling infrastructure under the covered section of Daly Avenue and improve the pedestrian experience. Relocate taxi, tour bus waiting areas, and bus lay-bys from Daly Avenue to provide wider sidewalks.
- Waller/Nicholas: Reduce the number of travel lanes to improve the pedestrian realm especially on the east side of Waller. Reconfigure the Waller and Mackenzie King bridge intersection to provide for improved pedestrian connections and cycling lane access to Sandy Hill.
- Waller Street (south): Integrate with University of Ottawa's campus. Be a vital cycling connection between University of Ottawa's and the Central Business District and the Rideau/Arts Precinct. Be a vital pedestrian connection between University of Ottawa's and Rideau/Arts Precinct.

Figure 12: Rideau/Arts Precinct PRP Study Area



The Rideau/Arts Precinct Public Realm Plan Study Area

Source: https://documents.ottawa.ca/sites/documents/files/documents/rideau_arts_court_en.pdf

Other Area Developments

The following section outlines adjacent developments in the general area that were 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.

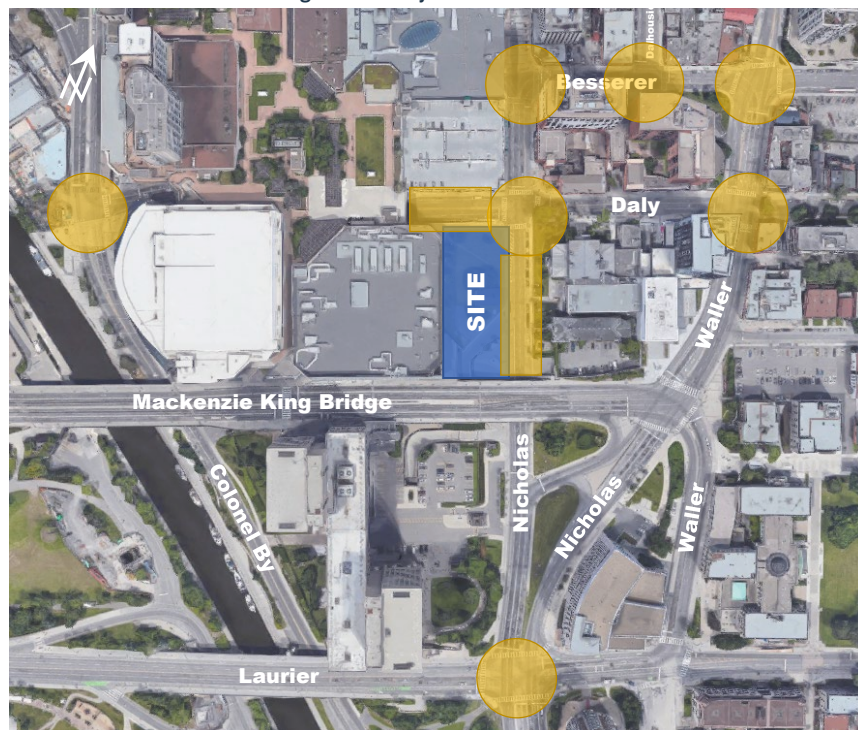
1) 261 – 277 King Edward Avenue & 260 Murray Street

A Transportation Overview prepared by Novatech in October 2016, for a residential mixed-use development consisting of 23 apartment units and 5,500 sq. ft. of retail. The development was anticipated to generate 16 and 30 veh/h during the morning and afternoon peak hours, respectively.

2.2. Study Area and Time Periods

Full buildout of the proposed residential development is assumed to be 2025. As such, the horizon years being analyzed in this report are 2025 and 2030 (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.

Figure 13: Study Area Intersections



- Colonel By/Daly (Signalized)
- Nicholas/Daly (Signalized)
- Waller/Daly (Signalized)
- Laurier/Nicholas (Signalized)
- Nicholas/Besserer (Signalized)
- Dalhousie/Besserer (Signalized)
- Waller/Besserer (Signalized)
- Daly Avenue, adjacent to site
- Nicholas Street, adjacent to site

2.3. Exemption Review

The following modules/elements of the TIA process recommended to be exempt in the subsequent steps of the TIA process, based on the City's TIA guidelines and the subject site:

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Not required for applications involving site plans.
4.2 Parking	4.2.2 Spillover Parking	Parking proposed to meet zoning By-law requirements.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighborhoods	Development relies on arterial/major collector roadways for access.
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. Forecasting Report

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and Mode Shares

Residential Trip Generation

The residential trip generation rate has been prepared on the basis of 280 residential units within a 21-storey high-rise apartment building with ground floor retail. The most updated site plan has increased the number of units to 286 apartment dwellings. The increase in the number of units would have a negligible difference on the transportation network as whole.

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 TRANS Trip Gen. Manual provides person-trip rates during the peak AM and PM periods (7am-9:30am and 3:30PM-6PM). The trip rates for the residential land use are summarized in Table 2 below.

Table 2: 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 (20 floors)	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 2, the total number of person trips generated during the morning and afternoon peak periods can be found in Table 3.

Table 3: Apartment Units Peak Period Person Trip Generation

Land Use	Dwelling Units	AM Peak Period Person Trips	PM Peak Period Person Trips
High-Rise Apartments (20 floors)	280	224	252

The proposed development is anticipated to generate 224 and 252 person trips during the morning and afternoon peak periods, respectively. The total peak period person trips in Table 3 are then divided into different travel modes, as shown in Table 4, using mode share percentages obtained from the 2020 TRANS Manual.

Table 4: Peak Period Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	Mode Share	PM Peak Period Person Trips
Auto Driver	18%	40	17%	43
Auto Passenger	2%	4	9%	23
Transit	26%	58	21%	53
Cycling	2%	4	1%	3
Walking	52%	116	52%	131
Total Person Trips	100%	224	100%	252

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 are provided in Table 5 below.

Table 5: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver	0.48	0.44
Passenger	0.31	0.29
Transit	0.55	0.47
Bike	0.58	0.48
Walk	0.58	0.52

Note that conversion factors for auto passenger trips are not available in the 2020 TRANS Manual. To obtain the passenger trip factor it is assumed that the total person trip peak hour conversion factor is the average of the provided adjustment factors minus the passenger trip peak hour conversion factor and has been calculated as shown in the example below:

$$0.5 = x + 0.48 + 0.55 + 0.58 + 0.58 \times 5$$

$$x = 2.5 - 0.48 - 0.55 - 0.58 - 0.58$$

$$x = 0.31 \rightarrow \text{AM passenger trip peak hour conversion factor}$$

Using the conversion rates in Table 5 and the peak period person trips for different travel modes in Table 4, the peak hour trips for different travel modes can be calculated as shown in Table 6. Inbound and outbound percentages were obtained from Table 9 of the 2020 TRANS Manual.

Table 6: Peak Hour Travel Mode Trips

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	6	13	19	11	8	19
Passenger	0	1	1	4	3	7
Transit	10	22	32	15	11	25
Bike	1	1	2	1	0	1
Walk	21	46	67	39	29	68
Total Person Trips	38	83	121	70	51	120
Total "New" Vehicle Trips	6	13	19	11	8	19

As shown in Table 6, the total person trips anticipated to be generated by the proposed residential portion of the development is approximately 120 trips during both the morning and afternoon peak hours. Vehicle trips are anticipated to be approximately 20 veh/h during both the morning and afternoon peak hours. Approximately 25 to 30 new transit trips and approximately 70 new active mode trips are anticipated.

Retail Trip Generation

Appropriate trip generation rates for the proposed 4,900 ft² ground floor retail was obtained from the ITE Trip Generation Manual (10th Edition) and is summarized in Table 7.

Table 7: ITE Trip Generation Rates

Land Use	ITE Land Use Code	Trip Rates	
		AM Peak	PM Peak
Shopping Centre	ITE 820	T = 0.94(X)	T = 3.81(X)
Notes: X = 1,000 ft ² GFA T = Average Vehicle Trip Ends Shopping centre is used as a generic shopping use as the tenant for the space has not been confirmed at this stage of development			

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Based on the TIA Guidelines, the average vehicle occupancy factor is 1.15 and the default non-auto mode share is 10%. As such, a combined factor of approximately 1.28 can be used to convert ITE's vehicle trip rates to person-trip rates. The person-trip generation for the proposed retail developments is summarized in Table 8.

Table 8: Modified Person Trip Generation

Land Use	Area	AM Peak (Person Trip/h)			PM Peak (Person Trip/h)		
		In	Out	Total	In	Out	Total
Shopping Centre	4,900 ft ²	3	3	6	11	13	24
Total Person Trips		3	3	6	11	13	24

Mode Shares

Based on the City's targets for TOD areas and given the retail is expected to serve residents and employees in the area, the future mode splits for the proposed development are summarized in Table 9. The person trip generation for the retail components of the site (Table 8) were then reduced by these modal shares and are shown in Table 9.

Table 9: Retail Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	15%	1	1	2	2	2	4
Auto Passenger	5%	1	1	2	1	1	2
Transit	30%	0	0	0	3	4	7
Non-motorized	50%	1	1	2	5	6	11
Total Person Trips	100%	3	3	6	11	13	24
Less Pass-by (100%)		-1	-1	-2	-2	-2	-4
Total 'New' Auto Trips		0	0	0	0	0	0

As shown in Table 9, the resulting number of potential 'new' two-way vehicle trips for the proposed retail development is approximately 2 to 4 veh/h during the weekday morning and afternoon peak hours, respectively. Note that the retail component of this site is anticipated to primarily service local area/residents and generate few destination trips and as such, all vehicle trips are assumed as pass-bys.

Total Trip Generation

The combined projected trips for the entire development (residential and retail) are summarized in Table 10.

Table 10: Total Site Trip Generation

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Auto Driver	7	14	21	13	10	23
Auto Passenger	1	2	3	5	4	9
Transit	10	22	32	18	15	32
Bike	2	2	4	6	6	12
Walk	21	46	67	39	29	68
Total Person Trips	41	86	127	81	64	144
Less Retail Auto Pass-by (100%)	-1	-1	-2	-2	-2	-4
Total 'New' Auto Trips	6	13	19	11	8	19

As shown in Table 10, the total number of new person trips to the development are expected to be 130 and 145 persons/h during the morning and afternoon peak hours, respectively. Vehicle trips are anticipated to be approximately 20 veh/h during both the morning and afternoon peak hours. Approximately 30 new transit trips and approximately 70 to 80 new active mode trips are anticipated.

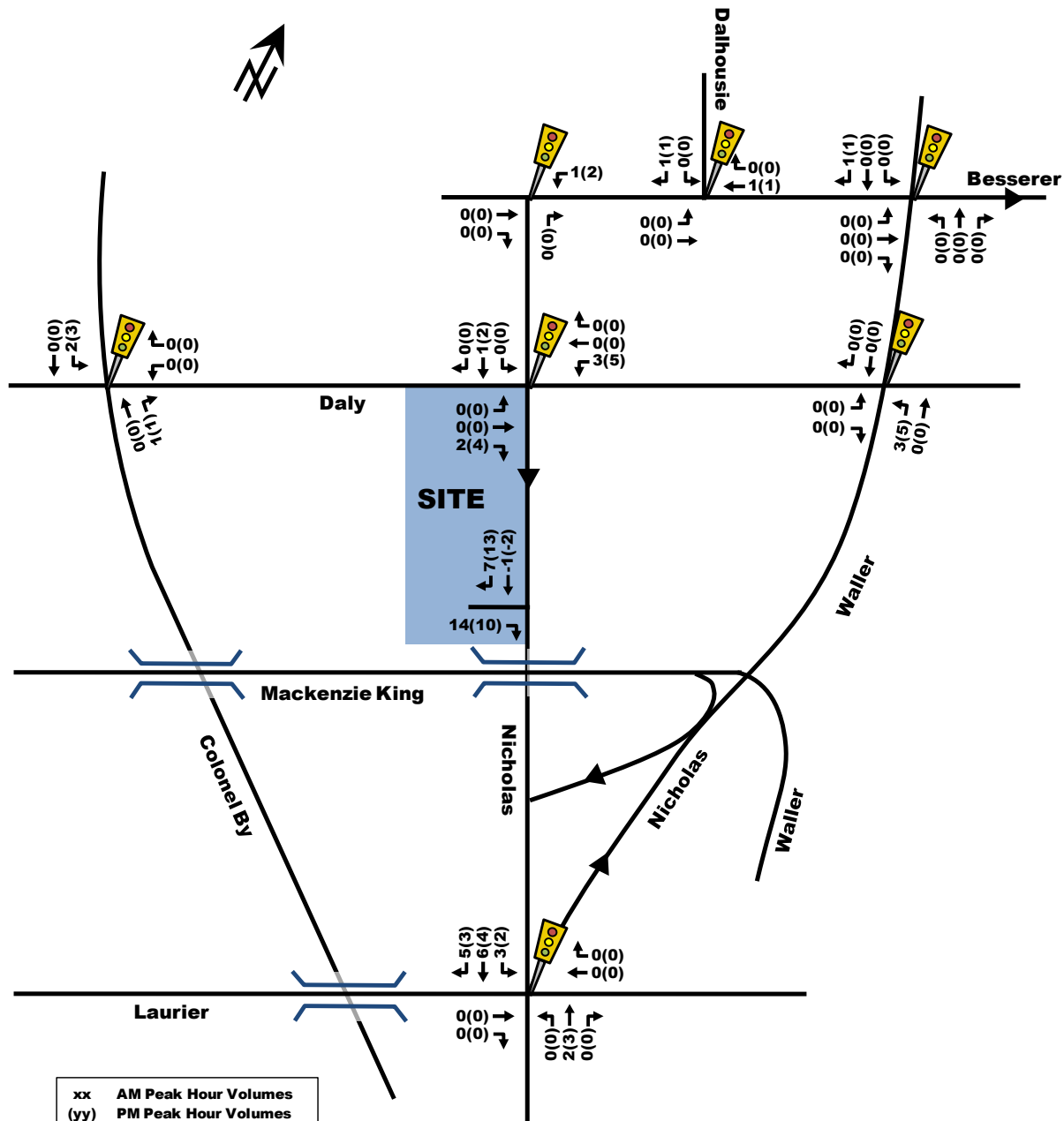
3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Ottawa Centre 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 Dalhousie Street and Waller Street;
- 25% to/from the south via Nicholas Street and Colonel By Drive;
- 10% to/from the east via Rideau Street and Besserer Street; and,
- 55% to/from the west via Mackenzie King Bridge and Colonel By Drive.

The anticipated site-generated auto trips for the proposed development from Table 10 were then assigned to the road networks as shown in Figure 14.

Figure 14: Site-Generated Traffic



3.2. Background Network Traffic

3.2.1. Transportation network plans

Refer to Section 2.1.3: Planned Study Area Transportation Network Changes.

3.2.2. Background Growth

Given that the proposed development will be located in the well-developed core downtown area of the city of Ottawa, traffic along study area roadways is anticipated to have a negligible increase within the future horizon years. Additionally, since the development is located in a TOD area, within 600m of LRT's Rideau Station, transit usage is expected to continuously increase, and auto usage is expected to decrease. Other area developments within the study area are accounted for in Section 3.2.3. As such, a background growth rate of 0% will be assumed to remain conservative. As

there is no background growth, the total projected volumes for the 2022 and 2027 horizon years are equal to the existing volumes outlined in Figure 7.

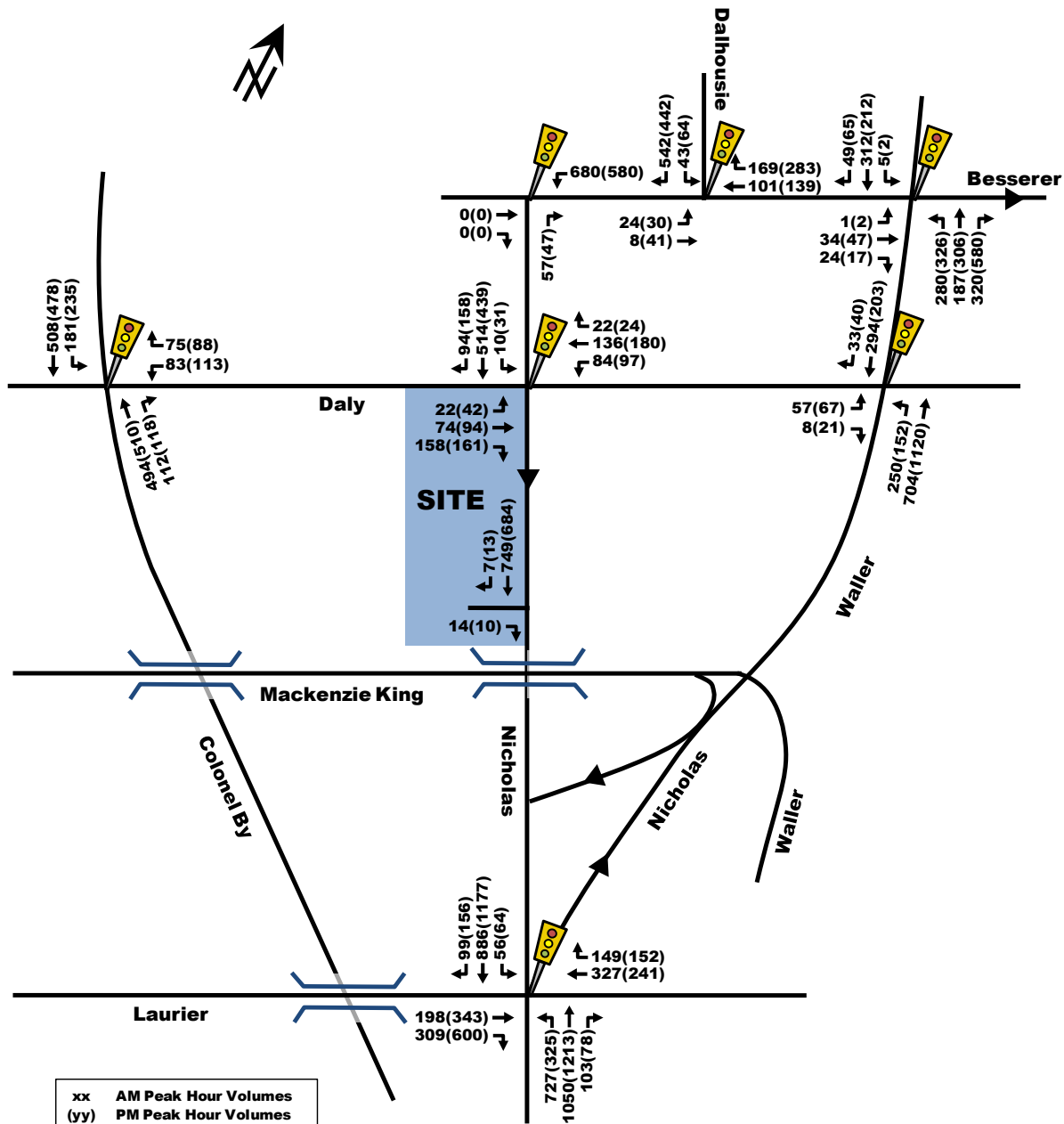
3.2.3. Other Developments

Description of other area developments taking place within the study area was provided in Section 2.1.3: Other Area Developments. Trip assignment for the 261 – 277 King Edward Avenue & 260 Murray Street development was not completed in the accompanying Transportation Brief and as such, this development will not be included in background traffic.

3.3. Demand Rationalization

The total projected future traffic volumes can be determined by superimposing the site-generated traffic volumes in Figure 14, onto the existing traffic volumes in Figure 7 as there is no projected background traffic growth. The total projected traffic volumes for 2025 and 2030 are illustrated in Figure 15.

Figure 15: Total Projected Traffic Volumes



4. Strategy Report

4.1. Development Design

4.1.1. Design for Sustainable Modes

Pedestrian/Cycling Routes and Facilities

The proposed building will have direct pedestrian and cycling access to Nicholas Street. Within the study area, all roadways have sidewalks on both sides and are all interconnected. Access to the Rideau Canal Eastern Pathway is located approximately 260 m walking distance south of the site. The Rideau Canal Eastern Pathway provides north-south mobility for active travel modes and provides connectivity to various other existing and future proposed pathways and cycle facilities such as the Trans Canada Trail to the north. To the south, the Rideau Canal Eastern Pathway continues along Colonel By Drive to Hogs Back Road. The development proposes to widen the sidewalk along Nicholas and Daly fronting the site in following with the PRP.

Location of Transit Facilities

Transit service within the vicinity of the site are OC Transpo Routes #9 along Daly Street and the #16 and #19 along Mackenzie King Bridge. A para-transpo stop is located along Rideau Street within the hatched area also used as a bus lay-up. Additionally, the proposed site is within 300m of the Rideau Transit Station and O-Train Confederation Line. Bus stops for Route #9 are located just north of the site on Daly Avenue. It is noted that stops for Routes #16 and #16 are located on Mackenzie King Bridge and are grade-separated from the site. They are approximately 270m to 400m walking distance from the site. Additionally, The O-Train Confederation line can be accessed approximately 270m (less than 10min walk) north of the proposed development at Rideau Station.

4.1.2. Circulation and Access

A one-way loop driveway is proposed to provide right-in/right out access to Nicholas Street. The driveway is proposed at 5 meters wide for vehicular access, meeting City By-Laws. Garbage pick-up is proposed on-site, with garbage rooms located on the ground floor.

Appendix D provides turning movement swept paths for the residential loop, the truck access and the preferred waste pick-up option.

4.1.3. New Streets Network

Exempt. See Table 1.

4.2. Parking

4.2.1. Parking Supply

According to the City of Ottawa Zoning By-Law, the site is located in Area B according to Schedule 1 and Area Z in Schedule 1A, given that it is within a 600m walk to Rideau Rapid Transit Station within Schedule 2A. Table 11 summarizes the vehicle parking minimum and maximums allowed within the parking by-law. Table 12 summarizes the bicycle parking requirements as per City of Ottawa Zoning By-Law-Part 4, sections 100-114.

Table 11: Vehicle Parking Space Supply

Land Use		Rate per Unit		Required Vehicle Spaces				Proposed Spaces
		Base	Visitor	Base	Visitors	Min Req	Max Allowed ³	
Residential Tower	280 units	0.0 per unit ¹	0.1 per unit ²	0	30	30	520	130
1) No off-street motor vehicle parking is required in area Z 2) No off-street motor vehicle parking is required for the first 12 dwelling units with a max of 30 visitor spots 3) Maximum parking allowed is at a rate of 1.75 parking stalls per unit (combined base and visitor)								

Table 12: Bicycle Parking Requirements

Land Use		Rate	Required Bicycle Spaces	Proposed Spaces
			Required	
Residential Tower	280 units	0.5 per unit	140	254

The proposed number of parking spaces meet City guidelines by being a number between the minimum and maximum number of parking spots required. All vehicular parking is proposed indoors in an underground lot, consisting of 102 vehicle parking stalls. With regards to the visitor parking, the applicant is anticipating that the visitor space requirements can be met within the Rideau Mall parking garage and to provide zero spaces within the proposed buildings underground parking garage.

The site proposes to exceed the minimum bicycle parking stall requirement of 0.5 stalls per unit. At least 241 stalls are to be located indoors in a well-lit area within a storage room in the underground parking garage. An additional 13 visitor bike stalls are anticipated to be located outside at street level.

4.2.2. Spillover Parking

Exempt. See table Table 1.

4.3. Boundary Street Design

The boundary streets of this development are Nicholas Street and Daly Avenue. Complete street concepts have been completed for both streets.

Public Realm Plan

Nicholas Street

A complete street concept has been prepared for Nicholas Street within the *Rideau/Arts Public Realm Plan* (Dec. 2014). The principles guiding the vision for Nicholas Street between Besserer Street and Laurier Avenue are for the street to be a vital pedestrian connection within the precinct and support outdoor related functions.

Elements of the proposed plan include the following:

- Relocate bus and taxi waiting areas off street to other locations.
- Provide parking laybys on the east side of the street north of Mackenzie King Bridge.
- Widen sidewalks and plant trees on both sides of the street.
- Coordinate streetscape elements throughout the precinct in a way that makes visual connections to Rideau Street as the defining and designated theme street within the precinct.
- Consider reconfiguring as two-way street to provide OC Transpo vehicles greater flexibility in travel routes through the area, with potential for some bus lay-bys on the east side of the street under Mackenzie King Bridge.

Figure 16 below illustrates the complete street concept for Nicholas Street adjacent to the site. The subject development does not impact the proposed design of Nicholas Street significantly. The proposed trees on the west side of the street may obstruct drivers sight lines when leaving the site and as such, may need to be eliminated or replaced with shorter shrubbery.

Figure 16: Nicholas Street Complete Street Concept Adjacent to Site



Source: https://documents.ottawa.ca/sites/documents/files/documents/rideau_arts_court_en.pdf

Daly Avenue

A complete street concept has been prepared for Daly Avenue within the *Rideau/Arts Public Realm Plan* (Dec. 2014). The principles guiding the vision for Daly Avenue between Colonel By Drive and Waller Street are for the street to be a

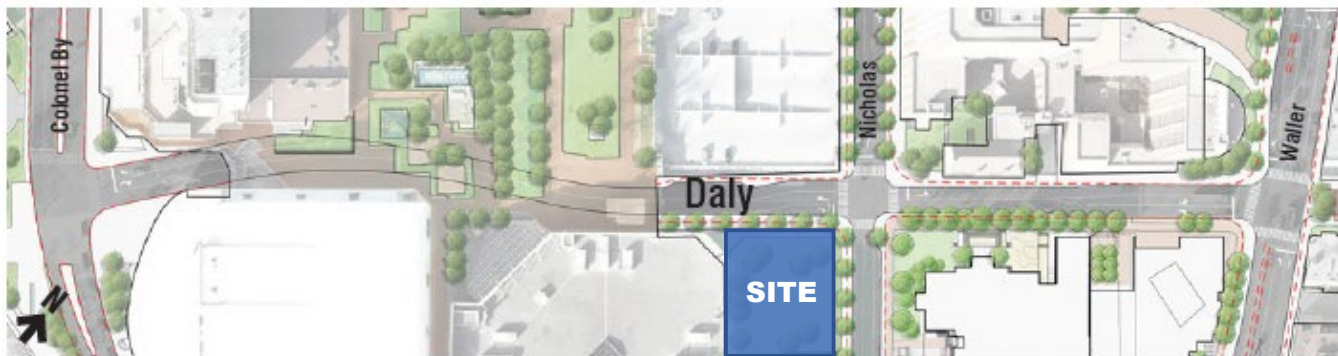
vital east-west pedestrian connection from the Rideau Canal Trail system to Sandy Hill and to provide for the drop off and entrance functions of the Arts Court development.

Elements of the proposed plan include the following:

- Improve the pedestrian and cycling infrastructure under the covered section of Daly Avenue.
- Consider introducing public art under the covered section of Daly Avenue to improve the pedestrian experience.
- Relocate taxi, tour bus waiting areas, and bus lay-bys from Daly Avenue to provide wider sidewalks.
- Coordinate streetscape elements throughout the precinct in a way that makes visual connections to Rideau Street as the defining and designated theme street within the precinct.

Figure 17 below illustrates the complete street concept for Daly Avenue adjacent to the site. The subject development does not impact the proposed design of Daly Avenue.

Figure 17: Daly Avenue Complete Street Concept Adjacent to Site



Source: https://documents.ottawa.ca/sites/documents/files/documents/rideau_arts_court_en.pdf

Public Realm Plan Integration with Potential for Cycle Tracks

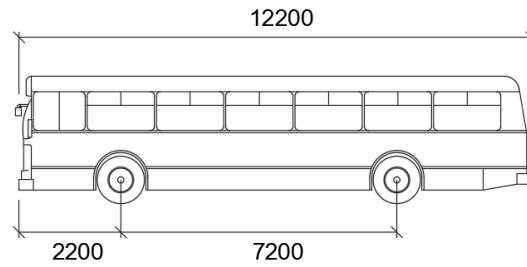
The intention of the proposed Site Plan is to incorporate a portion of the suggested designs from the Public Realm Plan (PRP) in an effort to improve the pedestrian experience along the redeveloped roadway frontage of the Site. However, it is prudent to note that applying the Public Realm Plan requires some interpretation as the future modification specifications are not clearly defined within the report. Through discussions with City staff, a preferred intersection concept has been developed to integrate the PRP and the potential for future cycle facilities along Nicholas Street.

Figure 18 displays the design vehicle profile for a typical bus. Note that Daly Avenue is not a designated truck route however provides for local bus routes and a loading facility for the Shaw Centre/Rideau Centre (accessed from EB Daly).

Figure 19 demonstrates that buses would conflict with the opposing eastbound travel lane if the right turn is taken from the southbound right turn lane. The swept path analysis utilized a wide-right-turn approach, making use of both the through lane and right turn lane to conduct the right turn. This is believed to be most consistent with the existing right turn configuration, as the bus would have minimal conflict with the existing opposing travel lanes.

RMA drawings for the preferred concept are illustrated in Figure 20 and in Appendix J.

Figure 18: B-12 - Vehicle Profile



B-12
mm

Width : 2400
Track : 2400
Lock to Lock Time : 6.0
Steering Angle : 37.1

Figure 19: Proposed RMA, Bus Turning Movement

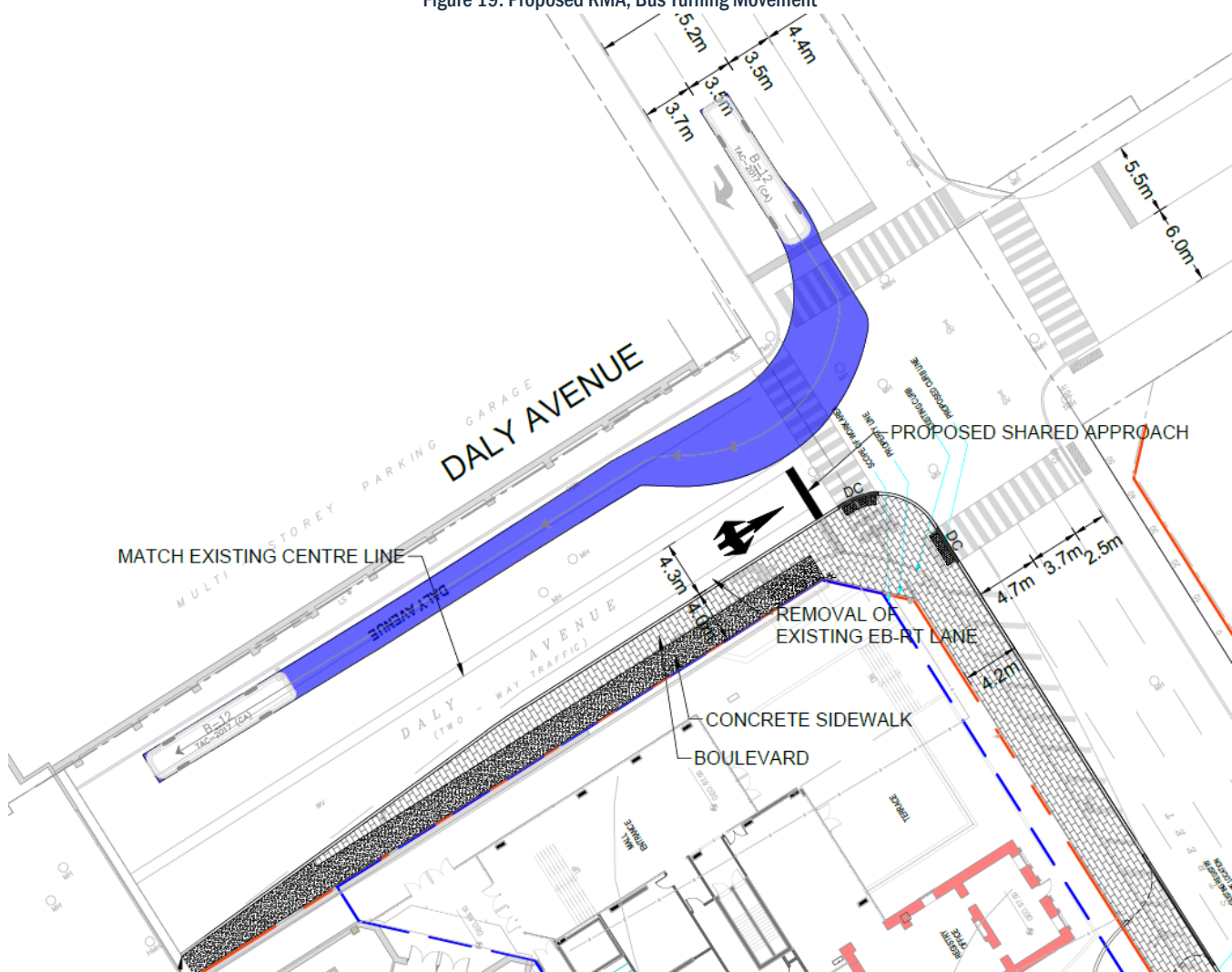
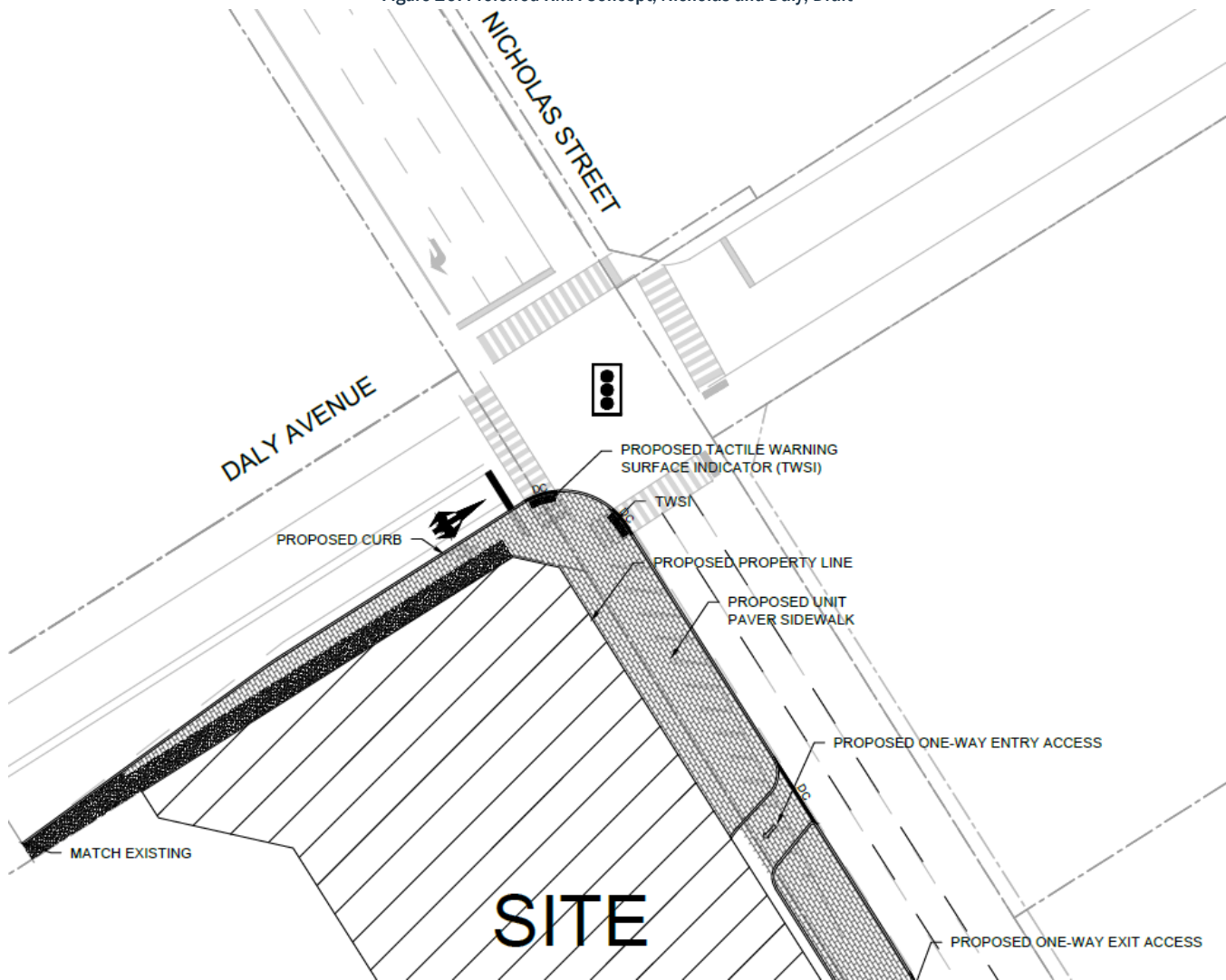


Figure 20: Preferred RMA Concept, Nicholas and Daly, Draft



Through discussions with City staff, two concerns of significance were highlighted regarding the Nicholas Street frontage:

- There currently exists a bus lay-up and para-transpo stop fronting the Rideau Centre within the hatched area. OC Transpo indicated that both should remain functional; and
- There is the potential for a bi-directional cycling facility fronting the site along Nicholas Street. This facility remains to be confirmed through the upcoming TMP, then studied for feasibility.

To address the competing interests of the site frontage, Appendix D provides the following demonstration plans:

- Two options considered to re-locate the existing bus lay-up site which currently exists along Nicholas Street. Through discussions with City staff and review of the concepts, there remains little opportunity to improve the public realm while maintaining the bus lay-up at its current location or elsewhere along the site frontage. In following the recommendations of the PRP, the bus lay-up area should be located off-site.
- Two options that demonstrate the potential for a bi-directional cycle track facility along the west side of Nicholas Street. The first option assumes a relocated para-transpo stop while the second assumes the para-transpo stop is integrated with the cycling facility. Overall, the demonstration plan indicates that a cycle track is like feasible fronting the site. The site proposes to institute the ultimate curb location in accordance with both the PRP and the potential for cycle tracks along Nicholas Street.

Ultimately, trade-offs are necessary along the street frontage. There exists potential for a cycle track along Nicholas Street, but its overall feasibility will need to be determined upstream and downstream of the site. The proposed site arrangement, including ultimate curb location, integrates the site frontage with the potential cycle tracks while not

precluding their ultimate implementation. In the interim, the Nicholas Street frontage will provide for an improved public realm and an on-street para-transpo facility.

In conformance with the PRP implementation, the following is proposed:

- OC Transpo buses will continue to make the southbound right-turn movement.
- The southbound Nicholas Street bus lay-by area is to be re-located off-site, as recommended by the PRP, as options were explored along the site frontage and found to not be feasible;
- Para transpo operations will continue along the Nicholas frontage, the details of which can be addressed during Detailed Design; and
- The sidewalk widening along Nicholas Street is to be implemented in its ultimate location for much of the site frontage to possibly accommodate a future bi-directional cycle track facility. The timing, and overall feasibility, remains to be determined through a future City of Ottawa initiative.

4.4. Access Intersection Design

4.4.1. Location and Design of Access

The proposed vehicular access to the site relies on a single one-way loop driveway to Nicholas Street. The driveway loop is proposed roughly in the middle of the site frontage, north of the existing Rideau Centre parking garage access. It is located approximately 36m south of the Nicholas/Daly intersection, exceeding the 30m requirement for the private approach by-law 25 (m). The site driveways are approximately 5.0m wide and are to remain below a 9.0m width at the street front.

4.4.2. Intersection Control

The proposed one-way loop driveway access will be STOP controlled within the site.

4.4.3. Intersection Design

The ramp gradient should be in accordance with the private approach by-law (No. 2003-447) Section 25.1.(u), which requires slope of driveway to be less than 2% for the first 9 meters.

4.5. Transportation Demand Management

4.5.1. Context for TDM

Based on the type of development, it is assumed that most trips generated by the proposed site will be residents leaving the site in the AM peak to go to work and returning from work to the proposed site in the PM peak. Sections 3.1.1 and 3.1.2 describe how many trips are anticipated per travel mode and anticipates the likely locations that they will travel to and from based on the OD-Survey 2011 for Ottawa. The site is located in a Transit-Oriented Development (TOD) zone according to the Official Plan.

4.5.2. Need and Opportunity

Developments located in a Transit-Oriented Development (TOD) zone such as the proposed site are expected to utilize measures to provide sustainable active mode shares. Such measures are described in more detail in Section 4.5.3 below but can include more aggressive desirable Multi-Modal Levels of Service (MMLoS) targets as described in Section 4.3 and 4.9 and safe and efficient connectivity to public transit as described in Section 4.7, to name a few.

4.5.3. TDM Program

The TDM infrastructure and measures checklist is attached as Appendix E. Some of the TDM measures proposed include:

Items to be provided identified in the TDM Measures Checklist are:

- Proponent to provide local area cycling/pedestrian maps at major entrances;
- Proponent to provide local area transit maps and information at entrances
- Parking to be unbundled from rent / purchase price of residential units
- A multi-modal travel option information package to be provided to new residents.

- A pre-loaded presto pass, or related transit fee measure, has been discussed with the proponent. A transit fare incentive is to be provided on a per-residential-unit basis to encourage transit use.

TDM-Supportive development design and infrastructure checklist items identified to be provided are:

- 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 a 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
- 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
- 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
- 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
- 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
- Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible
- 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
- 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
- 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
- Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for

4.6. Neighborhood Traffic Management

Exempt. See Table 1.

4.7. Transit

4.7.1. Route Capacity

There are approximately 30 projected 'new' two-way transit passenger trips per hour during morning and afternoon peak hours. The Confederation LRT Line operates with a capacity of approximately 600 passengers per train (Alstom Citadis Trains) and 12 trains per hour per direction during peak hours. 30 two-way transit trips equate to less than 1% of the total capacity of the Confederation Line per hour at that given station assuming that all trips were headed the same direction. Additionally, added capacity is available on local bus routes on Daly Avenue, Nicholas Street, and Mackenzie King Bridge. It is anticipated that the future transit network will have sufficient capacity to accommodate the subject development transit demand.

4.7.2. Transit Priority

There are no transit routes along the site's frontage on Nicholas Street and as such, the development's driveways will not impact travel times.

4.8. Review of Network Concept

Exempt. refer to Table 1.

4.9. Intersection Design

4.9.1. Intersection Control

See Section 4.4.2.

4.9.2. Intersection Design

Multi-Modal Level of Service

As stated in the MMLOS Guidelines, only signalized intersections are considered for the intersection Level of Service measures. Given that this location has a high pedestrian mode share, all signalized intersections within the study area will be assessed. Truck targets were only applied at intersections with intersecting truck routes. There are no transit priority measures existing or projected within the study area and as such, no transit level of service target. The MMLOS analysis is summarized in Table 13, with detailed analyses provided in Appendix F. MMLOS was undertaken for the existing intersection configurations. The implementation of the PRP, including its effects on MMLOS, remains outside the scope and horizon of this application.

Table 13: MMLOS – Existing Intersections

Intersection	Level of Service							
	Pedestrian		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLOs	Target	BLoS ₁	Target	TLoS	Target	TkLoS	Target
Colonel By/Daly	E	A	D	B	D	N/A	F	N/A
Nicholas/Daly	D	A	F	D	C	N/A	F	N/A
Waller/Daly	E	A	E	D	C	N/A	F	N/A
Nicholas/Laurier	F	A	F	A	D	N/A	B	D
Besserer/Dalhousie	D	A	E	D	C	N/A	D	D
Waller/Besserer	D	A	F	D	E	N/A	F	D
Nicholas/Besserer	E	A	E	D	E	N/A	F	D
1. In the absence of a speed test, the assumed/posted speed plus 10km/h is used								

Pedestrian

- No intersection met the pedestrian minimum desirable target of PLoS 'A'. All intersections had a PLoS of 'D' or worse, due to numerous factors, predominantly the pedestrian signal delay or number of lanes crossed. There are no mitigation measures that would lower the PLoS to reach the desired target without significantly reducing the vehicle capacity or without adding grade separated crossings. These are not recommended as the study area consists mainly of arterial roadways.
- Regarding the proposed configuration of the Nicholas/Daly intersection, the PLoS is not forecast to improve as the crossing distance of the critical north leg remains unchanged.

Bicycle

- None of the intersections met the BLoS desired targets. The Waller/Daly, Bessere/Dalhousie and Nicholas/Besserer intersections did not meet the BLoS desired targets due to the unconfirmed speed of the roadways, which requires the analysis to add 10km/h to the roadway speed worsening the level of service. If a speed test was conducted and confirmed their posted/unposted assumed speeds of 50km/h, then these intersections would meet their desired targets. The Nicholas/Daly, Nicholas/Laurier, and Waller/Besserer intersections did not meet the target due to cyclists needing to cross 2 lanes when completing a left turn. Colonel By/Daly does not meet BLoS targets given the more aggressive desired target. Providing any type of cycling facility except for mixed traffic and also providing improvements to the southbound left turning movement (either a 2-stage left turn) or confirming the roadway speeds with a speed test would meet the desired BLoS target.
- Regarding the proposed configuration of the Nicholas/Daly intersection, the BLoS is not forecast to improve as travel speeds and the number of lanes required to complete a crossing has remain unchanged.

Truck

- Half of the study area intersections met the truck minimum desirable target of T_kLoS 'D' where the target is applicable. The target is not met at the Waller/Besserer and Nicholas/Besserer as there is only one receiving lane for truck turning onto Besserer Street.

Existing Conditions

The following Table 14 provides a summary of the existing traffic operations at the study area intersection based on the Synchro (V10) traffic analysis software. The volumes from Figure 7 were used. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The Synchro model outputs of existing conditions are provided within Appendix G.

Table 14: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Colonel By/Daly	C(C)	0.78(0.79)	NBT(SBL)	26.4(31.6)	B(C)	0.70(0.71)
Nicholas/Daly	A(B)	0.54(0.68)	WBT(WBT)	54.5(15.9)	A(A)	0.40(0.45)
Waller/Daly	A(B)	0.48(0.64)	NBL(NBT)	14.2(13.9)	A(B)	0.34(0.62)
Nicholas/Laurier	F(F)	1.19(1.06)	SBT(SBT)	58.3(47.9)	E(E)	0.97(0.94)
Besserer/Dalhousie	B(A)	0.65(0.59)	SBR(SBR)	10.3(12.3)	A(A)	0.48(0.42)
Waller/Besserer	B(B)	0.65(0.68)	NBL(NBL)	18.7(16.4)	A(A)	0.42(0.44)
Nicholas/Besserer	A(F)	0.56(1.37)	WBL(WBL)	34.7(196.5)	A(F)	0.52(1.27)

Note: Analysis of signalized intersections assumes a PHF of 0.90, CBD area type and a saturation flow rate of 1800 veh/h/lane.

The entire network was modelled with the Central Business District (CBD) land area type in Synchro, which reduces overall capacity for intersections.

As shown in Table 14, the intersections 'as a whole' operate at an acceptable LoS 'C' or better during peak hours. The exceptions are the Nicholas/Besserer intersection which operates at an LoS 'F' during the afternoon peak hour and the Nicholas/Laurier intersection which operates overall at LoS 'E'.

With regard to critical movements, they also operate at an LoS 'C' or better. The exceptions are the SBT movement at the Nicholas/Laurier intersection and WBL movement at the Nicholas/Besserer intersection which operate at LoS 'F' during the morning and afternoon peak hours and the latter operates at LoS 'F' during the afternoon peak hour.

Future Conditions Full-Buildout

As the annual growth is projected at 0% (based on vehicular growth discussed in Section 3.2.2), it is assumed that 2025 future projected volumes will be more or less the same as 2030 future projected volumes. The total projected volumes from Figure 15 are used in the projected future operations analysis with outputs displayed in Table 15. The detailed Synchro results can be found in Appendix H.

Table 15: Full-Buildout Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Signalized Intersections						
Colonel By/Daly	C(C)	0.78(0.77)	NBT(SBL)	26.6(29.1)	B(B)	0.70(0.64)
Nicholas/Daly	A(B)	0.55(0.63)	WBT(WBT)	54.4(14.5)	A(A)	0.41(0.41)
Waller/Daly	A(A)	0.48(0.58)	NBL(NBT)	14.2(12.8)	A(A)	0.34(0.56)
Nicholas/Laurier	F(E)	1.19(0.92)	SBT(SBT)	59.2(36.3)	E(D)	0.97(0.85)
Besserer/Dalhousie	B(A)	0.65(0.55)	SBR(SBR)	10.3(9.8)	A(A)	0.48(0.39)
Waller/Besserer	B(B)	0.65(0.66)	NBL(NBL)	18.7(16.0)	A(A)	0.42(0.42)
Nicholas/Besserer	A(F)	0.56(1.23)	WBL(WBL)	34.7(146.8)	A(F)	0.52(1.14)
Unsignalized Intersections						
Nicholas/Site	B(B)	11.1(10.8)	EB(EB)	0.2(0.2)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 0.90, CBD area type and a saturation flow rate of 1800 veh/h/lane.

As seen in Table 15, study area intersections are expected to operate similar to existing conditions with minor changes in expected delays. The Nicholas/Site Access intersection is projected to operate 'as a whole' at LoS 'A' with critical movements operating at LoS 'B' during both peak hours.

5. Findings and Recommendations

Based on the results summarized herein the following findings and recommendations are provided:

Proposed Development

- The proposed development is a 21-storey residential building comprised of ground-floor retail that includes 286 units and 4,900 sq. ft of commercial space.
- The proposed development aims to improve the pedestrian facilities by widening sidewalks along the Site's Nicholas Street frontage and along Daly Avenue according to the PRP.
- Approximately 130 vehicle parking spaces will be provided through an underground lot. Bicycle parking is provided indoors, with approximately 254 bicycle parking spaces available for use.
- The development will be constructed in a single phase with the projected build-out year expected to be 2025.
- Access is proposed through a one-way loop driveway on Nicholas Street. Deliveries will be conducted through a re-located truck access/
- The proposed development is projected to generate 130 and 145 persons/h during the morning and afternoon peak hours respectively. The trip breakdown is as follows:
 - New two-way vehicle trip volumes of approximately 20 veh/h total during the weekday morning and afternoon peak hours.
 - New two-way transit trip volumes of approximately 30 person/h total during the weekday morning and afternoon peak hours.
 - New two-way active mode trip volumes of approximately 70 to 80 person/h total during the weekday morning and afternoon peak hours.

Existing Conditions

- The site is currently occupied by the City Registry Building which will be maintained in the new development.
- The site is located within a 600m walk of the existing Rideau LRT Station and Rideau Canal Eastern Pathway.
- Existing intersections operate 'as a whole' at an acceptable LoS 'C' or better with critical movements operating at LoS 'C' or better during the weekday peak hours. The exceptions are:
 - The Nicholas/Laurier intersection which operates at an LoS 'E' during the morning and afternoon peak hours.
 - The Nicholas/Besserer intersection which operates at an LoS 'F' during the afternoon peak hour.
 - The SBT movement at the Nicholas/Laurier intersection which operates at LoS 'F' during the morning and afternoon peak hours.
 - The WBL movement at the Nicholas/Besserer intersection which operates at LoS 'F' during the afternoon peak hour.
- With regards to MMLoS, the PLoS was not met at any intersection due to many factors, namely the signal delay and number of lanes crossed. The BLoS target was not met at any intersection. About half of them could meet the BLoS target if a speed test confirmed the actual roadway operation speeds to be consistent with posted/unposted assumed speeds, however locations where cyclists cross 2 lanes to turn left would still not meet the target. The TkLoS was substantially met at study area intersections. Locations did not meet this target where there was only one receiving lane for trucks turning right.

Future Conditions

- A 0% background growth rate was assumed to remain conservative as the development is located in a TOD area, within 600m of LRT's Rideau Station, transit usage is expected to continuously increase, and auto usage is expected to decrease.
- Study area intersections are projected to operate similar to existing conditions.

Based on the foregoing findings, the proposed development located at 70 Nicholas Street is recommended from a transportation perspective

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Transportation Engineer

APPENDIX A

SCREENING FORM

City of Ottawa 2017 TIA Guidelines

Date

1-Apr-21

TIA Screening Form

Project 70 Nicholas Street (Rideau Centre)

Project Number 477845-01000

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

Module 1.1 - Description of Proposed Development

Municipal Address	70 Nicholas Street (Rideau Centre)
Description of location	Property located east of the Rideau Centre with frontage along Daly St. and Nicholas St. Lot currently occupied by the Old City Registry Office (historic building).
Land Use	Mixed-use: residential units with ground floor retail
Development Size	Approximately 363 residential units and 215 sq. m retail space
Number of Accesses and Locations	2 one-way driveways with pick-up/drop-off area located on Nicholas St.
Development Phasing	One phase
Buildout Year	2023
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger

Land Use Type	Townhomes or Apartments	
Development Size	363	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers

Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes
Location Trigger Met?	Yes

Module 1.4 - Safety Triggers

Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature 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;	Yes	
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	Yes	
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	



APPENDIX B

TRAFFIC COUNT DATA

Turning Movement Count - Peak Hour Diagram

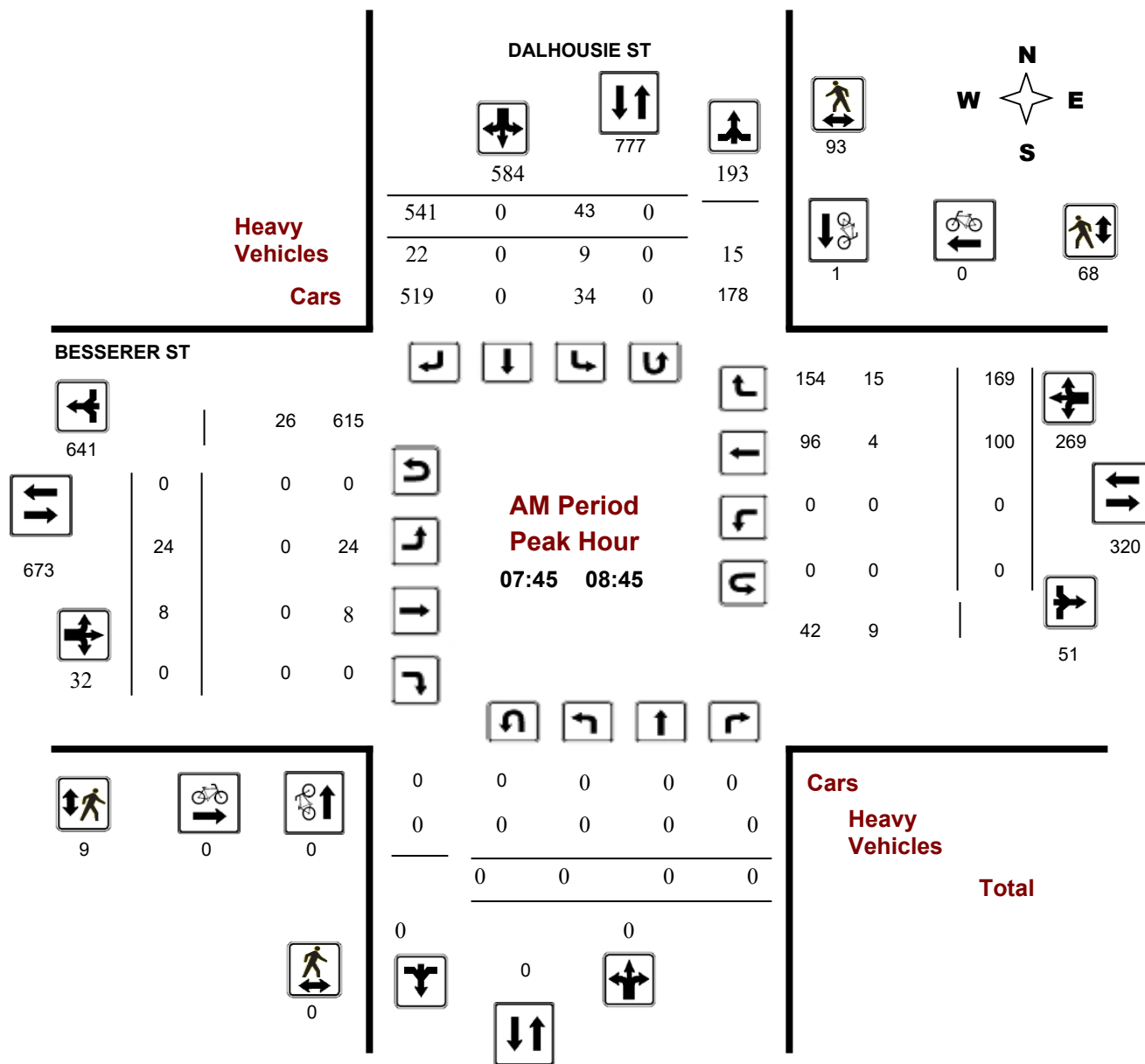
BESSERER ST @ DALHOUSIE ST

Survey Date: Wednesday, March 28, 2018

Start Time: 07:00

WO No: 37655

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

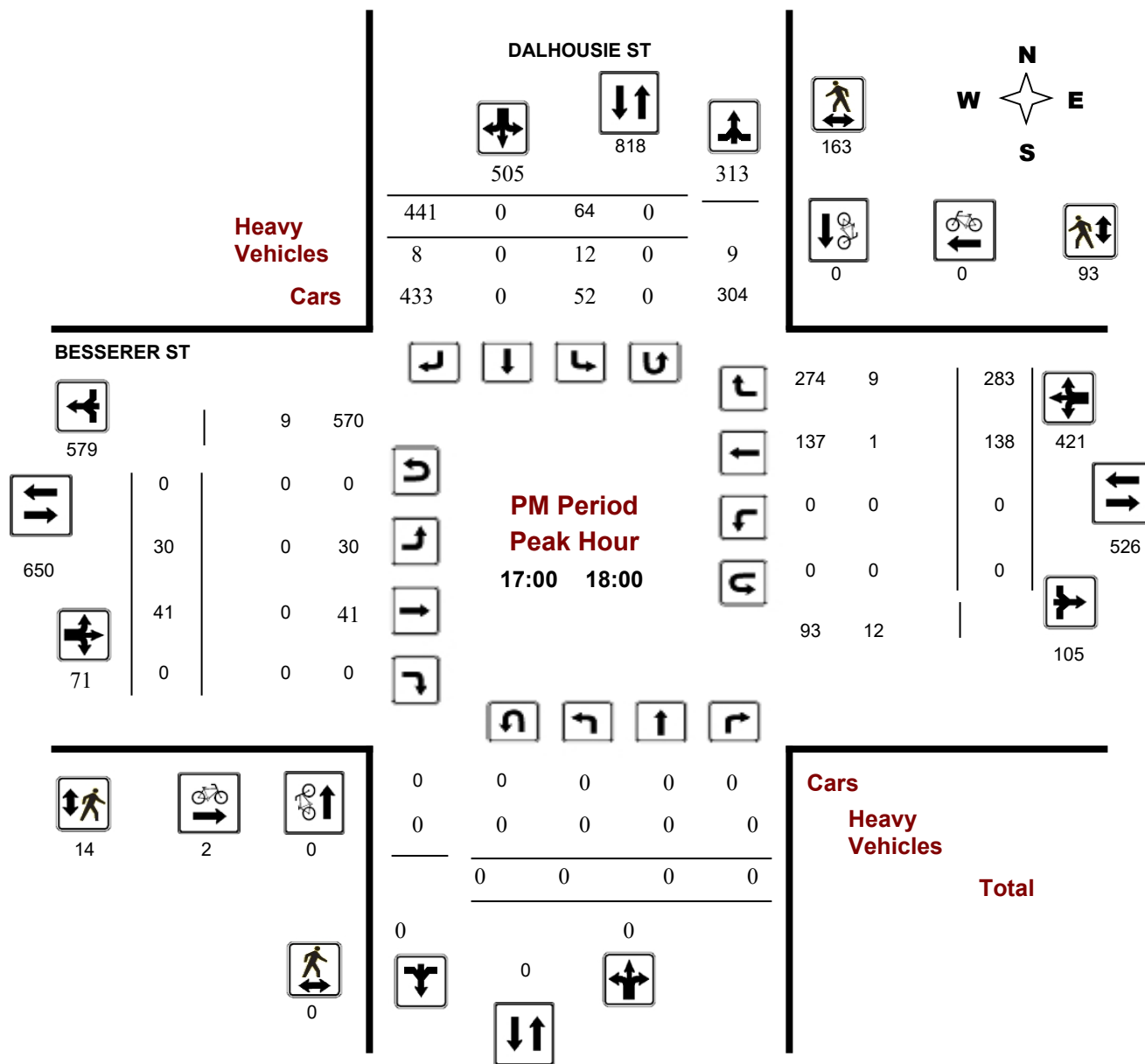
BESSERER ST @ DALHOUSIE ST

Survey Date: Wednesday, March 28, 2018

Start Time: 07:00

WO No: 37655

Device: Miovision



Turning Movement Count - Peak Hour Diagram

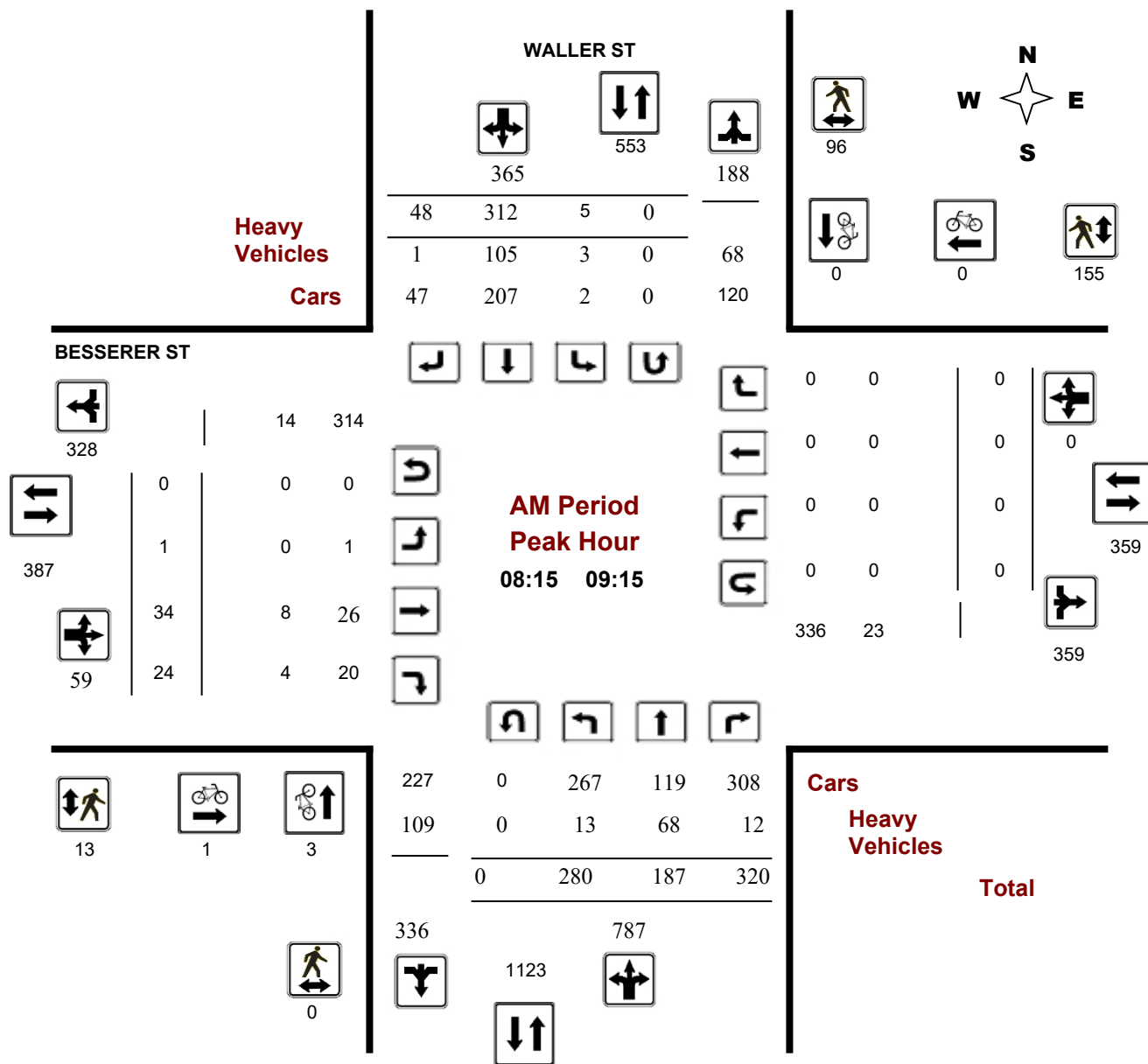
BESSERER ST @ WALLER ST

Survey Date: Tuesday, May 09, 2017

Start Time: 07:00

WO No: 37004

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

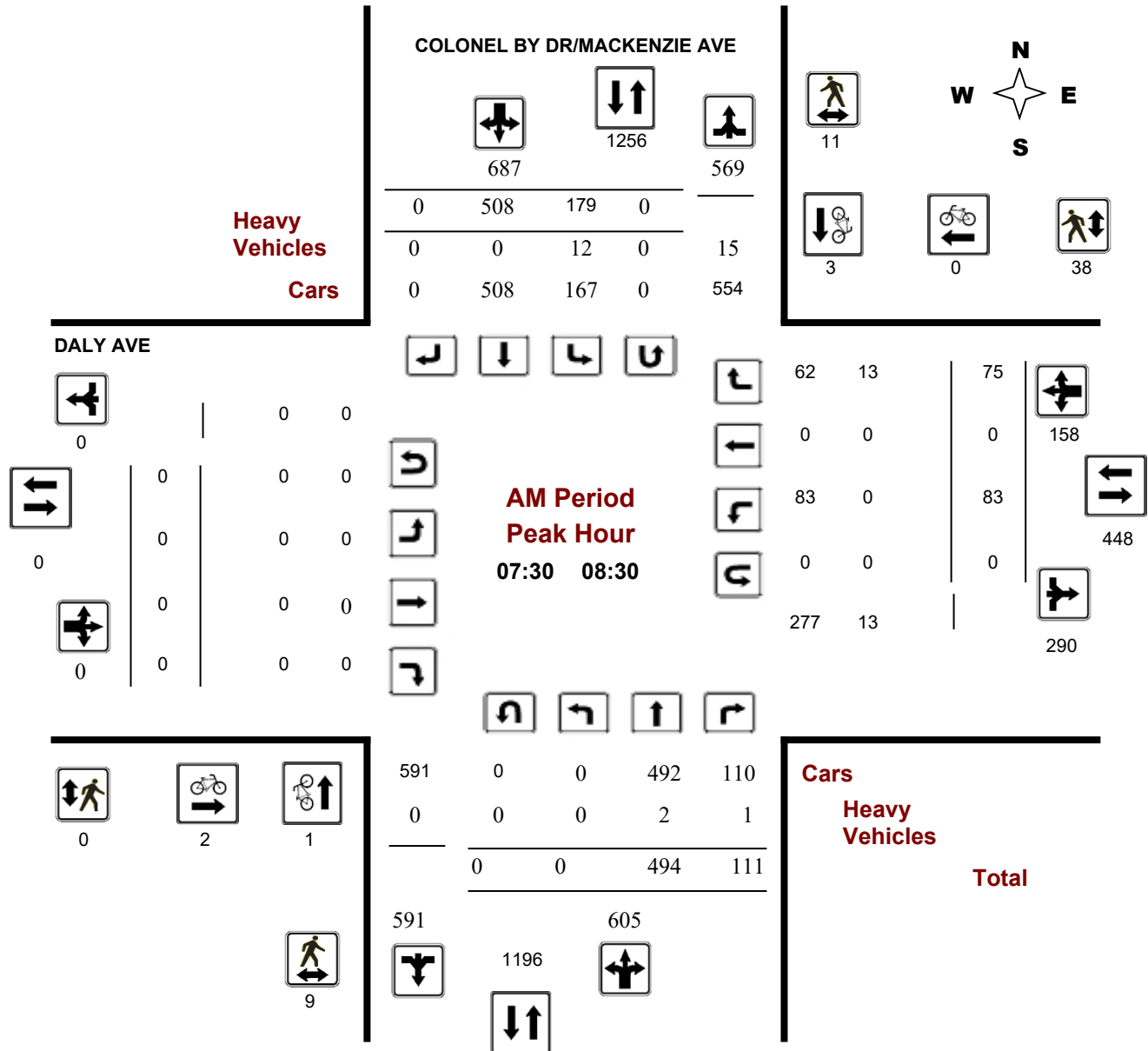
COLONEL BY DR/MACKENZIE AVE @ DALY AVE

Survey Date: Thursday, January 16, 2020

Start Time: 07:00

WO No: 39343

Device: Miovision



Turning Movement Count - Peak Hour Diagram

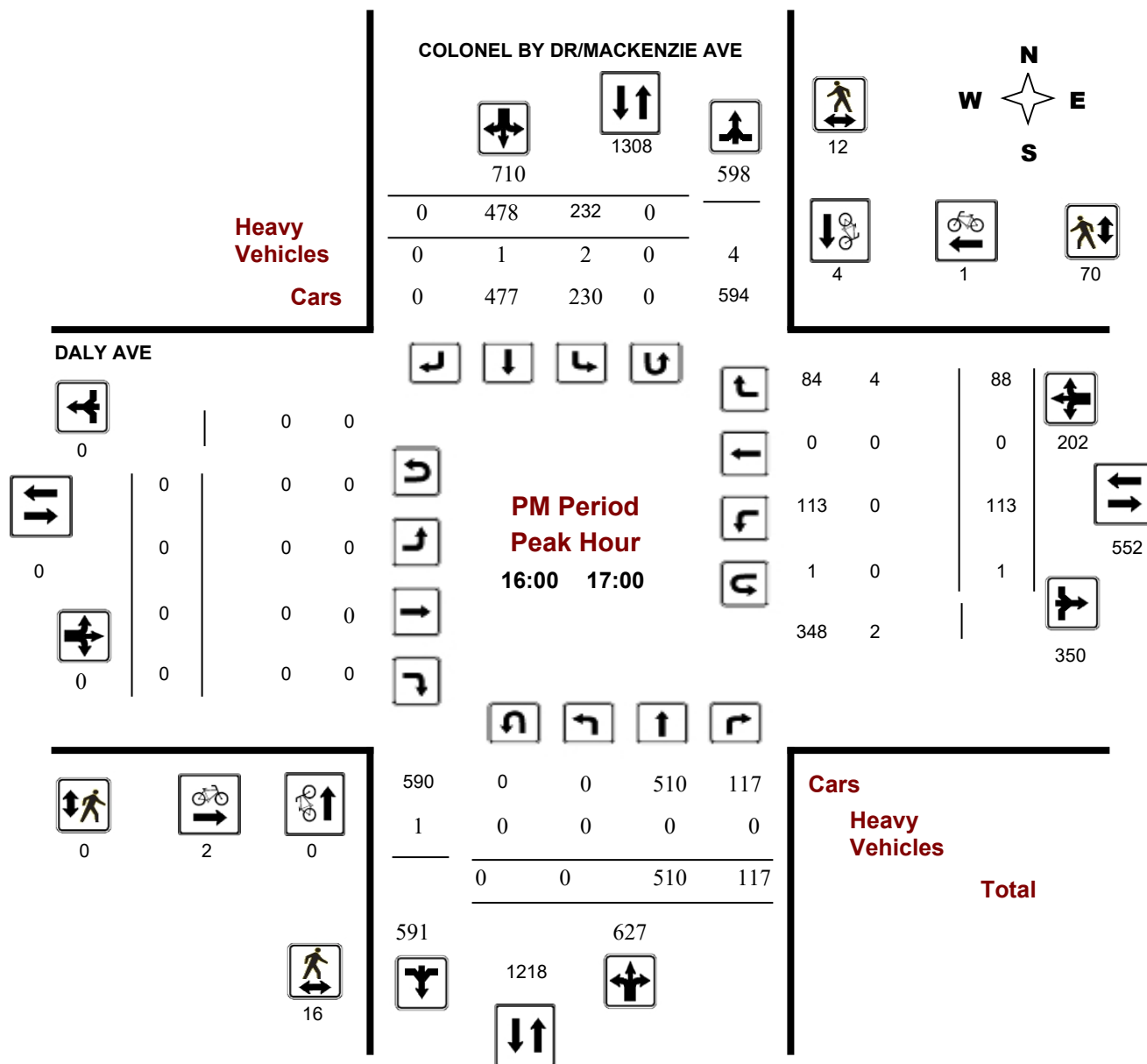
COLONEL BY DR/MACKENZIE AVE @ DALY AVE

Survey Date: Thursday, January 16, 2020

Start Time: 07:00

WO No: 39343

Device: Miovision



Comments 5472162 - THU JAN 16, 2020 - 8HRS - ADAM HORTOP



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

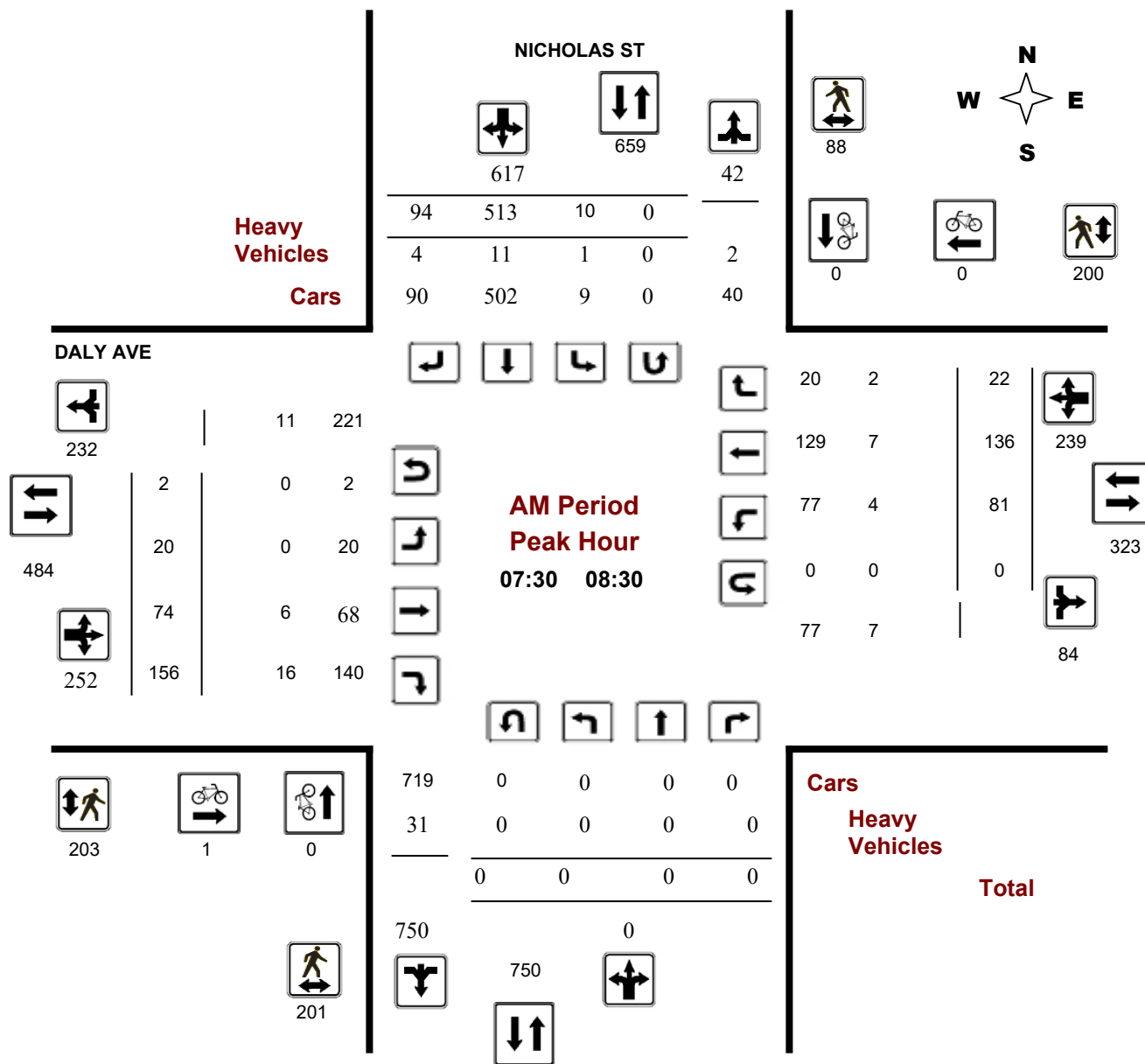
DALY AVE @ NICHOLAS ST

Survey Date: Wednesday, December 12, 2018

Start Time: 07:00

WO No: 38092

Device: Miovision



Turning Movement Count - Peak Hour Diagram

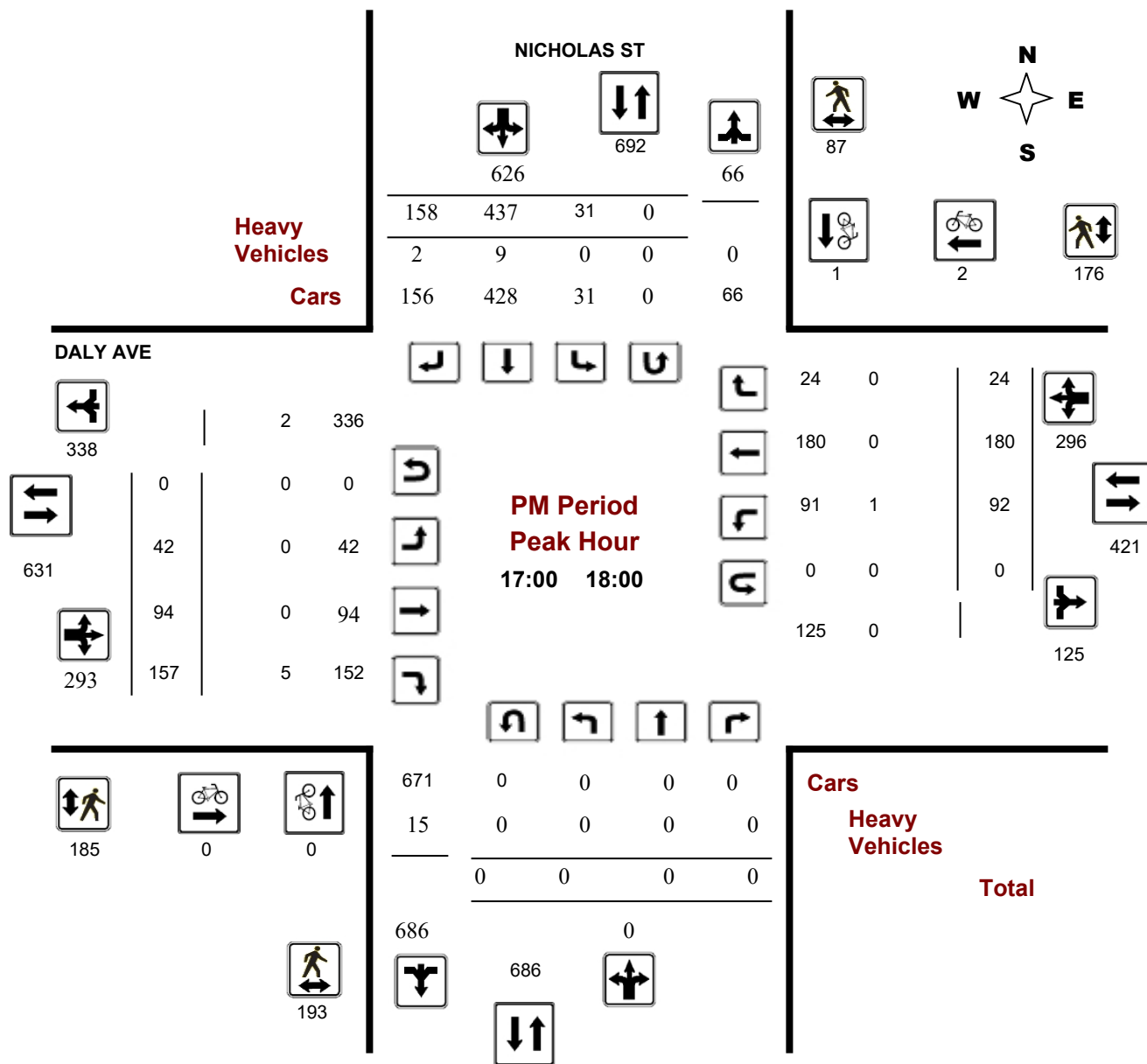
DALY AVE @ NICHOLAS ST

Survey Date: Wednesday, December 12, 2018

Start Time: 07:00

WO No: 38092

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

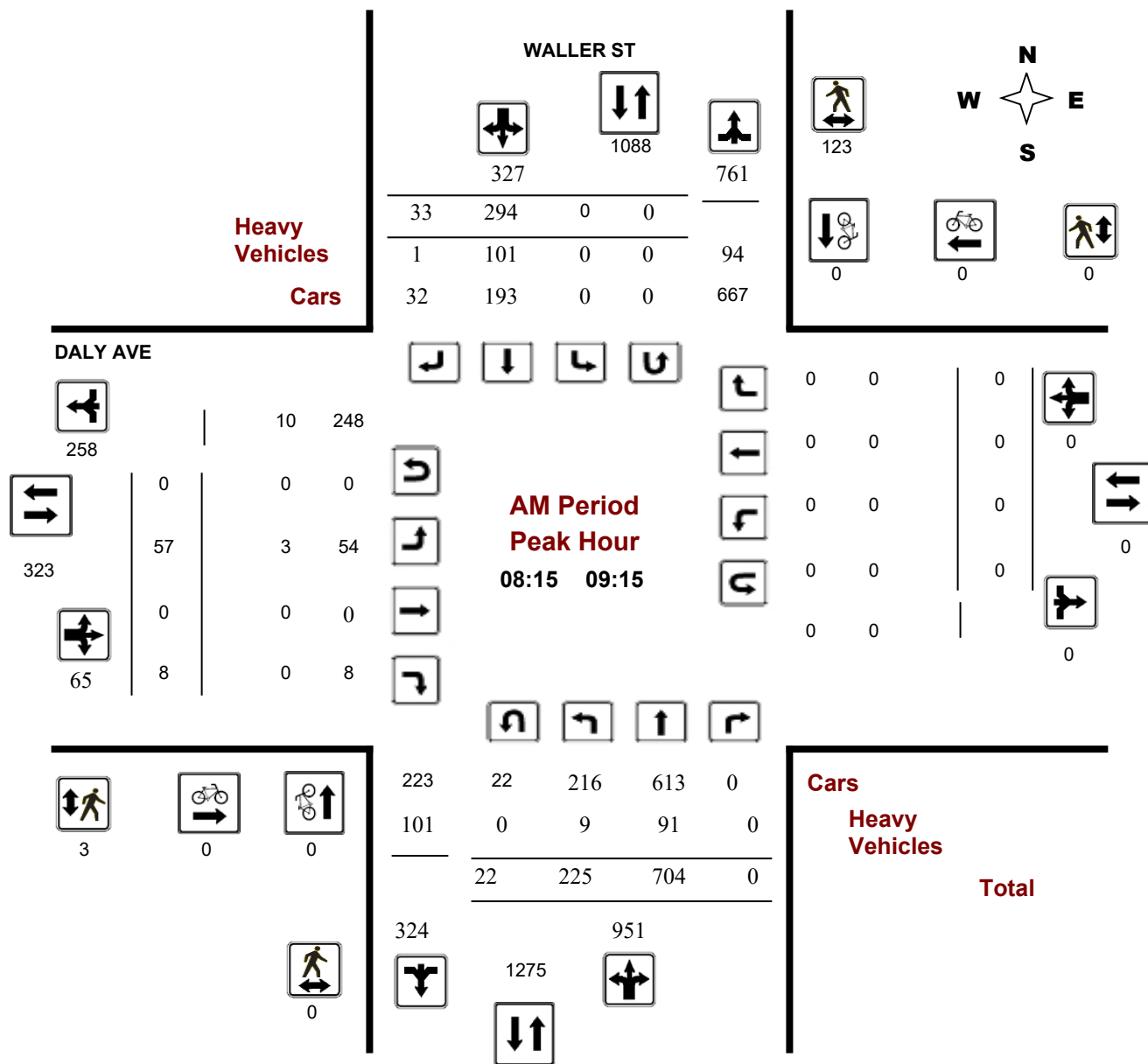
DALY AVE @ WALLER ST

Survey Date: Tuesday, May 09, 2017

Start Time: 07:00

WO No: 37003

Device: Miovision



Turning Movement Count - Peak Hour Diagram

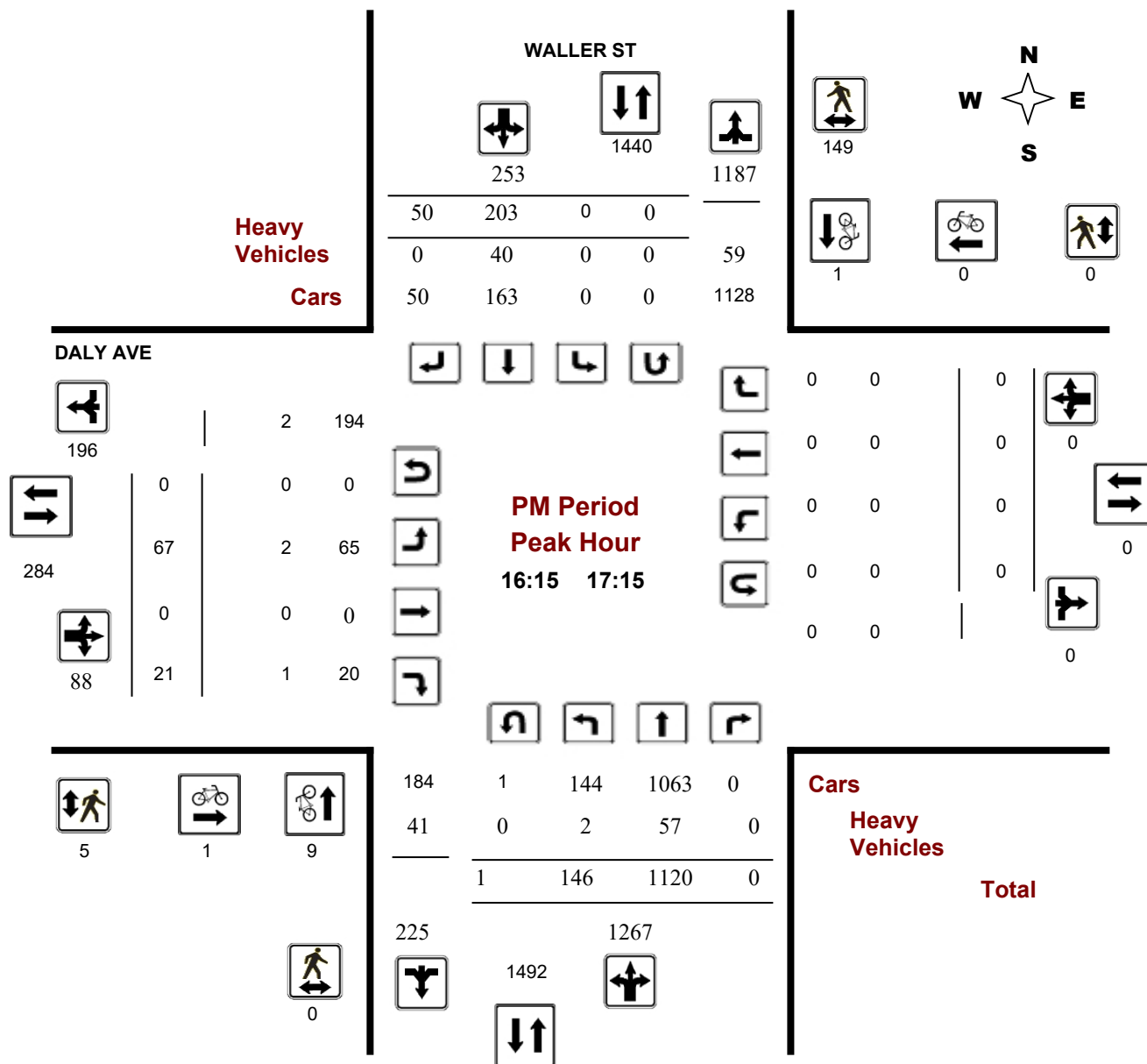
DALY AVE @ WALLER ST

Survey Date: Tuesday, May 09, 2017

Start Time: 07:00

WO No: 37003

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

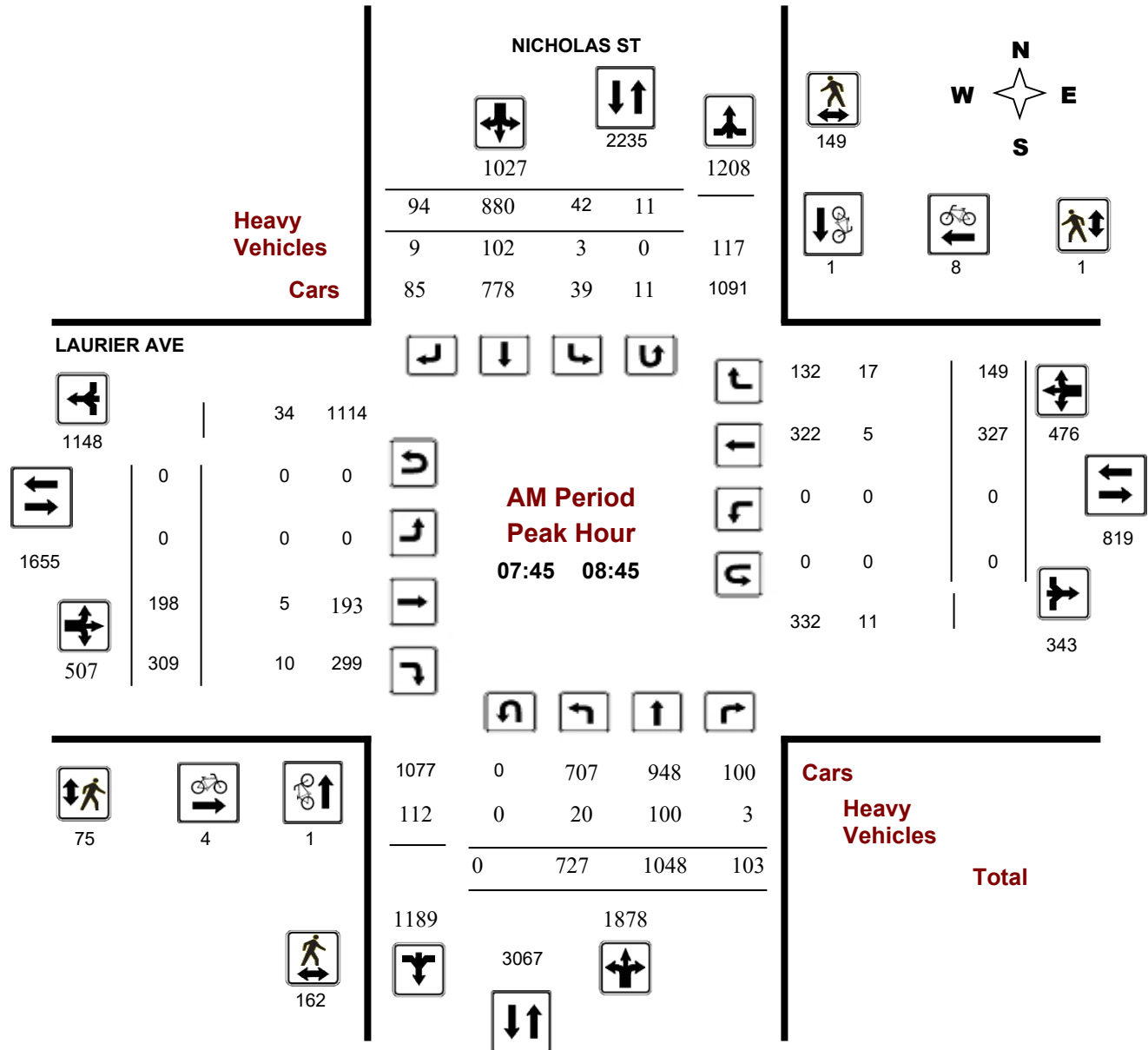
LAURIER AVE @ NICHOLAS ST

Survey Date: Wednesday, February 12, 2020

Start Time: 07:00

WO No: 39477

Device: Miovision



Comments 5474768 - WED FEB 12, 2020 - 8HRS - LAUREN O'GRADY



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

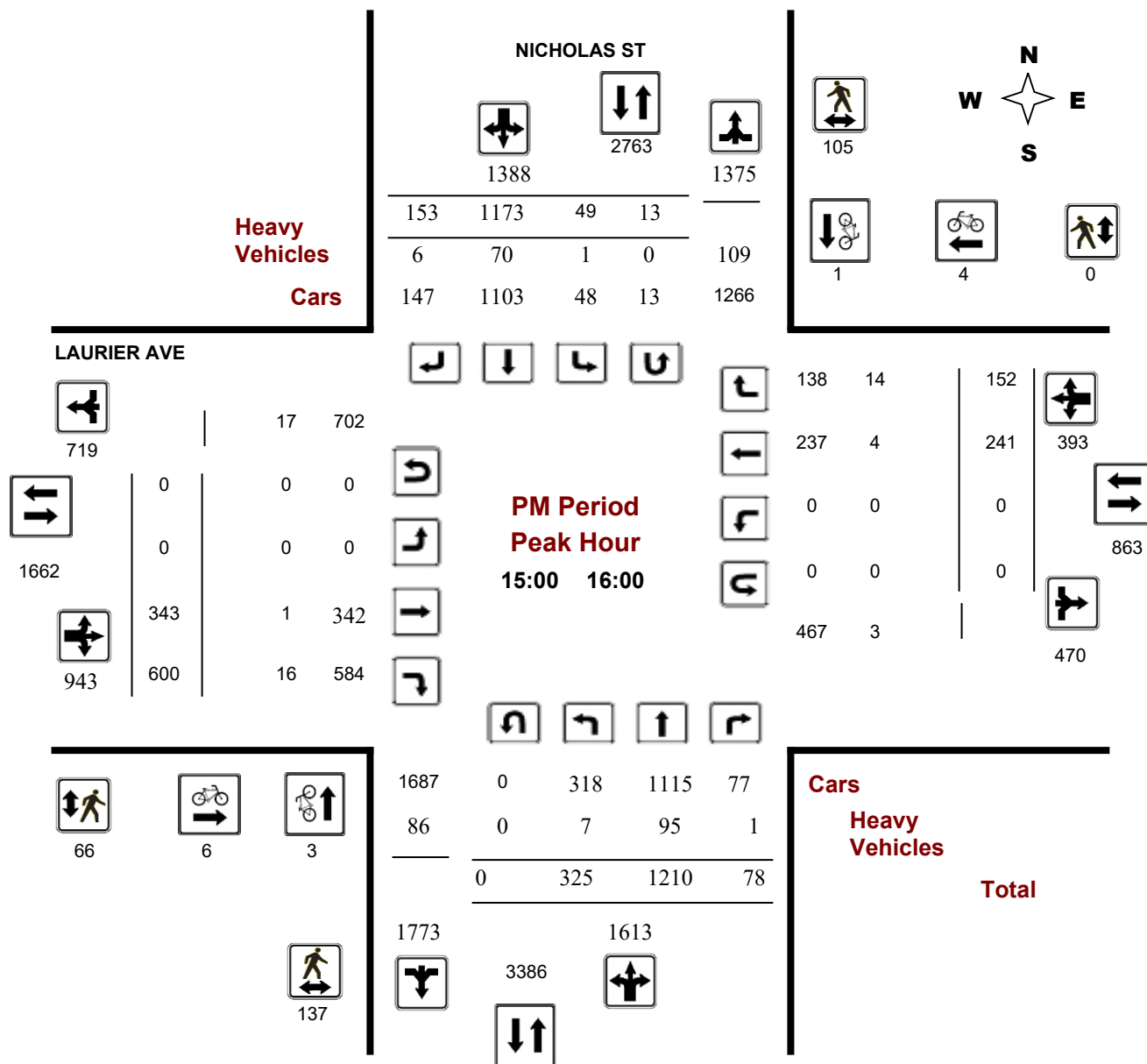
LAURIER AVE @ NICHOLAS ST

Survey Date: Wednesday, February 12, 2020

Start Time: 07:00

WO No: 39477

Device: Miovision



Comments 5474768 - WED FEB 12, 2020 - 8HRS - LAUREN O'GRADY

APPENDIX C

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	117	50	194	27	0	9	6	13	416
Non-fatal injury	17	7	8	5	0	19	0	0	56
Non reportable	0	0	0	0	0	0	0	0	2
Total	135	57	203	32	0	28	6	13	474
#2 or 28% #3 or 12% #1 or 43% #4 or 7% #8 or 0% #5 or 6% #7 or 1% #6 or 3%									

88%
12%
0%
100%

Besserer St./Dalhousie St.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	32	12,513	1825	1.40

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	3	4	21	0	0	2	1	1	32
Non-fatal injury	0	0	0	0	0	0	0	0	0
Non reportable	0	0	0	0	0	0	0	0	0
Total	3	4	21	0	0	2	1	1	32
9% 13% 66% 0% 0% 6% 3% 3%									

100%
0%
0%
100%

Besserer St./Waller St.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	85	16,612	1825	2.80

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	7	14	53	2	0	0	2	0	78
Non-fatal injury	2	1	0	0	0	3	0	0	7
Non reportable	0	0	0	0	0	0	0	0	0
Total	9	15	54	2	0	3	2	0	85
11% 18% 64% 2% 0% 4% 2% 0%									

92%
8%
0%
100%

Colonel Br Dr./Daly Ave.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	33	19,667	1825	0.92

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	20	2	8	0	0	1	0	0	31
Non-fatal injury	1	0	1	0	0	0	0	0	2
Non reportable	0	0	0	0	0	1	0	0	0
Total	21	2	9	0	0	2	0	0	33
64% 6% 27% 0% 0% 3% 0% 0%									

94%
6%
0%
100%

Nicholas St./Daly Ave.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	46	15,839	1825	1.59

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	11	7	13	3	0	1	0	2	37
Non-fatal injury	1	3	2	2	0	1	0	0	9
Non reportable	0	0	0	0	0	0	0	0	0
Total	12	10	15	5	0	2	0	2	46
26% 22% 33% 11% 0% 4% 0% 4%									

80%
20%
0%
100%

Waller St./Daly Ave.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	28	17,854	1825	0.86

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	9	4	6	1	0	1	0	0	21
Non-fatal injury	0	1	1	0	0	5	0	0	7
Non reportable	0	0	0	0	0	0	0	0	0
Total	9	5	7	1	0	6	0	0	28
32% 18% 25% 4% 0% 21% 0% 0%									

75%
25%
0%
100%

Laurier Ave./Nicholas St.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	130	53,818	1825	1.32

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	46	8	41	8	0	2	0	5	110
Non-fatal injury	9	2	1	3	0	3	0	0	18
Non reportable	1	0	1	0	0	0	0	0	2
Total	56	10	43	11	0	5	0	5	130
43% 8% 33% 8% 0% 4% 0% 4%									

85%
14%
2%
100%

Mackenzie King-Waller/Nicholas-Waller

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	44	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	12	4	18	4	0	1	0	0	39
Non-fatal injury	1	0	0	0	0	4	0	0	5
Non reportable	0	0	0	0	0	0	0	0	0
Total	13	4	18	4	0	5	0	0	44
30% 9% 41% 9% 0% 11% 0% 0%									

89%
11%
0%
100%

Daly Ave., Colonel By Dr. to Nicholas St.

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	20	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	2	4	3	3	0	1	1	4	18
Non-fatal injury	1	0	0	0	0	1	0	0	2
Non reportable	0	0	0	0	0	0	0	0	0
Total	3	4	3	3	0	2	1	4	20
15% 20% 15% 15% 0% 10% 5% 20%									

90%
10%
0%
100%

Nicholas SB, Daly to Laurier

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	26	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	2	1	12	4	0	0	1	1	21
Non-fatal injury	2	0	2	0	0	1	0	0	5
Non reportable	0	0	0	0	0	0	0	0	0
Total	4	1	14	4	0	1	1	1	26
15% 4% 54% 15% 0% 4% 4% 4%									

81%
19%
0%
100%

Nicholas NB/Waller, Laurier to Daly

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016 - 2021	30	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	5	2	19	2	0	0	0	0	29
Non-fatal injury	0	0	0	0	0	1	0	0	1
Non reportable	0	0	0	0	0	0	0	0	0
Total	5	2	19	2	0	1	1	0	30
17% 7% 63% 7% 0% 3% 3% 0%									

97%
3%
0%
100%



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ DALHOUSIE ST

Traffic Control: Traffic signal

Total Collisions: 32

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-08, Sun,02:15	Snow	Rear end	P.D. only	Packed snow	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jul-17, Fri,13:26	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Truck - open	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Aug-14, Fri,11:39	Clear	Sideswipe	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Oct-31, Sat,00:47	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Truck and trailer	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Dec-23, Wed,10:30	Clear	Turning movement	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-08, Fri,12:00	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Delivery van	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-May-04, Wed,08:47	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Municipal transit bus	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Aug-03, Wed,07:14	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2016-Nov-27, Sun,23:28	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Truck - dump	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jan-08, Sun,14:18	Snow	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Mar-13, Mon,20:20	Clear	SMV unattended vehicle	P.D. only	Dry	South	Turning right	Truck - closed	Unattended vehicle	0
2017-Jun-28, Wed,16:51	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Municipal transit bus	Other motor vehicle	0
					South	Turning right	Passenger van	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ DALHOUSIE ST

Traffic Control: Traffic signal

Total Collisions: 32

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Aug-14, Mon,08:10	Clear	SMV other	P.D. only	Dry	West	Turning right	Municipal transit bus	Building or wall	0
2017-Aug-15, Tue,08:52	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Municipal transit bus	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Aug-30, Wed,14:20	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-22, Wed,06:55	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Dec-28, Thu,04:48	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Truck - tractor	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-May-16, Wed,16:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-14, Tue,12:41	Clear	Turning movement	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Sep-19, Wed,07:00	Clear	Turning movement	P.D. only	Dry	South	Turning right	Truck-other	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Sep-21, Fri,06:12	Rain	Sideswipe	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2018-Oct-19, Fri,08:00	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Unknown	Automobile, station wagon	Other motor vehicle	
2018-Oct-22, Mon,17:11	Clear	SMV other	P.D. only	Wet	West	Turning right	Truck - tractor	Pole (utility, power)	0
2018-Oct-28, Sun,09:48	Rain	Turning movement	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-13, Tue,21:13	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ DALHOUSIE ST

Traffic Control: Traffic signal

Total Collisions: 32

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Dec-14, Fri,14:55	Rain	Sideswipe	P.D. only	Wet	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Delivery van	Other motor vehicle	
2018-Dec-15, Sat,17:32	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-13, Sun,03:00	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-07, Thu,21:29	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Feb-14, Thu,09:40	Clear	Other	P.D. only	Wet	East	Reversing	Truck and trailer	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-27, Wed,07:35	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Automobile, station wagon	Other motor vehicle	0
					South	Unknown	Automobile, station wagon	Other motor vehicle	
2019-Dec-23, Mon,19:05	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jan-27, Tue,13:29	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2015-Feb-23, Mon,13:04	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Feb-25, Wed,09:25	Snow	Rear end	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Delivery van	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-28, Sat,11:20	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2015-Mar-11, Wed,10:12	Clear	Sideswipe	P.D. only	Wet	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Turning left	Truck - open	Other motor vehicle	
2015-Mar-18, Wed,16:45	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-24, Fri,14:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-09, Sat,16:42	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Stopped	Municipal transit bus	Other motor vehicle	
2015-Jun-03, Wed,21:15	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Jun-23, Tue,15:19	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Truck and trailer	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jun-26, Fri,14:08	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Turning left	Municipal transit bus	Other motor vehicle	
2015-Jul-01, Wed,12:30	Rain	Sideswipe	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2015-Jul-27, Mon,20:13	Rain	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2015-Sep-16, Wed,14:04	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	0
					North	Turning right	Municipal transit bus	Other motor vehicle	
2015-Sep-18, Fri,16:06	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Oct-02, Fri,18:16	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	
2015-Oct-26, Mon,17:52	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2015-Nov-09, Mon,11:30	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	
2015-Nov-10, Tue,13:10	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Unknown	Unknown	Other motor vehicle	
2015-Nov-17, Tue,13:52	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Truck and trailer	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Nov-19, Thu,17:54	Rain	Sideswipe	P.D. only	Wet	North	Turning right	Truck and trailer	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Nov-28, Sat,17:42	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Dec-11, Fri,21:49	Rain	Angle	P.D. only	Wet	East	Turning right	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-28, Mon,15:42	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jan-18, Mon,08:28	Clear	Sideswipe	P.D. only	Slush	North	Turning right	Truck - tank	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Jan-22, Fri,17:38	Clear	SMV other	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Pedestrian	1
2016-Mar-11, Fri,13:10	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Changing lanes	Delivery van	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Mar-25, Fri,13:35	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - tank	Other motor vehicle	
2016-Mar-28, Mon,15:16	Rain	Sideswipe	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Apr-14, Thu,12:15	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	
2016-May-21, Sat,12:49	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-May-30, Mon,14:44	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Intercity bus	Pedestrian	1
2016-Jun-18, Sat,11:44	Clear	SMV unattended vehicle	P.D. only	Dry	North	Turning right	Municipal transit bus	Unattended vehicle	0
2016-Aug-13, Sat,19:32	Rain	Turning movement	P.D. only	Wet	North	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Aug-15, Mon,10:03	Clear	Sideswipe	Non-fatal injury	Dry	South	Going ahead	Unknown	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2016-Sep-01, Thu,12:49	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Truck - dump	Other motor vehicle	
2016-Oct-15, Sat,12:08	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-Oct-19, Wed,14:00	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Oct-26, Wed,07:04	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Truck and trailer	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Nov-14, Mon,11:34	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Truck and trailer	Other motor vehicle	0
					North	Stopped	Truck-other	Other motor vehicle	
2016-Dec-13, Tue,23:54	Clear	Sideswipe	P.D. only	Slush	North	Turning right	Unknown	Other motor vehicle	0
					North	Slowing or stopping	Municipal transit bus	Other motor vehicle	
2016-Dec-31, Sat,22:10	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
					North	Stopped	Municipal transit bus	Other motor vehicle	
2017-Feb-16, Thu,00:59	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Construction equipment	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Feb-16, Thu,11:46	Clear	Sideswipe	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Construction equipment	Other motor vehicle	
2017-Mar-16, Thu,18:11	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Apr-16, Sun,15:08	Rain	Sideswipe	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2017-May-30, Tue,17:31	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Unknown	Pick-up truck	Other motor vehicle	
2017-Jun-01, Thu,11:35	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2017-Jun-21, Wed,17:17	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-01, Sat,13:28	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Aug-11, Fri,11:12	Clear	Rear end	P.D. only	Dry	North	Going ahead	Truck - dump	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Aug-31, Thu,15:23	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Sep-19, Tue,12:33	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Truck and trailer	Other motor vehicle	0
					North	Turning right	Truck - dump	Other motor vehicle	
2017-Sep-26, Tue,17:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Truck and trailer	Other motor vehicle	
2017-Sep-29, Fri,09:13	Clear	Turning movement	Non-fatal injury	Dry	North	Changing lanes	Bicycle	Other motor vehicle	0
					North	Turning right	Truck - tractor	Cyclist	
2017-Oct-15, Sun,09:51	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Dec-07, Thu,08:23	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	School bus	Other motor vehicle	
2017-Dec-07, Thu,12:30	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Truck - open	Other motor vehicle	
2018-Jan-10, Wed,17:02	Freezing Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Changing lanes	Automobile, station wagon	Other motor vehicle	
2018-Feb-13, Tue,03:30	Clear	Sideswipe	P.D. only	Wet	North	Turning left	Truck - dump	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-23, Fri,18:40	Freezing Rain	SMV other	Non-fatal injury	Ice	North	Going ahead	Automobile, station wagon	Pedestrian	1
2018-Mar-23, Fri,10:44	Clear	SMV unattended vehicle	P.D. only	Dry	South	Turning right	Municipal transit bus	Unattended vehicle	0



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Mar-28, Wed,17:04	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-06, Wed,11:17	Rain	Turning movement	P.D. only	Wet	South	Turning left	Municipal transit bus	Other motor vehicle	0
					North	Stopped	Truck - tractor	Other motor vehicle	
2018-Jun-15, Fri,08:55	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Jul-05, Thu,20:08	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2018-Aug-22, Wed,15:05	Clear	Turning movement	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2018-Aug-27, Mon,08:34	Clear	Turning movement	P.D. only	Dry	North	Turning left	Truck - closed	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2018-Sep-29, Sat,19:51	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-01, Thu,12:45	Clear	Sideswipe	P.D. only	Dry	North	Merging	Bus (other)	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2018-Nov-11, Sun,18:07	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-20, Tue,14:19	Clear	Sideswipe	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Truck and trailer	Other motor vehicle	
2018-Dec-31, Mon,17:00	Rain	Sideswipe	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-12, Sat,17:36	Clear	Rear end	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: BESSERER ST @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 85

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Jan-13, Sun,19:30	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2019-Jan-28, Mon,19:25	Clear	Angle	P.D. only	Packed snow	East	Going ahead	Unknown	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Apr-07, Sun,16:40	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Unknown	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-May-21, Tue,15:48	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-11, Thu,14:30	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Delivery van	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Aug-03, Sat,13:51	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Sep-07, Sat,19:00	Clear	Sideswipe	P.D. only	Dry	West	Turning right	Passenger van	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Nov-11, Mon,21:43	Snow	Sideswipe	P.D. only	Packed snow	North	Turning right	Truck and trailer	Other motor vehicle	0
					North	Turning right	Motorcycle	Other motor vehicle	
2019-Nov-27, Wed,13:11	Clear	Rear end	Non-fatal injury	Wet	North	Going ahead	Truck - dump	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-17, Tue,15:30	Snow	Sideswipe	P.D. only	Loose snow	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-23, Mon,07:39	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR/MACKENZIE AVE @ DALY AVE

Traffic Control: Traffic signal

Total Collisions: 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jan-30, Fri,13:38	Drifting Snow	Sideswipe	P.D. only	Loose snow	West	Turning right	Bus (other)	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Feb-14, Sat,13:45	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-21, Sat,10:00	Snow	Rear end	P.D. only	Slush	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-25, Wed,08:45	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Sep-27, Sun,12:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Aug-05, Fri,13:57	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2016-Aug-11, Thu,11:45	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-31, Tue,07:26	Clear	Rear end	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Apr-15, Sat,21:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2017-May-14, Sun,08:25	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-21, Wed,14:35	Clear	Rear end	P.D. only	Dry	North	Unknown	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR/MACKENZIE AVE @ DALY AVE

Traffic Control: Traffic signal

Total Collisions: 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Jul-27, Thu,16:45	Clear	Sideswipe	P.D. only	Dry	North	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-04, Mon,09:21	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Delivery van	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2017-Sep-07, Thu,12:13	Clear	Rear end	P.D. only	Dry	South	Turning left	Unknown	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Oct-07, Sat,13:38	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-16, Sat,22:45	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Unknown	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Jan-19, Fri,23:40	Clear	SMV other	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Ran off road	0
2018-Feb-01, Thu,21:30	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Unknown	Unknown	Other motor vehicle	
2018-Feb-10, Sat,00:00	Freezing Rain	Rear end	P.D. only	Wet	South	Stopped	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-28, Wed,22:11	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Mar-30, Fri,03:25	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Apr-22, Sun,12:32	Clear	Rear end	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR/MACKENZIE AVE @ DALY AVE

Traffic Control: Traffic signal

Total Collisions: 33

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Aug-28, Tue,14:00	Clear	Turning movement	P.D. only	Dry	North	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-29, Mon,16:47	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Overtaking	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-12, Wed,15:10	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Dec-20, Thu,18:30	Snow	Rear end	P.D. only	Loose snow	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-02, Wed,10:39	Clear	Rear end	P.D. only	Ice	North	Going ahead	Passenger van	Skidding/sliding	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jan-10, Thu,09:10	Snow	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Feb-22, Fri,16:00	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-19, Fri,08:00	Clear	Rear end	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-13, Sat,15:00	Clear	Sideswipe	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-03, Sun,08:40	Clear	Sideswipe	Non-fatal injury	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-20, Fri,21:03	Clear	Rear end	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-09, Mon,07:40	Snow	Turning movement	P.D. only	Loose snow	North	Making "U" turn	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Mar-05, Thu,19:02	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2015-Mar-10, Tue,06:10	Clear	Rear end	P.D. only	Wet	North	Turning left	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Apr-04, Sat,17:40	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-10, Fri,13:17	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-19, Tue,21:47	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Dec-07, Mon,08:55	Clear	Rear end	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Dec-26, Sat,15:15	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-29, Tue,19:23	Rain	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-13, Sat,10:12	Clear	Turning movement	Non-fatal injury	Ice	West	Overtaking	Automobile, station wagon	Other motor vehicle	0
					West	Making "U" turn	Automobile, station wagon	Other motor vehicle	
2016-Aug-16, Tue,15:21	Rain	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Nov-03, Thu,20:40	Rain	Sideswipe	Non-fatal injury	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-08, Tue,13:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Delivery van	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Jan-16, Mon,19:25	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jan-17, Tue,23:06	Freezing Rain	SMV other	P.D. only	Ice	South	Going ahead	Automobile, station wagon	Building or wall	0
2017-Feb-03, Fri,13:52	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-03, Fri,18:30	Clear	Turning movement	P.D. only	Slush	West	Turning left	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Mar-08, Wed,14:17	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Passenger van	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-23, Thu,12:37	Clear	Turning movement	P.D. only	Dry	East	Overtaking	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Truck-other	Other motor vehicle	
2017-Mar-25, Sat,13:06	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Apr-15, Sat,21:03	Rain	Angle	P.D. only	Wet	South	Going ahead	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jun-22, Thu,09:00	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Bicycle	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Cyclist	
2017-Jun-29, Thu,12:01	Rain	Other	P.D. only	Wet	West	Reversing	Bus (other)	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Jul-11, Tue,15:29	Rain	Sideswipe	P.D. only	Wet	South	Merging	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - dump	Other motor vehicle	
2017-Jul-23, Sun,20:15	Clear	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-03, Sun,13:04	Rain	Angle	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Cyclist	0
					South	Stopped	Bicycle	Other motor vehicle	
2017-Sep-11, Mon,14:16	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-24, Sun,02:01	Clear	SMV other	Non-fatal injury	Dry	West	Turning right	Unknown	Pedestrian	1
2017-Sep-25, Mon,07:10	Clear	Other	P.D. only	Dry	West	Reversing	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Delivery van	Other motor vehicle	
2017-Nov-21, Tue,10:26	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Nov-24, Fri,13:22	Clear	Rear end	P.D. only	Dry	East	Unknown	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Unknown	Other motor vehicle	
2018-Mar-06, Tue,13:29	Clear	Turning movement	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Delivery van	Other motor vehicle	
2018-May-27, Sun,22:23	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-23, Mon,08:58	Clear	Turning movement	P.D. only	Dry	East	Turning right	Truck - dump	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Dec-13, Thu,10:21	Clear	Turning movement	Non-fatal injury	Dry	South	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Tow truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Dec-31, Mon,11:25	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Delivery van	Other motor vehicle	
2019-Feb-16, Sat,17:00	Clear	Angle	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-11, Thu,16:20	Clear	Turning movement	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	
2019-Apr-11, Thu,19:00	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jun-29, Sat,15:20	Clear	Angle	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Sep-09, Mon,08:06	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Bus (other)	Other motor vehicle	0
					South	Slowing or stopping	Truck - dump	Other motor vehicle	
2019-Sep-14, Sat,10:18	Rain	Rear end	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-19, Tue,17:01	Clear	Sideswipe	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Delivery van	Other motor vehicle	
2019-Nov-21, Thu,15:11	Clear	Sideswipe	P.D. only	Dry	North	Merging	Automobile, station wagon	Other motor vehicle	0
					North	Merging	Automobile, station wagon	Other motor vehicle	
2019-Dec-18, Wed,08:50	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-26, Thu,10:46	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Delivery van	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 28

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jan-08, Thu,09:08	Clear	Rear end	P.D. only	Loose snow	South	Going ahead	Delivery van	Other motor vehicle	0
					South	Stopped	Delivery van	Other motor vehicle	
2015-Jan-29, Thu,15:50	Snow	Rear end	P.D. only	Loose snow	North	Turning left	Truck-other	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jun-26, Fri,12:07	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2015-Jun-26, Fri,21:53	Clear	Sideswipe	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-10, Fri,20:54	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Dec-18, Fri,16:24	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Bicycle	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Cyclist	
2016-Jan-22, Fri,11:51	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Pedestrian	1
2016-Feb-12, Fri,09:00	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Pedestrian	1
2016-Mar-17, Thu,12:26	Rain	Rear end	P.D. only	Wet	South	Going ahead	Delivery van	Other motor vehicle	0
					South	Slowing or stopping	Truck - tractor	Other motor vehicle	
2016-Jun-08, Wed,10:58	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Aug-02, Tue,16:49	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Nov-17, Thu,17:39	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 28

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Feb-05, Sun,19:55	Strong wind	SMV other	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other	0
2017-Aug-01, Tue,23:17	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Municipal transit bus	Pedestrian	1
2017-Oct-12, Thu,16:30	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Truck and trailer	Other motor vehicle	0
					South	Stopped	Truck - closed	Other motor vehicle	
2017-Oct-29, Sun,14:49	Rain	Turning movement	P.D. only	Wet	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Nov-18, Sat,16:24	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2017-Dec-08, Fri,16:22	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2018-Jan-02, Tue,10:08	Snow	SMV other	Non-fatal injury	Loose snow	North	Going ahead	Automobile, station wagon	Pedestrian	1
2018-Nov-06, Tue,12:35	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Truck - tractor	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-16, Fri,14:27	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-13, Thu,09:37	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-04, Fri,10:13	Clear	Sideswipe	P.D. only	Wet	North	Going ahead	Unknown	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Feb-22, Fri,07:17	Clear	Angle	P.D. only	Wet	North	Turning left	Truck and trailer	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-20, Wed,19:00	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: DALY AVE @ WALLER ST

Traffic Control: Traffic signal

Total Collisions: 28

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Apr-22, Mon,14:19	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - dump	Other motor vehicle	
2019-Jun-03, Mon,09:27	Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Delivery van	Other motor vehicle	
2019-Aug-21, Wed,09:31	Clear	Turning movement	P.D. only	Wet	South	Turning right	Truck - dump	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: DALY AVE btwn MACKENZIE AVE & NICHOLAS ST

Traffic Control: No control

Total Collisions: 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jul-11, Sat,11:56	Clear	Angle	P.D. only	Dry	North	Reversing	School bus	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-Sep-08, Tue,13:10	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-03, Sat,09:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-30, Sat,16:42	Clear	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Truck - closed	Other motor vehicle	
2016-Jul-07, Thu,09:00	Clear	Turning movement	P.D. only	Dry	West	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	0
					West	Making "U" turn	Automobile, station wagon	Other motor vehicle	
2016-Dec-08, Thu,19:15	Clear	SMV other	Non-fatal injury	Dry	South	Stopped	Automobile, station wagon	Pedestrian	1
2017-Apr-29, Sat,15:53	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: DALY AVE btwn MACKENZIE AVE & NICHOLAS ST

Traffic Control: No control

Total Collisions: 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Sep-28, Thu,06:21	Clear	SMV other	P.D. only	Dry	East	Pulling onto shoulder or toward curb	Truck and trailer	Other	0
2017-Sep-28, Thu,08:54	Clear	Other	P.D. only	Dry	East	Reversing	Truck - open	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-25, Sun,22:59	Clear	Sideswipe	P.D. only	Dry	East	Overtaking	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jun-13, Wed,12:50	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-19, Tue,08:24	Clear	Angle	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-21, Fri,10:50	Rain	Other	P.D. only	Wet	East	Reversing	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2018-Oct-06, Sat,06:19	Rain	SMV unattended vehicle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Unattended vehicle	0
2019-Jan-31, Thu,22:20	Clear	Turning movement	P.D. only	Wet	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-04, Mon,16:30	Clear	Other	P.D. only	Wet	East	Reversing	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-19, Fri,11:30	Clear	Other	P.D. only	Dry	East	Reversing	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-20, Fri,08:03	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Motorcycle	Other motor vehicle	
2019-Oct-16, Wed,13:37	Clear	Angle	P.D. only	Dry	South	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Unknown	Automobile, station wagon	Other motor vehicle	



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

Location: DALY AVE btwn MACKENZIE AVE & NICHOLAS ST

Traffic Control: No control

Total Collisions: 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Nov-03, Sun,18:23	Clear	Rear end	Non-fatal injury	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-14, Wed,08:45	Clear	Rear end	P.D. only	Ice	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning right	Unknown	Other motor vehicle	
2015-Jan-30, Fri,18:20	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-14, Sat,07:00	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Passenger van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-17, Tue,18:57	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Mar-24, Tue,09:40	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Passenger van	Other motor vehicle	0
					North	Turning left	Passenger van	Other motor vehicle	
2015-Apr-09, Thu,20:46	Rain	Angle	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Municipal transit bus	Other motor vehicle	
2015-Apr-18, Sat,02:16	Clear	Angle	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-21, Tue,08:20	Rain	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2015-May-26, Tue,17:00	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Pedestrian	1



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-May-29, Fri,19:53	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jun-15, Mon,15:30	Clear	Rear end	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jun-16, Tue,10:46	Clear	Other	P.D. only	Dry	North	Reversing	Pick-up truck	Other motor vehicle	0
					South	Stopped	Truck and trailer	Other motor vehicle	
2015-Jun-16, Tue,11:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2015-Aug-07, Fri,17:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Truck and trailer	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Aug-29, Sat,09:38	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2015-Sep-30, Wed,11:06	Clear	Angle	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					West	Turning left	Municipal transit bus	Other motor vehicle	
2015-Oct-24, Sat,20:54	Rain	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2015-Oct-27, Tue,07:03	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Merging	Pick-up truck	Other motor vehicle	
2015-Nov-18, Wed,15:07	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-02, Wed,20:47	Clear	SMV other	P.D. only	Dry	East	Turning right	Automobile, station wagon	Pole (sign, parking meter)	0
2015-Dec-09, Wed,11:20	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Jan-12, Tue,22:30	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Skidding/sliding	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jan-12, Tue,23:30	Snow	Sideswipe	P.D. only	Loose snow	South	Stopped	Pick-up truck	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2016-Jan-20, Wed,06:43	Clear	Rear end	P.D. only	Slush	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Mar-01, Tue,07:35	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Mar-28, Mon,12:21	Rain	Turning movement	P.D. only	Wet	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Apr-08, Fri,21:06	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-May-01, Sun,13:46	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-05, Thu,06:21	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-May-05, Thu,18:27	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-10, Tue,12:10	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Jun-13, Mon,13:07	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-18, Sat,03:09	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Aug-06, Sat,12:10	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Aug-29, Mon,14:17	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Truck - tank	Other motor vehicle	0
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2016-Sep-01, Thu,17:05	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Sep-14, Wed,20:05	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Municipal transit bus	Other motor vehicle	
2016-Sep-20, Tue,16:52	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2016-Sep-26, Mon,09:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Unknown	Other motor vehicle	
2016-Oct-01, Sat,22:57	Clear	Turning movement	P.D. only	Dry	South	Overtaking	Unknown	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Oct-03, Mon,11:42	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Bicycle	Other motor vehicle	0
					East	Turning right	Delivery van	Cyclist	
2016-Oct-10, Mon,16:30	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Nov-03, Thu,14:33	Rain	Sideswipe	P.D. only	Wet	East	Turning right	Truck and trailer	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Dec-01, Thu,08:50	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Delivery van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-09, Mon,21:30	Clear	SMV other	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Pedestrian	1



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Jan-19, Thu,17:31	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-02, Thu,08:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Municipal transit bus	Other motor vehicle	
2017-Feb-18, Sat,21:10	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-24, Fri,23:28	Clear	Other	P.D. only	Wet	South	Reversing	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-03, Fri,16:25	Clear	Angle	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2017-Mar-19, Sun,17:36	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Unknown	Other motor vehicle	
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2017-Apr-07, Fri,14:27	Rain	Rear end	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Passenger van	Other motor vehicle	
2017-Apr-23, Sun,12:50	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-May-03, Wed,15:26	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2017-May-05, Fri,16:20	Rain	Sideswipe	P.D. only	Wet	South	Turning left	Unknown	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2017-May-07, Sun,16:10	Rain	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Jul-09, Sun,18:15	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-21, Fri,15:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-25, Tue,19:48	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-17, Thu,12:38	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Changing lanes	Municipal transit bus	Other motor vehicle	
2017-Aug-29, Tue,09:21	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - closed	Other motor vehicle	
2017-Aug-31, Thu,14:58	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-19, Tue,12:55	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2017-Oct-07, Sat,01:45	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Oct-17, Tue,13:01	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - tractor	Other motor vehicle	
2017-Oct-24, Tue,22:07	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Nov-01, Wed,01:55	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-03, Fri,13:08	Clear	Angle	P.D. only	Dry	South	Turning right	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Nov-09, Thu,16:14	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-11, Sat,14:40	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-14, Tue,13:30	Clear	Other	P.D. only	Dry	South	Reversing	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-19, Tue,10:11	Snow	Rear end	P.D. only	Slush	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-23, Sat,16:22	Snow	Sideswipe	P.D. only	Slush	South	Turning left	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-09, Tue,13:36	Clear	Turning movement	Non-fatal injury	Wet	South	Turning left	Police vehicle	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-01, Thu,19:24	Clear	Sideswipe	Non-fatal injury	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Municipal transit bus	Other motor vehicle	
2018-Feb-11, Sun,09:27	Snow	Other	P.D. only	Slush	South	Reversing	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-15, Thu,13:32	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					North	Turning right	Municipal transit bus	Other motor vehicle	
2018-Mar-22, Thu,17:20	Clear	Other	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Fence/noice barrier	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2018-Mar-24, Sat,12:21	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - dump	Other motor vehicle	
2018-Apr-02, Mon,23:06	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Apr-04, Wed,15:10	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-04, Wed,15:58	Rain	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Apr-19, Thu,09:24	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Apr-20, Fri,09:46	Clear	Angle	P.D. only	Dry	North	Turning right	Municipal transit bus	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-03, Thu,09:38	Clear	Sideswipe	P.D. only	Wet	South	Overtaking	Truck - closed	Other motor vehicle	0
					South	Stopped	Truck - tractor	Other motor vehicle	
2018-May-29, Tue,21:09	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jul-02, Mon,17:31	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Intercity bus	Other motor vehicle	
2018-Jul-20, Fri,13:59	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-21, Tue,07:29	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-02, Sun,00:19	Clear	Rear end	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2018-Sep-28, Fri,12:53	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	



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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Oct-13, Sat,17:13	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2018-Oct-22, Mon,12:07	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck and trailer	Other motor vehicle	
2018-Oct-24, Wed,15:13	Clear	Rear end	P.D. only	Dry	North	Going ahead	Truck - open	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-28, Sun,15:45	Rain	Rear end	Non-reportable	Wet	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-29, Mon,18:23	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-08, Thu,04:12	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Intercity bus	Other motor vehicle	
2018-Nov-17, Sat,13:35	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-12, Wed,08:00	Clear	Sideswipe	P.D. only	Wet	North	Turning left	Unknown	Other motor vehicle	0
					North	Stopped	Truck - dump	Other motor vehicle	
2018-Dec-18, Tue,18:54	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2018-Dec-20, Thu,08:33	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Municipal transit bus	Other motor vehicle	
2019-Jan-11, Fri,14:13	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Jan-20, Sun,09:30	Snow	Rear end	P.D. only	Packed snow	North	Going ahead	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-24, Thu,13:45	Snow	Sideswipe	Non-reportable	Packed snow	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2019-Jan-29, Tue,10:06	Snow	Turning movement	P.D. only	Packed snow	South	Turning left	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Feb-07, Thu,18:34	Rain	Rear end	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-12, Tue,05:52	Clear	Rear end	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Mar-04, Mon,23:07	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
2019-Mar-05, Tue,15:21	Snow	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - tractor	Other motor vehicle	
2019-Mar-06, Wed,13:52	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-21, Thu,00:15	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-24, Wed,17:55	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Apr-25, Thu,11:50	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2019-May-01, Wed,10:48	Rain	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-31, Fri,14:00	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Turning left	Bus (other)	Other motor vehicle	
2019-Jun-06, Thu,22:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - dump	Other motor vehicle	
2019-Jun-13, Thu,03:00	Clear	SMV other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Curb	0
2019-Jun-25, Tue,19:00	Clear	Sideswipe	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Bus (other)	Other motor vehicle	
2019-Jul-03, Wed,11:50	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Passenger van	Other motor vehicle	
2019-Jul-05, Fri,06:30	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-15, Mon,18:27	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jul-23, Tue,14:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Unknown	Unknown	Other motor vehicle	
2019-Aug-02, Fri,21:00	Clear	Rear end	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-05, Mon,11:24	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Cyclist	



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Collision Details Report - Public Version

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

Location: LAURIER AVE @ NICHOLAS ST

Traffic Control: Traffic signal

Total Collisions: 130

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Sep-03, Tue,09:48	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Delivery van	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Nov-04, Mon,12:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-23, Sat,13:20	Clear	SMV other	Non-fatal injury	Dry	South	Unknown	Unknown	Pedestrian	1
2019-Dec-19, Thu,15:02	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2019-Dec-19, Thu,22:00	Clear	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Dec-29, Sun,17:41	Freezing Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: MACKENZIE KING BR/NICHOLAS ST SB RAMP @ WALLER

Traffic Control: Traffic signal

Total Collisions: 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Jun-29, Fri,10:17	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Truck - dump	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-22, Thu,08:15	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Municipal transit bus	Other motor vehicle	0
					South	Stopped	Truck and trailer	Other motor vehicle	

Location: MACKENZIE KING BR/WALLER ST @ NICHOLAS ST/WALL

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-19, Thu,16:48	Clear	Rear end	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Unknown	Truck and trailer	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: MACKENZIE KING BR/WALLER ST @ NICHOLAS ST/WALL

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Apr-24, Fri,10:40	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2015-Aug-14, Fri,08:29	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-26, Sat,15:28	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-30, Wed,17:20	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Municipal transit bus	Other motor vehicle	
2015-Nov-22, Sun,02:58	Rain	SMV other	Non-fatal injury	Wet	East	Turning left	Pick-up truck	Pedestrian	1
2016-Feb-04, Thu,18:48	Snow	Rear end	P.D. only	Ice	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Mar-19, Sat,10:55	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-16, Wed,21:33	Clear	Rear end	P.D. only	Wet	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-12, Thu,12:49	Snow	Rear end	P.D. only	Slush	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-29, Sun,14:28	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-17, Fri,18:32	Clear	SMV other	P.D. only	Dry	East	Going ahead	Municipal transit bus	Steel guide rail	0
2017-Apr-25, Tue,17:44	Rain	Angle	P.D. only	Wet	South	Going ahead	Truck - dump	Other motor vehicle	0
					East	Going ahead	Municipal transit bus	Other motor vehicle	
2017-Jun-16, Fri,07:36	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Passenger van	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: MACKENZIE KING BR/WALLER ST @ NICHOLAS ST/WALL

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Jun-20, Tue,11:06	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Truck-other	Other motor vehicle	
2017-Jun-22, Thu,09:53	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Truck - tank	Other motor vehicle	
2017-Jul-02, Sun,19:25	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Aug-11, Fri,17:34	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Municipal transit bus	Pedestrian	1
2017-Aug-15, Tue,11:20	Clear	Rear end	P.D. only	Dry	West	Turning left	Truck - tractor	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Aug-28, Mon,07:15	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Dec-06, Wed,16:20	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Pedestrian	1
2018-Jan-08, Mon,11:40	Snow	Rear end	P.D. only	Packed snow	West	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-28, Sun,01:45	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-14, Wed,07:41	Clear	SMV other	Non-fatal injury	Dry	South	Turning right	Unknown	Pedestrian	1
2018-Mar-10, Sat,10:50	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-May-08, Tue,10:20	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Municipal transit bus	Other motor vehicle	0
					West	Turning left	Municipal transit bus	Other motor vehicle	
2018-Aug-10, Fri,13:22	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: MACKENZIE KING BR/WALLER ST @ NICHOLAS ST/WALL

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Oct-21, Sun,21:28	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Oct-31, Wed,14:35	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Municipal transit bus	Other motor vehicle	
2019-Jan-18, Fri,09:26	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-19, Sat,18:32	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Tow truck	Other motor vehicle	
2019-Feb-09, Sat,16:40	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Feb-26, Tue,11:48	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2019-Mar-19, Tue,16:31	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Apr-22, Mon,17:15	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-06, Mon,15:41	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-06, Mon,21:10	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jul-14, Sun,19:45	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



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Collision Details Report - Public Version

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

Location: MACKENZIE KING BR/WALLER ST @ NICHOLAS ST/WALL

Traffic Control: Traffic signal

Total Collisions: 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Jul-24, Wed,10:05	Clear	Angle	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2019-Sep-16, Mon,17:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-25, Mon,09:29	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Truck - tractor	Other motor vehicle	
2019-Dec-06, Fri,17:55	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: NICHOLAS ST btwn DALY AVE & SB RAMP FROM WALLER/NICHOLAS/MACKENZIE KIN

Traffic Control: No control

Total Collisions: 12

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Apr-28, Tue,09:04	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Delivery van	Other motor vehicle	
2015-Jun-21, Sun,13:03	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-02, Thu,15:30	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-01, Thu,14:13	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Oct-20, Tue,16:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2016-Jun-04, Sat,12:28	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	



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

Location: NICHOLAS ST btwn DALY AVE & SB RAMP FROM WALLER/NICHOLAS/MACKENZIE KIN

Traffic Control: No control

Total Collisions: 12

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Mar-17, Fri,13:48	Clear	Other	P.D. only	Dry	North	Reversing	Pick-up truck	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2017-Dec-05, Tue,12:30	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Pedestrian	1
2018-May-26, Sat,10:46	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-17, Tue,14:49	Clear	Sideswipe	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2018-Dec-10, Mon,10:51	Clear	Sideswipe	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2018-Dec-11, Tue,15:30	Clear	Sideswipe	P.D. only	Dry	South	Overtaking	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	

Location: NICHOLAS ST NB @ RAMP TO NICHOLAS ST SB

Traffic Control: Traffic signal

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Apr-17, Tue,10:01	Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Truck - tractor	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	

Location: NICHOLAS ST NB btwn NICHOLAS ST NB OFF RAMP TO NICHOLAS ST SB & LAURIE

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-26, Thu,08:16	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-May-26, Thu,21:22	Rain	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	



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

Location: NICHOLAS ST NB btwn NICHOLAS ST NB OFF RAMP TO NICHOLAS ST SB & LAURIE

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Jan-18, Thu,19:11	Clear	Sideswipe	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - tractor	Other motor vehicle	
2018-Jul-27, Fri,15:44	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-02, Tue,11:02	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Truck - closed	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-06, Thu,11:21	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Truck - open	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: NICHOLAS ST NB btwn NICHOLAS ST NB OFF RAMP TO NICHOLAS ST SB & MACKEN

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-May-23, Sat,15:05	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2015-Jun-19, Fri,07:56	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck and trailer	Other motor vehicle	
2015-Aug-13, Thu,14:15	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-09, Fri,22:00	Clear	Sideswipe	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-12, Thu,11:47	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - dump	Other motor vehicle	
2019-Feb-27, Wed,11:48	Clear	Rear end	P.D. only	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: NICHOLAS ST SB btwn RAMP & LAURIER AVE E

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Feb-05, Fri,11:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2016-Apr-06, Wed,23:00	Snow	Rear end	P.D. only	Loose snow	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Overtaking	Pick-up truck	Other motor vehicle	
2016-Apr-26, Tue,12:37	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - car carrier	Other motor vehicle	
2017-Oct-01, Sun,15:15	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2018-Jul-10, Tue,08:49	Clear	Angle	P.D. only	Dry	East	Turning right	Bus (other)	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-27, Thu,20:16	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Changing lanes	Police vehicle	Other motor vehicle	
2018-Dec-04, Tue,13:17	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Truck and trailer	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: NICHOLAS ST/NICHOLAS ST SB @ SB RAMP FROM WALL

Traffic Control: Traffic signal

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Sep-18, Sun,14:02	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-13, Tue,20:46	Clear	Angle	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2018-Sep-21, Fri,13:30	Clear	Angle	P.D. only	Dry	North	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: NICHOLAS ST/NICHOLAS ST SB @ SB RAMP FROM WALL

Traffic Control: Traffic signal

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Dec-04, Tue,09:34	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-06, Sun,21:15	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-06, Tue,16:24	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Truck - closed	Other motor vehicle	0
					South	Overtaking	Automobile, station wagon	Other motor vehicle	

Location: STEWART ST @ WALLER ST

Traffic Control: Stop sign

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Mar-08, Wed,17:21	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Truck and trailer	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Nov-05, Sun,12:18	Rain	Rear end	P.D. only	Wet	North	Slowing or stopping	Truck - open	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Mar-15, Fri,16:30	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Unknown	Unknown	Other motor vehicle	
2019-May-28, Tue,10:15	Rain	Sideswipe	P.D. only	Wet	North	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: WALLER ST btwn DALY AVE & STEWART ST

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Jan-23, Fri,17:00	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: WALLER ST btwn DALY AVE & STEWART ST

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Oct-20, Thu,13:21	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck and trailer	Other motor vehicle	
2016-Dec-09, Fri,14:50	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Truck - closed	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-30, Wed,20:07	Clear	SMV other	Non-fatal injury	Spilled liquid	North	Going ahead	Motorcycle	Skidding/sliding	0
2018-Feb-17, Sat,18:35	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Oct-09, Wed,13:13	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Changing lanes	Automobile, station wagon	Other motor vehicle	
2019-Oct-15, Tue,17:45	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	

Location: WALLER ST btwn NICHOLAS ST & STEWART ST

Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2015-Feb-21, Sat,10:45	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Passenger van	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2015-Feb-25, Wed,14:23	Clear	Turning movement	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-25, Fri,16:25	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Truck and trailer	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2018-Jun-19, Tue,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	East	Reversing	Unknown	Unattended vehicle	0
2018-Sep-21, Fri,13:25	Clear	Sideswipe	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - tractor	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: WALLER ST btwn NICHOLAS ST & STEWART ST

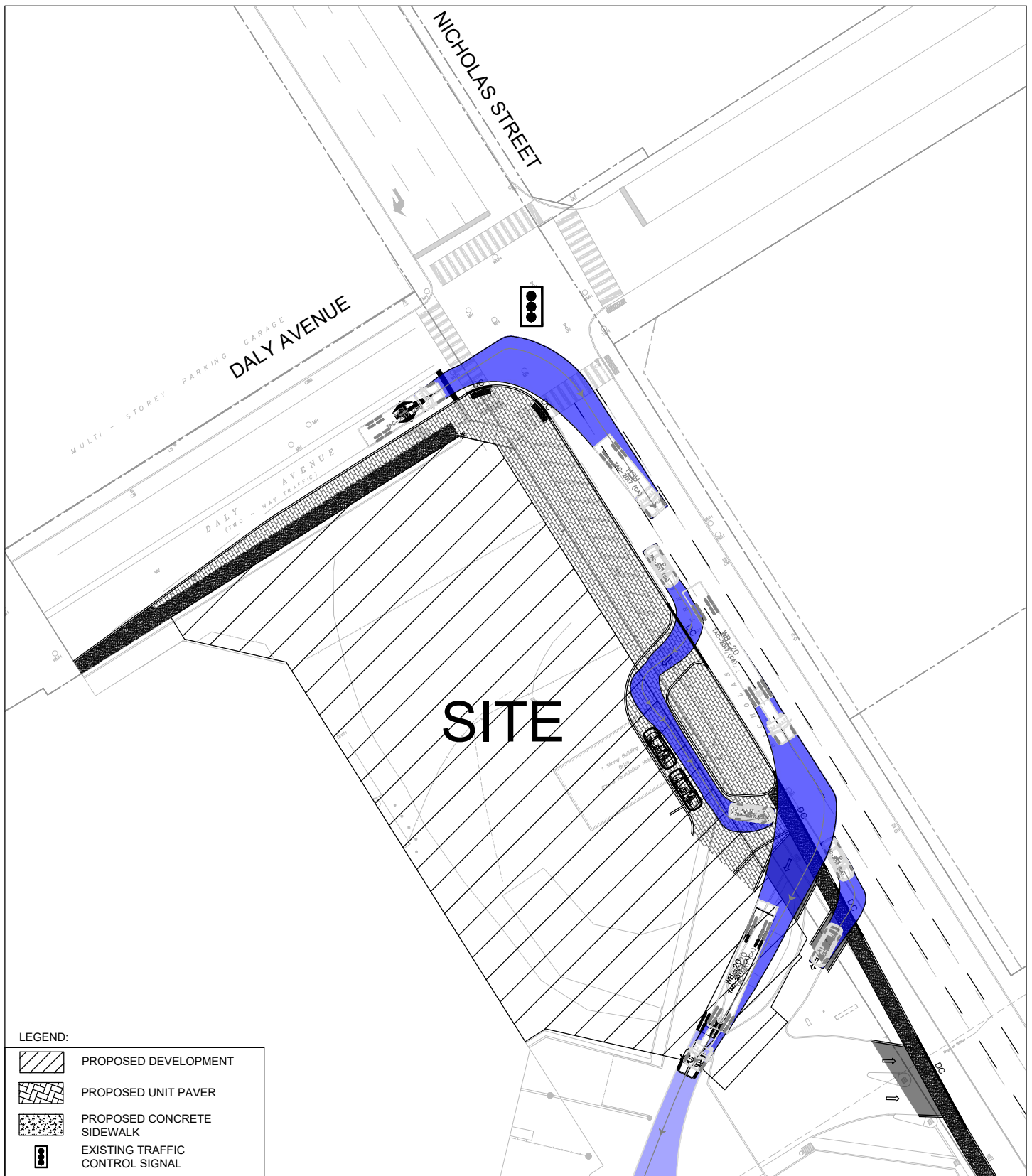
Traffic Control: No control

Total Collisions: 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Mar-20, Wed,19:34	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - tractor	Other motor vehicle	
2019-Jul-02, Tue,13:31	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Truck - dump	Other motor vehicle	

APPENDIX D

Swept Path Turning Movements



TURNING MOVEMENTS

70 NICHOLAS ST

Transportation Engineering Services Branch

Approved By:

Drawing No.:

Completed By:

PARSONS

RMA-2022-
TPD-XXX-D

Scale:

N.T.S.

Date:

APR.
2022

APPENDIX E

TDM CHECKLISTS

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: <i>Residential developments</i>		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 (<i>see Official Plan policy 4.3.3</i>)	☒
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 (<i>see Official Plan policy 4.3.12</i>)	☒

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		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 (<i>see Official Plan policy 4.3.10</i>)	☒
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 (<i>see Official Plan policy 4.3.10</i>)	☒
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 (<i>see Official Plan policy 4.3.11</i>)	☒
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: <i>Residential developments</i>		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 <i>Official Plan policy 4.3.6</i>)	☒
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 <i>Zoning By-law Section 111</i>)	☒
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 <i>Zoning By-law Section 111</i>)	☒
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 <i>Zoning By-law Section 111</i>)	☒
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: <i>Residential developments</i>		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 <i>Zoning By-law Section 94</i>)	☐
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 <i>Zoning By-law Section 104</i>)	☐
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 <i>Zoning By-law Section 111</i>)	☐
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)	☐

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: <i>Residential developments</i>		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 (<i>multi-family, condominium</i>)	☒ Proponent to provide local maps in lobby of building
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	☐

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (<i>multi-family, condominium</i>)	☒ Proponent to provide local maps in lobby of building
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	☐
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	☒ Move-in transit fare incentive to be provided on a per-residential-unit basis.
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 (<i>subdivision</i>)	☐
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 (<i>multi-family</i>)	☐ Recommended to developer to promote a cycling mode share
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	☐
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 (<i>condominium</i>)	☒ Parking cost to be unbundled
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	☒

TDM measures: <i>Residential developments</i>			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	☒ Multimodal travel info package to be provided with transit fare incentive
6.2 Personalized trip planning			
BETTER	★	6.2.1 Offer personalized trip planning to new residents	☐

APPENDIX F

MMLOS ANALYSIS

Multi-Modal Level of Service - Intersections Form

Consultant
Scenario
Comments

Parsons

70 Nicholas St

Project
Date

477845-01000

Oct-21

Unlocked Rows for Replicating

Unlocked Rows

INTERSECTIONS																																	
		Colonel By/Daly				Nicholas/Daly				Waller/Daly																							
Crossing Side		NORTH		SOUTH		EAST		WEST		NORTH		SOUTH		EAST		WEST		NORTH															
Pedestrian	Lanes	4		3		3		0 - 2		4		3		4		4		6		5		3		7									
	Median	No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m									
	Conflicting Left Turns	No left turn / Prohib.		Permissive		Protected/ Permissive		No left turn / Prohib.		Permissive		Permissive		Permissive		Permissive		Permissive		No left turn / Prohib.		Protected/ Permissive		No left turn / Prohib.									
	Conflicting Right Turns	No right turn		No right turn		Permissive or yield control		No right turn		Permissive or yield control		Permissive or yield control		No right turn		Permissive or yield control		Permissive or yield control		Permissive or yield control		Permissive or yield control		Permissive or yield control									
	Right Turns on Red (RTor) ?	RTOR prohibited		RTOR prohibited		RTOR prohibited		RTOR prohibited		RTOR allowed		RTOR prohibited		RTOR allowed		RTOR allowed		RTOR allowed		RTOR allowed		RTOR allowed		RTOR allowed									
	Ped Signal Leading Interval?	No		No		No		No		Yes		Yes		No		No		Yes		Yes		No		Yes									
	Right Turn Channel	No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		No Channel		Conv'tl without Receiving Lane									
	Corner Radius	3-5m		10-15m		10-15m		0-3m		5-10m		5-10m		5-10m		5-10m		10-15m		10-15m		10-15m		15-25m									
	Crosswalk Type	Zebra stripe hi-vis markings		Raised crosswalk		Zebra stripe hi-vis markings		Textured/coloured pavement		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Std transverse markings		Zebra stripe hi-vis markings									
	PETSI Score		74		85		76		107		59		79		62		57		30		50		70		19								
	Ped. Exposure to Traffic LoS		C		B		B		A		D		B		C		D		E		D		-		C								
	Cycle Length		120		120		120		120		100		100		100		100		100		100		100		120								
	Effective Walk Time		11		11		8		8		24		24		42		42		8		8		38		8								
Average Pedestrian Delay		50		50		52		52		29		29		17		17		42		42		19		52									
Pedestrian Delay LoS		E		E		E		E		C		C		B		B		E		E		-		B									
Level of Service		E		E		E		E		D		C		C		D		E		E		-		C									
		E								D								E															
Approach From		NORTH		SOUTH		EAST		WEST		NORTH		SOUTH		EAST		WEST		NORTH		SOUTH		EAST		WEST		NORTH							
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic				Mixed Traffic				Mixed Traffic				Mixed Traffic				Mixed Traffic				Mixed Traffic				Mixed Traffic							
	Right Turn Lane Configuration	≤ 50 m				≤ 50 m				≤ 50 m				≤ 50 m				≤ 50 m				≤ 50 m				≤ 50 m							
	Right Turning Speed	≤ 25 km/h				≤ 25 km/h				≤ 25 km/h				≤ 25 km/h				≤ 25 km/h				≤ 25 km/h				≤ 25 km/h							
	Cyclist relative to RT motorists	-		D		D		-		D		-		D		D		D		-		-		D		D							
	Separated or Mixed Traffic	-		Mixed Traffic		Mixed Traffic		-		Mixed Traffic		-		Mixed Traffic		Mixed Traffic		Mixed Traffic		-		-		Mixed Traffic		Mixed Traffic							
	Left Turn Approach	1 lane crossed				No lane crossed				≥ 2 lanes crossed				One lane crossed				One lane crossed				≥ 2 lanes crossed				One lane crossed							
	Operating Speed	> 40 to ≤ 50 km/h				> 40 to ≤ 50 km/h				> 50 to < 60 km/h				> 50 to < 60 km/h				> 50 to < 60 km/h				> 50 to < 60 km/h											
	Left Turning Cyclist	C		-		B		-		F		-		E		E		-		F		-		E		F							
	Level of Service	-		-		D		-		F		-		E		E		-		-		-		E		F							
Transit	Average Signal Delay	≤ 30 sec								≤ 20 sec								≤ 20 sec								≤ 10 sec							
	Level of Service	-		-		D		-		C		-		-		-		C		B		-		-		-							
		D								C								C															
Truck	Effective Corner Radius	10 - 15 m				< 10 m				< 10 m				< 10 m				< 10 m				10 - 15 m				> 15 m							
	Number of Receiving Lanes on Departure from Intersection	1				1				≥ 2				1				≥ 2				1				≥ 2							
	Level of Service	-		E		F		-		D		-		F		D		F		-		-		B		A							
		F								F								F															
Auto	Volume to Capacity Ratio	0.61 - 0.70								0.0 - 0.60								0.0 - 0.60															
	Level of Service	B								A								A															

for Replicating			Unlocked Rows for Replicating				Unlocked Rows for Replicating				Unlocked Rows for Replicating				
Laurier/Nicholas			Nicholas/Besserer				Dalhousie/Besserer				Waller/Besserer				
SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
7		5		4	3	3	4		3		3		3		
No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m	
No left turn / Prohib.		Protected		Permissive	No left turn / Prohib.	Permissive	Permissive		Permissive		Permissive		Permissive	Protected	
Protected/ Permissive		Permissive or yield control		No right turn	Permissive or yield control	No right turn	Permissive or yield control		Permissive or yield control		No right turn		Protected	Permissive or yield control	
RTOR allowed		RTOR allowed		RTOR allowed	RTOR prohibited	RTOR prohibited	RTOR allowed		RTOR allowed		RTOR allowed		RTOR prohibited	RTOR allowed	
Yes		No		No	Yes	Yes	No		No		No		No	No	
No Channel		No Channel		No Channel	No Channel	No Channel	No Channel		No Channel		No Channel		No Channel	No Channel	
10-15m		15-25m		3-5m	3-5m	3-5m	3-5m		3-5m		5-10m		15-25m	10-15m	
Zebra stripe hi-vis markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Std transverse markings	Std transverse markings		Std transverse markings		Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	
17		46		63	88	82	55		72		79		79	81	
F		D	-	C	B	B	D		-	C	-	B	-	B	B
120		120		100	100	100	100		100		100		100	100	
8		33		7	7	7	38		27		47		29	22	
52		32		43	43	43	19		27		14		25	30	
E		D	-	E	E	E	B		-	C	-	B	-	C	D
F	-	D	-	E	E	E	D	-	C	-	B	-	C	D	
F			E				D				D				
SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	
Pocket Bike Lane				Mixed Traffic	Mixed Traffic		Mixed Traffic		Mixed Traffic		Mixed Traffic	Mixed Traffic		Mixed Traffic	
Bike lane shifts to the left of right turn				≤ 50 m	≤ 50 m		≤ 50 m		≤ 50 m		≤ 50 m	≤ 50 m		≤ 50 m	
≤ 25 km/h				≤ 25 km/h	≤ 25 km/h		≤ 25 km/h		≤ 25 km/h		≤ 25 km/h	>25 km/h		≤ 25 km/h	
-	D	-	-	D	D	-	D	-	D	-	D	E	-	D	
-	Separated	-	-	Mixed Traffic	Mixed Traffic	-	Mixed Traffic	-	Mixed Traffic	-	Mixed Traffic	Mixed Traffic	-	Mixed Traffic	
One lane crossed				No lane crossed	One lane crossed		One lane crossed		No lane crossed		One lane crossed	≥ 2 lanes crossed		No lane crossed	
> 50 to < 60 km/h				> 50 to < 60 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h		> 50 to < 60 km/h		> 50 to < 60 km/h	> 50 to < 60 km/h		> 50 to < 60 km/h	
-	-	E	-	C	E	-	E	-	-	C	E	F	-	C	
-	-	-	-	D	E	-	E	-	-	-	E	F	-	D	
F			E				E				F				
≤ 30 sec			≤ 40 sec				≤ 20 sec		≤ 20 sec	≤ 20 sec	≤ 40 sec				
-	D	-	-	-	E	-	C	-	C	C	-	E	-	E	
D			E				C				E				
10 - 15 m	> 15 m	10 - 15 m		< 10 m			< 10 m		< 10 m		< 10 m	> 15 m		< 10 m	
≥ 2	≥ 2	≥ 2		1			≥ 2		≥ 2		≥ 2	≥ 2		≥ 2	
B	A	B	-	F	-	-	D	-	D	-	D	A	-	D	
B			F				D				D				
0.81 - 0.90			0.0 - 0.60				0.0 - 0.60				> 1.00				
D			A				A				F				

APPENDIX G

SYNCHRO ANALYSIS – EXISTING CONDITIONS

Existing AM

1: Colonel By & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	83	0	75	0	494	111	179	508	0
Future Volume (vph)	0	0	0	83	0	75	0	494	111	179	508	0
Satd. Flow (prot)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	87	0	79	0	520	117	188	535	0
Turn Type				Perm		Perm		NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			3		3			2			
Detector Phase	4	4		3		3		2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	16.3	16.3		25.4		25.4		22.7	22.7	10.6	22.7	
Total Split (s)	17.0	17.0		26.0		26.0		37.0	37.0	20.0	57.0	
Total Split (%)	17.0%	17.0%		26.0%		26.0%		37.0%	37.0%	20.0%	57.0%	
Yellow Time (s)	3.3	3.3		3.3		3.3		3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.1		3.1		3.4	3.4	2.3	3.4	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3		6.4		6.4		6.7	6.7	5.6	6.7	
Lead/Lag	Lag	Lag		Lead		Lead		Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes		Yes	Yes	Yes		
Recall Mode	None	None		None		None		C-Min	C-Min	None	C-Min	
Act Effct Green (s)				19.6		19.6		42.6	42.6	19.1	67.3	
Actuated g/C Ratio				0.20		0.20		0.43	0.43	0.19	0.67	
v/c Ratio				0.30		0.30		0.78	0.21	0.66	0.51	
Control Delay				28.4		28.9		35.6	20.6	48.4	10.2	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				28.4		28.9		35.6	20.6	48.4	10.2	
LOS				C		C		D	C	D	B	
Approach Delay					28.7			32.9			20.1	
Approach LOS					C			C			C	
Queue Length 50th (m)				11.4		10.3		85.3	14.1	33.8	45.8	
Queue Length 95th (m)				m22.9		m20.8		#151.7	28.3	53.6	69.0	
Internal Link Dist (m)		0.1			240.5			56.5			69.7	
Turn Bay Length (m)									25.0			
Base Capacity (vph)				292		261		669	568	288	1057	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.30		0.30		0.78	0.21	0.65	0.51	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.4

Intersection LOS: C

Intersection Capacity Utilization 61.1%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Colonel By & Daly

			
Ø1	Ø2 (R)	Ø3	Ø4
20 s	37 s	26 s	17 s
			
Ø6 (R)			
57 s			

Existing AM
2: Nicholas & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	74	156	81	136	22	0	0	0	10	513	94
Future Volume (vph)	22	74	156	81	136	22	0	0	0	10	513	94
Satd. Flow (prot)	0	1553	1335	0	1525	0	0	0	0	0	2981	1335
Flt Permitted		0.902			0.857						0.999	
Satd. Flow (perm)	0	1417	1335	0	1330	0	0	0	0	0	2981	1335
Satd. Flow (RTOR)					6							99
Lane Group Flow (vph)	0	101	164	0	251	0	0	0	0	0	551	99
Turn Type	Perm	NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4		4	8						6		6
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6					23.6	23.6	23.6
Total Split (s)	40.0	40.0	40.0	40.0	40.0					55.0	55.0	55.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%					55.0%	55.0%	55.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	0.0
Total Lost Time (s)		5.6	5.6		5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		34.4	34.4		34.4						49.4	49.4
Actuated g/C Ratio		0.34	0.34		0.34						0.49	0.49
v/c Ratio		0.21	0.36		0.54						0.37	0.14
Control Delay		14.8	18.1		26.7						35.8	19.3
Queue Delay		0.0	0.0		0.0						55.8	0.0
Total Delay		14.8	18.1		26.7						91.6	19.3
LOS		B	B		C						F	B
Approach Delay		16.8			26.7						80.6	
Approach LOS		B			C						F	
Queue Length 50th (m)		14.0	22.8		24.6						61.2	9.4
Queue Length 95th (m)		m22.9	m35.5		36.5						78.4	28.7
Internal Link Dist (m)		240.5			109.0			42.5			50.1	
Turn Bay Length (m)			35.0									
Base Capacity (vph)		487	459		461						1472	709
Starvation Cap Reductn		0	0		0						1040	0
Spillback Cap Reductn		0	0		0						0	0
Storage Cap Reductn		0	0		0						0	0
Reduced v/c Ratio		0.21	0.36		0.54						1.28	0.14

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 54.5

Intersection LOS: D

Intersection Capacity Utilization 57.5%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nicholas & Daly



Existing AM
2: Nicholas & Daly

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Existing AM
3: Waller & Daly

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	57	8	247	704	294	33	
Future Volume (vph)	57	8	247	704	294	33	
Satd. Flow (prot)	1492	1335	1492	2984	2939	0	
Flt Permitted	0.950		0.477				
Satd. Flow (perm)	1492	1335	749	2984	2939	0	
Satd. Flow (RTOR)		8			16		
Lane Group Flow (vph)	60	8	260	741	344	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		5	2	6		3
Permitted Phases		4	2				
Minimum Split (s)	26.9	26.9	10.6	15.6	23.6		5.0
Total Split (s)	28.0	28.0	17.0	67.0	50.0		5.0
Total Split (%)	28.0%	28.0%	17.0%	67.0%	50.0%		5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		2.0
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.6	5.6	5.6		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Act Effct Green (s)	22.1	22.1	61.4	61.4	44.4		
Actuated g/C Ratio	0.22	0.22	0.61	0.61	0.44		
v/c Ratio	0.18	0.03	0.48	0.40	0.26		
Control Delay	60.6	46.0	12.3	10.7	13.6		
Queue Delay	0.0	0.0	0.0	0.0	0.7		
Total Delay	60.6	46.0	12.3	10.7	14.3		
LOS	E	D	B	B	B		
Approach Delay	58.9			11.1	14.3		
Approach LOS	E			B	B		
Queue Length 50th (m)	12.7	0.4	21.7	35.6	11.6		
Queue Length 95th (m)	25.8	m5.2	34.8	47.4	20.2		
Internal Link Dist (m)	109.0			107.8	52.5		
Turn Bay Length (m)							
Base Capacity (vph)	329	301	544	1832	1313		
Starvation Cap Reductn	0	0	0	0	648		
Spillback Cap Reductn	0	0	0	23	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.18	0.03	0.48	0.41	0.52		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 53 (53%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 14.2

Intersection LOS: B

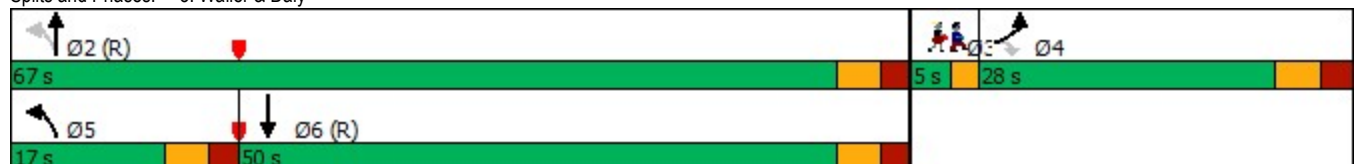
Intersection Capacity Utilization 49.4%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Waller & Daly



Existing AM

4: Nicholas & Laurier

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	198	309	0	327	149	727	1048	103	53	880	94
Future Volume (vph)	0	198	309	0	327	149	727	1048	103	53	880	94
Satd. Flow (prot)	0	2984	1335	0	2844	0	2895	2984	1335	1492	2984	1335
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	2984	1335	0	2844	0	2895	2984	1335	1492	2984	1335
Satd. Flow (RTOR)			110		71							189
Lane Group Flow (vph)	0	208	325	0	501	0	765	1103	108	56	926	99
Turn Type		NA	pm+ov		NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase		4	5		8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)		10.0	5.0		10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)		41.9	11.6		41.9		11.6	16.2	16.2	11.6	29.2	29.2
Total Split (s)		42.0	28.0		42.0		28.0	49.0	49.0	14.0	35.0	35.0
Total Split (%)		38.2%	25.5%		38.2%		25.5%	44.5%	44.5%	12.7%	31.8%	31.8%
Yellow Time (s)		3.3	3.3		3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)		3.6	3.3		3.6		3.3	2.9	2.9	3.3	2.9	2.9
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.9	6.6		6.9		6.6	6.2	6.2	6.6	6.2	6.2
Lead/Lag		Lag	Lead		Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode		None	None		None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)		31.2	68.4		31.2		30.3	52.1	52.1	9.4	28.8	28.8
Actuated g/C Ratio		0.28	0.62		0.28		0.28	0.47	0.47	0.09	0.26	0.26
v/c Ratio		0.25	0.37		0.58		0.96	0.78	0.17	0.44	1.19	0.20
Control Delay		29.9	7.8		31.0		64.7	32.3	21.4	57.7	133.2	0.9
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		29.9	7.8		31.0		64.7	32.3	21.4	57.7	133.2	0.9
LOS		C	A		C		E	C	C	E	F	A
Approach Delay		16.4			31.0			44.3			117.2	
Approach LOS		B			C			D			F	
Queue Length 50th (m)		17.1	19.5		39.4		~96.0	113.5	14.5	11.6	~126.1	0.0
Queue Length 95th (m)		26.5	35.9		55.8		#132.5	#163.4	27.8	23.6	#165.0	0.0
Internal Link Dist (m)		96.3			89.1			107.9			97.5	
Turn Bay Length (m)												
Base Capacity (vph)		952	871		955		798	1414	632	132	781	489
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.22	0.37		0.52		0.96	0.78	0.17	0.42	1.19	0.20

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 58.3

Intersection LOS: E

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

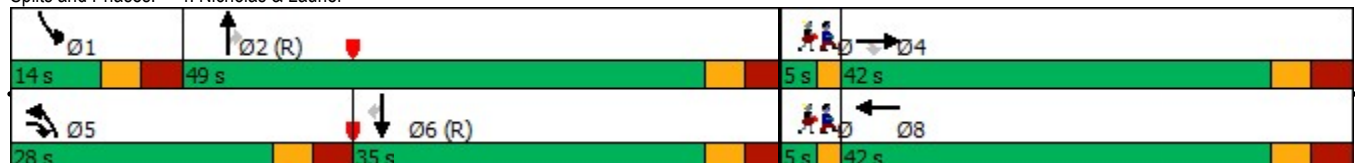
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Nicholas & Laurier



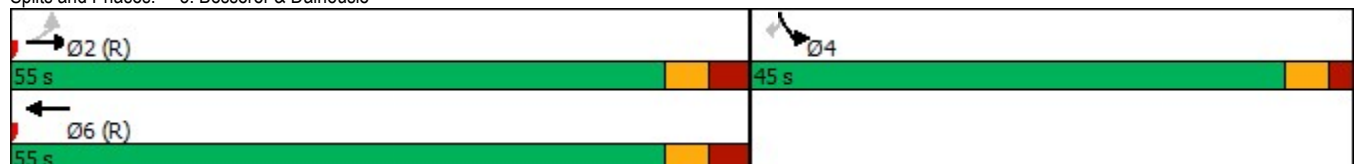
Existing AM
4: Nicholas & Laurier

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Existing AM
5: Besserer & Dalhousie

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	8	100	169	43	541
Future Volume (vph)	24	8	100	169	43	541
Satd. Flow (prot)	0	1514	2704	0	1492	1335
Flt Permitted		0.750			0.950	
Satd. Flow (perm)	0	1178	2704	0	1492	1335
Satd. Flow (RTOR)			178			569
Lane Group Flow (vph)	0	33	283	0	45	569
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Minimum Split (s)	16.4	16.4	31.4		25.2	25.2
Total Split (s)	55.0	55.0	55.0		45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%		45.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	3.1	3.1	3.1		1.9	1.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.4	6.4		5.2	5.2
Lead/Lag						
Lead-Lag Optimize?						
Act Effct Green (s)		48.6	48.6		39.8	39.8
Actuated g/C Ratio		0.49	0.49		0.40	0.40
v/c Ratio		0.06	0.20		0.08	0.65
Control Delay		9.4	16.3		19.3	5.8
Queue Delay		0.0	1.5		0.0	0.2
Total Delay		9.4	17.8		19.3	6.0
LOS		A	B		B	A
Approach Delay		9.4	17.8		7.0	
Approach LOS		A	B		A	
Queue Length 50th (m)		1.5	11.9		5.3	0.0
Queue Length 95th (m)		4.4	24.0		12.3	23.1
Internal Link Dist (m)		58.2	34.1		52.3	
Turn Bay Length (m)						
Base Capacity (vph)		572	1405		593	873
Starvation Cap Reductn		0	922		0	0
Spillback Cap Reductn		0	118		0	28
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.06	0.59		0.08	0.67
Intersection Summary						
Cycle Length: 100						
Actuated Cycle Length: 100						
Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBT, Start of Green						
Natural Cycle: 60						
Control Type: Pretimed						
Maximum v/c Ratio: 0.65						
Intersection Signal Delay: 10.3				Intersection LOS: B		
Intersection Capacity Utilization 58.6%				ICU Level of Service B		
Analysis Period (min) 15						

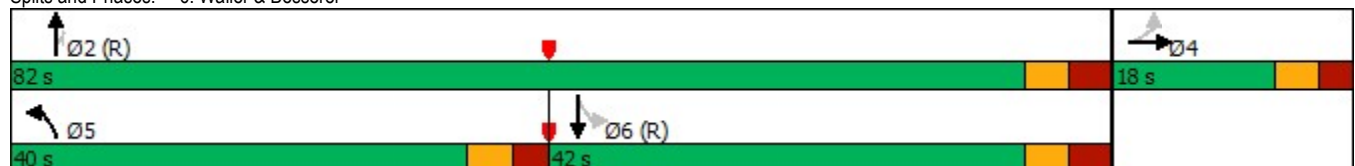
Splits and Phases: 5: Besserer & Dalhousie



Existing AM
6: Waller & Besserer

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	34	24	0	0	0	280	187	320	5	312	48
Future Volume (vph)	1	34	24	0	0	0	280	187	320	5	312	48
Satd. Flow (prot)	0	1484	0	0	0	0	2895	1425	1268	0	2922	0
Flt Permitted		0.999					0.950				0.951	
Satd. Flow (perm)	0	1484	0	0	0	0	2895	1425	1268	0	2781	0
Satd. Flow (RTOR)		25									19	
Lane Group Flow (vph)	0	62	0	0	0	0	295	281	253	0	384	0
Turn Type	Perm	NA					Prot	NA	Perm	Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4								2	6		
Detector Phase	4	4					5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0					5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	27.0	27.0					11.0	23.6	23.6	26.6	26.6	
Total Split (s)	18.0	18.0					40.0	82.0	82.0	42.0	42.0	
Total Split (%)	18.0%	18.0%					40.0%	82.0%	82.0%	42.0%	42.0%	
Yellow Time (s)	3.3	3.3					3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7					2.7	3.3	3.3	3.3	3.3	
Lost Time Adjust (s)		0.0					0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0					6.0	6.6	6.6		6.6	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None					None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)		18.8					15.6	73.1	73.1		50.2	
Actuated g/C Ratio		0.19					0.16	0.73	0.73		0.50	
v/c Ratio		0.21					0.65	0.27	0.27		0.27	
Control Delay		35.6					39.6	5.7	5.9		16.9	
Queue Delay		2.5					0.0	0.3	0.3		0.0	
Total Delay		38.1					39.7	6.0	6.3		16.9	
LOS		D					D	A	A		B	
Approach Delay		38.1						18.1			16.9	
Approach LOS		D						B			B	
Queue Length 50th (m)		8.2					28.4	31.1	28.2		23.0	
Queue Length 95th (m)		21.4					39.8	51.0	47.4		36.5	
Internal Link Dist (m)		34.1			111.4			52.5			48.1	
Turn Bay Length (m)												
Base Capacity (vph)		305					984	1144	1018		1405	
Starvation Cap Reductn		164					43	421	361		0	
Spillback Cap Reductn		0					0	0	0		0	
Storage Cap Reductn		0					0	0	0		0	
Reduced v/c Ratio		0.44					0.31	0.39	0.39		0.27	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.65												
Intersection Signal Delay: 18.7						Intersection LOS: B						
Intersection Capacity Utilization 55.6%						ICU Level of Service B						
Analysis Period (min) 15												

Splits and Phases: 6: Waller & Besserer



Existing AM
7: Nicholas & Besserer

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations	↗	↗	↗	↗		↗	
Traffic Volume (vph)	0	0	679	0	0	57	
Future Volume (vph)	0	0	679	0	0	57	
Satd. Flow (prot)	1571	1571	1417	1417	0	1359	
Flt Permitted			0.950	0.950			
Satd. Flow (perm)	1571	1571	1417	1417	0	1359	
Satd. Flow (RTOR)						1091	
Lane Group Flow (vph)	0	0	357	358	0	60	
Turn Type		Perm	Split	NA		Prot	
Protected Phases	2		6	6		4	3
Permitted Phases		2					
Minimum Split (s)	22.8	22.8	23.3	23.3		15.6	5.0
Total Split (s)	23.0	23.0	51.0	51.0		21.0	5.0
Total Split (%)	23.0%	23.0%	51.0%	51.0%		21.0%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3		3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5		2.3	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8		5.6	
Lead/Lag						Lag	Lead
Lead-Lag Optimize?						Yes	Yes
Act Effct Green (s)			45.2	45.2		15.4	
Actuated g/C Ratio			0.45	0.45		0.15	
v/c Ratio			0.56	0.56		0.05	
Control Delay			25.2	25.2		0.1	
Queue Delay			12.4	12.4		0.0	
Total Delay			37.5	37.6		0.1	
LOS			D	D		A	
Approach Delay				37.6	0.1		
Approach LOS				D	A		
Queue Length 50th (m)			50.4	50.7		0.0	
Queue Length 95th (m)			87.1	87.4		m0.0	
Internal Link Dist (m)	16.7			58.2	50.1		
Turn Bay Length (m)							
Base Capacity (vph)			640	640		1132	
Starvation Cap Reductn			257	256		0	
Spillback Cap Reductn			189	189		0	
Storage Cap Reductn			0	0		0	
Reduced v/c Ratio			0.93	0.93		0.05	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 34.7	Intersection LOS: C
Intersection Capacity Utilization 26.9%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 7: Nicholas & Besserer



Existing PM

1: Colonel By & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	113	0	88	0	510	117	232	478	0
Future Volume (vph)	0	0	0	113	0	88	0	510	117	232	478	0
Satd. Flow (prot)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	119	0	93	0	537	123	244	503	0
Turn Type				Perm		Perm		NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			3		3			2			
Detector Phase	4	4		3		3		2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	16.3	16.3		25.4		25.4		22.7	22.7	10.6	22.7	
Total Split (s)	17.0	17.0		26.0		26.0		38.0	38.0	39.0	77.0	
Total Split (%)	14.2%	14.2%		21.7%		21.7%		31.7%	31.7%	32.5%	64.2%	
Yellow Time (s)	3.3	3.3		3.3		3.3		3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.1		3.1		3.4	3.4	2.3	3.4	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3		6.4		6.4		6.7	6.7	5.6	6.7	
Lead/Lag	Lag	Lag		Lead		Lead		Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes		Yes	Yes	Yes		
Recall Mode	None	None		None		None		C-Min	C-Min	None	C-Min	
Act Effct Green (s)				19.6		19.6		56.9	56.9	24.8	87.3	
Actuated g/C Ratio				0.16		0.16		0.47	0.47	0.21	0.73	
v/c Ratio				0.49		0.43		0.72	0.19	0.79	0.44	
Control Delay				53.4		52.0		33.7	21.1	63.0	8.0	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				53.4		52.0		33.7	21.1	63.0	8.0	
LOS				D		D		C	C	E	A	
Approach Delay					52.8			31.3			25.9	
Approach LOS					D			C			C	
Queue Length 50th (m)				25.8		19.9		98.6	16.4	54.8	41.8	
Queue Length 95th (m)				44.7		36.8		#173.2	32.7	77.2	60.1	
Internal Link Dist (m)		0.1			240.5			56.5			69.7	
Turn Bay Length (m)									25.0			
Base Capacity (vph)				243		218		744	632	415	1142	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.49		0.43		0.72	0.19	0.59	0.44	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 31.6

Intersection LOS: C

Intersection Capacity Utilization 67.5%

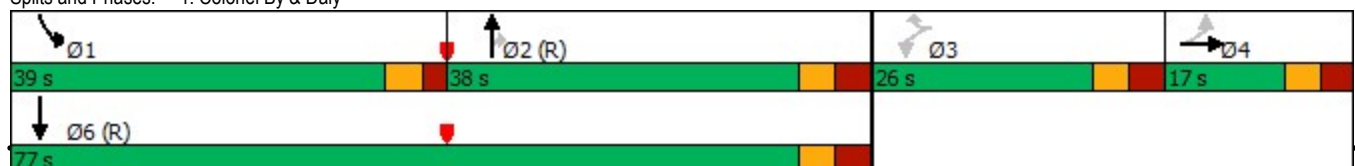
ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Colonel By & Daly



Existing PM
2: Nicholas & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	94	157	92	180	24	0	0	0	31	437	158
Future Volume (vph)	42	94	157	92	180	24	0	0	0	31	437	158
Satd. Flow (prot)	0	1547	1335	0	1530	0	0	0	0	0	2975	1335
Flt Permitted		0.837			0.848						0.997	
Satd. Flow (perm)	0	1315	1335	0	1317	0	0	0	0	0	2975	1335
Satd. Flow (RTOR)					5							166
Lane Group Flow (vph)	0	143	165	0	311	0	0	0	0	0	493	166
Turn Type	Perm	NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4		4	8						6		6
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6					23.6	23.6	23.6
Total Split (s)	40.0	40.0	40.0	40.0	40.0					55.0	55.0	55.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%					55.0%	55.0%	55.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	0.0
Total Lost Time (s)		5.6	5.6		5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		34.4	34.4		34.4						49.4	49.4
Actuated g/C Ratio		0.34	0.34		0.34						0.49	0.49
v/c Ratio		0.32	0.36		0.68						0.34	0.22
Control Delay		26.6	27.4		29.9						2.0	0.6
Queue Delay		0.0	0.0		0.0						2.4	2.3
Total Delay		26.6	27.4		29.9						4.4	2.9
LOS		C	C		C						A	A
Approach Delay		27.0			29.9						4.0	
Approach LOS		C			C						A	
Queue Length 50th (m)		20.2	23.7		46.5						1.8	0.0
Queue Length 95th (m)		36.0	41.2		73.2						m1.5	m0.0
Internal Link Dist (m)		240.5			109.0			39.8			50.1	
Turn Bay Length (m)			35.0									
Base Capacity (vph)		452	459		456						1469	743
Starvation Cap Reductn		0	0		0						822	455
Spillback Cap Reductn		0	0		0						0	0
Storage Cap Reductn		0	0		0						0	0
Reduced v/c Ratio		0.32	0.36		0.68						0.76	0.58

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nicholas & Daly



Existing PM
2: Nicholas & Daly

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Existing PM
3: Waller & Daly

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	67	21	147	1120	203	40	
Future Volume (vph)	67	21	147	1120	203	40	
Satd. Flow (prot)	1492	1335	1492	2984	2910	0	
Flt Permitted	0.950		0.529				
Satd. Flow (perm)	1492	1335	831	2984	2910	0	
Satd. Flow (RTOR)		22			30		
Lane Group Flow (vph)	71	22	155	1179	256	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		5	2	6		3
Permitted Phases		4	2				
Minimum Split (s)	26.9	26.9	10.6	15.6	23.6		5.0
Total Split (s)	28.0	28.0	15.0	67.0	52.0		5.0
Total Split (%)	28.0%	28.0%	15.0%	67.0%	52.0%		5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		2.0
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.6	5.6	5.6		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Act Effct Green (s)	22.1	22.1	61.4	61.4	46.4		
Actuated g/C Ratio	0.22	0.22	0.61	0.61	0.46		
v/c Ratio	0.22	0.07	0.27	0.64	0.19		
Control Delay	35.4	20.4	9.7	14.4	7.4		
Queue Delay	0.0	0.0	0.0	0.0	0.3		
Total Delay	35.4	20.4	9.7	14.4	7.6		
LOS	D	C	A	B	A		
Approach Delay	31.9			13.8	7.6		
Approach LOS	C			B	A		
Queue Length 50th (m)	12.4	0.6	11.9	70.6	5.0		
Queue Length 95th (m)	25.4	7.9	20.7	91.3	7.7		
Internal Link Dist (m)	109.0			107.8	52.5		
Turn Bay Length (m)							
Base Capacity (vph)	329	312	572	1832	1366		
Starvation Cap Reductn	0	0	0	0	594		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.22	0.07	0.27	0.64	0.33		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 13.9

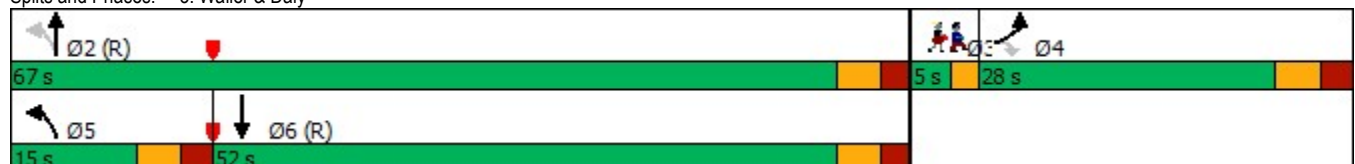
Intersection LOS: B

Intersection Capacity Utilization 54.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Waller & Daly



Existing PM

4: Nicholas & Laurier

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	343	600	0	241	152	325	1210	78	62	1173	153
Future Volume (vph)	0	343	600	0	241	152	325	1210	78	62	1173	153
Satd. Flow (prot)	0	2984	1335	0	2811	0	2895	2984	1335	1492	2984	1335
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	2984	1335	0	2811	0	2895	2984	1335	1492	2984	1335
Satd. Flow (RTOR)			80		118							129
Lane Group Flow (vph)	0	361	632	0	414	0	342	1274	82	65	1235	161
Turn Type		NA	pm+ov		NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase		4	5		8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)		10.0	5.0		10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)		41.9	11.6		41.9		11.6	16.2	16.2	11.6	29.2	29.2
Total Split (s)		43.0	22.0		43.0		22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)		35.8%	18.3%		35.8%		18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)		3.3	3.3		3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)		3.6	3.3		3.6		3.3	2.9	2.9	3.3	2.9	2.9
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.9	6.6		6.9		6.6	6.2	6.2	6.6	6.2	6.2
Lead/Lag		Lag	Lead		Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode		None	None		None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)		30.9	60.4		30.9		22.6	61.4	61.4	10.6	46.8	46.8
Actuated g/C Ratio		0.26	0.50		0.26		0.19	0.51	0.51	0.09	0.39	0.39
v/c Ratio		0.47	0.89		0.51		0.63	0.83	0.12	0.50	1.06	0.27
Control Delay		38.9	38.9		28.1		51.2	34.5	20.1	64.1	80.9	8.3
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		38.9	38.9		28.1		51.2	34.5	20.1	64.1	80.9	8.3
LOS		D	D		C		D	C	C	E	F	A
Approach Delay		38.9			28.1			37.2			72.1	
Approach LOS		D			C			D			E	
Queue Length 50th (m)		36.0	110.1		29.5		39.0	146.5	10.9	14.8	~178.0	4.9
Queue Length 95th (m)		50.1	#187.4		44.5		54.7	#209.0	22.4	28.3	#219.8	19.7
Internal Link Dist (m)		96.3			89.1			107.9			97.5	
Turn Bay Length (m)												
Base Capacity (vph)		897	712		928		545	1526	682	191	1163	599
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.40	0.89		0.45		0.63	0.83	0.12	0.34	1.06	0.27

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 41 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 47.9

Intersection LOS: D

Intersection Capacity Utilization 92.3%

ICU Level of Service F

Analysis Period (min) 15

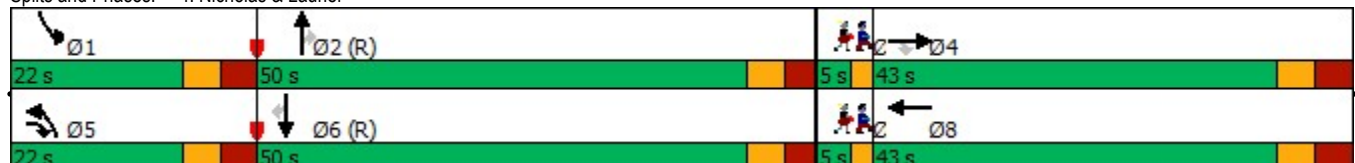
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Nicholas & Laurier



Existing PM
4: Nicholas & Laurier

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Existing PM
5: Besserer & Dalhousie

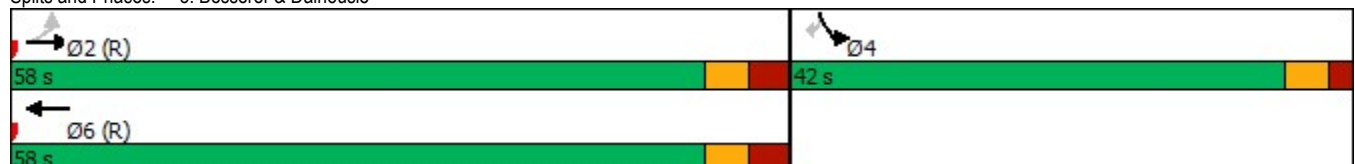
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	41	138	283	64	441
Future Volume (vph)	30	41	138	283	64	441
Satd. Flow (prot)	0	1538	2683	0	1492	1335
Flt Permitted		0.769			0.950	
Satd. Flow (perm)	0	1208	2683	0	1492	1335
Satd. Flow (RTOR)			298			464
Lane Group Flow (vph)	0	75	443	0	67	464
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Minimum Split (s)	16.4	16.4	31.4		25.2	25.2
Total Split (s)	58.0	58.0	58.0		42.0	42.0
Total Split (%)	58.0%	58.0%	58.0%		42.0%	42.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	3.1	3.1	3.1		1.9	1.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.4	6.4		5.2	5.2
Lead/Lag						
Lead-Lag Optimize?						
Act Effct Green (s)		51.6	51.6		36.8	36.8
Actuated g/C Ratio		0.52	0.52		0.37	0.37
v/c Ratio		0.12	0.29		0.12	0.59
Control Delay		9.4	4.2		21.8	5.7
Queue Delay		0.0	1.0		0.0	12.6
Total Delay		9.4	5.1		21.8	18.3
LOS		A	A		C	B
Approach Delay		9.4	5.1		18.7	
Approach LOS		A	A		B	
Queue Length 50th (m)		3.8	1.2		8.5	0.0
Queue Length 95th (m)		8.8	0.7		17.6	21.5
Internal Link Dist (m)		58.2	34.1		52.3	
Turn Bay Length (m)						
Base Capacity (vph)		623	1528		549	784
Starvation Cap Reductn		0	794		0	0
Spillback Cap Reductn		0	162		0	297
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.12	0.60		0.12	0.95

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 62 (62%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.59
 Intersection Signal Delay: 12.3
 Intersection Capacity Utilization 56.9%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

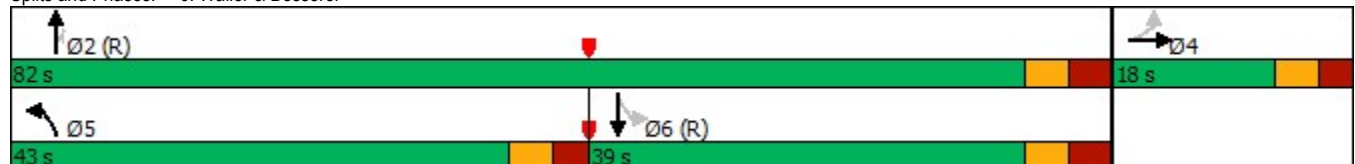
Splits and Phases: 5: Besserer & Dalhousie



Existing PM
6: Waller & Besserer

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	47	17	0	0	0	326	306	580	2	212	64
Future Volume (vph)	2	47	17	0	0	0	326	306	580	2	212	64
Satd. Flow (prot)	0	1514	0	0	0	0	2895	1414	1268	0	2883	0
Flt Permitted		0.999					0.950				0.953	
Satd. Flow (perm)	0	1514	0	0	0	0	2895	1414	1268	0	2747	0
Satd. Flow (RTOR)		14									41	
Lane Group Flow (vph)	0	69	0	0	0	0	343	493	440	0	292	0
Turn Type	Perm	NA					Prot	NA	Perm	Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4								2	6		
Detector Phase	4	4					5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0					5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	27.0	27.0					11.0	23.6	23.6	26.6	26.6	
Total Split (s)	18.0	18.0					43.0	82.0	82.0	39.0	39.0	
Total Split (%)	18.0%	18.0%					43.0%	82.0%	82.0%	39.0%	39.0%	
Yellow Time (s)	3.3	3.3					3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7					2.7	3.3	3.3	3.3	3.3	
Lost Time Adjust (s)		0.0					0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0					6.0	6.6	6.6		6.6	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None					None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)		18.8					17.3	73.1	73.1		48.5	
Actuated g/C Ratio		0.19					0.17	0.73	0.73		0.48	
v/c Ratio		0.23					0.68	0.48	0.48		0.22	
Control Delay		20.3					52.1	2.7	2.9		15.8	
Queue Delay		2.4					0.1	0.1	0.1		0.0	
Total Delay		22.7					52.1	2.8	3.0		15.8	
LOS		C					D	A	A		B	
Approach Delay		22.7						16.1			15.8	
Approach LOS		C						B			B	
Queue Length 50th (m)		10.2					26.3	6.5	5.7		15.6	
Queue Length 95th (m)		23.0					34.2	8.6	7.8		27.0	
Internal Link Dist (m)		34.1			111.4			52.5			48.1	
Turn Bay Length (m)												
Base Capacity (vph)		302					1071	1136	1018		1352	
Starvation Cap Reductn		150					81	108	95		0	
Spillback Cap Reductn		0					0	0	0		0	
Storage Cap Reductn		0					0	0	0		0	
Reduced v/c Ratio		0.45					0.35	0.48	0.48		0.22	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 7 (7%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.68												
Intersection Signal Delay: 16.4						Intersection LOS: B						
Intersection Capacity Utilization 66.4%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 6: Waller & Besserer



Existing PM
7: Nicholas & Besserer

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	578	0	0	47	
Future Volume (vph)	0	0	578	0	0	47	
Satd. Flow (prot)	1571	1571	2895	0	0	1359	
Flt Permitted			0.950				
Satd. Flow (perm)	1571	1571	2895	0	0	1359	
Satd. Flow (RTOR)						1091	
Lane Group Flow (vph)	0	0	608	0	0	49	
Turn Type		Perm	Prot			Prot	
Protected Phases	2		6			4	3
Permitted Phases		2					
Minimum Split (s)	22.8	22.8	20.6			15.6	5.0
Total Split (s)	23.0	23.0	21.0			51.0	5.0
Total Split (%)	23.0%	23.0%	21.0%			51.0%	5%
Yellow Time (s)	3.3	3.3	3.3			3.3	2.0
All-Red Time (s)	2.5	2.5	2.3			2.3	0.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0	
Total Lost Time (s)	5.8	5.8	5.6			5.6	
Lead/Lag						Lag	Lead
Lead-Lag Optimize?						Yes	Yes
Act Effct Green (s)			15.4			45.4	
Actuated g/C Ratio			0.15			0.45	
v/c Ratio			1.37			0.04	
Control Delay			212.3			0.1	
Queue Delay			0.0			0.0	
Total Delay			212.3			0.1	
LOS			F			A	
Approach Delay				212.3	0.1		
Approach LOS				F	A		
Queue Length 50th (m)			~81.7			0.0	
Queue Length 95th (m)			#114.9			m0.0	
Internal Link Dist (m)	16.7			58.2	50.1		
Turn Bay Length (m)							
Base Capacity (vph)			445			1212	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			1.37			0.04	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 5 (5%), Referenced to phase 2:EBT, Start of Green

Natural Cycle: 65

Control Type: Pretimed

Maximum v/c Ratio: 1.37

Intersection Signal Delay: 196.5

Intersection LOS: F

Intersection Capacity Utilization 22.7%

ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

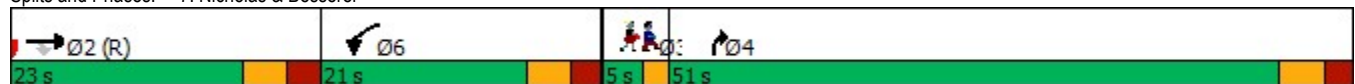
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: Nicholas & Besserer



APPENDIX H

SYNCHRO ANALYSIS – FUTURE TOTAL CONDITIONS

Future Total AM
1: Colonel By & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	83	0	75	0	494	112	181	508	0
Future Volume (vph)	0	0	0	83	0	75	0	494	112	181	508	0
Satd. Flow (prot)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1571	0	1492	0	1335	0	1571	1335	1492	1571	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	87	0	79	0	520	118	191	535	0
Turn Type				Perm		Perm		NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			3		3			2			
Detector Phase	4	4		3		3		2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	16.3	16.3		25.4		25.4		22.7	22.7	10.6	22.7	
Total Split (s)	17.0	17.0		26.0		26.0		37.0	37.0	20.0	57.0	
Total Split (%)	17.0%	17.0%		26.0%		26.0%		37.0%	37.0%	20.0%	57.0%	
Yellow Time (s)	3.3	3.3		3.3		3.3		3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.1		3.1		3.4	3.4	2.3	3.4	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3		6.4		6.4		6.7	6.7	5.6	6.7	
Lead/Lag	Lag	Lag		Lead		Lead		Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes		Yes	Yes	Yes		
Recall Mode	None	None		None		None		C-Min	C-Min	None	C-Min	
Act Effct Green (s)				19.6		19.6		42.2	42.2	19.5	67.3	
Actuated g/C Ratio				0.20		0.20		0.42	0.42	0.20	0.67	
v/c Ratio				0.30		0.30		0.78	0.21	0.66	0.51	
Control Delay				28.4		29.0		36.3	20.9	47.8	10.2	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				28.4		29.0		36.3	20.9	47.8	10.2	
LOS				C		C		D	C	D	B	
Approach Delay					28.7			33.5			20.1	
Approach LOS					C			C			C	
Queue Length 50th (m)				11.4		10.4		85.9	14.3	34.2	45.8	
Queue Length 95th (m)				m22.6		m20.6		#152.4	28.5	54.0	69.0	
Internal Link Dist (m)		0.1			240.5			56.5			69.7	
Turn Bay Length (m)									25.0			
Base Capacity (vph)				292		261		663	563	292	1057	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.30		0.30		0.78	0.21	0.65	0.51	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 61.2%

ICU Level of Service B

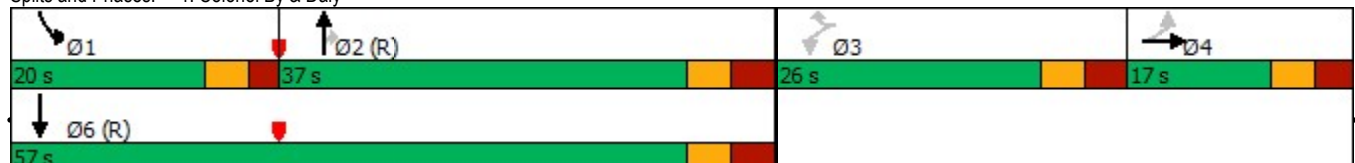
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Colonel By & Daly



Future Total AM
2: Nicholas & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	74	158	84	136	22	0	0	0	10	514	94
Future Volume (vph)	22	74	158	84	136	22	0	0	0	10	514	94
Satd. Flow (prot)	0	1553	1335	0	1525	0	0	0	0	0	2981	1335
Flt Permitted		0.902			0.854						0.999	
Satd. Flow (perm)	0	1417	1335	0	1325	0	0	0	0	0	2981	1335
Satd. Flow (RTOR)					5							99
Lane Group Flow (vph)	0	101	166	0	254	0	0	0	0	0	552	99
Turn Type	Perm	NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4		4	8						6		6
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6					23.6	23.6	23.6
Total Split (s)	40.0	40.0	40.0	40.0	40.0					55.0	55.0	55.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%					55.0%	55.0%	55.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	0.0
Total Lost Time (s)		5.6	5.6		5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		34.4	34.4		34.4						49.4	49.4
Actuated g/C Ratio		0.34	0.34		0.34						0.49	0.49
v/c Ratio		0.21	0.36		0.55						0.38	0.14
Control Delay		14.7	18.0		27.0						35.8	19.3
Queue Delay		0.0	0.0		0.0						55.8	0.0
Total Delay		14.7	18.0		27.0						91.6	19.3
LOS		B	B		C						F	B
Approach Delay		16.8			27.0						80.6	
Approach LOS		B			C						F	
Queue Length 50th (m)		14.0	23.1		25.0						61.4	9.3
Queue Length 95th (m)		m22.9	m35.8		37.0						78.5	28.9
Internal Link Dist (m)		240.5			109.0			42.5			50.1	
Turn Bay Length (m)			35.0									
Base Capacity (vph)		487	459		459						1472	709
Starvation Cap Reductn		0	0		0						1040	0
Spillback Cap Reductn		0	0		0						0	0
Storage Cap Reductn		0	0		0						0	0
Reduced v/c Ratio		0.21	0.36		0.55						1.28	0.14

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 54.4

Intersection LOS: D

Intersection Capacity Utilization 57.9%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nicholas & Daly



Future Total AM
2: Nicholas & Daly

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Future Total AM
3: Waller & Daly

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	57	8	250	704	294	33	
Future Volume (vph)	57	8	250	704	294	33	
Satd. Flow (prot)	1492	1335	1492	2984	2939	0	
Flt Permitted	0.950		0.477				
Satd. Flow (perm)	1492	1335	749	2984	2939	0	
Satd. Flow (RTOR)		8			16		
Lane Group Flow (vph)	60	8	263	741	344	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		5	2	6		3
Permitted Phases		4	2				
Minimum Split (s)	26.9	26.9	10.6	15.6	23.6		5.0
Total Split (s)	28.0	28.0	17.0	67.0	50.0		5.0
Total Split (%)	28.0%	28.0%	17.0%	67.0%	50.0%		5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		2.0
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.6	5.6	5.6		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Act Effct Green (s)	22.1	22.1	61.4	61.4	44.4		
Actuated g/C Ratio	0.22	0.22	0.61	0.61	0.44		
v/c Ratio	0.18	0.03	0.48	0.40	0.26		
Control Delay	60.4	46.1	12.4	10.7	13.6		
Queue Delay	0.0	0.0	0.0	0.0	0.7		
Total Delay	60.4	46.1	12.4	10.7	14.3		
LOS	E	D	B	B	B		
Approach Delay	58.7			11.2	14.3		
Approach LOS	E			B	B		
Queue Length 50th (m)	12.7	0.5	22.0	35.6	11.6		
Queue Length 95th (m)	25.8	m5.2	35.3	47.4	20.2		
Internal Link Dist (m)	109.0			107.8	52.5		
Turn Bay Length (m)							
Base Capacity (vph)	329	301	544	1832	1313		
Starvation Cap Reductn	0	0	0	0	648		
Spillback Cap Reductn	0	0	0	23	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.18	0.03	0.48	0.41	0.52		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 53 (53%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 14.2

Intersection LOS: B

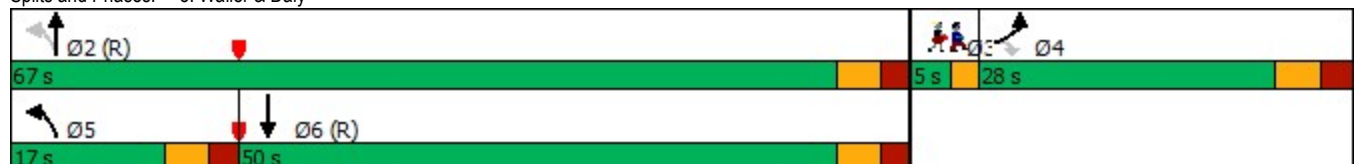
Intersection Capacity Utilization 49.6%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Waller & Daly



Future Total AM
4: Nicholas & Laurier

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑		↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (vph)	0	198	309	0	327	149	727	1050	103	56	886	99
Future Volume (vph)	0	198	309	0	327	149	727	1050	103	56	886	99
Satd. Flow (prot)	0	2984	1335	0	2844	0	2895	2984	1335	1492	2984	1335
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	2984	1335	0	2844	0	2895	2984	1335	1492	2984	1335
Satd. Flow (RTOR)			110		71							189
Lane Group Flow (vph)	0	208	325	0	501	0	765	1105	108	59	933	104
Turn Type		NA	pm+ov		NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase		4	5		8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)		10.0	5.0		10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)		41.9	11.6		41.9		11.6	16.2	16.2	11.6	29.2	29.2
Total Split (s)		42.0	28.0		42.0		28.0	49.0	49.0	14.0	35.0	35.0
Total Split (%)		38.2%	25.5%		38.2%		25.5%	44.5%	44.5%	12.7%	31.8%	31.8%
Yellow Time (s)		3.3	3.3		3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)		3.6	3.3		3.6		3.3	2.9	2.9	3.3	2.9	2.9
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.9	6.6		6.9		6.6	6.2	6.2	6.6	6.2	6.2
Lead/Lag		Lag	Lead		Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode		None	None		None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)		31.2	68.4		31.2		30.3	52.0	52.0	9.7	28.8	28.8
Actuated g/C Ratio		0.28	0.62		0.28		0.28	0.47	0.47	0.09	0.26	0.26
v/c Ratio		0.25	0.37		0.58		0.96	0.78	0.17	0.45	1.19	0.21
Control Delay		29.9	7.8		31.0		64.7	32.7	21.5	57.9	136.7	1.0
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		29.9	7.8		31.0		64.7	32.7	21.5	57.9	136.7	1.0
LOS		C	A		C		E	C	C	E	F	A
Approach Delay		16.4			31.0			44.4			119.6	
Approach LOS		B			C			D			F	
Queue Length 50th (m)		17.1	19.5		39.4		~96.0	114.4	14.6	12.2	~127.8	0.0
Queue Length 95th (m)		26.5	35.9		55.8		#132.5	#163.8	27.8	24.8	#166.7	0.0
Internal Link Dist (m)		96.3			89.1			107.9			97.5	
Turn Bay Length (m)												
Base Capacity (vph)		952	871		955		798	1409	630	135	781	489
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.22	0.37		0.52		0.96	0.78	0.17	0.44	1.19	0.21

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 35 (32%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.19

Intersection Signal Delay: 59.2

Intersection LOS: E

Intersection Capacity Utilization 85.7%

ICU Level of Service E

Analysis Period (min) 15

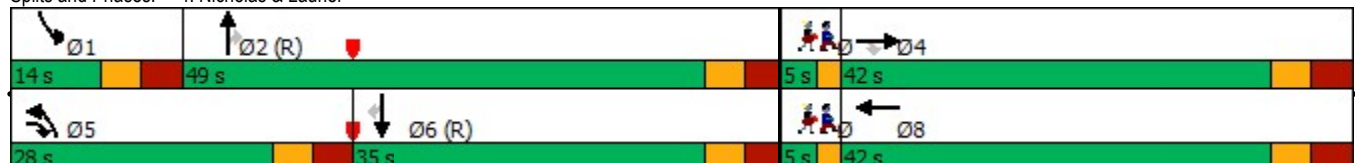
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Nicholas & Laurier



Future Total AM
4: Nicholas & Laurier

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Future Total AM
5: Besserer & Dalhousie

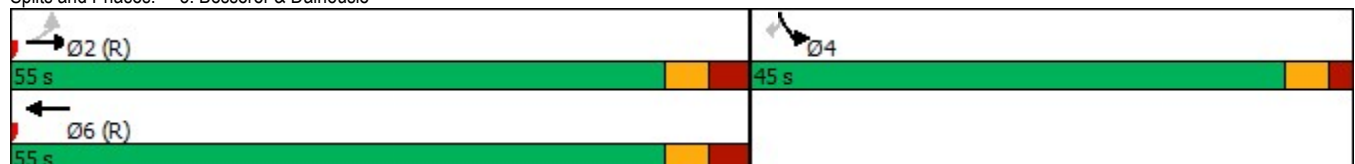
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	8	101	169	43	542
Future Volume (vph)	24	8	101	169	43	542
Satd. Flow (prot)	0	1514	2704	0	1492	1335
Flt Permitted		0.749			0.950	
Satd. Flow (perm)	0	1176	2704	0	1492	1335
Satd. Flow (RTOR)			178			571
Lane Group Flow (vph)	0	33	284	0	45	571
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Minimum Split (s)	16.4	16.4	31.4		25.2	25.2
Total Split (s)	55.0	55.0	55.0		45.0	45.0
Total Split (%)	55.0%	55.0%	55.0%		45.0%	45.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	3.1	3.1	3.1		1.9	1.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.4	6.4		5.2	5.2
Lead/Lag						
Lead-Lag Optimize?						
Act Effct Green (s)		48.6	48.6		39.8	39.8
Actuated g/C Ratio		0.49	0.49		0.40	0.40
v/c Ratio		0.06	0.20		0.08	0.65
Control Delay		9.5	16.3		19.3	5.8
Queue Delay		0.0	1.5		0.0	0.2
Total Delay		9.5	17.8		19.3	6.0
LOS		A	B		B	A
Approach Delay		9.5	17.8		7.0	
Approach LOS		A	B		A	
Queue Length 50th (m)		1.6	11.9		5.3	0.0
Queue Length 95th (m)		4.4	24.1		12.3	23.2
Internal Link Dist (m)		58.2	34.1		52.3	
Turn Bay Length (m)						
Base Capacity (vph)		571	1405		593	875
Starvation Cap Reductn		0	922		0	0
Spillback Cap Reductn		0	117		0	28
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.06	0.59		0.08	0.67

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 10.3
 Intersection Capacity Utilization 58.7%
 Analysis Period (min) 15

Intersection LOS: B
 ICU Level of Service B

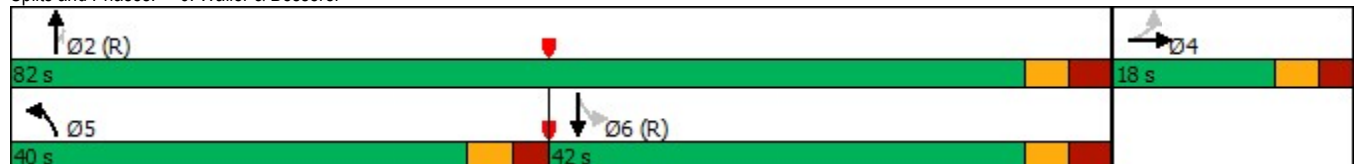
Splits and Phases: 5: Besserer & Dalhousie



Future Total AM
6: Waller & Besserer

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	34	24	0	0	0	280	187	320	5	312	49
Future Volume (vph)	1	34	24	0	0	0	280	187	320	5	312	49
Satd. Flow (prot)	0	1484	0	0	0	0	2895	1425	1268	0	2922	0
Flt Permitted		0.999					0.950				0.951	
Satd. Flow (perm)	0	1484	0	0	0	0	2895	1425	1268	0	2781	0
Satd. Flow (RTOR)		25									19	
Lane Group Flow (vph)	0	62	0	0	0	0	295	281	253	0	385	0
Turn Type	Perm	NA					Prot	NA	Perm	Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4								2	6		
Detector Phase	4	4					5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0					5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	27.0	27.0					11.0	23.6	23.6	26.6	26.6	
Total Split (s)	18.0	18.0					40.0	82.0	82.0	42.0	42.0	
Total Split (%)	18.0%	18.0%					40.0%	82.0%	82.0%	42.0%	42.0%	
Yellow Time (s)	3.3	3.3					3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7					2.7	3.3	3.3	3.3	3.3	
Lost Time Adjust (s)		0.0					0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0					6.0	6.6	6.6		6.6	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None					None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)		18.8					15.6	73.1	73.1		50.2	
Actuated g/C Ratio		0.19					0.16	0.73	0.73		0.50	
v/c Ratio		0.21					0.65	0.27	0.27		0.27	
Control Delay		35.7					39.6	5.7	5.9		16.9	
Queue Delay		2.5					0.0	0.3	0.3		0.0	
Total Delay		38.2					39.7	6.0	6.3		16.9	
LOS		D					D	A	A		B	
Approach Delay		38.2						18.1			16.9	
Approach LOS		D						B			B	
Queue Length 50th (m)		8.2					28.4	31.1	28.2		23.1	
Queue Length 95th (m)		21.4					39.8	51.0	47.4		36.7	
Internal Link Dist (m)		34.1			111.4			52.5			48.1	
Turn Bay Length (m)												
Base Capacity (vph)		305					984	1144	1018		1405	
Starvation Cap Reductn		164					43	421	361		0	
Spillback Cap Reductn		0					0	0	0		0	
Storage Cap Reductn		0					0	0	0		0	
Reduced v/c Ratio		0.44					0.31	0.39	0.39		0.27	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.65												
Intersection Signal Delay: 18.7						Intersection LOS: B						
Intersection Capacity Utilization 55.6%						ICU Level of Service B						
Analysis Period (min) 15												

Splits and Phases: 6: Waller & Besserer



Future Total AM
7: Nicholas & Besserer

	→	↘	↙	←	↖	↗	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations	↗	↗	↗	↗		↗	
Traffic Volume (vph)	0	0	680	0	0	57	
Future Volume (vph)	0	0	680	0	0	57	
Satd. Flow (prot)	1571	1571	1417	1417	0	1359	
Flt Permitted			0.950	0.950			
Satd. Flow (perm)	1571	1571	1417	1417	0	1359	
Satd. Flow (RTOR)						1091	
Lane Group Flow (vph)	0	0	358	358	0	60	
Turn Type		Perm	Split	NA		Prot	
Protected Phases	2		6	6		4	3
Permitted Phases		2					
Minimum Split (s)	22.8	22.8	23.3	23.3		15.6	5.0
Total Split (s)	23.0	23.0	51.0	51.0		21.0	5.0
Total Split (%)	23.0%	23.0%	51.0%	51.0%		21.0%	5%
Yellow Time (s)	3.3	3.3	3.3	3.3		3.3	2.0
All-Red Time (s)	2.5	2.5	2.5	2.5		2.3	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.8	5.8	5.8	5.8		5.6	
Lead/Lag						Lag	Lead
Lead-Lag Optimize?						Yes	Yes
Act Effct Green (s)			45.2	45.2		15.4	
Actuated g/C Ratio			0.45	0.45		0.15	
v/c Ratio			0.56	0.56		0.05	
Control Delay			25.2	25.2		0.1	
Queue Delay			12.4	12.4		0.0	
Total Delay			37.6	37.6		0.1	
LOS			D	D		A	
Approach Delay				37.6	0.1		
Approach LOS				D	A		
Queue Length 50th (m)			50.7	50.7		0.0	
Queue Length 95th (m)			87.7	87.7		m0.0	
Internal Link Dist (m)	16.7			58.2	50.1		
Turn Bay Length (m)							
Base Capacity (vph)			640	640		1132	
Starvation Cap Reductn			256	256		0	
Spillback Cap Reductn			189	189		0	
Storage Cap Reductn			0	0		0	
Reduced v/c Ratio			0.93	0.93		0.05	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 70	
Control Type: Pretimed	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 34.7	Intersection LOS: C
Intersection Capacity Utilization 26.9%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 7: Nicholas & Besserer



Future Total AM
8: Nicholas & Site

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	0	0	749	7
Future Vol, veh/h	0	14	0	0	749	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	0	0	788	7
Major/Minor	Minor2		Major2			
Conflicting Flow All	-	398	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	601	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	601	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		SB			
HCM Control Delay, s	11.1	-	0	-	-	-
HCM LOS	B	-	-	-	-	-
Minor Lane/Major Mvmt	EBLn1	SBT	SBR			
Capacity (veh/h)	601	-	-			
HCM Lane V/C Ratio	0.025	-	-			
HCM Control Delay (s)	11.1	-	-			
HCM Lane LOS	B	-	-			
HCM 95th %tile Q(veh)	0.1	-	-			

Future Total AM
2: Nicholas & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	74	158	84	136	22	0	0	0	10	514	94
Future Volume (vph)	22	74	158	84	136	22	0	0	0	10	514	94
Satd. Flow (prot)	0	1433	0	0	1525	0	0	0	0	0	2981	1335
Flt Permitted		0.961			0.810						0.999	
Satd. Flow (perm)	0	1383	0	0	1257	0	0	0	0	0	2981	1335
Satd. Flow (RTOR)					7							99
Lane Group Flow (vph)	0	267	0	0	254	0	0	0	0	0	552	99
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4			8						6		6
Minimum Split (s)	23.6	23.6		23.6	23.6					23.6	23.6	23.6
Total Split (s)	51.0	51.0		51.0	51.0					44.0	44.0	44.0
Total Split (%)	51.0%	51.0%		51.0%	51.0%					44.0%	44.0%	44.0%
Yellow Time (s)	3.3	3.3		3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		5.6			5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		45.4			45.4						38.4	38.4
Actuated g/C Ratio		0.45			0.45						0.38	0.38
v/c Ratio		0.43			0.44						0.48	0.17
Control Delay		11.2			38.4						12.0	5.3
Queue Delay		0.0			0.0						1.8	0.0
Total Delay		11.2			38.4						13.8	5.3
LOS		B			D						B	A
Approach Delay		11.2			38.4						12.5	
Approach LOS		B			D						B	
Queue Length 50th (m)		7.6			52.9						46.8	8.5
Queue Length 95th (m)		25.6			77.4						67.8	13.1
Internal Link Dist (m)		240.5			109.0			42.5			50.1	
Turn Bay Length (m)												
Base Capacity (vph)		627			574						1144	573
Starvation Cap Reductn		0			0						412	0
Spillback Cap Reductn		0			0						0	0
Storage Cap Reductn		0			0						0	0
Reduced v/c Ratio		0.43			0.44						0.75	0.17

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 50 (50%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 17.8

Intersection LOS: B

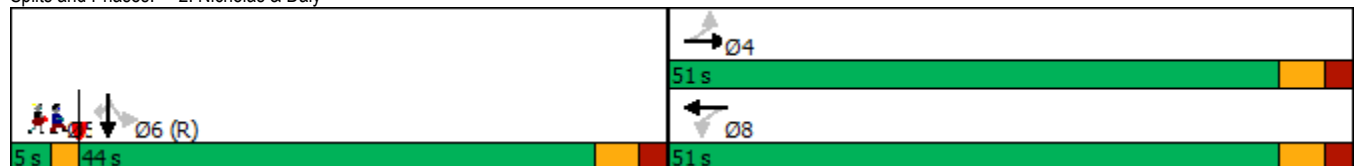
Intersection Capacity Utilization 63.8%

ICU Level of Service B

Analysis Period (min) 15

Description: 50 second offset

Splits and Phases: 2: Nicholas & Daly



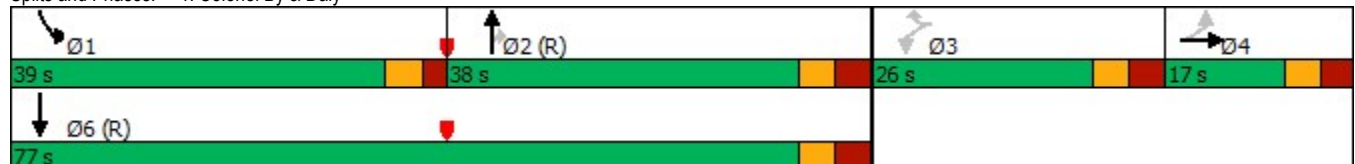
Future Total AM
2: Nicholas & Daly

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Future Total PM
1: Colonel By & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	113	0	88	0	510	118	235	478	0
Future Volume (vph)	0	0	0	113	0	88	0	510	118	235	478	0
Satd. Flow (prot)	0	1745	0	1658	0	1483	0	1745	1483	1658	1745	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	1745	0	1658	0	1483	0	1745	1483	1658	1745	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	0	0	119	0	93	0	537	124	247	503	0
Turn Type				Perm		Perm		NA	Perm	Prot	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4			3		3			2			
Detector Phase	4	4		3		3		2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0		10.0		10.0	10.0	5.0	10.0	
Minimum Split (s)	16.3	16.3		25.4		25.4		22.7	22.7	10.6	22.7	
Total Split (s)	17.0	17.0		26.0		26.0		38.0	38.0	39.0	77.0	
Total Split (%)	14.2%	14.2%		21.7%		21.7%		31.7%	31.7%	32.5%	64.2%	
Yellow Time (s)	3.3	3.3		3.3		3.3		3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.1		3.1		3.4	3.4	2.3	3.4	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3		6.4		6.4		6.7	6.7	5.6	6.7	
Lead/Lag	Lag	Lag		Lead		Lead		Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes		Yes		Yes	Yes	Yes		
Recall Mode	None	None		None		None		C-Min	C-Min	None	C-Min	
Act Effct Green (s)				19.6		19.6		58.5	58.5	23.2	87.3	
Actuated g/C Ratio				0.16		0.16		0.49	0.49	0.19	0.73	
v/c Ratio				0.44		0.38		0.63	0.17	0.77	0.40	
Control Delay				51.1		50.2		28.3	19.5	61.6	7.3	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				51.1		50.2		28.3	19.5	61.6	7.3	
LOS				D		D		C	B	E	A	
Approach Delay					50.7			26.6			25.2	
Approach LOS					D			C			C	
Queue Length 50th (m)				25.6		19.8		91.0	15.9	55.7	39.9	
Queue Length 95th (m)				44.0		36.3		145.6	31.2	77.8	56.4	
Internal Link Dist (m)		0.1			240.5			56.5			69.7	
Turn Bay Length (m)									25.0			
Base Capacity (vph)				270		242		851	723	461	1269	
Starvation Cap Reductn				0		0		0	0	0	0	
Spillback Cap Reductn				0		0		0	0	0	0	
Storage Cap Reductn				0		0		0	0	0	0	
Reduced v/c Ratio				0.44		0.38		0.63	0.17	0.54	0.40	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 40 (33%), Referenced to phase 2:NBT and 6:SBT, Start of Green												
Natural Cycle: 100												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.77												
Intersection Signal Delay: 29.1				Intersection LOS: C								
Intersection Capacity Utilization 62.3%				ICU Level of Service B								
Analysis Period (min) 15												

Splits and Phases: 1: Colonel By & Daly



Future Total PM
2: Nicholas & Daly

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	94	161	97	180	24	0	0	0	31	439	158
Future Volume (vph)	42	94	161	97	180	24	0	0	0	31	439	158
Satd. Flow (prot)	0	1719	1483	0	1698	0	0	0	0	0	3306	1483
Flt Permitted		0.835			0.842						0.997	
Satd. Flow (perm)	0	1457	1483	0	1453	0	0	0	0	0	3306	1483
Satd. Flow (RTOR)					5							166
Lane Group Flow (vph)	0	143	169	0	316	0	0	0	0	0	495	166
Turn Type	Perm	NA	Perm	Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4		4	8						6		6
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6					23.6	23.6	23.6
Total Split (s)	40.0	40.0	40.0	40.0	40.0					55.0	55.0	55.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%					55.0%	55.0%	55.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0	0.0		0.0						0.0	0.0
Total Lost Time (s)		5.6	5.6		5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		34.4	34.4		34.4						49.4	49.4
Actuated g/C Ratio		0.34	0.34		0.34						0.49	0.49
v/c Ratio		0.29	0.33		0.63						0.30	0.20
Control Delay		25.8	26.6		27.0						1.5	0.3
Queue Delay		0.0	0.0		0.0						1.6	1.9
Total Delay		25.8	26.6		27.0						3.2	2.1
LOS		C	C		C						A	A
Approach Delay		26.2			27.0						2.9	
Approach LOS		C			C						A	
Queue Length 50th (m)		20.0	24.0		46.2						1.8	0.0
Queue Length 95th (m)		35.3	41.0		71.6						m1.5	m0.0
Internal Link Dist (m)		240.5			109.0			39.8			50.1	
Turn Bay Length (m)			35.0									
Base Capacity (vph)		501	510		503						1633	816
Starvation Cap Reductn		0	0		0						928	508
Spillback Cap Reductn		0	0		0						0	0
Storage Cap Reductn		0	0		0						0	0
Reduced v/c Ratio		0.29	0.33		0.63						0.70	0.54

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Nicholas & Daly



Future Total PM
2: Nicholas & Daly

Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Future Total PM
3: Waller & Daly

							
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	67	21	152	1120	203	40	
Future Volume (vph)	67	21	152	1120	203	40	
Satd. Flow (prot)	1658	1483	1658	3316	3233	0	
Flt Permitted	0.950		0.529				
Satd. Flow (perm)	1658	1483	923	3316	3233	0	
Satd. Flow (RTOR)		22			30		
Lane Group Flow (vph)	71	22	160	1179	256	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		5	2	6		3
Permitted Phases		4	2				
Minimum Split (s)	26.9	26.9	10.6	15.6	23.6		5.0
Total Split (s)	28.0	28.0	15.0	67.0	52.0		5.0
Total Split (%)	28.0%	28.0%	15.0%	67.0%	52.0%		5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		2.0
All-Red Time (s)	2.6	2.6	2.3	2.3	2.3		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.6	5.6	5.6		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Act Effct Green (s)	22.1	22.1	61.4	61.4	46.4		
Actuated g/C Ratio	0.22	0.22	0.61	0.61	0.46		
v/c Ratio	0.19	0.06	0.25	0.58	0.17		
Control Delay	34.5	20.3	9.4	13.0	7.3		
Queue Delay	0.0	0.0	0.0	0.0	0.3		
Total Delay	34.5	20.3	9.4	13.0	7.6		
LOS	C	C	A	B	A		
Approach Delay	31.2			12.6	7.6		
Approach LOS	C			B	A		
Queue Length 50th (m)	12.3	0.4	12.2	66.3	5.1		
Queue Length 95th (m)	25.1	7.9	20.9	84.1	7.7		
Internal Link Dist (m)	109.0			107.8	52.5		
Turn Bay Length (m)							
Base Capacity (vph)	366	344	635	2036	1516		
Starvation Cap Reductn	0	0	0	0	735		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.19	0.06	0.25	0.58	0.33		

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 70

Control Type: Pretimed

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 12.8

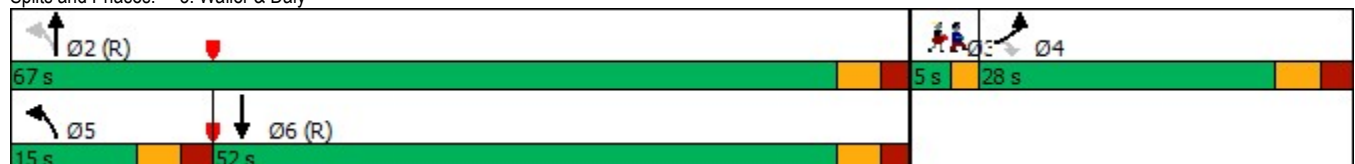
Intersection LOS: B

Intersection Capacity Utilization 50.6%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Waller & Daly



Future Total PM
4: Nicholas & Laurier

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	343	600	0	241	152	325	1213	78	64	1177	156
Future Volume (vph)	0	343	600	0	241	152	325	1213	78	64	1177	156
Satd. Flow (prot)	0	3316	1483	0	3123	0	3216	3316	1483	1658	3316	1483
Flt Permitted							0.950			0.950		
Satd. Flow (perm)	0	3316	1483	0	3123	0	3216	3316	1483	1658	3316	1483
Satd. Flow (RTOR)			80		118							131
Lane Group Flow (vph)	0	361	632	0	414	0	342	1277	82	67	1239	164
Turn Type		NA	pm+ov		NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases			4						2			6
Detector Phase		4	5		8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)		10.0	5.0		10.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)		41.9	11.6		41.9		11.6	16.2	16.2	11.6	29.2	29.2
Total Split (s)		43.0	22.0		43.0		22.0	50.0	50.0	22.0	50.0	50.0
Total Split (%)		35.8%	18.3%		35.8%		18.3%	41.7%	41.7%	18.3%	41.7%	41.7%
Yellow Time (s)		3.3	3.3		3.3		3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)		3.6	3.3		3.6		3.3	2.9	2.9	3.3	2.9	2.9
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.9	6.6		6.9		6.6	6.2	6.2	6.6	6.2	6.2
Lead/Lag		Lag	Lead		Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode		None	None		None		None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)		30.7	58.3		30.7		20.7	61.9	61.9	10.2	48.9	48.9
Actuated g/C Ratio		0.26	0.49		0.26		0.17	0.52	0.52	0.08	0.41	0.41
v/c Ratio		0.43	0.83		0.47		0.62	0.75	0.11	0.48	0.92	0.24
Control Delay		37.9	32.9		27.3		51.5	29.7	19.5	62.7	46.6	7.9
Queue Delay		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		37.9	32.9		27.3		51.5	29.7	19.5	62.7	46.6	7.9
LOS		D	C		C		D	C	B	E	D	A
Approach Delay		34.7			27.3			33.6			43.1	
Approach LOS		C			C			C			D	
Queue Length 50th (m)		35.5	105.5		29.0		39.4	136.0	10.8	15.3	149.4	4.8
Queue Length 95th (m)		49.1	152.6		43.4		53.7	#189.0	21.8	29.0	#205.0	19.4
Internal Link Dist (m)		96.3			89.1			107.9			97.5	
Turn Bay Length (m)												
Base Capacity (vph)		997	762		1022		555	1711	765	212	1350	681
Starvation Cap Reductn		0	0		0		0	0	0	0	0	0
Spillback Cap Reductn		0	0		0		0	0	0	0	0	0
Storage Cap Reductn		0	0		0		0	0	0	0	0	0
Reduced v/c Ratio		0.36	0.83		0.41		0.62	0.75	0.11	0.32	0.92	0.24

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 41 (34%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 36.3

Intersection LOS: D

Intersection Capacity Utilization 84.2%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Nicholas & Laurier



Future Total PM
4: Nicholas & Laurier

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Future Total PM
5: Besserer & Dalhousie

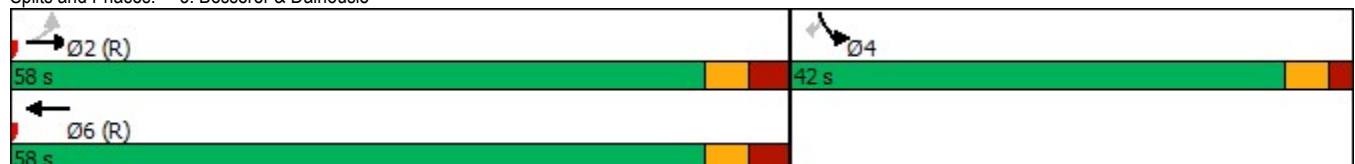
						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	41	139	283	64	442
Future Volume (vph)	30	41	139	283	64	442
Satd. Flow (prot)	0	1708	2981	0	1658	1483
Flt Permitted		0.768			0.950	
Satd. Flow (perm)	0	1340	2981	0	1658	1483
Satd. Flow (RTOR)			298			465
Lane Group Flow (vph)	0	75	444	0	67	465
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2					4
Minimum Split (s)	16.4	16.4	31.4		25.2	25.2
Total Split (s)	58.0	58.0	58.0		42.0	42.0
Total Split (%)	58.0%	58.0%	58.0%		42.0%	42.0%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3
All-Red Time (s)	3.1	3.1	3.1		1.9	1.9
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		6.4	6.4		5.2	5.2
Lead/Lag						
Lead-Lag Optimize?						
Act Effct Green (s)		51.6	51.6		36.8	36.8
Actuated g/C Ratio		0.52	0.52		0.37	0.37
v/c Ratio		0.11	0.26		0.11	0.55
Control Delay		8.9	4.1		21.5	5.0
Queue Delay		0.0	0.9		0.0	8.0
Total Delay		8.9	4.9		21.5	12.9
LOS		A	A		C	B
Approach Delay		8.9	4.9		14.0	
Approach LOS		A	A		B	
Queue Length 50th (m)		3.7	0.9		8.4	0.0
Queue Length 95th (m)		8.3	0.6		17.5	19.8
Internal Link Dist (m)		58.2	34.1		52.3	
Turn Bay Length (m)						
Base Capacity (vph)		691	1682		610	839
Starvation Cap Reductn		0	921		0	0
Spillback Cap Reductn		0	177		0	328
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.11	0.58		0.11	0.91

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 62 (62%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 9.8
 Intersection Capacity Utilization 52.2%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

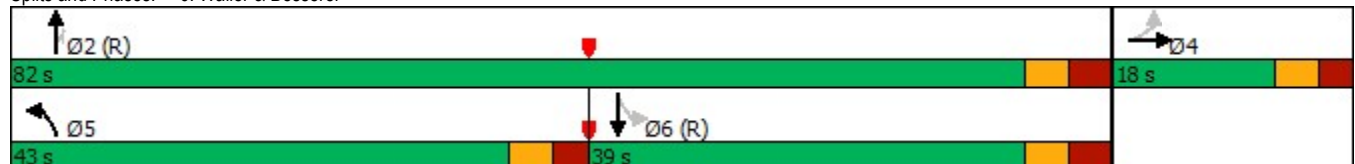
Splits and Phases: 5: Besserer & Dalhousie



Future Total PM
6: Waller & Besserer

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	47	17	0	0	0	326	306	580	2	212	65
Future Volume (vph)	2	47	17	0	0	0	326	306	580	2	212	65
Satd. Flow (prot)	0	1682	0	0	0	0	3216	1572	1409	0	3200	0
Flt Permitted		0.999					0.950				0.953	
Satd. Flow (perm)	0	1682	0	0	0	0	3216	1572	1409	0	3049	0
Satd. Flow (RTOR)		14									42	
Lane Group Flow (vph)	0	69	0	0	0	0	343	493	440	0	293	0
Turn Type	Perm	NA					Prot	NA	Perm	Perm	NA	
Protected Phases		4					5	2			6	
Permitted Phases	4								2	6		
Detector Phase	4	4					5	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0					5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	27.0	27.0					11.0	23.6	23.6	26.6	26.6	
Total Split (s)	18.0	18.0					43.0	82.0	82.0	39.0	39.0	
Total Split (%)	18.0%	18.0%					43.0%	82.0%	82.0%	39.0%	39.0%	
Yellow Time (s)	3.3	3.3					3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.7	2.7					2.7	3.3	3.3	3.3	3.3	
Lost Time Adjust (s)		0.0					0.0	0.0	0.0		0.0	
Total Lost Time (s)		6.0					6.0	6.6	6.6		6.6	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None					None	C-Min	C-Min	C-Min	C-Min	
Act Effct Green (s)		18.8					16.1	73.1	73.1		49.7	
Actuated g/C Ratio		0.19					0.16	0.73	0.73		0.50	
v/c Ratio		0.21					0.66	0.43	0.43		0.19	
Control Delay		19.9					52.1	2.5	2.6		14.8	
Queue Delay		2.5					0.0	0.1	0.1		0.0	
Total Delay		22.4					52.2	2.5	2.7		14.8	
LOS		C					D	A	A		B	
Approach Delay		22.4						15.9			14.8	
Approach LOS		C						B			B	
Queue Length 50th (m)		10.2					26.3	6.5	5.7		15.1	
Queue Length 95th (m)		22.9					34.1	8.5	7.7		25.7	
Internal Link Dist (m)		34.1			111.4			52.5			48.1	
Turn Bay Length (m)												
Base Capacity (vph)		334					1189	1262	1131		1536	
Starvation Cap Reductn		182					93	125	109		0	
Spillback Cap Reductn		0					0	0	0		0	
Storage Cap Reductn		0					0	0	0		0	
Reduced v/c Ratio		0.45					0.31	0.43	0.43		0.19	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 7 (7%), Referenced to phase 2:NBT and 6:SBTL, Start of Green												
Natural Cycle: 65												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.66												
Intersection Signal Delay: 16.0						Intersection LOS: B						
Intersection Capacity Utilization 62.2%						ICU Level of Service B						
Analysis Period (min) 15												

Splits and Phases: 6: Waller & Besserer



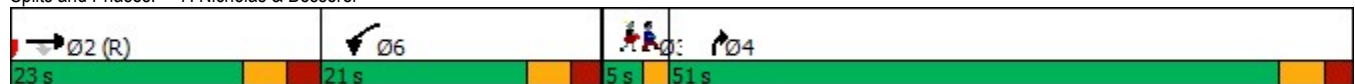
Future Total PM
7: Nicholas & Besserer

							
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	580	0	0	47	
Future Volume (vph)	0	0	580	0	0	47	
Satd. Flow (prot)	1745	1745	3216	0	0	1510	
Flt Permitted			0.950				
Satd. Flow (perm)	1745	1745	3216	0	0	1510	
Satd. Flow (RTOR)						1091	
Lane Group Flow (vph)	0	0	611	0	0	49	
Turn Type		Perm	Prot			Prot	
Protected Phases	2		6			4	3
Permitted Phases		2					
Minimum Split (s)	22.8	22.8	20.6			15.6	5.0
Total Split (s)	23.0	23.0	21.0			51.0	5.0
Total Split (%)	23.0%	23.0%	21.0%			51.0%	5%
Yellow Time (s)	3.3	3.3	3.3			3.3	2.0
All-Red Time (s)	2.5	2.5	2.3			2.3	0.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0	
Total Lost Time (s)	5.8	5.8	5.6			5.6	
Lead/Lag						Lag	Lead
Lead-Lag Optimize?						Yes	Yes
Act Effct Green (s)			15.4			45.4	
Actuated g/C Ratio			0.15			0.45	
v/c Ratio			1.23			0.04	
Control Delay			158.6			0.0	
Queue Delay			0.0			0.0	
Total Delay			158.6			0.0	
LOS			F			A	
Approach Delay				158.6			
Approach LOS				F			
Queue Length 50th (m)			~77.0			0.0	
Queue Length 95th (m)			#111.2			m0.0	
Internal Link Dist (m)	16.7			58.2	50.1		
Turn Bay Length (m)							
Base Capacity (vph)			495			1281	
Starvation Cap Reductn			0			0	
Spillback Cap Reductn			0			0	
Storage Cap Reductn			0			0	
Reduced v/c Ratio			1.23			0.04	

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 5 (5%), Referenced to phase 2:EBT, Start of Green	
Natural Cycle: 65	
Control Type: Pretimed	
Maximum v/c Ratio: 1.23	
Intersection Signal Delay: 146.8	Intersection LOS: F
Intersection Capacity Utilization 20.8%	ICU Level of Service A
Analysis Period (min) 15	
~ Volume exceeds capacity, queue is theoretically infinite.	
Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 7: Nicholas & Besserer



Future Total PM
8: Nicholas & Site

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	10	0	0	684	13
Future Vol, veh/h	0	10	0	0	684	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	-	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	0	0	720	14
Major/Minor	Minor2		Major2			
Conflicting Flow All	-	367	-	-	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	630	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	630	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB		SB			
HCM Control Delay, s	10.8		0			
HCM LOS	B					
Minor Lane/Major Mvmt	EBLn1	SBT	SBR			
Capacity (veh/h)	630	-	-			
HCM Lane V/C Ratio	0.017	-	-			
HCM Control Delay (s)	10.8	-	-			
HCM Lane LOS	B	-	-			
HCM 95th %tile Q(veh)	0.1	-	-			

Future Total PM
2: Nicholas & Daly

Option 2 - Shared EB-Th

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	94	161	97	180	24	0	0	0	31	439	158
Future Volume (vph)	42	94	161	97	180	24	0	0	0	31	439	158
Satd. Flow (prot)	0	1606	0	0	1698	0	0	0	0	0	3306	1483
Flt Permitted		0.915			0.711						0.997	
Satd. Flow (perm)	0	1480	0	0	1227	0	0	0	0	0	3306	1483
Satd. Flow (RTOR)					5							166
Lane Group Flow (vph)	0	312	0	0	316	0	0	0	0	0	495	166
Turn Type	Perm	NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases	4			8						6		6
Minimum Split (s)	23.6	23.6		23.6	23.6					23.6	23.6	23.6
Total Split (s)	40.0	40.0		40.0	40.0					55.0	55.0	55.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%					55.0%	55.0%	55.0%
Yellow Time (s)	3.3	3.3		3.3	3.3					3.3	3.3	3.3
All-Red Time (s)	2.3	2.3		2.3	2.3					2.3	2.3	2.3
Lost Time Adjust (s)		0.0			0.0						0.0	0.0
Total Lost Time (s)		5.6			5.6						5.6	5.6
Lead/Lag										Lag	Lag	Lag
Lead-Lag Optimize?										Yes	Yes	Yes
Act Effct Green (s)		34.4			34.4						49.4	49.4
Actuated g/C Ratio		0.34			0.34						0.49	0.49
v/c Ratio		0.61			0.74						0.30	0.20
Control Delay		33.5			34.3						1.5	0.3
Queue Delay		0.0			0.0						1.6	1.9
Total Delay		33.5			34.3						3.2	2.1
LOS		C			C						A	A
Approach Delay		33.5			34.3						2.9	
Approach LOS		C			C						A	
Queue Length 50th (m)		49.8			48.4						1.8	0.0
Queue Length 95th (m)		78.0			#92.5						m1.5	m0.0
Internal Link Dist (m)		240.5			109.0			39.8			50.1	
Turn Bay Length (m)												
Base Capacity (vph)		509			425						1633	816
Starvation Cap Reductn		0			0						928	508
Spillback Cap Reductn		0			0						0	0
Storage Cap Reductn		0			0						0	0
Reduced v/c Ratio		0.61			0.74						0.70	0.54

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 25 (25%), Referenced to phase 6:SBTL, Start of Green

Natural Cycle: 55

Control Type: Pretimed

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 56.5%

ICU Level of Service B

Analysis Period (min) 15

Description: No Timing Changes

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

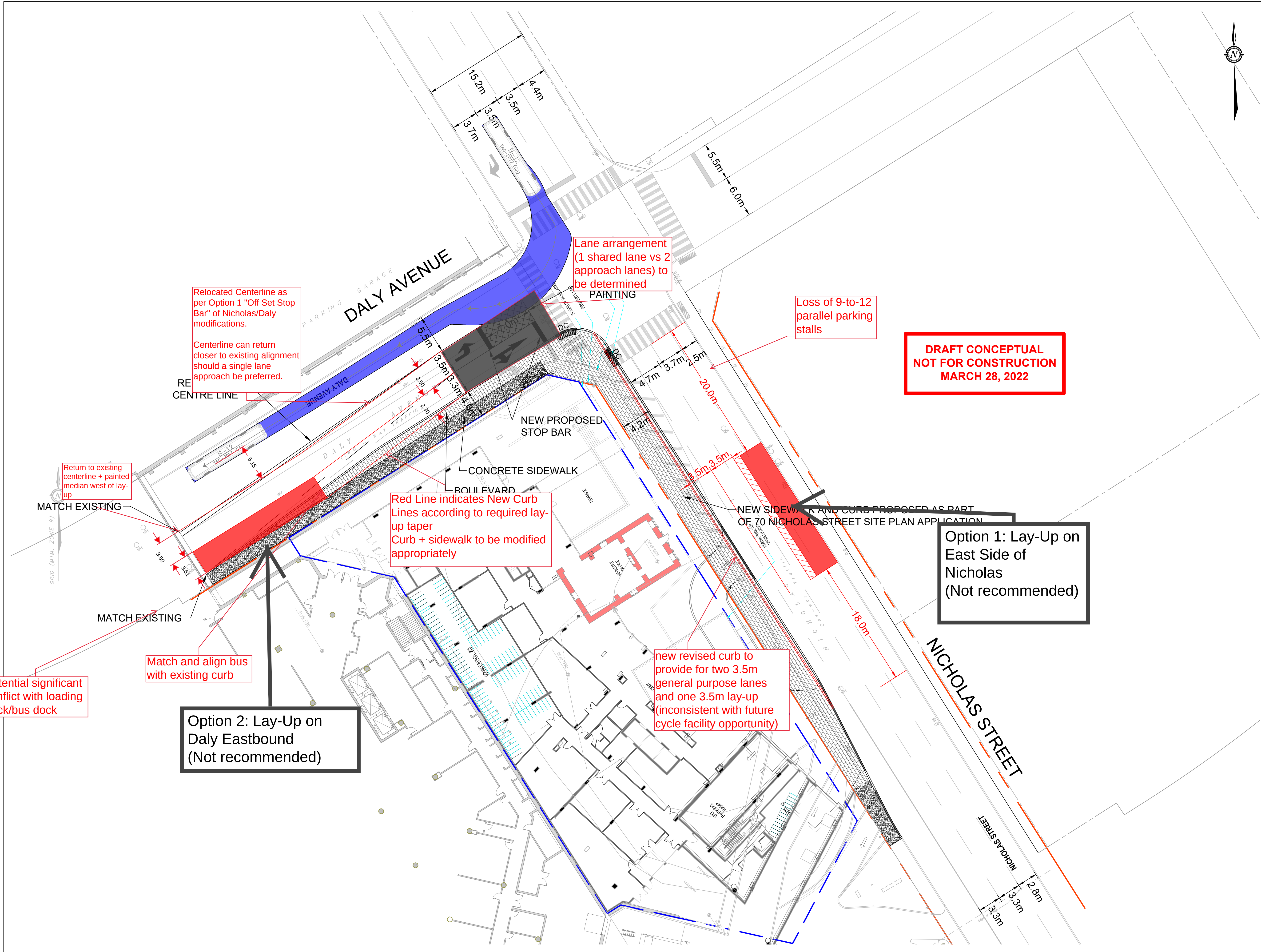
Splits and Phases: 2: Nicholas & Daly



Lane Group	Ø5
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	5
Permitted Phases	
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

APPENDIX I

Bus Lay-by and Cycle Track Demonstration Plans



KEY PLAN

No.	DATE	REVISIONS DESCRIPTION	BY
1	28/03/2022		A.B.

PARSONS
1223 Michael Street, Suite 100, Ottawa, Ontario, Canada K1J 7T2
Tel: (613) 738-4160 Fax: (613) 739-7105

CADILLAC FAIRVIEW

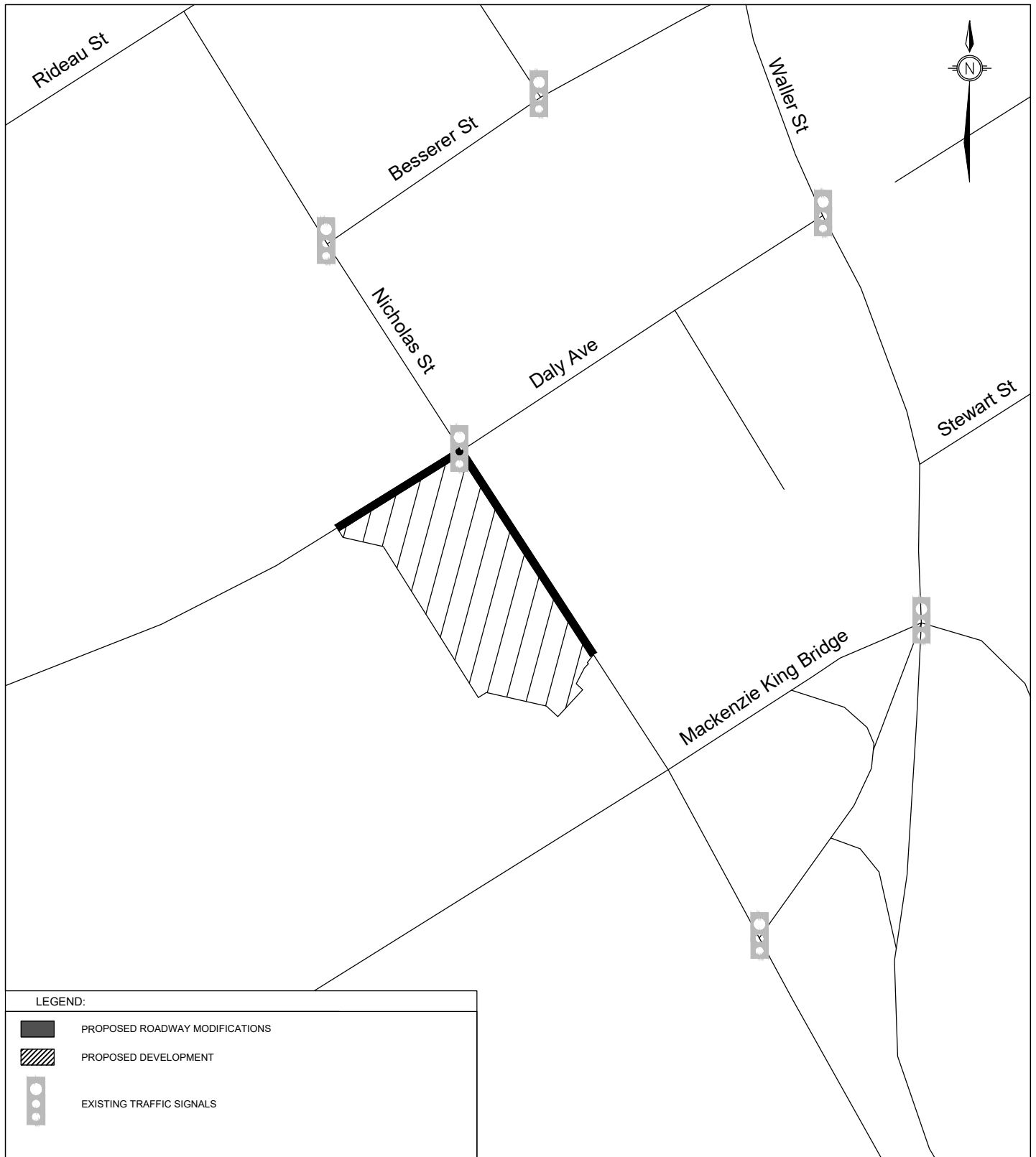
CF RIDEAU CENTRE
REGISTRY SITE

OPTION 1
(BUS LAYUPS)

DESIGNED BY	J.B.	PROJECT NO.	477845
DRAWN BY	A.B.		
CHECKED BY			5
DATE	March 28, 2022		
SCALE	N.T.S.	DRAWING NO.	DRAWING

APPENDIX J

Proposed Nicholas / Daly RMA



LEGEND:



PROPOSED ROADWAY MODIFICATIONS

PROPOSED DEVELOPMENT

EXISTING TRAFFIC SIGNALS

KEY PLAN

70 NICHOLAS ST

Transportation Engineering Services Branch

Approved By:

-

Drawing No.:

Completed By:

PARSONS

RMA-2022-
TPD-###-A

Scale:

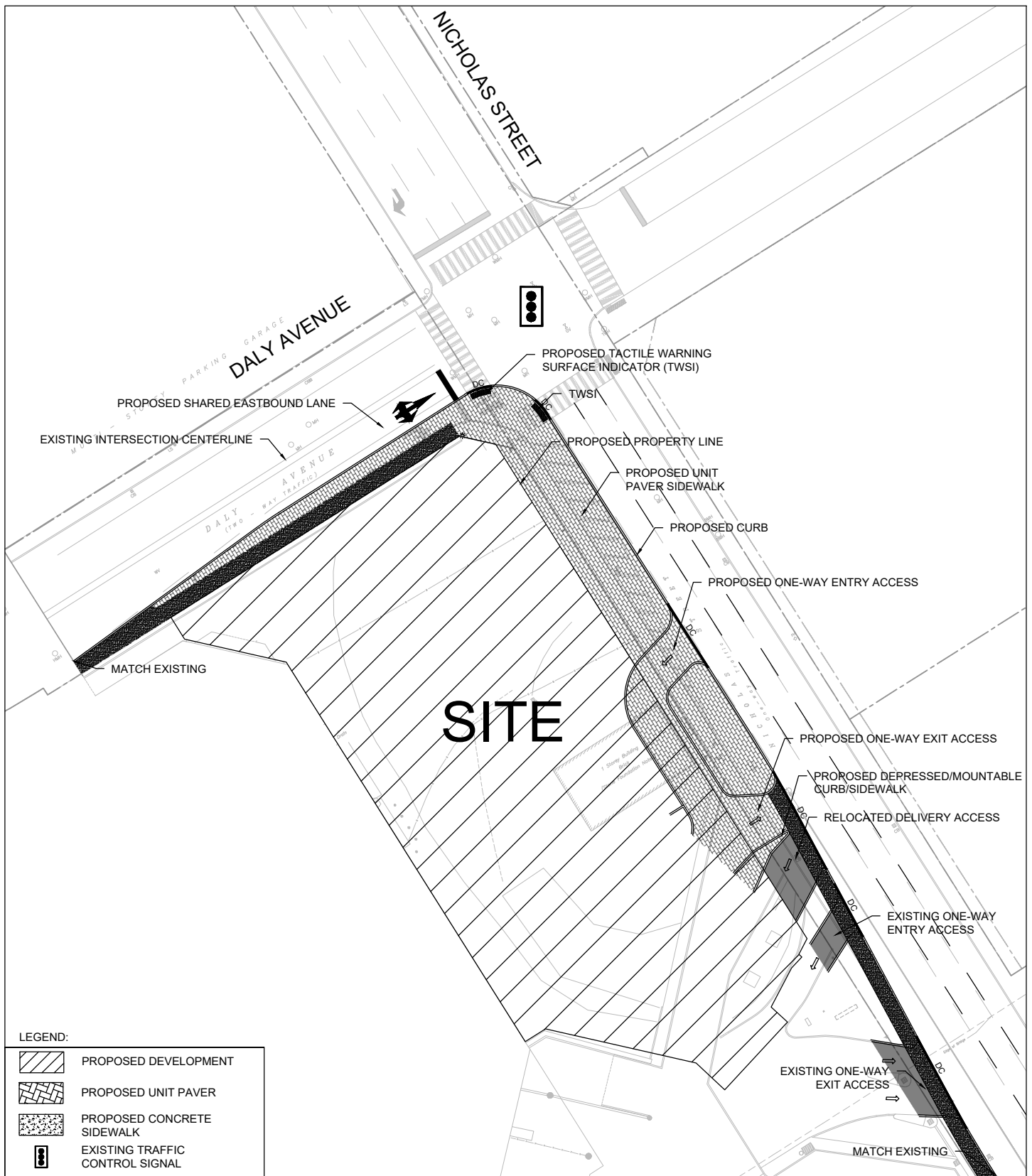
N.T.S.

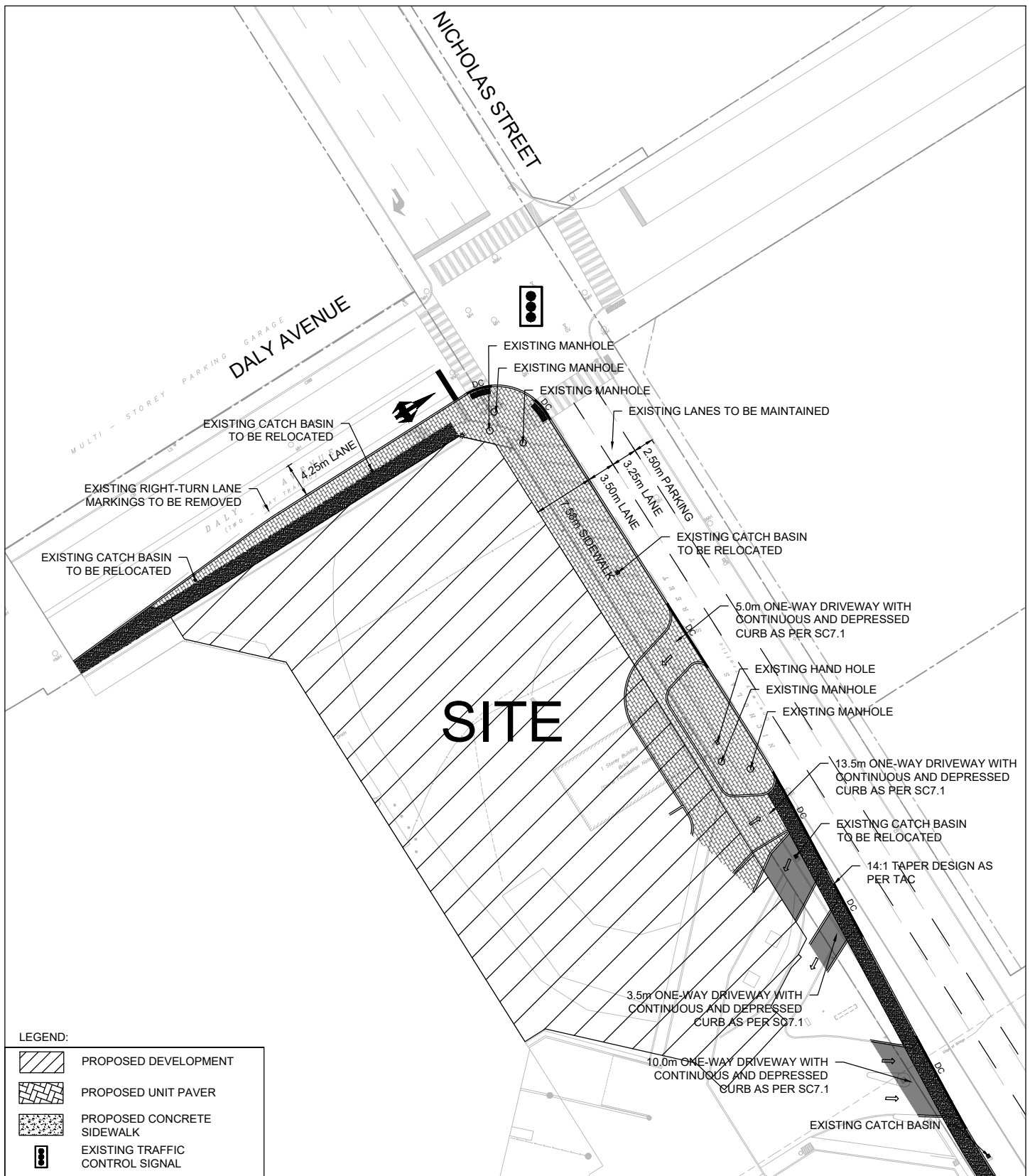
Date:

APR
2022



TRANSPORTATION SERVICES
DEPARTMENT





FUNCTIONAL DESIGN PLAN

70 NICHOLAS ST

Transportation Engineering Services Branch

Approved By:

Drawing No.:

Completed By:

PARSONS

RMA-2022-
TPD-XXX-C

Scale:

N.T.S.

Date:

APR.
2022