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36 Years

Waterford Ottawa Senior Apartments
2431 Bank Street

Transportation Impact Assessment

Engineering excellence. Planning precision. Inspired landscapes.

Waterford Ottawa Senior Apartments

2431 Bank Street

Transportation Impact Assessment

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

May 1, 2020

Novatech File: 119247
Ref: R-2020-037

NOVATECH
Engineers, Planners & Landscape Architects

May 1, 2020

City of Ottawa
Planning and Growth Management Department
110 Laurier Ave. W., 4th Floor,
Ottawa, Ontario K1P 1J1

Attention: **Mr. Wally Dubyk**
Project Manager, Infrastructure Approvals

Dear Mr. Dubyk:

Reference: **Waterford Ottawa Senior Apartments, 2431 Bank Street**
Transportation Impact Assessment Report
Novatech File No. 119247

We are pleased to submit the following Transportation Impact Assessment report in support of a Site Plan Control application for the above address. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

If you have any questions or comments regarding this report, please feel free to contact Brad Byvelds, or the undersigned.

Yours truly,

NOVATECH

Rochelle Fortier, B.Eng.
E.I.T. | Transportation/Traffic

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

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

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

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering ☑ or transportation planning ☐.

[1,2] **License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.**

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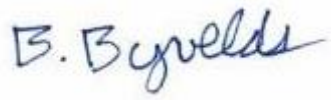
Dated at ____Ottawa_____ this __1__ day of ____May_ _____, 2020.
(City)

Name: _____Brad Byvelds, P.Eng._____
(Please Print)

Professional Title: _____Project Coordinator, Transportation/Traffic_____



_____
Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)	
Address:	240 Michael Cowpland Drive, Suite 200
City / Postal Code:	Ottawa, ON, K2M 1P6
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Table of Contents

Tables

Figures

Appendices

EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) report has been prepared in support of a Site Plan Control application for 2431 Bank Street. Currently the property is occupied by an existing 124-rooming unit retirement home with surface parking for approximately 134 vehicles.

A Transportation Overview was written by Novatech in July 2014 for the subject property as the hotel was being converted to a retirement home. As the retirement home use generated less traffic than the hotel use, no impact to the operating conditions on the surrounding area roadways was anticipated. A review of on-site design was conducted, including provisions for non-auto modes, access design, parking, circulation, and transportation demand management.

The proposed development consists of a one, seven, and fourteen storey addition to the existing Waterford Retirement Community, providing an additional 144 units. The proposed redevelopment will include a total of 133 underground parking spaces on two levels and 64 surface parking spaces on-site. The existing northerly Bank Street access will be closed, and the site will be served by the existing southerly full movement access to Bank Street and the existing right-in-right out access to Hunt Club Road. The development is anticipated to be completed in a single phase, with full build out by 2021.

The main conclusions and recommendations of this TIA can be summarized as follows:

<u>Development Design</u>

- Pedestrian walkways will be provided to connect the proposed building entrances to the existing building entrances and to the existing facilities along Bank Street and Hunt Club Road, as shown on the site plan. Sidewalks are depressed and continuous across the existing accesses to Hunt Club Road and to Bank Street. The existing northern vehicular access will be removed as part of this application to provide a new resident garden at the rear of the existing building and will provide pedestrian connectivity to Bank Street.
- There are four OC Transpo bus stops within a five-minute (400m) walking distance of the proposed development. Additionally, rapid transit and future light rail transit is available at the South Keys Transit Station, located at an approximately 750m walk from the proposed development.
- A bicycle rack with storage for eleven bicycles is proposed north of the Hunt Club Road access and an existing bicycle rack with storage for twelve bicycles will be maintained near the rear of the building. The remainder of the bicycle parking will be provided in the underground garage.
- All required TDM measures in the TDM checklist are met.

<u>Parking</u>

- The proposed vehicular and bicycle parking spaces will meet the minimum requirements of the ZBL.
- Vehicular parking will conform to the requirements of the City's *Accessibility Design Standards*.

<u>Boundary Street Design</u>

- Bank Street meets the target TkLOS but does not meet the target PLOS or BLOS
    - Bank Street is currently operating with a PLOS E. Based on the MMLOS guidelines, the target PLOS A is not achievable along roadways with an annual average daily

traffic (AADT) greater than 3,000 vehicles per day and an operating speed of 60km/h.
    - Bank Street is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the BLOS C along Bank Street. However, The Ontario Traffic Manual (OTM) – Book 18 suggests a desired bike lane width of 1.8m and an absolute minimum width of 1.5m. The OTM *Desirable Cycling Facility Pre-Selection Nomograph* describes the desirable cycling facility for a roadway, given the roadway's average annual daily traffic (AADT) and operating speed. For roadways with a curbside AADT of approximately 6,000 vehicles per day and an operating speed of 60km/h, the nomograph suggests that either exclusive bike lanes or a separated cycling facility should be considered.
- Hunt Club Road meets the target TkLOS but does not meet the target PLOS, BLOS, or TLOS.
    - Hunt Club Road is currently operating with a PLOS F. Based on the MMLOS guidelines, the target PLOS C can be achieved by implementing a 2.0m sidewalk and a minimum boulevard width of 2.0m. This is identified for the City's consideration as funding becomes available.
    - Hunt Club Road is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the target BLOS C along Hunt Club Road. The Ottawa Cycling Plan indicates that bike lanes are planned on Hunt Club Road from Bank Street to Lorry Greenberg Drive, as part of Phase 2, achieving the target BLOS.
    - The TLOS of Hunt Club Road does not achieve the target TLOS C. The target TLOS can be achieved by implementing a bus lane with limited parking and driveway friction. The RTTP Affordable Network identifies road widening on Hunt Club Road to provide exclusive bus lanes and transit signal priority between Albion Road and Uplands Drive, with funding for improvements at Bank Street.

<u>Access Design</u>

- The proposed development will be served by the existing right-in right-out access to Hunt Club Road and the existing southerly full movement access to Bank Street. The existing northerly access to Bank Street will be closed as part of this application.
- The proposed access along Hunt Club Road is located approximately 2m from the eastern property line. As the access is located as far away from the Bank Street/Hunt Club Road intersection and it is an existing condition, no changes are recommended. A waiver to the *Private Approach By-Law* will be required.
- The accesses meet all other requirements of the *Private Approach By-Law* and TAC requirements for corner clearance.
- Available sightlines at the Bank Street access are within recommended guidelines to allow safe all directional access to the development.
- No capacity or queuing problems are anticipated at the site's vehicular accesses.
- The maximum westbound queuing length anticipated at the Bank Street/Hunt Club Road intersection is approximately 185m in the AM peak, which will extend past the existing Hunt Club Road site access. The maximum southbound queuing length anticipated at the Bank Street/Hunt Club Road intersection is approximately 150m in the PM peak, which will extend past the existing southerly Bank Street site access.
- There is sufficient capacity at the Bank Street/Hunt Club Road to accommodate an increased pedestrian walk time for the elderly population.

- The 95th percentile queue length on the southbound and westbound approaches to the Bank Street/Hunt Club Road intersection may periodically extend past the site accesses, and traffic departing the site may be required to rely on courtesy of drivers along the adjacent driveways.

Transportation Demand Management

- To encourage travel by sustainable modes, the proponent agrees to provide the following TDM measures:
    - Display relevant transit schedules and route maps at entrances; and
    - Unbundle parking cost from monthly rent.

1.0 INTRODUCTION

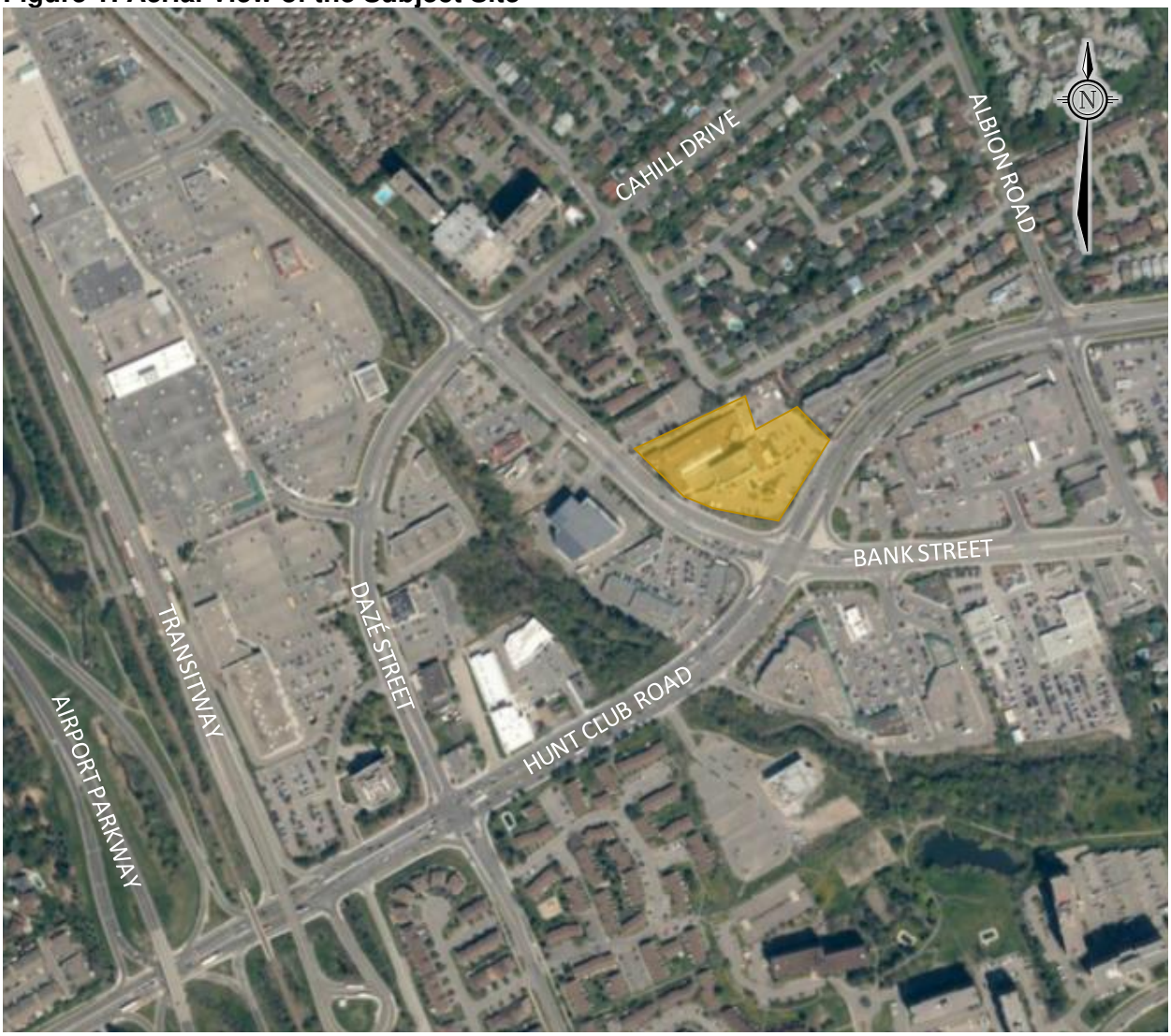
This Transportation Impact Assessment (TIA) report has been prepared in support of a Site Plan Control application for 2431 Bank Street. Currently the property is occupied by an existing 124-rooming unit retirement home with surface parking for approximately 134 vehicles.

The subject property is located at the northeast corner of the Bank Street/Hunt Club Road intersection and is surrounded by the following:

- A commercial plaza and residential uses to the northwest;
- Residential uses to the northeast;
- Bank Street and commercial uses to the southwest; and
- Hunt Club Road and commercial uses to the southeast.

An aerial view of the subject site is provided in **Figure 1**.

Figure 1: Aerial View of the Subject Site



A Transportation Overview was written by Novatech in July 2014 for the subject property as the hotel was being converted to a retirement home. As the retirement home use generated less traffic than the hotel use, no impact to the operating conditions on the surrounding area roadways was anticipated. A review of on-site design was conducted, including provisions for non-auto modes, access design, parking, circulation, and transportation demand management.

2.0 PROPOSED DEVELOPMENT

The subject site is currently zoned Mixed-Use Centre MC[2286] S349-h and is located in the General Urban Area.

The proposed development consists of a one, seven, and fourteen storey addition to the existing Waterford Retirement Community, providing an additional 144 units. The proposed redevelopment will include a total of 133 underground parking spaces on two levels and 64 surface parking spaces on-site. The existing northerly Bank Street access will be closed, and the site will be served by the existing southerly full movement access to Bank Street and the existing right-in-right out access to Hunt Club Road.

The development is anticipated to be completed in a single phase, with full build out by 2021.

A copy of the proposed site plan is included in **Appendix A**.

3.0 SCREENING

The City's 2017 TIA Guidelines identifies three triggers for completing a TIA report, including trip generation, location, and safety. The criteria for each trigger are outlined in the City's TIA Screening Form. A copy of the TIA screening form is included in **Appendix B**.

The trigger results are as follows:

- Trip Generation Trigger – The development is not anticipated to generate over 60 person trips/peak hour; further assessment is not required based on this trigger.

- Location Triggers – The development is located within a Transit Oriented Development (TOD) zone; further assessment is required based on this trigger

- Safety Triggers – The development is located in close proximity to the high volume/high collision intersection of Bank Street/Hunt Club Road; further assessment is required based on this trigger.

Based on the foregoing, the proposed development meets the location and safety triggers for completing a TIA.

4.0 SCOPING

4.1 Existing Conditions

This section provides a review of existing conditions in the vicinity of the subject site including: roadways, intersections, driveways, pedestrian and cycling facilities, transit, area traffic management measures, traffic volumes, and collision records.

4.1.1 Roadways

The roadway network of the greater area surrounding the subject site is illustrated in **Figure 2**.

Figure 2: Roadway Network

All study area roadways fall under the jurisdiction of the City of Ottawa.

Bank Street is a two-way arterial roadway that runs on a north-south alignment and has a four-lane divided urban cross section adjacent to the subject site. Bank Street is classified as a truck route. The posted speed limit is 60km/h and concrete sidewalks are provided along both sides of Bank Street. The City of Ottawa's Official Plan identifies a right of way (ROW) protection of 37.5m along Bank Street between Riverside Drive and Hunt Club Road. The road widening, as identified in the City's Official Plan, is shown on the site plan.

Hunt Club Road is a two-way arterial roadway that runs on an east-west alignment and has a four-lane divided urban cross section adjacent to the subject site. Hunt Club Road is classified as a truck route. The posted speed limit is 60km/h and concrete sidewalks are provided along both sides of Hunt Club Road. The City of Ottawa's Official Plan identifies a right of way (ROW) protection of 44.5m along Hunt Club Road between Prince of Wales Drive and Conroy Road. A widening will be taken along the Hunt Club Road frontage as part of this application, as shown on the site plan.

4.1.2 Intersections

Bank Street/Hunt Club Road

- Signalized intersection
- Eastbound/Westbound: two left turn lanes, two through lanes, one channelized right turn lane
- Southbound: one left turn lane, two through lanes, one channelized right turn lane
- Northbound: two left turn lanes, two through lanes, one channelized right turn lane
- Standard crosswalks provided on all approaches

4.1.3 Driveways

In accordance with the City's 2017 TIA guidelines, a review of adjacent driveways along the boundary roads (within 200m of the subject site) was conducted:

Bank Street, north side:

- One driveway to the commercial plaza at 2401 Bank Street

Bank Street, south side

- One right-in right-out driveway to the bank at 2300 Bank Street
- One driveway to the fast food restaurant at 2380 Bank Street
- One right-in right-out driveway to the commercial building at 2400 Bank Street
- One driveway to the commercial/self storage building at 2420 Bank Street
- One driveway to the commercial plaza at 2430 Bank, opposite the access to the subject site. Note that left turns in and out of this plaza are restricted from 4PM-6PM

Hunt Club Road, west side:

- One right-in right-out driveway to the funeral home at 1371 Hunt Club Road
- One right-in right-out driveway to the retirement residence at 1351 Hunt Club Road

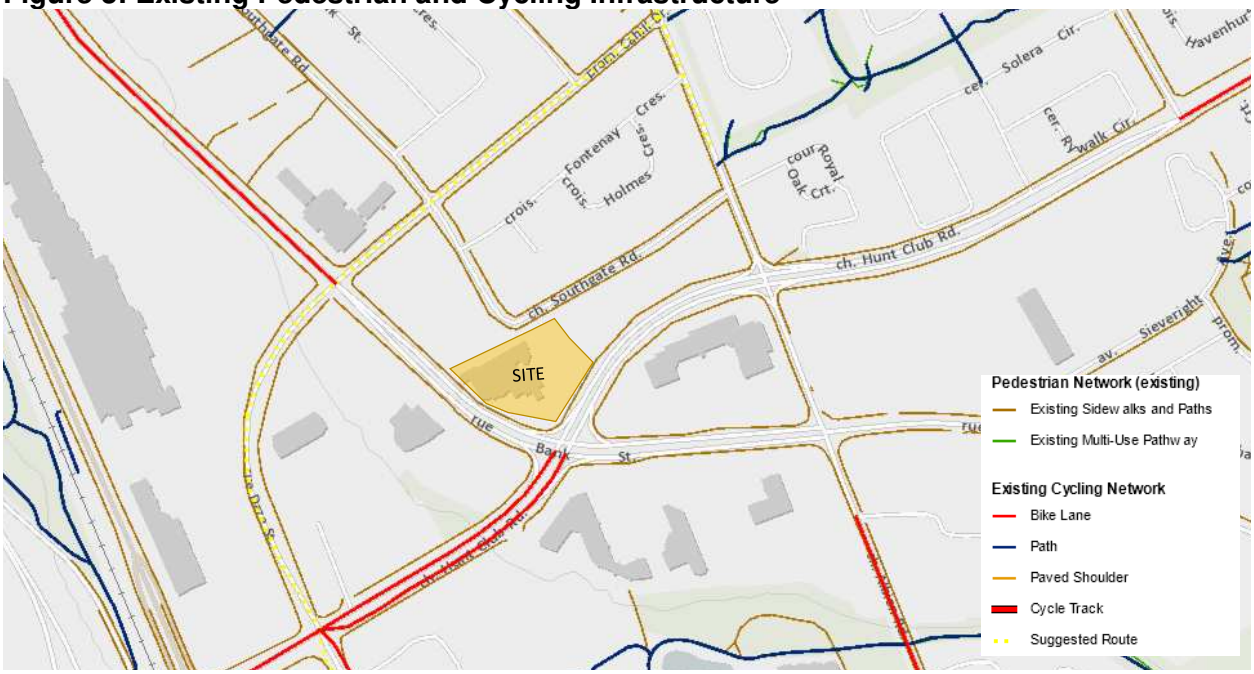
Hunt Club Road, east side:

- One right-in right-out driveway to the gas station at 2471 Bank Street
- One right-in right-out driveway to the commercial plaza at 2495 Bank Street

4.1.4 Pedestrian and Cycling Facilities

The existing pedestrian and cycling infrastructure provided in the greater area surrounding the subject site is illustrated in **Figure 3**.

Figure 3: Existing Pedestrian and Cycling Infrastructure



Within the vicinity of the subject site, sidewalks are provided along both sides of all study area roadways. Bike lanes are provided on Hunt Club Road, west of Bank Street and east of Cahill Drive. A southbound bike lane is provided on Bank Street, north of Cahill Drive/Dazé Street.

The City of Ottawa's 2013 Cycling Plan identifies Bank Street and Hunt Club Road as Spine Cycling Routes in the Ultimate Cycling Network.

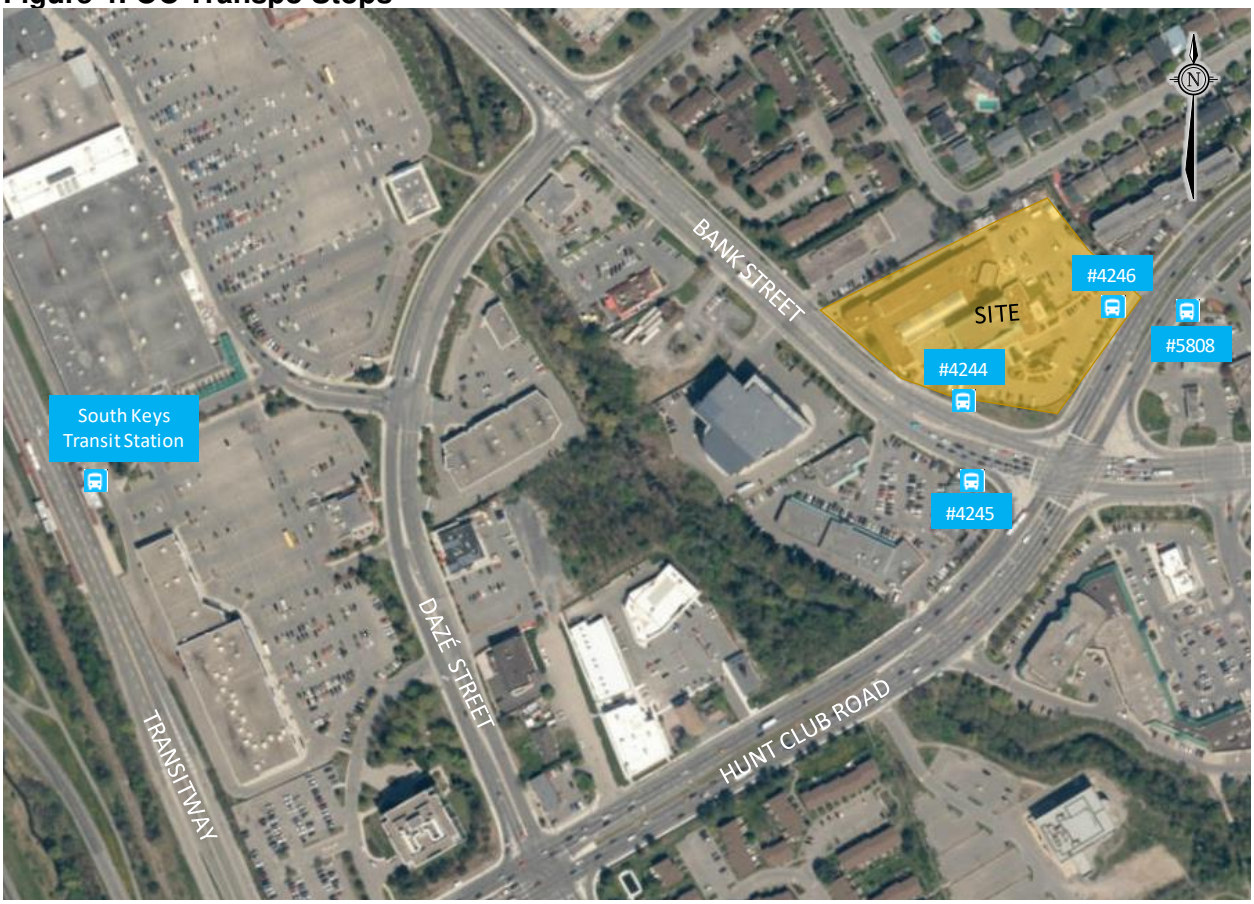
4.1.5 Transit

The nearest bus stops to the subject site are summarized in the following table. An aerial view of these stops can be found in **Figure 4**. OC Transpo Route information is included in **Appendix C**.

Table 1: OC Transpo Stops

OC Transpo Bus Stop	Location	Route(s) Serviced
#4246	North side of Hunt Club Road, east of Bank Street	98
#5808	South side of Hunt Club Road, east of Bank Street	98
#4244	East side of Bank Street, north of Hunt Club Road	6, 40
#4245	West side of Bank Street, north of Hunt Club Road	6

Figure 4: OC Transpo Stops



OC Transpo Route 98 travels from Hawthorne to Hurdman Transit Station. It operates seven days a week, with all day service. Route 98 generally operates with 10- to 15-minute headways.

OC Transpo Route 6 travels from Rockcliffe to Greenboro Transit Station. It operates seven days a week, with all day service. Route 6 generally operates with 10- to 15-minute headways.

OC Transpo Route 40 travels from St Laurent Shopping Centre to Greenboro Transit Station with service extended to reach Hurdman Transit Station during peak periods. It operates seven days a week, with all day service. Route 40 generally operates with 30-minute headways.

The aforementioned bus routes also provide service to the South Keys transitway station. The majority of the subject site is also located within a 600m radius of the South Keys transitway station with service to numerous OC Transpo routes providing coverage across the City of Ottawa.

4.1.6 Existing Area Traffic Management Measures

Northbound and eastbound left turns are restricted during the PM peak (from 4PM to 6PM) at the Bank Street entrance to the plaza at 2430 Bank Street.

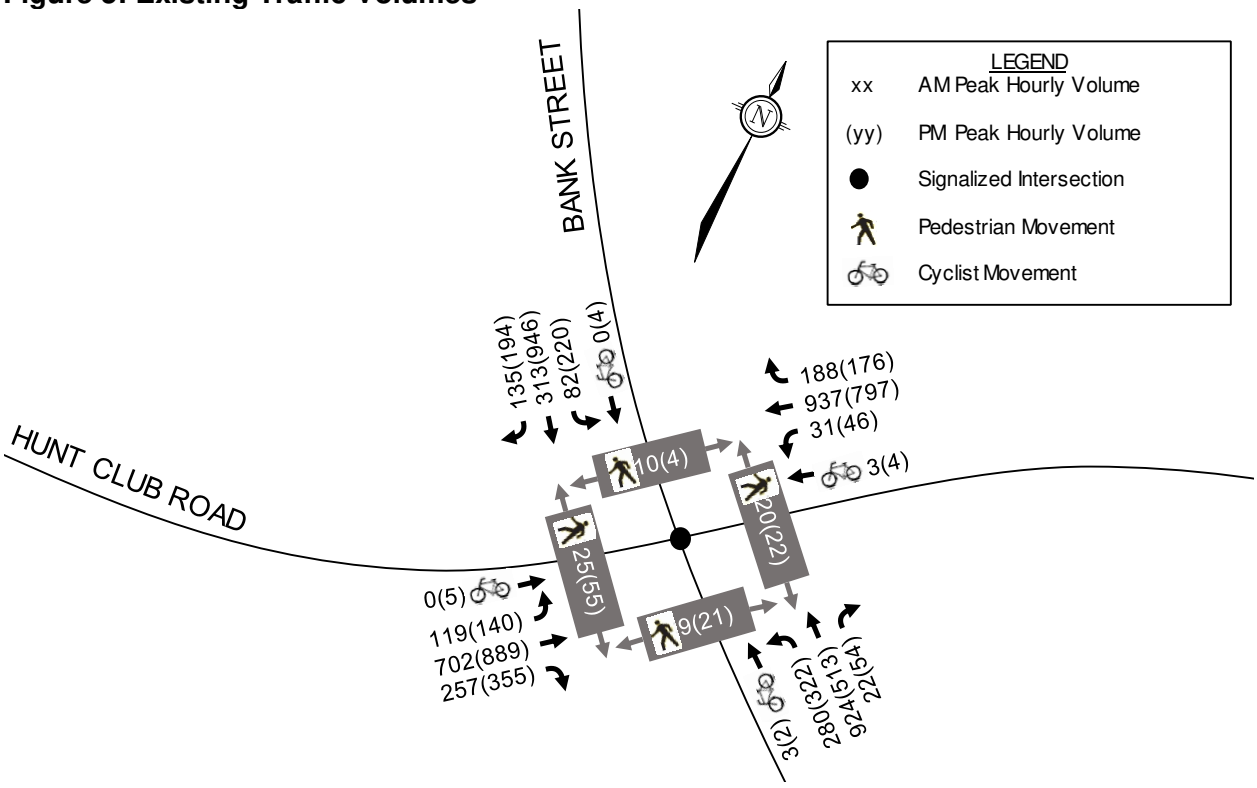
Currently, there are no other existing Area Traffic Management (ATM) measures within the study area.

4.1.7 Existing Traffic Volumes

Weekday traffic counts were obtained from the City of Ottawa at the Bank Street/Hunt Club Road intersection to determine the existing pedestrian, cyclist and vehicular traffic volumes. The traffic count was completed on June 12, 2019 (Wednesday).

Existing traffic volumes within the study area are shown in **Figure 5**. Traffic count data is included in **Appendix D**.

Figure 5: Existing Traffic Volumes



4.1.8 Collision Records

Historical collision data from the last five years was obtained from the City's Public Works and Service Department for the study area intersections. Copies of the collision summary report are included in **Appendix E**.

The collision data has been evaluated to determine if there are any identifiable collision patterns. **Table 2** summarizes the number of collisions at each intersection from January 1, 2014 to December 31, 2018.

Table 2: Reported Collisions

Intersection	Impact Types					Total Number of Collisions
	Angle	Sideswipe	Rear End	Turning Movement	SMV/ Other	
Bank Street/Hunt Club Road	17	28	68	5	12	**130**
Bank Street between Hunt Club Road and Cahill Drive/Dazé Street	10	2	4	6	3	**25**

Bank Street/Hunt Club Road

A total of one hundred and thirty (130) collisions were reported at this intersection over the course of the last five years. Of these, sixty-eight (68) were rear end collisions, twenty-eight (28) were sideswipes, seventeen (17) were angle impacts, twelve (12) were classified as single vehicle or other collisions, and five were turning movement impacts. Of the total 130 reported collisions, seventeen (17) occurred in wet conditions, twenty-one (21) occurred in snowy/icy conditions, and ninety-two (92) occurred in clear conditions. Eight of the collisions involved more than two vehicles. One of the collisions involved a pedestrian, and one involved a cyclist. A total of twenty-one (21) collisions caused injuries, but none caused fatalities. Six of the collisions involved three vehicles while two of the collisions involved four vehicles.

Of the sixty-eight (68) rear end collisions, nineteen (19) occurred on the northbound approach, nineteen (19) occurred on the eastbound approach, seventeen (17) occurred on the westbound approach, and thirteen (13) occurred on the southbound approach. A total of ten rear end collisions caused injuries and the rest caused property damage only. Of the sixty-eight (68) rear end collisions, fifty-three (53) occurred in clear conditions, four occurred in wet conditions, and eleven (11) occurred in snowy conditions.

Of the nineteen (19) rear end collisions that occurred on the northbound approach, two of the collisions occurred between right turning vehicles, six occurred between left turning vehicles, and eleven (11) occurred between vehicles going straight ahead. The high frequency of rear end collisions on the northbound approach could be attributed to the high volume of traffic in the area.

Of the nineteen (19) rear end collisions that occurred on the eastbound approach, nine of the collisions occurred between right turning vehicles, while the remaining ten collisions occurred between vehicles travelling straight through. The high frequency of rear end collisions on the eastbound approach could be attributed to the high volume of traffic in the area, and the access to the commercial plaza at 2430 Bank Street located within the right turn lane.

Of the seventeen (17) rear end collisions that occurred on the westbound approach, six of the collisions occurred between right turning vehicles, while the remaining eleven (11) collisions occurred between vehicles travelling straight through. The high frequency of rear end collisions on the westbound approach could be attributed to the high volume of traffic in the area.

Of the thirteen (13) rear end collisions that occurred on the southbound approach, two of the collisions occurred between right turning vehicles and the other eleven (11) occurred between vehicles going straight ahead. The high frequency of rear end collisions on the southbound approach could be attributed to the high volume of traffic in the area.

Of the twenty-eight (28) sideswipe collisions, ten occurred on the eastbound approach, nine occurred on the northbound approach, six occurred on the southbound approach, and three occurred on the westbound approach. All sideswipe collisions were classified as property damage only.

Of the seventeen (17) angle impacts, thirteen (13) involved northbound travelling vehicles, while three involved southbound travelling vehicles, and one involved cyclists only. Of the thirteen angle collisions involving northbound travelling vehicles, six were collisions with eastbound through vehicles, five were collisions with westbound through vehicles, one was a collision with an eastbound left turning vehicle, and one was a collision with a westbound left turning vehicle. Eight of the angle impacts caused injuries, but none caused fatalities. Seven of the angle impacts occurred in daylight, two occurred in the dawn, while the other eight occurred in dark.

Of the twelve (12) collisions that were classified as either single vehicle or other, five involved vehicles colliding with a pole, four involved vehicles reversing, two were vehicles that traveled onto the curb, and one was a collision with a pedestrian.

Bank Street between Hunt Club Road and Cahill Drive/Dazé Street
A total of twenty-five (25) collisions were reported on Bank Street mid-block between Hunt Club Road and Dazé Street over the course of the last five years. Of these, there were ten angle impacts, six turning movement impacts, four rear end collisions, two sideswipes, one approaching collision and two single vehicle collisions. Two of the collisions involved cyclists. Three of the collisions caused injuries, but none caused fatalities. Four of the collisions occurred in wet conditions and all others occurred under clear conditions.

Of the ten angle impacts, three occurred between eastbound left turning vehicles and northbound vehicles, two occurred between eastbound right turning vehicles and southbound vehicles, one occurred between a westbound left turning vehicle and a southbound vehicle, one occurred between a westbound right turning vehicle and a northbound vehicle, and one occurred between a northbound cyclist and a eastbound right turning vehicle.

Of the six turning movement impacts, five involved northbound left turning vehicles colliding with southbound through vehicles and the other involved a northbound cyclist colliding with a northbound left turning vehicle. Four of the five turning movement impacts involving northbound left turning vehicles and southbound through vehicles occurred between the hours of 4PM-6:15PM. Note that northbound left turns are banned from 4PM-6PM at the access to 2430 Bank Street and the accesses to 2420 and 2380 Bank Street are full movement.

4.2 Planned Conditions

4.2.1 Planned Roadway Improvements

The City of Ottawa's Transportation Master Plan (TMP) identifies the widening of Hunt Club Road from four to six lanes between Riverside Drive and Bank Street as part of the Network Concept. This project is not included in the Affordable Network.

The Ottawa Cycling Plan (OCP) identifies new bike lanes, shared use lanes and multi-use pathways as part of the Hunt Club Neighbourhood Bikeway. Phase 1 will see new cycling infrastructure along Johnston Road, from Bank Street to Southgate Road, along Southgate Road

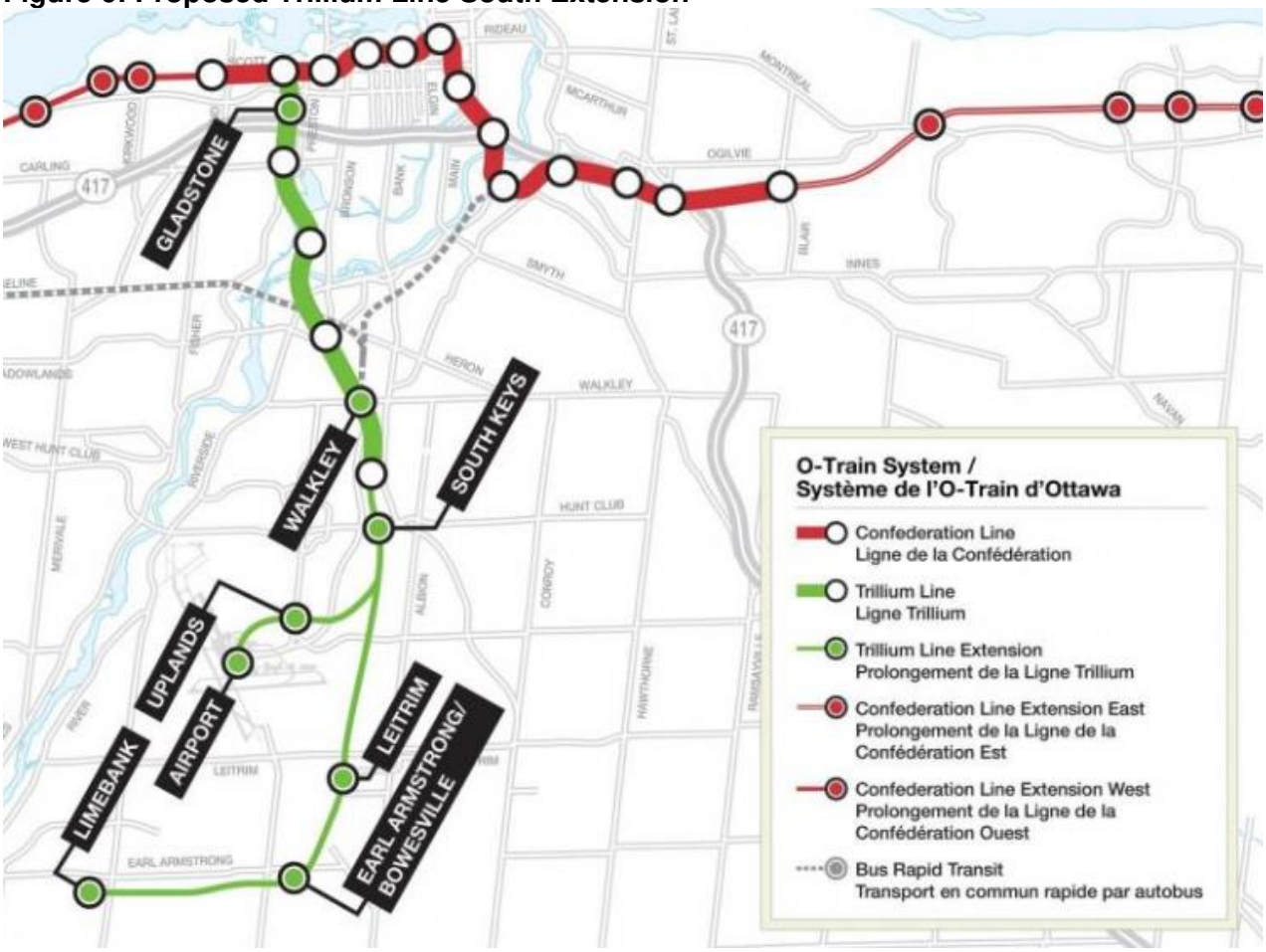
from Johnston Road to South Keys Place, along South Keys Place, and along Pebble Road from South Keys Place to the existing MUP east of South Keys Place. Phase 2 will see this bikeway extend along Southgate Road to Cahill Drive, along Cahill Drive from Southgate Road to Bank Street, along Dazé Street from Bank Street to the South Keys mall entrance, extending to the South Keys transit station and the Airport Parkway MUP.

The OCP also identifies new bike lanes on Hunt Club Road between Bank Street and Lorry Greenburg Drive, as part of Phase 2 of the Affordable Cycling Network.

Included in the 2031 Rapid Transit and Transit Priority (RTTP) Affordable Network, Hunt Club Road will be widened to provide exclusive bus lanes and transit signal priority between Albion Road and Uplands Drive. The TMP identifies that funding is available for improvements at Bank Street. The TMP Network Concept includes transit signal priority and queue jump lanes along Hunt Club Road at selected intersections between Uplands Drive and Riverside Drive, and between Conroy Road and Albion Road.

The Trillium Line South Extension will see the existing O-Train system extended south from Greenboro Station to Limebank Road in Riverside South along with a link to the Ottawa Macdonald-Cartier International airport. The proposed Trillium Line extension is shown in **Figure 6**. Revenue service for this extension is planned for 2022.

Figure 6: Proposed Trillium Line South Extension



4.2.2 Other Area Developments

A new development is planned for 1026-1054 Hunt Club Road. The site is currently occupied by two detached dwellings. The proposed redevelopment consists of an eight-storey hotel on the eastern portion of the site and an eight-storey retirement home on the western portion of the site. The proposed retirement home will be constructed initially and will contain 145 units. The proposed hotel will be constructed as part of a future phase and is anticipated to contain 150 units. Access for the development is proposed via two right-in right-out driveways to Hunt Club Road. Full buildout is anticipated by 2021.

4.3 Study Area and Time Periods

The proposed study area for the modules in the Design Review component is the development property and the boundary roads (i.e., Bank Street and Hunt Club Road).

The time periods chosen for this TIA are the weekday AM and PM peak hours. The TIA will review the 2021 build out year and the 2026 horizon year.

4.4 Exemptions Review

This module reviews possible exemptions from the final TIA, as outlined in the TIA Guidelines. As described in Section 3.0, the trip generation trigger was not met. Therefore, the Network Impact Component (Modules 4.5 to 4.9) of the TIA analysis is exempt from further review. The applicable exemptions for this site are shown in **Table 3**.

Table 3: TIA Exemptions

Module	Element	Exemption Criteria	Exemption Applies
Design Review Component			
4.1 Development Design	*4.1.2* Circulation and Access	• Only required for site plans	No
	4.1.3 New Street Networks	• Only required for plans of subdivision	Yes
4.2 Parking	*4.2.1* Parking Supply	• Only required for site plans	No
	4.2.2 Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	Yes

Although exempt from the analysis, City staff have requested the TIA include Module 4.5: Transportation Demand Management (TDM).

Based on the foregoing, the following modules will be included in the TIA report:

- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design
- Module 4.5: Transportation Demand Management

5.0 FORECASTING

5.1 Development-Generated Traffic

5.1.1 Trip Generation

The proposed development, consisting of one, seven, and fourteen storey addition to the existing Waterford Retirement Community, will provide a total of 144 new units.

Trips generated by the proposed development have been estimated using the peak hour rates identified in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition for Land Use Code 253 (Congregate Care Facility). Trips generated using the ITE rates have been converted to person trips by using an ITE Trip to Person Trip adjustment factor of 1.28, consistent with the TIA Guidelines. The Person Trips generated by the proposed development are summarized in **Table 4**.

Table 4: Person Trip Generation

Land Use	ITE Code	Units/ GFA	AM Peak (PPH)			PM Peak (PPH)		
			IN	OUT	TOT	IN	OUT	TOT
Proposed Development								
Congregate Care Facility	253	144	8	5	13	17	15	32

The 2011 *TRANS O-D Survey Report* indicates that the proposed development is located within the Hunt Club district. It is noteworthy that the western portion of the subject site is also located within a Transit Oriented Development (TOD) zone (within 600m radius of a transit station). However, the actual walking distance between the main building entrance and the South Keys Transit Station is approximately 750m.

Due to the nature of the proposed land use (retirement home), and the actual walking distance to the South Keys Transit Station, the modal shares associated with the proposed development are anticipated to be mostly consistent with the Hunt Club District. The modal share values are based on the typical commuter pattern, represented by all observed trips from/within the Hunt Club District in the AM peak hour, and all observed trips to/within the Hunt Club District in the PM peak hour. The transit mode share has been decreased by 10% and this difference has been re-assigned to the non-auto mode share as many of the residents are anticipated to walk to the surrounding retail uses.

A full breakdown of the projected person trips by modal share is shown in **Table 5**.

Table 5: Person Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		IN	OUT	TOT	IN	OUT	TOT
Proposed Development							
Person Trips		8	5	13	17	15	32
Auto Driver	**55%**	**4**	**3**	**7**	**9**	**8**	**17**
Auto Passenger	15%	1	1	2	3	2	5
Transit	15%	2	1	3	4	4	8
Non-Auto	15%	1	1	2	1	1	2

From the previous table, the proposed development is projected to generate an additional seven vehicle trips during the AM peak hour and seventeen vehicle trips during the PM peak hour.

5.1.2 Trip Distribution

The trip distribution for the proposed development is based on existing traffic patterns within the study area. The trip distribution is as follows:

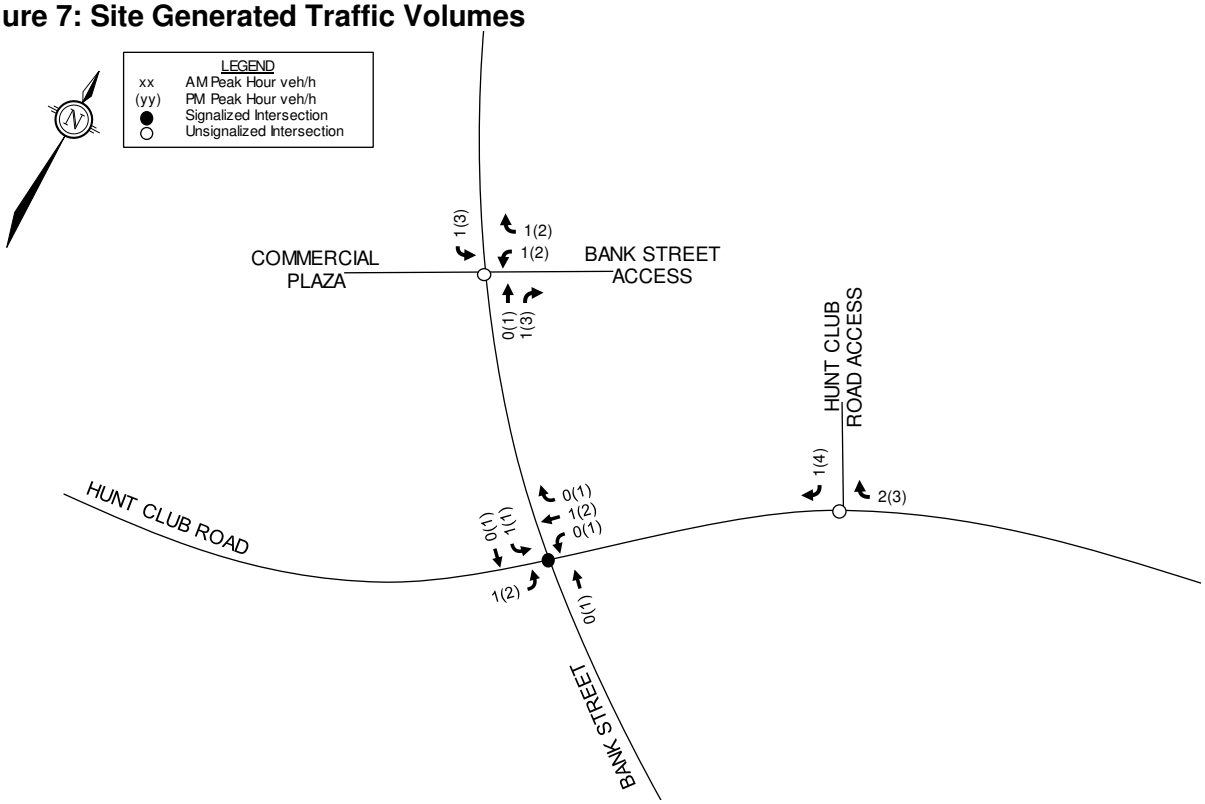
- 30% to/from the north via Bank Street
- 20% to/from the east via Hunt Club Road
- 30% to/from the west via Hunt Club Road
- 20% to/from the south via Bank Street

Trips arriving from the east have been assigned to the right-in right-out access on Hunt Club Road. All other trips arriving to the subject site have been assigned to the Bank Street access.

Trips departing to the west have been assigned to the right-in right-out access on Hunt Club Road. All trips departing to the east have been assigned to the Bank Street access. Two thirds of trips departing to the north have been assigned to the Bank Street access with the remaining one third being assigned to the Hunt Club Road access. One third of trips departing to the south have been assigned to the Bank Street access with the remaining two thirds being assigned to the Hunt Club Road access.

Site generated traffic volumes are shown in **Figure 7**.

Figure 7: Site Generated Traffic Volumes



5.2 Background Traffic

5.2.1 General Background Growth

A review of the City of Ottawa's Strategic Long-Range Transportation Model (comparing snapshots of 2011 and 2031 AM peak hour volumes), historic counts at the Bank Street/Hunt Club Road intersection, and other developments was conducted to determine an appropriate background growth rate for the study area roadways.

The 2017 Transportation Impact Study written in support of the development at 1026-1054 Hunt Club Road suggests a background growth rate of 0.5% per year along Hunt Club Road.

On the roadways within and around the study area, the Long-Range Model snapshots suggest a growth rate between -0.5% and +1.0% per annum. Captures of the Long-Range Model in the vicinity of the subject site are included in **Appendix D**.

Based on 2016 and 2019 traffic counts at the Bank Street/Hunt Club Road intersection, traffic volumes have generally increased 0.4% to 1.5% per year along Bank Street and 0.5% to 2.4% per year along Hunt Club Road. The City's Intersection Traffic Growth Rate figures, included in **Appendix D**, identify an annual growth rate between -2% and -0.2% for the Bank Street/Hunt Club Road intersection, for both the AM and PM peak hours.

The City of Ottawa uses the Long Range Model to project the long-range traffic trends along roadways and the snapshots are more representative of the long term growth compared to two traffic counts. Based on the foregoing, a background growth rate of 0.5% per year has been applied to the traffic volumes along Bank Street and Hunt Club Road.

5.2.2 Other Area Developments

A summary of other area developments was described in Section 4.2.2. Traffic from the proposed development at 1026-1054 Hunt Club Road has been added to background traffic in the study area. Relevant excerpts from the 2017 Transportation Impact Study are included in **Appendix F**.

5.2.3 Background Traffic at Site Accesses

As traffic counts at the site accesses were unavailable at the time of writing, traffic generated by for the existing retirement home (124 units) on-site was estimated using the methods outlined in Section 5.1.1. The existing retirement is anticipated to be generating six vehicle trips in the AM Peak and 15 vehicle trips in the PM peak hour. Traffic generated by the existing development was added to the existing site accesses based on the distribution presented in Section 5.1.2.

The northern Bank Street access is not overly used as it does not lead to the main parking area and it functions today as a service access. Note that with the closure of the northern Bank Street access, all existing site traffic has been distributed to the remaining southern Bank Street access and the Hunt Club Road access.

The Bank Street access is served by a median break which also allows access to the commercial plaza at 2430 Bank Street. Traffic generated by this commercial plaza has been estimated using the ITE Land Use Code 820 for shopping centre. The estimated gross floor area of this commercial plaza is 36,000 ft^2, based on aerial measurements using GeoOttawa. The existing commercial plaza is anticipated to be generating 24 vehicle trips in the AM Peak and 179 vehicle trips in the PM Peak hour. Trips generated by the existing commercial plaza have been assigned to the accesses based on existing traffic patterns on the adjacent roadways.

Background traffic volumes for the 2022 build out and 2027 horizon year are shown in **Figures 8** and **9**. Total traffic volumes for the 2022 and 2027 horizon year are shown in **Figures 10** and **11**.

Figure 8: 2022 Background Traffic Volumes

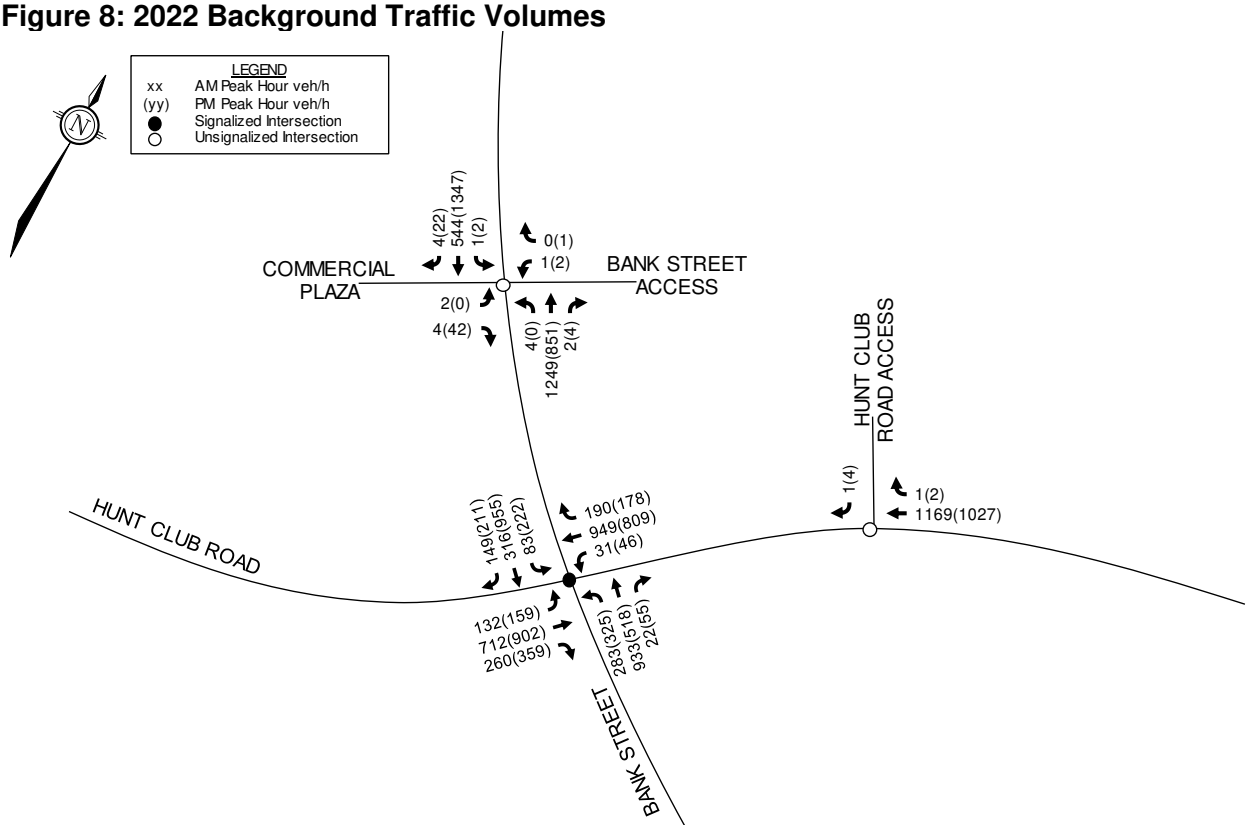


Figure 9: 2027 Background Traffic Volumes

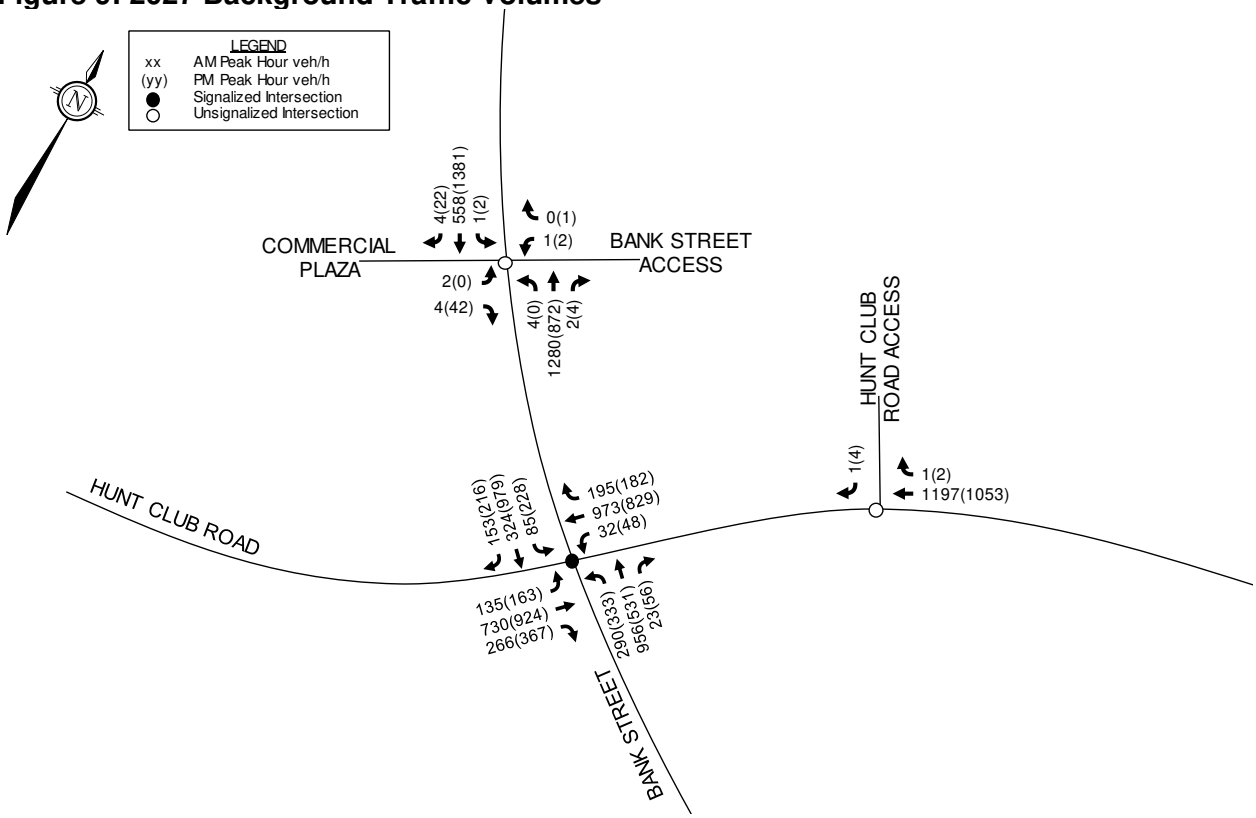


Figure 10: 2022 Total Traffic Volumes

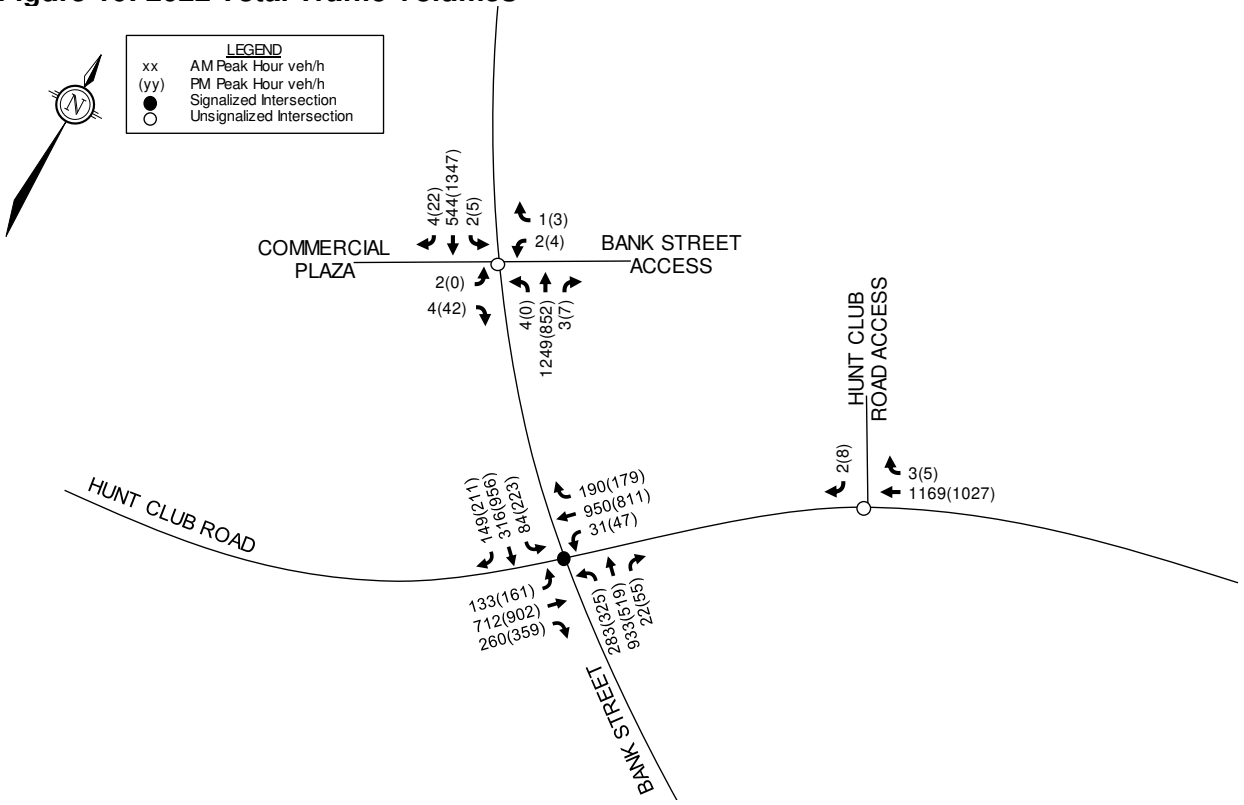
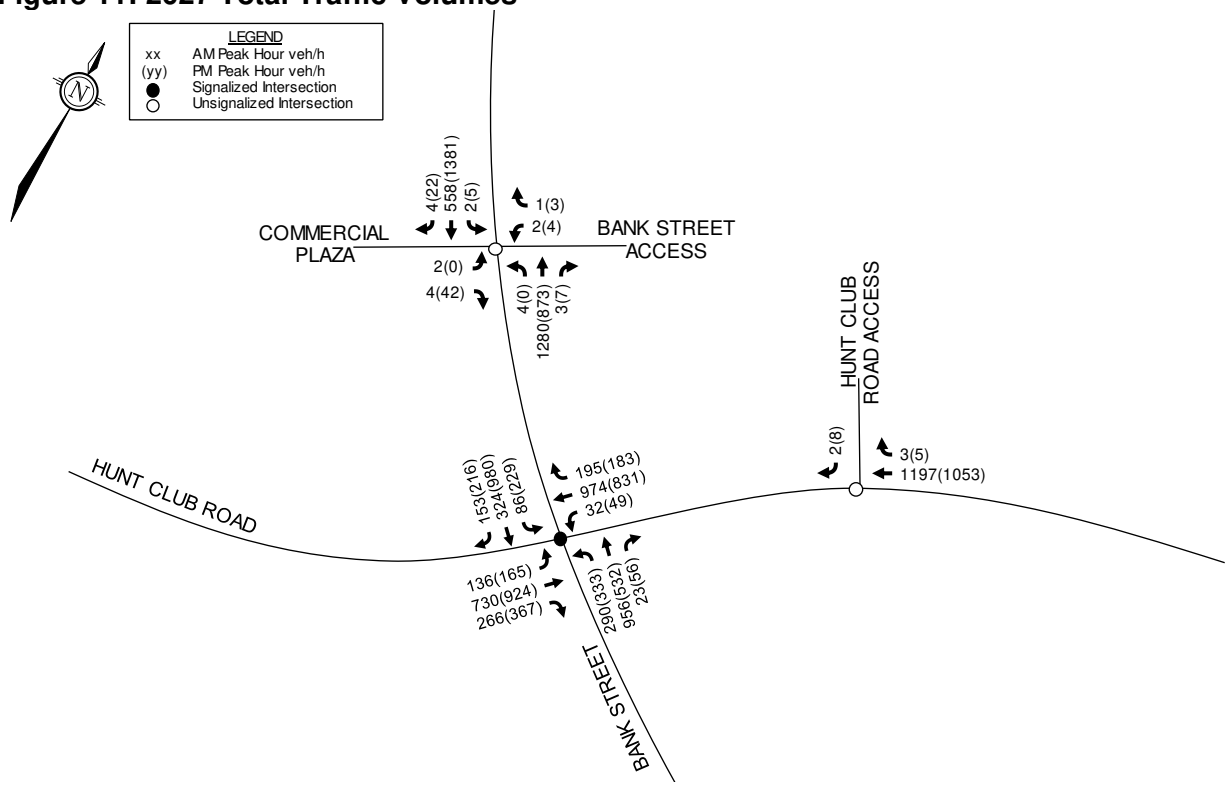


Figure 11: 2027 Total Traffic Volumes



6.0 ANALYSIS

6.1 Development Design

6.1.1 Design for Sustainable Modes

Pedestrian walkways will be provided to connect the proposed building entrances to the existing building entrances and to the existing facilities along Bank Street and Hunt Club Road, as shown on the site plan. Sidewalks are depressed and continuous across the existing accesses to Hunt Club Road and to Bank Street. The existing northern vehicular access will be removed as part of this application to provide a new resident garden at the rear of the existing building and will provide pedestrian connectivity to Bank Street.

The nearest bus stops to the subject site are described in Section 4.1.5.

OC Transpo's service design guideline for peak period service is to provide service within a five minute (400m) walk of the home, school and work location of 95% of urban residents. The actual walking distance from the main building entrance to the nearest bus stops was measured. Stop #4244 is a 90m walk, stop #4246 is a 110m walk, stop #4245 is a 250m walk, and stop #5808 is a 350m walk from the proposed development. Additionally, rapid transit and future light rail transit is available at the South Keys Transit Station, located at an approximately 750m walk (measured using legal crosswalks) from the proposed development.

Bicycle parking for the proposed development will be in accordance with the City of Ottawa's Zoning By-Law (ZBL). A bicycle rack with storage for eleven bicycles is proposed north of the Hunt Club Road access and an existing bicycle rack with storage for twelve bicycles will be maintained near the rear of the building. The remainder of the bicycle parking will be provided in the underground garage. Bicycle parking requirements are discussed further in Section 6.2.

A review of the Transportation Demand Management (TDM) – Supportive Development Design and Infrastructure Checklist has been completed. A copy of the TDM checklist is included in **Appendix G**. All required TDM measures in the TDM checklist are met.

6.1.2 Circulation and Access

The proposed development will be served by the existing right-in right-out access to Hunt Club Road and the existing southerly full movement access to Bank Street. The northerly access to Bank Street will be closed as part of this application.

The City has indicated concerns with the median break at the Bank Street access based on the collision history for 2014-2018. Based on the collision review, there were 15 collisions that occurred on Bank Street between Hunt Club Road and the first opening to the north in the median on Bank Street (i.e., the median break serving the 2430 and 2431 Bank Street accesses). Of the collisions, there were ten collisions associated with the 2430 Bank Street plaza across the street from the subject site, and only one collision associated with the access to 2431 Bank Street. The remainder of the collisions were not associated with either of the accesses (i.e., northbound and southbound through traffic only). As there was only one collision associated with the access to the subject site (2431 Bank Street), it is proposed that full movement vehicular access be

maintained at the existing Bank Street driveway. A further review of sight lines and access intersection operations are reviewed in the subsequent sections.
Garbage collection will occur north of the proposed building, as shown on the site plan.

The existing fire route is shown on the site plan and includes the main drive aisle from the Hunt Club Road access to the southerly Bank Street access.

A new drop-off loop is proposed in front of the main entrance to the proposed building addition. This drop off loop will accommodate one-way vehicular travel. A loading zone is proposed in front of the building which will be used for residents moving.

6.2 Parking

The subject site is located in Area C on Schedule 1 and Area Z on Schedule 1A of the City of Ottawa's ZBL. Within the areas shown as Area Z on Schedule 1A, no off-street motor vehicle parking is required to be provided.

No maximum or minimum vehicular parking rates are identified for a retirement home within Area Z in the ZBL. Minimum bicycle parking rates for the proposed development are identified in the ZBL and are summarized in the following table.

Table 6: Parking Requirements per Zoning By-Law

Land Use	Minimum Rate	Units	Required	Proposed
Vehicular Parking				
Retirement Home	N/A	144 new + 124 existing	N/A	64 surface 133 underground
Bicycle Parking				
Retirement Home	0.25 per dwelling unit	144 new + 124 existing	67	67

Based on the foregoing, the proposed vehicular and bicycle parking spaces will meet the minimum requirements of the ZBL.

For the surface parking lot with 64 spaces, the City of Ottawa's *Accessibility Design Standards* outlines the requirement for 3 accessible spaces. Of these, 1 Type A space and 2 Type B spaces are required. For the underground parking lot with 132 spaces, the City of Ottawa's *Accessibility Design Standards* outlines the requirement for 5 accessible spaces. Of these, 2 Type A spaces and 3 Type B spaces are required. Vehicular parking will conform to the requirements of the City's *Accessibility Design Standards*.

6.3 Boundary Street Design

This section provides a review of the boundary streets (Bank Street and Hunt Club Road) using complete streets principles. The Multi-Modal Level of Service (MMLOS) guidelines produced by IBI Group in 2015 were used to evaluate the LOS of the boundary roadways for each mode of transportation. Schedule 'B' of the City of Ottawa's Official Plan indicates both boundary roadways

are in the 'General Urban Area', and Bank Street is located within 600m of a rapid transit station (South Keys Transit Station).

Targets for the Pedestrian Level of Service (PLOS), Bicycle Level of Service (BLOS), Transit Level of Service (TLOS), and Truck Level of Service (TkLOS) for the study area roadways are based on the targets for General Urban Area and targets within 600m of a rapid transit station, as identified in Exhibit 22 of the MMLOS guidelines.

The following summarizes the findings of the MMLOS segment analysis.

6.3.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS guidelines has been used to evaluate the segment PLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggest a target PLOS C for all road classes within the General Urban Area, and a PLOS A for all road classes within 600m of a rapid transit station. The results of the segment PLOS analysis are summarized in the following table.

Table 7: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed	Segment PLOS
Bank Street (East Side)					
2.0 m	0 m	> 3,000 vpd	No	60 km/h	E
Bank Street (West Side)					
2.0 m	0 m	> 3,000 vpd	No	60 km/h	E
Hunt Club Road (North Side)					
1.5 m	3.0 m	> 3,000 vpd	No	60 km/h	E
Hunt Club Road (South Side)					
2.0 m	0 m	> 3,000 vpd	No	60 km/h	E

6.3.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS guidelines has been used to evaluate the segment BLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggest a target BLOS C for Spine Routes on arterial roads in the General Urban Area (Hunt Club Road) and for arterial roads within 600m of a rapid transit station (Bank Street). The results of the segment BLOS analysis are in the following table.

Table 8: BLOS Segment Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Operating Speed	Segment BLOS
Bank Street					
Arterial	Spine	Mixed Traffic	2 in each direction	60 km/h	F
Hunt Club Road					
Arterial	Spine	Mixed Traffic	2 in each direction	60 km/h	F

6.3.3 Transit Level of Service (TLOS)

Exhibit 22 of the MMLOS guidelines do not suggest a target TLOS for roadways without rapid transit or transit priority designations. As transit service is currently provided along Hunt Club Road and Bank Street, and Hunt Club Road is identified as a transit priority corridor with continuous lanes in the RTTP Affordable Network, the TLOS of both boundary streets has been evaluated.

Table 9: TLOS Segment Analysis

Facility Type	Level/Exposure to Congestion Delay, Friction and Incidents			Segment TLOS
	Congestion	Friction	Incident Potential	
Bank Street				
Mixed Traffic	Yes	Medium	Medium	E
Hunt Club Road				
Mixed Traffic	Yes	Medium	Medium	E

6.3.4 Truck Level of Service (TkLOS)

Exhibit 20 of the MMLOS guidelines has been used to evaluate the segment TkLOS of the boundary roadways. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for truck routes on arterial roadways in the General Urban Area (Hunt Club Road) and for truck routes on arterial roadways within 600m of a rapid transit station (Bank Street). The results of the segment TkLOS analysis are summarized in the following table.

Table 10: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes per Direction	Segment TkLOS
Bank Street		
> 3.7m	2	A
Hunt Club Road		
> 3.7m	2	A

6.3.5 Segment MMLOS Summary

A summary of the results of the segment MMLOS analysis for the boundary roadways is provided in the following table.

Table 11: Segment MMLOS Summary

Segment	PLOS	BLOS	TLOS	TkLOS
Bank Street	E	F	E	A
Target	**A**	**C**	**-**	**D**
Hunt Club Road	E	F	E	A
Target	**C**	**C**	**C**	**D**

The results of the segment MMLOS analysis can be summarized as follows:

- Neither boundary street meets the target PLOS;
- Neither boundary street meets the target BLOS;
- Hunt Club Road does not meet the target TLOS;
- Both boundary streets meet the target TkLOS; and

Bank Street
Bank Street meets the target TkLOS but does not meet the target PLOS or BLOS.

Bank Street is currently operating with a PLOS E. Based on the MMLOS guidelines, the target PLOS A is not achievable along roadways with an annual average daily traffic (AADT) greater than 3,000 vehicles per day and an operating speed of 60km/h.

Bank Street is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the BLOS C along Bank Street. However, The Ontario Traffic Manual (OTM) – Book 18 suggests a desired bike lane width of 1.8m and an absolute minimum width of 1.5m. The OTM *Desirable Cycling Facility Pre-Selection Nomograph* describes the desirable cycling facility for a roadway, given the roadway's average annual daily traffic (AADT) and operating speed. For roadways with a curbside AADT of approximately 6,000 vehicles per day and an operating speed of 60km/h, the nomograph suggests that either exclusive bike lanes or a separated cycling facility should be considered. This is identified for the City's consideration as funding becomes available. No cycling projects are currently planned for Bank Street as part of the City's 2031 Affordable Network.

Hunt Club Road
Hunt Club Road meets the target TkLOS but does not meet the target PLOS, BLOS, or TLOS.

Hunt Club Road is currently operating with a PLOS F. Based on the MMLOS guidelines, the target PLOS C can be achieved by implementing a 2.0m sidewalk and a minimum boulevard width of 2.0m. This is identified for the City's consideration as funding becomes available.

Hunt Club Road is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the target BLOS C along Hunt Club Road. The Ottawa Cycling Plan indicates that bike lanes are planned on Hunt Club Road from Bank Street to Lorry Greenberg Drive, as part of Phase 2, achieving the target BLOS.

The TLOS of Hunt Club Road does not achieve the target TLOS C. The target TLOS can be achieved by implementing a bus lane with limited parking and driveway friction. The RTTP Affordable Network identifies road widening on Hunt Club Road to provide exclusive bus lanes and transit signal priority between Albion Road and Uplands Drive, with funding for improvements at Bank Street.

6.4 Access Intersection Design

The proposed development will be served by the existing right-in right-out access to Hunt Club Road and the existing southerly full movement access to Bank Street. The Hunt Club access is approximately 8.8m in width and the Bank Street access is approximately 8.4m in width, measured along the proposed road widening. No changes are proposed to these existing accesses. The access on Bank Street is located approximately 72m north of Hunt Club Road, and the access on Hunt Club Road is located approximately 82m east of Bank Street, measuring from the nearest limit of the approach and the nearest intersecting street line or its extension.

The subject property has approximately 90m of frontage on Hunt Club Road and approximately 160m of frontage on Bank Street. Section 25 (a) of the City of Ottawa's *Private Approach By-Law* identifies a maximum number of private approaches permitted based on the amount of frontage. Based on this, up to two two-way private approaches are permitted on each Hunt Club Road and Bank Street. The number of private approaches meets the requirements of the *Private Approach By-Law.*

Section 25 (c) of the City of Ottawa's *Private Approach By-Law* identifies a requirement for two-way accesses to have a width no greater than 9m, as measured at the street line. Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 6.7m for a double traffic lane. The existing accesses range between 8.4-8.8m in width, thereby meeting these requirements.

Section 25 (m) of the *Private Approach By-Law* identifies a requirement for apartment buildings with 200-299 parking spaces to provide a minimum distance of 60m at the street line between the private approach and the nearest intersecting street line. Based on the spacing described, the minimum distance as outlined in the *Private Approach By-Law* is satisfied.

A review of the suggested minimum corner clearances to accesses at major intersections from the Transport Association of Canada (TAC) *Geometric Design Guide for Canadian Roads* was conducted. For an arterial road intersecting with an arterial road, with signals at the cross road, a minimum clearance of 70m (from nearest edge to nearest edge) is suggested between the intersection and any access. Based on the existing spacing of the accesses, this minimum requirement is satisfied.

Section 25 (p) of the *Private Approach By-Law* identifies a requirement to provide a minimum spacing of 3m between the nearest edge of the private approach and the property line, as measured at the street line. The proposed access along Hunt Club Road is located approximately 2m from the eastern property line. As the access is located as far away from the Bank Street/Hunt

Club Road intersection and it is an existing condition, no changes are recommended. A waiver to the *Private Approach By-Law* will be required.

Intersection sight distance (ISD) at the proposed accesses has been determined using the TAC *Geometric Design Guide for Canadian Roads.* The ISD for the access, for a design speed of 70km/h (10km/h above the posted speed limit), is as follows:

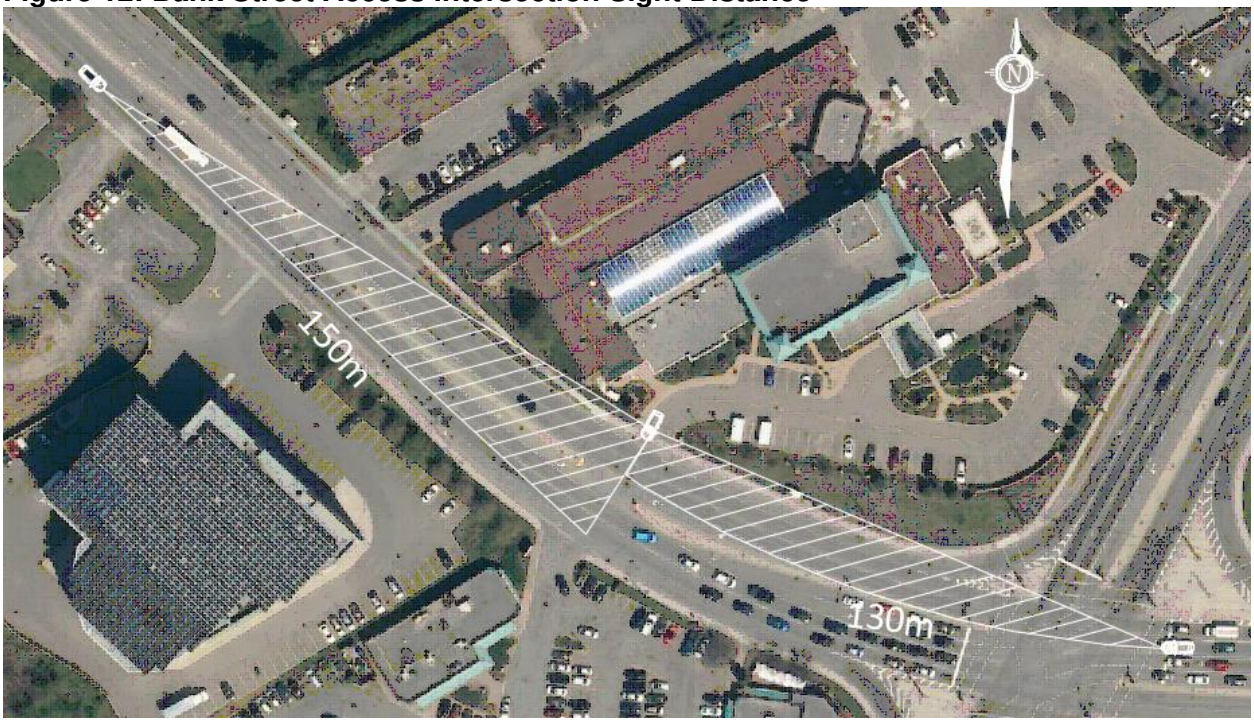
- Left Turn from Minor Road 150 metres
- Right Turn from Minor Road 130 metres

The required ISD for a passenger vehicle to turn left of right from the Bank Street access is shown in **Figure 12**.

Additionally, the stopping sight distance (SSD) requirement for a design speed of 70km/h is 105m for vehicles turning left or right at the accesses.

There is slight horizontal curvature along Bank Street east of the site access, however, as demonstrated in **Figure 11**, the ISD is not impacted. Based on the foregoing, available sightlines are within recommended guidelines to allow safe all directional access to the development.

Figure 12: Bank Street Access Intersection Sight Distance



6.4.1 Intersection Operations

A review of the intersection operations at the site accesses and at the adjacent signalized intersection of Bank Street/Hunt Club Road was conducted and is summarized in the following table. The 2027 total traffic volume projections, identified above, were used in order to account for the worst-case scenario. Synchro reports are included in **Appendix H**.

The City has indicated that a concern with the potential increase in pedestrian demand, notably for seniors, at the nearby signalized intersection of Bank Street/Hunt Club Road. Per the City's TIA guidelines, typical pedestrian walk speed should be 1.0 m/second, or 0.8-0.9 m/second if near high elderly population. The intersection was modelled with the current signal timing, with optimized timing, and with an increased pedestrian walk time (0.8 m/second walk speed) in order to accommodate the elderly population.

Table 12: Intersection Operations

Intersection	AM Peak			PM Peak		
	Max. v/c or Delay	Mvmt	LOS	Max. v/c or Delay	Mvmt	LOS
2027 Total Traffic						
Hunt Club Road Access	13 sec.	SB	B	12 sec.	SB	B
Bank Street Access	26 sec.	WB	D	36 sec.	WB	E
Bank Street/Hunt Club Road[1]	**1.06**	**WBT**	**F**	**1.02**	**NBL**	**F**
Bank Street/Hunt Club Road[2]	0.91	WBT	E	0.91	NBL	E
Bank Street/Hunt Club Road[3]	0.97	WBT	E	0.92	NBL	E

1. Intersection modeled with existing signal timing
2. Intersection modeled with optimized signal timing
3. Intersection modeled with increased pedestrian walk time

Based on the foregoing, no capacity or queuing problems are anticipated at the site's vehicular accesses.

The Bank Street/Hunt Club Road intersection is anticipated to operate with a v/c of 1.06 (LOS F) in the AM peak with the existing timing plan. With optimized signal timing, the intersection is anticipated to achieve the target LOS E with a maximum v/c ratio of 0.91 during the AM and PM peaks.

With increased pedestrian walk time, the intersection is anticipated to operate with a maximum v/c ratio of 0.97 in the AM peak. The scenario with increased pedestrian walk time was modeled with an increased cycle length of 125 seconds. Note that increasing the cycle length at this intersection will likely result in an increased cycle length at other nearby intersection as the network is coordinated. This is identified for the City's consideration as the overall network impact is outside the scope of this report. Note that while the TIA guidelines suggest a pedestrian walk speed of 0.8 m/second for the elderly population, the Ontario Traffic Manual (OTM) Book 12 suggests that a 1.0m/second walk speed may be used at crossings frequented by young children, seniors, and special needs persons. Based on the above, there is sufficient capacity at the Bank Street/Hunt Club Road to accommodate an increased pedestrian walk time for the elderly population.

The maximum westbound queuing length anticipated at the Bank Street/Hunt Club Road intersection is approximately 185m in the AM peak, which will extend past the existing Hunt Club Road site access. With optimized signal timing, this queue length improves to approximately 150m in the AM peak. With increased pedestrian walk time, this queue length is anticipated to be approximately 170m in the AM peak.

The maximum southbound queuing length anticipated at the Bank Street/Hunt Club Road intersection is approximately 150m in the PM peak, which will extend past the existing southerly Bank Street site access. With increased pedestrian walk time, this queue length is anticipated to increase to approximately 155m.

Based on the foregoing, the 95th percentile queue length on the southbound and westbound approaches to the Bank Street/Hunt Club Road intersection may periodically extend past the site accesses, and traffic departing the site may be required to rely on courtesy of drivers along the adjacent driveways.

6.5 Transportation Demand Management

Although not technically required for a development that generates less than 60 peak hour person trips, a review of the TDM – Measures checklist was conducted and can be found in **Appendix G**. To encourage travel by sustainable modes, the proponent agrees to provide the following TDM measures:

- Display relevant transit schedules and route maps at entrances; and
- Unbundle parking cost from monthly rent.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing, the conclusions and recommendations of this TIA can be summarized as follows:

Development Design

- Pedestrian walkways will be provided to connect the proposed building entrances to the existing building entrances and to the existing facilities along Bank Street and Hunt Club Road, as shown on the site plan. Sidewalks are depressed and continuous across the existing accesses to Hunt Club Road and to Bank Street. The existing northern vehicular access will be removed as part of this application to provide a new resident garden at the rear of the existing building and will provide pedestrian connectivity to Bank Street.
- There are four OC Transpo bus stops within a five-minute (400m) walking distance of the proposed development. Additionally, rapid transit and future light rail transit is available at the South Keys Transit Station, located at an approximately 750m walk from the proposed development.
- A bicycle rack with storage for eleven bicycles is proposed north of the Hunt Club Road access and an existing bicycle rack with storage for twelve bicycles will be maintained near the rear of the building. The remainder of the bicycle parking will be provided in the underground garage.
- All required TDM measures in the TDM checklist are met.

Parking

- The proposed vehicular and bicycle parking spaces will meet the minimum requirements of the ZBL.
- Vehicular parking will conform to the requirements of the City's *Accessibility Design Standards*.

Boundary Street Design

- Bank Street meets the target TkLOS but does not meet the target PLOS or BLOS
    - Bank Street is currently operating with a PLOS E. Based on the MMLOS guidelines, the target PLOS A is not achievable along roadways with an annual average daily traffic (AADT) greater than 3,000 vehicles per day and an operating speed of 60km/h.
    - Bank Street is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the BLOS C along Bank Street. However, The Ontario Traffic Manual (OTM) – Book 18 suggests a desired bike lane width of 1.8m and an absolute minimum width of 1.5m. The OTM *Desirable Cycling Facility Pre-Selection Nomograph* describes the desirable cycling facility for a roadway, given the roadway's average annual daily traffic (AADT) and operating speed. For roadways with a curbside AADT of approximately 6,000 vehicles per day and an operating speed of 60km/h, the nomograph suggests that either exclusive bike lanes or a separated cycling facility should be considered.
- Hunt Club Road meets the target TkLOS but does not meet the target PLOS, BLOS, or TLOS.
    - Hunt Club Road is currently operating with a PLOS F. Based on the MMLOS guidelines, the target PLOS C can be achieved by implementing a 2.0m sidewalk and a minimum boulevard width of 2.0m. This is identified for the City's consideration as funding becomes available.
    - Hunt Club Road is currently operating with a BLOS F. Based on the MMLOS guidelines, the provision of bike lanes with a minimum width of 1.2m would achieve the target BLOS C along Hunt Club Road. The Ottawa Cycling Plan indicates that bike lanes are planned on Hunt Club Road from Bank Street to Lorry Greenberg Drive, as part of Phase 2, achieving the target BLOS.
    - The TLOS of Hunt Club Road does not achieve the target TLOS C. The target TLOS can be achieved by implementing a bus lane with limited parking and driveway friction. The RTTP Affordable Network identifies road widening on Hunt Club Road to provide exclusive bus lanes and transit signal priority between Albion Road and Uplands Drive, with funding for improvements at Bank Street.

Access Design

- The proposed development will be served by the existing right-in right-out access to Hunt Club Road and the existing southerly full movement access to Bank Street. The existing northerly access to Bank Street will be closed as part of this application.
- The proposed access along Hunt Club Road is located approximately 2m from the eastern property line. As the access is located as far away from the Bank Street/Hunt Club Road intersection and it is an existing condition, no changes are recommended. A waiver to the *Private Approach By-Law* will be required.
- The accesses meet all other requirements of the *Private Approach By-Law* and TAC requirements for corner clearance.
- Available sightlines at the Bank Street access are within recommended guidelines to allow safe all directional access to the development.
- No capacity or queuing problems are anticipated at the site's vehicular accesses.
- The maximum westbound queuing length anticipated at the Bank Street/Hunt Club Road intersection is approximately 185m in the AM peak, which will extend past the existing Hunt Club Road site access. The maximum southbound queuing length anticipated at the

Bank Street/Hunt Club Road intersection is approximately 150m in the PM peak, which will extend past the existing southerly Bank Street site access.

- There is sufficient capacity at the Bank Street/Hunt Club Road to accommodate an increased pedestrian walk time for the elderly population.
- The 95th percentile queue length on the southbound and westbound approaches to the Bank Street/Hunt Club Road intersection may periodically extend past the site accesses, and traffic departing the site may be required to rely on courtesy of drivers along the adjacent driveways.

Transportation Demand Management

- To encourage travel by sustainable modes, the proponent agrees to provide the following TDM measures:
  - Display relevant transit schedules and route maps at entrances; and
  - Unbundle parking cost from monthly rent.

NOVATECH

Prepared by:

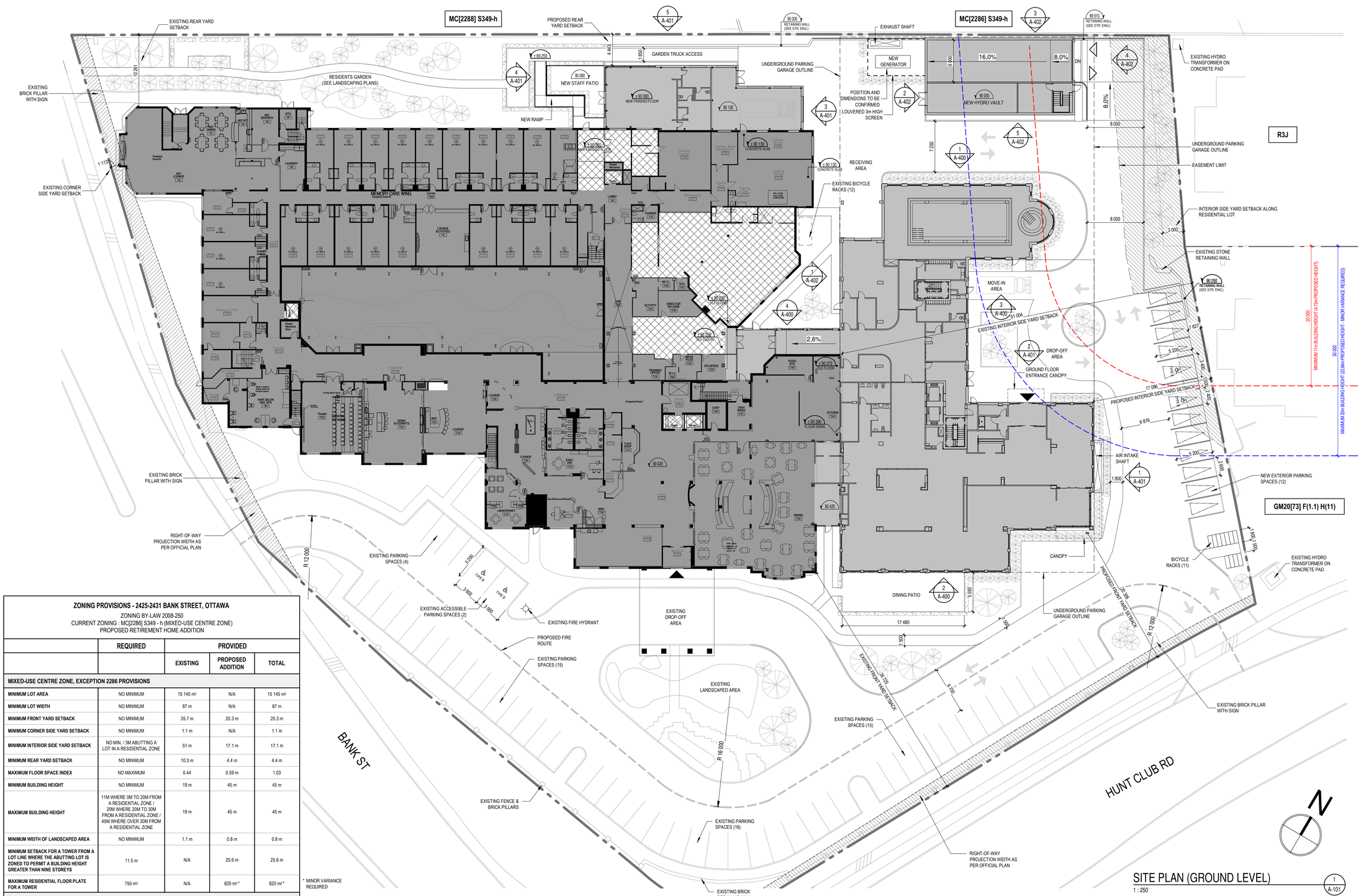
Rochelle Fortier, B.Eng.
E.I.T. | Transportation/Traffic

Reviewed by:

Brad Byvelds, P.Eng.
Project Coordinator | Transportation/Traffic

APPENDIX A

Site Plan



SITE PLAN (GROUND LEVEL)

1 : 250

1 / A-101

ZONING PROVISIONS - 2425-2431 BANK STREET, OTTAWA

ZONING BY-LAW 2008-250
CURRENT ZONING : MC[2286] S349 - h (MIXED-USE CENTRE ZONE)
PROPOSED RETIREMENT HOME ADDITION

	REQUIRED	PROVIDED		
		EXISTING	PROPOSED ADDITION	TOTAL
MIXED-USE CENTRE ZONE, EXCEPTION 2286 PROVISIONS				
MINIMUM LOT AREA	NO MINIMUM	15 145 m²	N/A	15 145 m²
MINIMUM LOT WIDTH	NO MINIMUM	87 m	N/A	87 m
MINIMUM FRONT YARD SETBACK	NO MINIMUM	35.7 m	20.3 m	20.3 m
MINIMUM CORNER SIDE YARD SETBACK	NO MINIMUM	1.1 m	N/A	1.1 m
MINIMUM INTERIOR SIDE YARD SETBACK	NO MIN. / 3M ABUTTING A LOT IN A RESIDENTIAL ZONE	51 m	17.1 m	17.1 m
MINIMUM REAR YARD SETBACK	NO MINIMUM	10.3 m	4.4 m	4.4 m
MAXIMUM FLOOR SPACE INDEX	NO MAXIMUM	0.44	0.59 m	1.03
MINIMUM BUILDING HEIGHT	NO MINIMUM	19 m	45 m	45 m
MAXIMUM BUILDING HEIGHT	11M WHERE 0M TO 20M FROM A RESIDENTIAL ZONE / 20M WHERE 20M TO 30M FROM A RESIDENTIAL ZONE / 45M WHERE OVER 30M FROM A RESIDENTIAL ZONE	19 m	45 m	45 m
MINIMUM WIDTH OF LANDSCAPED AREA	NO MINIMUM	1.1 m	0.8 m	0.8 m
MINIMUM SETBACK FOR A TOWER FROM A LOT LINE WHERE THE ABUTTING LOT IS ZONED TO PERMIT A BUILDING HEIGHT GREATER THAN NINE STOREYS	11.5 m	N/A	25.6 m	25.6 m
MAXIMUM RESIDENTIAL FLOOR PLATE FOR A TOWER	750 m²	N/A	820 m² *	820 m² *
PARKING PROVISIONS (AREA Z)				
MINIMUM PARKING SPACES	NO MINIMUM	52	145	197
MINIMUM ACCESSIBLE PARKING SPACES	AT GRADE : 1 TYPE A & 2 TYPE B BELOW GRADE : 2 TYPE A & 3 TYPE B	AT GRADE : 2 TYPE B	AT GRADE : 1 TYPE A & 1 TYPE B BELOW GRADE : 2 TYPE A & 3 TYPE B	AT GRADE : 1 TYPE A & 3 TYPE B BELOW GRADE : 2 TYPE A & 3 TYPE B
MINIMUM BICYCLE PARKING SPACES	0.25 PER DWELLING OR ROOMING UNIT = 67	12	55	67
AMENITY AREA PROVISIONS				
TOTAL AMENITY AREA	6 m² PER DWELLING UNIT AND 10% OF THE GFA OF EACH ROOMING UNIT = 1 515 m²	2 524 m²	2 914 m²	5 438 m²
COMMUNAL AMENITY AREA	50% OF REQUIRED TOTAL AMENITY AREA = 758 m²	2 524 m²	1 775 m²	4 299 m²

* MINOR VARIANCE REQUIRED

LEGEND

- PROPERTY LINE
- SET BACK LINE
- MAIN ENTRANCE
- VEHICULAR ENTRANCE
- PEDESTRIAN CROSSING
- EXISTING BUILDING
- NEW CONSTRUCTION
- EXISTING BUILDING RENOVATIONS

AREA SUMMARY

LOT AREA :	15 145 m²
LOT COVERAGE :	6 176 m² (40.8%)
EXISTING BUILDING GFA* :	6 710 m²
NEW CONSTRUCTION GFA* :	8 860 m²
PERCENTAGE OF LANDSCAPED AREA WITHIN PARKING LOTS :	24 %
TOTAL LANDSCAPED AREA :	27 %

*AS DEFINED BY ZONING BY-LAW 2008-250

RESIDENTIAL UNITS SUMMARY

EXISTING BUILDING :	124 ROOMING UNITS
NEW CONSTRUCTION :	144 DWELLING UNITS
GROUND FLOOR :	0 UNITS
2ND TO 7TH FLOOR :	(6x14) = 84 UNITS
8TH TO 11TH FLOOR :	(4x10) = 40 UNITS
12TH TO 13TH FLOOR :	(2x7) = 14 UNITS
14TH FLOOR :	6 UNITS
TOTAL EXISTING + NEW :	268 UNITS

PARKING SUMMARY

VEHICULAR PARKING

GARAGE LEVEL 2 (NEW) :	72
GARAGE LEVEL 1 (NEW) :	61 (INCL. 5 ACCESSIBLE SPACES)
GRADE LEVEL (EXISTING) :	52 (INCL. 2 ACCESSIBLE SPACES)
GRADE LEVEL (NEW) :	12 (INCL. 2 ACCESSIBLE SPACES)
TOTAL VEHICULAR PARKING PROVIDED :	197*

(133 INDOOR SPACES + 64 OUTDOOR SPACES)

*INCLUDES 9 ACCESSIBLE SPACES

BICYCLE PARKING

GARAGE LEVEL 2 (NEW) :	44
GARAGE LEVEL 1 (NEW) :	0
GRADE LEVEL (EXISTING) :	12
GRADE LEVEL (NEW) :	11
TOTAL BICYCLE PARKING PROVIDED :	67

(44 INDOOR SPACES + 23 OUTDOOR SPACES)

NOTES GÉNÉRALES General Notes

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Novatech
240 Michael Cowpland Dr, Suite 200, Ottawa, ON
Tel: (613) 254-9643

STRUCTURE Structural
Cleland Jardine Engineering Ltd.
200-580 Terry Fox Drive, Kanata, ON K2L 4B9
Tel: (613) 591-1533

MÉCANIQUE / ÉLECTRICITÉ Mechanical / Electrical
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1600 Carling Ave, #530, Ottawa, ON K1Z 1G3
Tel: (613) 230-1186

ARCHITECTURE DE PAYSAGE Landscape Architect
James B. Lennox & Associates
3332 Carling Ave. Ottawa, ON K2H 5A8
Tel: (613) 772-5168

ARCHITECTES Architect
NEUF architect(e)s SENCRL
630, boul. René-Lévesque O. 32e étages, Montréal QC H3B 1S6
T 514 847 1117 NEUFarchitectes.com

SCEAU / Seal

Ordre des architectes du Québec — A 4840 HUGO GAGNON ARCHITECTE

NEUF
ARCHITECT(E)S
NEUF ARCHITECTES SENCRL

CLIENT Client
WATERFORD RETIREMENT COMMUNITY

OUVRAGE Project
WATERFORD OTTAWA SENIOR APARTMENTS

EMPLACEMENT Location
2425-2431 Bank Street, Ottawa

NO PROJET No.
12165

NO	RÉVISION	DATE (aa-mm-jj)
F	SITE PLAN CONTROL	20/04/28

Preliminary DO NOT USE FOR CONSTRUCTION

DESSINÉ PAR Drawn by
SJD/YHL

VÉRIFIÉ PAR Checked
HG

DATE (aa.mm.jj)
20/04/28

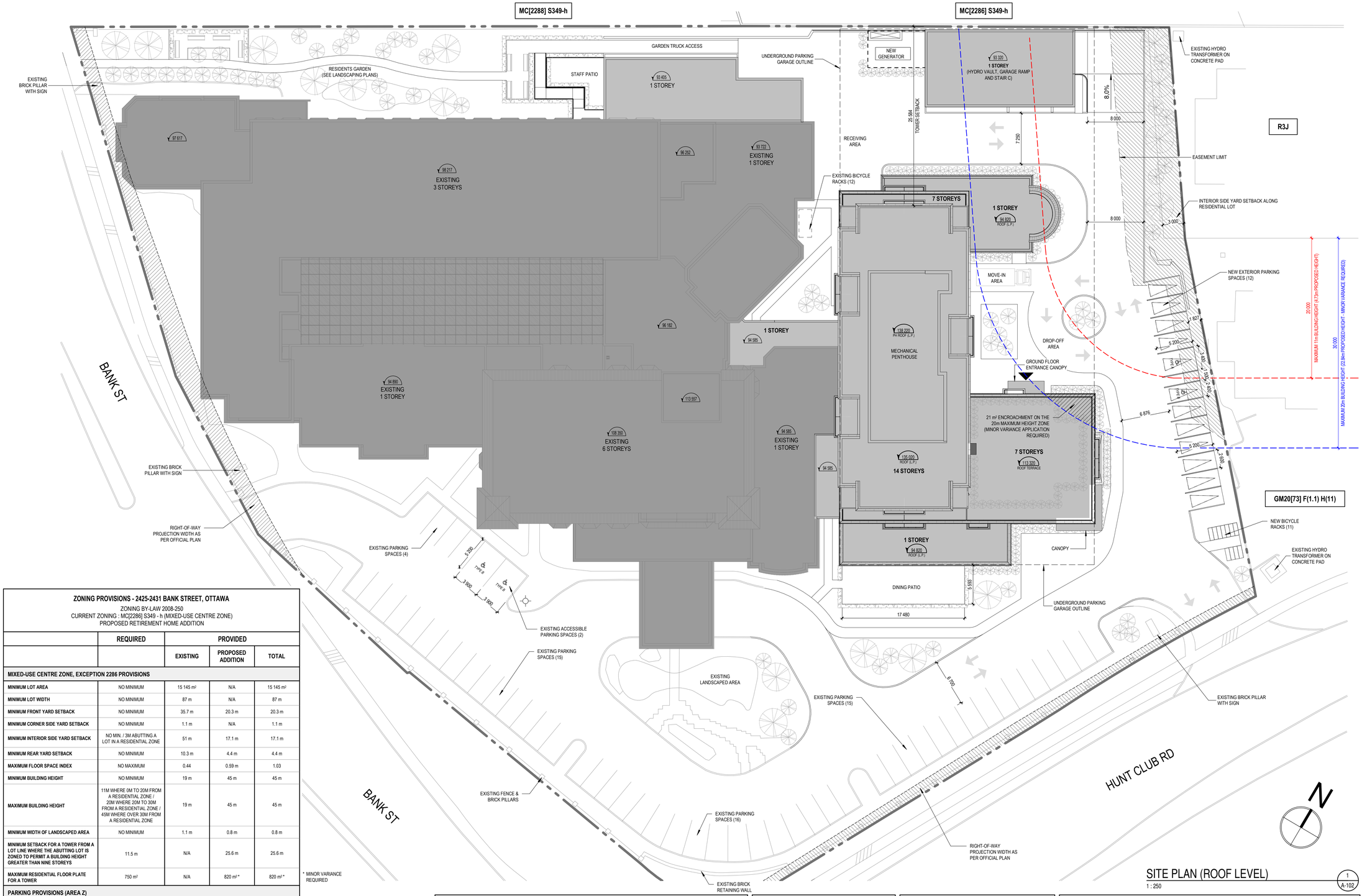
ÉCHELLE Scale
Comme indiqué

TITRE DU DESSIN Drawing Title
SITE PLAN (GROUND LEVEL)

RÉVISION Revision
F

NO. DESSIN Dwg Number
A-101

C:\Fichiers Revit Locaux\WOSA_12165_ARC_R20_sjdlagenais.rvt



SITE PLAN (ROOF LEVEL)
1 : 250
1 / A-102

ZONING PROVISIONS - 2425-2431 BANK STREET, OTTAWA

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LEGEND

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SCEAU / Seal

Ordre des architectes du Québec
A 4840
HUGO GAGNON
ARCHITECTE

NEUF
ARCHITECT(E)S
NEUF ARCHITECTES SENCRL

CLIENT Client
WATERFORD RETIREMENT COMMUNITY

OUVRAGE Project
WATERFORD OTTAWA SENIOR APARTMENTS

EMPLACEMENT Location
2425-2431 Bank Street, Ottawa

NO PROJET No.
12165

NO	RÉVISION	DATE (aa-mm-jj)
F	SITE PLAN CONTROL	20/04/28

Preliminary DO NOT USE FOR CONSTRUCTION

DESSINÉ PAR Drawn by
YL/SJD

VÉRIFIÉ PAR Checked
HG

DATE (aa.mm.jj)
20/04/28

ÉCHELLE Scale
Comme indiqué

TITRE DU DESSIN Drawing Title
SITE PLAN (ROOF LEVEL)

RÉVISION Revision
F

NO. DESSIN Dwg Number
A-102

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APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	**2431 Bank Street**
Description of Location	**Northeast corner of Bank Street/Hunt Club Road intersection**
Land Use Classification	**Retirement home**
Development Size (units)	**144 additional units**
Development Size (m^2)	
Number of Accesses and Locations	**2 existing accesses – one right in right out to Hunt Club Road, one full movement accesses to Bank Street (closure of one full movement access to Bank Street)**
Phase of Development	**2**
Buildout Year	

If available, please attach a sketch of the development or site plan to this form.

2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.

3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?		X
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	X	

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street 80 km/hr or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
Is the proposed driveway 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)?		X
Is the proposed driveway within auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	X	
Does the development include a drive-thru facility?		X

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?		X
Does the development satisfy the Location Trigger?	X	
Does the development satisfy the Safety Trigger?	X	

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

APPENDIX C

OC Transpo System Information

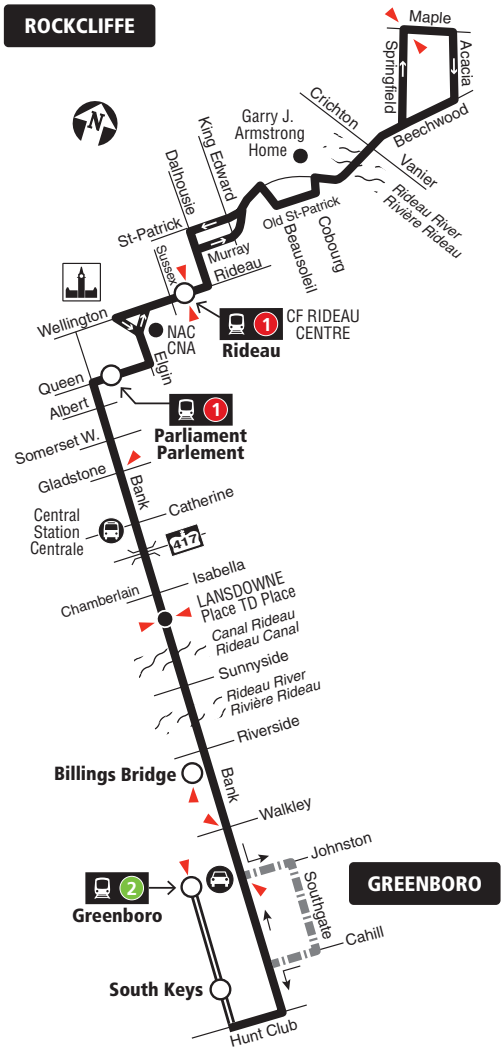
6 ROCKCLIFFE / GREENBORO

Fréquent

7 days a week / 7 jours par semaine

All day service

Service toute la journée



2019.06

Schedule / Horaire.....613-560-1000

Text / Texto 560560

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Service
Service à la clientèle **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité..... **613-741-2478**

Effective September 2, 2018
En vigueur 2 septembre 2018

OC Transpo

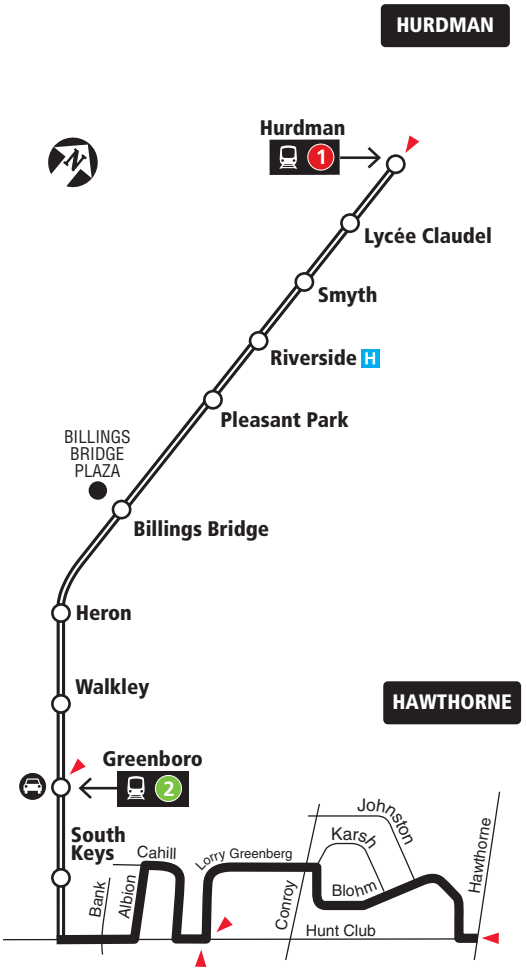
INFO 613-741-4390
octranspo.com

98 Rapide

HAWTHORNE
HURDMAN

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Transitway & Station
Park & Ride | Parc-o-bus
Timepoint | Heures de passage

2019.07

1

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

OC Transpo
INFO 613-741-4390
octranspo.com

40

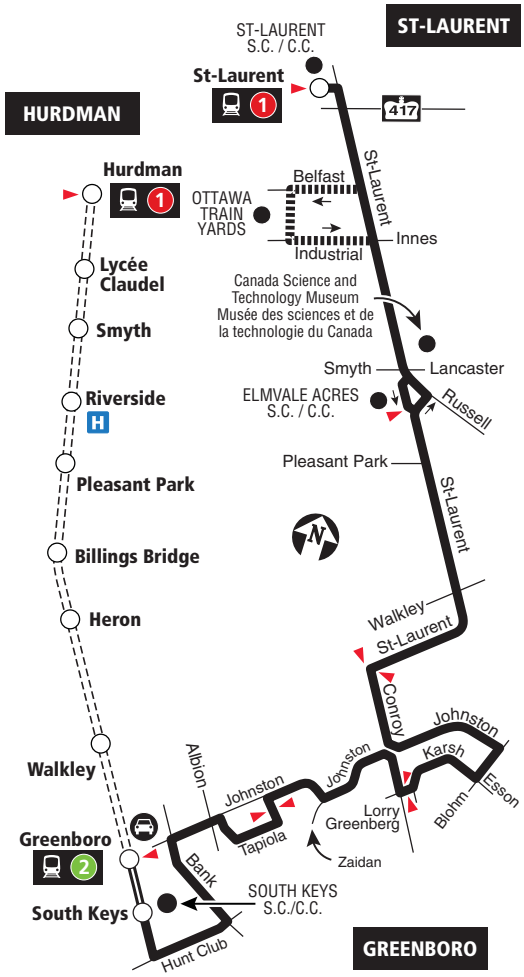
Fréquent

ST-LAURENT
GREENBORO
HURDMAN

7 days a week / 7 jours par semaine

All day service

Service toute la journée



Transitway & Station

Peak periods / Périodes de pointe

Some trips early morning only / Quelques trajets tôt le matin seulement

Park & Ride / Parc-o-Bus

Timepointe / Heures de passage

2019.06

Schedule / Horaire.....613-560-1000

Text / Texto 560560

plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Service
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Effective September 3, 2017
En vigueur 3 septembre 2017

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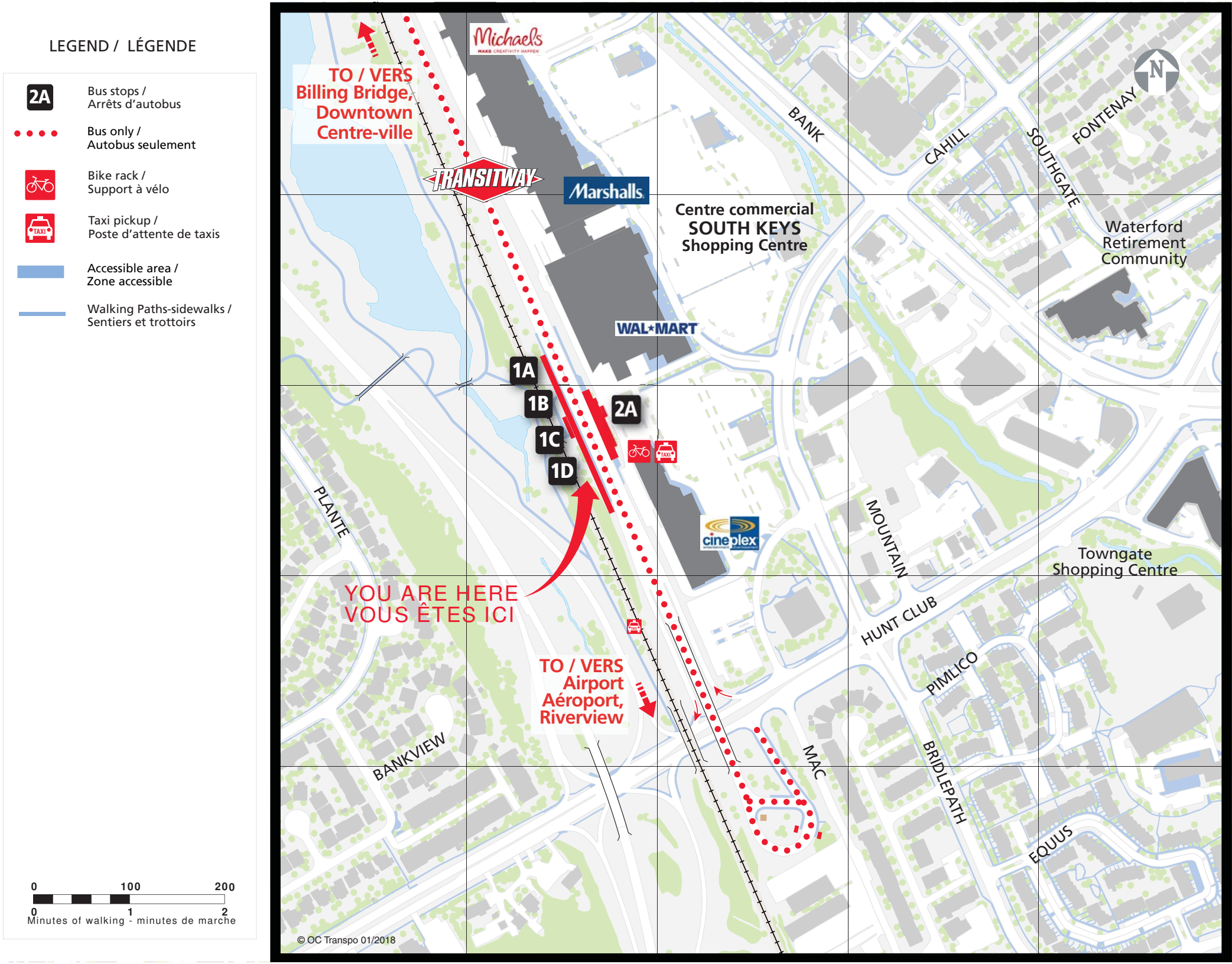

LEGEND / LÉGENDE
2A
Bus stops / Arrêts d'autobus
Bus only / Autobus seulement
Bike rack / Support à vélo
TAXI
Taxi pickup / Poste d'attente de taxis
Accessible area / Zone accessible
Walking Paths-sidewalks / Sentiers et trottoirs
0 100 200
0 1 2
Minutes of walking - minutes de marche
TO / VERS Billing Bridge, Downtown Centre-ville
Michaels
TRANSITWAY
Marshalls
Centre commercial SOUTH KEYS Shopping Centre
WAL*MART
BANK
CAHILL
SOUTHGATE
FONTENAY
N
Waterford Retirement Community
1A
1B
1C
1D
2A
PLANTE
cineplex
MOUNTAIN
Towngate Shopping Centre
YOU ARE HERE
VOUS ÊTES ICI
HUNT CLUB
PIMLICO
TO / VERS Airport Aéroport, Riverview
BANKVIEW
MAC
BRIDLEPATH
EQUUS
© OC Transpo 01/2018

Smyth
Riverside
Pleasant Park
Billings Bridge
Heron
Carleton
Mooney's Bay
Walkley
Greenboro
South Keys
Sunnyside
Grove
Bronson
Seneca
University
Campus
Prince of Wales
Baseline
Heron
Riverside
Brookfield
Ridgewood
Springland
Flannery
Airport Parkway
Data Centre
Bélanger
Clementine
Kilborn
Alta Vista
Pleasant
Featherston
Jefferson
Ryder
Baycrest
Herongate Square
St. Patrick's
Ridgemont
Walkley
Albion
Bank
Heatherington
Fielding
Southmore
McCarthy
prom. de l'Aéroport
Johnston
Tapiola
Conroy
Uplands
Paul Anka
Cahill
Plante
Southgate
Transitway
South Keys
Lorry Greenberg
Hunt Club
Bridlepath
Downpatrick
De Niverville
Curtis
Tylee
McGill
Croil
Breadner
Paul Benoit
Research
Athans
Queensdale
Sixth
Fisher
Carleton University
Université Carleton
Billings Bridge
Billings Estate
Domaine Billings
Brookfield
Mooney's Bay
St. Pius X
Steve MacLean
Hog's Back
Vincent Massey
Rivière Rideau River
Ottawa Hunt & Golf Club
Clifford Allen
Winterwood
Grasshopper Hill
Billings
Lynda Lane
CHEG
Riverside
Canal Rideau
EY Centre
Centre EY
weekends
les fins de semaine
late evenings
tard le soir
Greenboro
2
97 98 99
6 40 90
92 93
197 198 199
294 299
304
97 98 99
10 40 88 90
48 49 92 93
96 190 199
290 291 294 299
7 10 111 86 89 88 111 10 111 10 90 88 111 190 141 46 140 48 49 45 44 6 290 92 291 140 291 140 44 291 90 290 40 6 6 40 90 92 98 96 198 197 199 294 93 197 89

APPENDIX D

Traffic Count Data

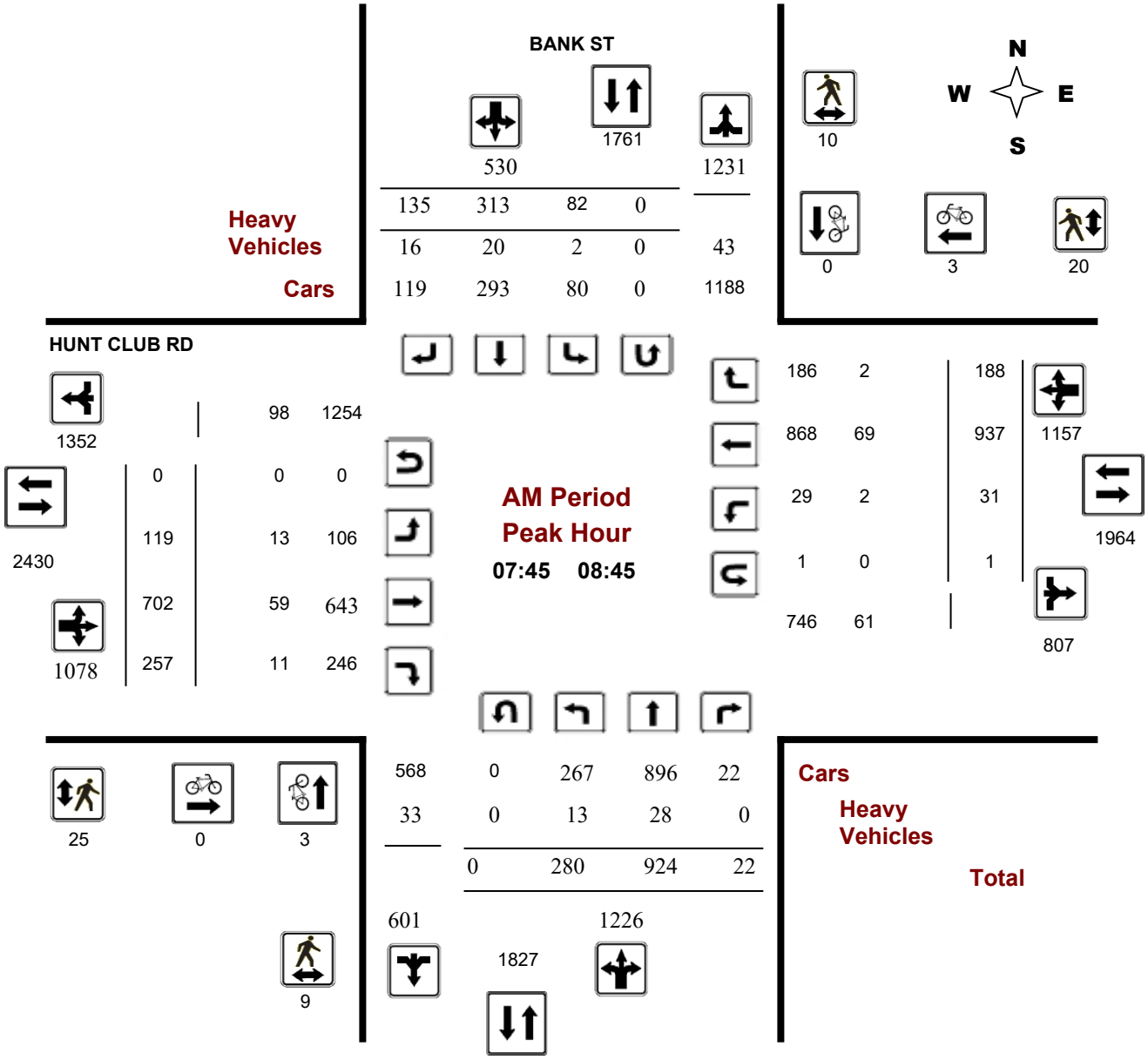
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BANK ST @ HUNT CLUB RD

Survey Date: Wednesday, June 12, 2019 **WO No:** 38656

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



Comments

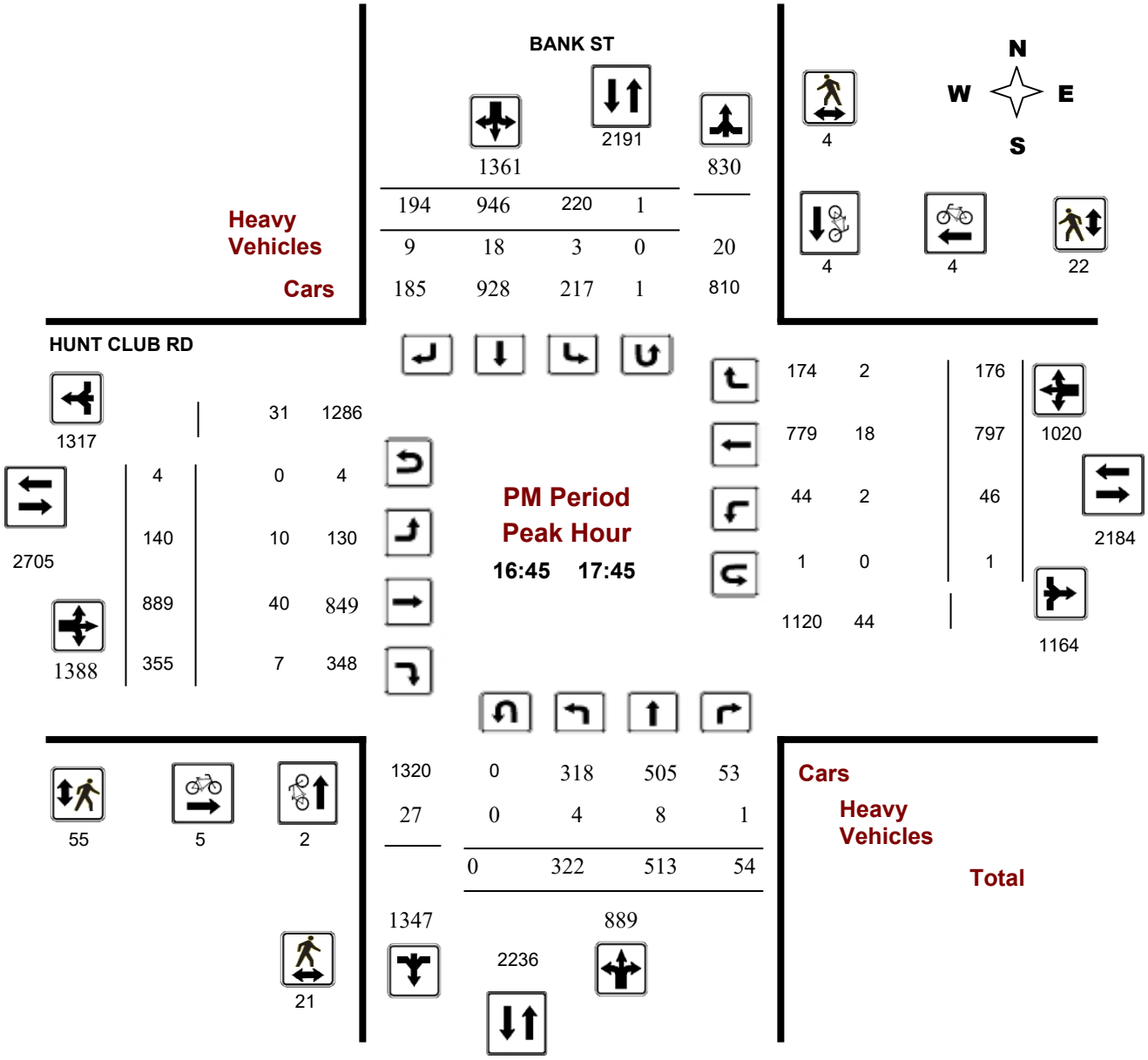
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BANK ST @ HUNT CLUB RD

Survey Date: Wednesday, June 12, 2019 **WO No:** 38656

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ HUNT CLUB RD

Survey Date: Wednesday, June 12, 2019 **WO No:** 38656

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, June 12, 2019

Total Observed U-Turns

Northbound: 2 Southbound: 4

Eastbound: 15 Westbound: 13

AADT Factor

1.25

	BANK ST								HUNT CLUB RD									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	236	885	11	**1132**	54	281	114	**449**	**1581**	119	647	248	**1014**	17	935	183	**1135**	**2149**	**3730**
08:00 09:00	292	852	27	**1171**	72	318	135	**525**	**1696**	126	748	257	**1131**	35	881	190	**1106**	**2237**	**3933**
09:00 10:00	272	571	36	**879**	94	364	143	**601**	**1480**	143	602	192	**937**	62	672	183	**917**	**1854**	**3334**
11:30 12:30	316	536	56	**908**	145	571	192	**908**	**1816**	180	591	276	**1047**	58	581	151	**790**	**1837**	**3653**
12:30 13:30	296	567	55	**918**	175	595	185	**955**	**1873**	156	611	251	**1018**	56	567	143	**766**	**1784**	**3657**
15:00 16:00	348	581	63	**992**	211	547	175	**933**	**1925**	121	920	234	**1275**	58	494	157	**709**	**1984**	**3909**
16:00 17:00	291	502	65	**858**	240	945	175	**1360**	**2218**	122	995	312	**1429**	55	773	158	**986**	**2415**	**4633**
17:00 18:00	310	489	59	**858**	212	917	215	**1344**	**2202**	153	892	354	**1399**	41	801	178	**1020**	**2419**	**4621**
Sub Total	2361	4983	372	**7716**	1203	4538	1334	**7075**	**14791**	1120	6006	2124	**9250**	382	5704	1343	**7429**	**16679**	**31470**
U Turns				**2**				**4**	**6**				**15**				**13**	**28**	**34**
Total	2361	4983	372	**7718**	1203	4538	1334	**7079**	**14797**	1120	6006	2124	**9265**	382	5704	1343	**7442**	**16707**	**31504**
EQ 12Hr	3282	6926	517	**10728**	1672	6308	1854	**9840**	**20568**	1557	8348	2952	**12878**	531	7929	1867	**10344**	**23223**	**43791**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr	2954	6234	465	**9655**	1505	5677	1669	**8856**	**18511**	1401	7514	2657	**11591**	478	7136	1680	**9310**	**20901**	**39412**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **0.9**

AVG 24Hr	3869	8166	610	**12648**	1971	7437	2186	**11601**	**24249**	1835	9843	3481	**15184**	626	9348	2201	**12196**	**27380**	**51629**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

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

APPENDIX E

Collision Records

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2014 **To:** December 31, 2018

Location: ALBION RD @ BANK ST

Traffic Control: Traffic signal

Total Collisions: 39

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jan-06, Mon,21:17	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-11, Sat,07:09	Freezing Rain	Angle	P.D. only	Ice	North	Slowing or stopping	Truck and trailer	Other motor vehicle	
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jun-12, Thu,19:10	Clear	Sideswipe	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jan-07, Tue,13:30	Clear	Rear end	P.D. only	Loose snow	West	Turning left	Automobile, station wagon	Skidding/sliding	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2014-Jan-23, Thu,01:27	Clear	Other	P.D. only	Dry	South	Reversing	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Jul-05, Sat,12:00	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Unknown	Other motor vehicle	

					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jan-09, Fri,17:06	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Skidding/sliding	
					North	Stopped	Pick-up truck	Other motor vehicle	
2015-Aug-24, Mon,13:31	Clear	Angle	Non-fatal injury	Wet	East	Going ahead	Bicycle	Other motor vehicle	
					North	Going ahead	Pick-up truck	Cyclist	
2015-Sep-19, Sat,14:47	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jun-05, Fri,14:18	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Sep-05, Sat,12:09	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-17, Thu,15:13	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Pedestrian	1
2015-Aug-01, Sat,14:14	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	

					East	Turning right	Pick-up truck	Other motor vehicle
2015-Dec-14, Mon,13:14	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Feb-21, Sun,16:46	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2016-May-09, Mon,21:35	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2016-May-04, Wed,19:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Unknown	Other motor vehicle
					South	Slowing or stopping	Passenger van	Other motor vehicle
2016-Jun-18, Sat,19:37	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-07, Wed,19:29	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle

2016-Oct-31, Mon,13:03	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Jan-12, Thu,17:34	Rain	Rear end	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Dec-15, Thu,17:32	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Dec-22, Thu,07:56	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Feb-14, Tue,08:39	Clear	Rear end	P.D. only	Slush	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2017-Mar-16, Thu,13:10	Clear	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Delivery van	Other motor vehicle
2017-Apr-13, Thu,17:55	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle

2017-Jul-22, Sat,11:11	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jun-12, Mon,17:48	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2017-Apr-13, Thu,16:10	Clear	Turning movement	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2017-Nov-19, Sun,17:27	Clear	Angle	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jan-30, Tue,08:04	Snow	Rear end	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Mar-27, Tue,14:52	Clear	Rear end	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle

2018-Jun-08, Fri,22:31	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jun-23, Sat,03:26	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-17, Sat,20:00	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Nov-09, Fri,14:05	Snow	Sideswipe	P.D. only	Wet	South	Changing lanes	Truck - closed	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Dec-11, Tue,10:31	Clear	Rear end	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Truck - closed	Other motor vehicle
2018-Jan-20, Sat,12:52	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jul-07, Sat,23:00	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

Location: BANK ST @ 80 S OF HUNT CLUB RD/TOWNGATE PLAZA

Traffic Control: Traffic signal **Total Collisions:** 9

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Feb-12, Wed,18:18	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2014-May-07, Wed,10:45	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Oct-16, Thu,16:07	Rain	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2014-Nov-28, Fri,19:27	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Jun-12, Fri,14:53	Clear	Angle	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Passenger van	Other motor vehicle	
2015-Nov-02, Mon,22:30	Rain	Turning movement	P.D. only	Wet	South	Making "U" turn	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Passenger van	Other motor vehicle	
2015-Nov-04, Wed,14:25	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	

					South	Changing lanes	Car and trailer	Other motor vehicle	
2015-Mar-19, Thu,08:40	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2017-Feb-13, Mon,14:20	Clear	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Passenger van	Other motor vehicle	

Location: BANK ST @ BANK ST

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jun-23, Thu,16:18	Clear	Angle	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	

Location: BANK ST @ CAHILL DR/DAZE ST

Traffic Control: Traffic signal

Total Collisions: 36

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Nov-08, Sat,10:28	Clear	Other	P.D. only	Dry	West	Reversing	Pick-up truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Nov-12, Wed,16:26	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	

2014-Oct-03, Fri,13:47	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Oct-21, Tue,18:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-May-18, Sun,18:00	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jan-06, Tue,18:14	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Mar-23, Mon,16:54	Clear	Rear end	P.D. only	Dry	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2015-Apr-19, Sun,16:45	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Apr-02, Thu,07:30	Freezing Rain	Sideswipe	P.D. only	Ice	North	Going ahead	Passenger van	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2015-Aug-03, Mon,13:33	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Delivery van	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Jul-11, Sat,14:15	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2015-Dec-17, Thu,16:30	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-13, Sun,12:35	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2016-Mar-14, Mon,11:10	Rain	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Aug-01, Mon,16:21	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Passenger van	Other motor vehicle
2016-Sep-09, Fri,12:10	Clear	Rear end	P.D. only	Dry	West	Turning right	Passenger van	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle

2016-Nov-18, Fri,13:45	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jan-05, Thu,08:05	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Passenger van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-30, Thu,08:45	Clear	Sideswipe	Non-fatal injury	Dry	South	Changing lanes	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2017-Aug-21, Mon,19:15	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2017-Sep-02, Sat,15:35	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2017-Aug-30, Wed,15:15	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Bicycle	Other motor vehicle
					South	Turning right	Automobile, station wagon	Cyclist
2017-Jan-22, Sun,14:30	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Jul-01, Sat,13:37	Rain	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-25, Mon,11:29	Clear	Angle	Non-fatal injury	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	
					East	Unknown	Automobile, station wagon	Other motor vehicle	
2017-Aug-08, Tue,12:58	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Feb-10, Sat,17:26	Snow	Sideswipe	P.D. only	Loose snow	South	Changing lanes	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-11, Thu,14:15	Rain	SMV other	Non-fatal injury	Wet	East	Turning left	Automobile, station wagon	Pedestrian	1
2018-Mar-08, Thu,18:35	Snow	Turning movement	Non-fatal injury	Ice	West	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-23, Fri,14:18	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Pedestrian	1
2018-Apr-29, Sun,17:03	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

2018-Jul-16, Mon,21:00	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Ran off road
2018-Oct-11, Thu,17:53	Clear	Rear end	Non-fatal injury	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Aug-12, Sun,08:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Dec-24, Mon,18:07	Clear	Turning movement	Non-fatal injury	Loose snow	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-03, Sat,20:06	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

Location: BANK ST @ HUNT CLUB RD

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
2014-Jan-24, Fri,08:00	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2014-Jan-25, Sat,18:20	Snow	Rear end	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Turning left	Automobile, station wagon	Other motor vehicle	

2014-Mar-12, Wed,16:40	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Passenger van	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Apr-08, Tue,12:04	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Apr-15, Tue,08:00	Rain	Rear end	P.D. only	Wet	West	Turning right	Pick-up truck	Other motor vehicle	
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Apr-16, Wed,07:09	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	
					West	Turning right	Pick-up truck	Other motor vehicle	
2014-May-09, Fri,23:04	Rain	SMV other	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Pedestrian	1
2014-May-07, Wed,10:23	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Truck and trailer	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2014-Sep-04, Thu,19:00	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2014-Nov-06, Thu,17:38	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	

					North	Turning left	Pick-up truck	Other motor vehicle
2014-Dec-04, Thu,16:36	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Passenger van	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2014-Dec-07, Sun,13:10	Clear	Rear end	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2014-Nov-26, Wed,08:55	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle
					South	Turning right	Automobile, station wagon	Other motor vehicle
2014-Dec-24, Wed,13:47	Rain	Other	P.D. only	Wet	South	Reversing	Delivery van	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2014-Dec-01, Mon,04:32	Clear	SMV other	P.D. only	Wet	East	Turning right	Automobile, station wagon	Curb
2014-May-28, Wed,15:41	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2014-May-28, Wed,16:02	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle

2014-Sep-16, Tue,17:30	Snow	Rear end	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2014-Jan-11, Sat,07:50	Freezing Rain	Sideswipe	P.D. only	Ice	East	Changing lanes	Unknown	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2014-Mar-03, Mon,20:26	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Passenger van	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2014-Mar-13, Thu,20:02	Clear	Sideswipe	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2014-Aug-29, Fri,18:06	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle
					West	Turning left	Pick-up truck	Other motor vehicle
2014-Dec-09, Tue,11:15	Clear	Other	P.D. only	Dry	East	Reversing	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Feb-10, Tue,15:45	Clear	Sideswipe	P.D. only	Wet	North	Changing lanes	Pick-up truck	Other motor vehicle
					North	Going ahead	Truck - dump	Other motor vehicle

2015-Feb-08, Sun,14:08	Snow	Angle	P.D. only	Loose snow	North	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jan-12, Mon,06:21	Snow	Angle	P.D. only	Ice	North	Slowing or stopping	Pick-up truck	Skidding/sliding
					West	Going ahead	Passenger van	Other motor vehicle
2015-Feb-23, Mon,16:57	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2015-Mar-07, Sat,09:29	Clear	Sideswipe	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Truck - closed	Other motor vehicle
2015-Feb-20, Fri,19:06	Snow	Rear end	P.D. only	Loose snow	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-Feb-02, Mon,19:45	Snow	Rear end	Non-fatal injury	Packed snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2015-May-22, Fri,23:13	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Apr-13, Mon,17:00	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2015-Jun-11, Thu,14:36	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Unknown	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-May-29, Fri,13:14	Clear	Sideswipe	P.D. only	Dry	North	Slowing or stopping	Truck - closed	Other motor vehicle
					North	Changing lanes	Automobile, station wagon	Other motor vehicle
2015-Jun-14, Sun,01:31	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Passenger van	Other motor vehicle
2015-Jun-19, Fri,18:06	Clear	Rear end	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2015-Mar-20, Fri,13:12	Clear	Rear end	Non-fatal injury	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2015-May-07, Thu,20:39	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle

2015-Jul-09, Thu,15:11	Clear	Rear end	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2015-Jul-04, Sat,12:51	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Changing lanes	Automobile, station wagon	Other motor vehicle
2015-Sep-15, Tue,14:57	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Truck - dump	Other motor vehicle
2015-Sep-23, Wed,08:00	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Jun-27, Sat,21:52	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2015-Aug-11, Tue,13:47	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2015-Sep-04, Fri,12:07	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2015-Oct-12, Mon,06:49	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Pick-up truck	Other motor vehicle
2015-Oct-21, Wed,11:00	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2015-Dec-04, Fri,14:07	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Dec-24, Thu,15:52	Clear	Rear end	P.D. only	Wet	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Pick-up truck	Other motor vehicle
2015-Feb-14, Sat,13:49	Clear	Rear end	P.D. only	Ice	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2015-Feb-04, Wed,14:12	Clear	Rear end	Non-fatal injury	Slush	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
2015-Feb-21, Sat,15:50	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2015-Feb-24, Tue,15:42	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2015-Mar-25, Wed,08:08	Clear	Rear end	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					East	Turning right	Passenger van	Other motor vehicle
2016-Jan-16, Sat,10:58	Rain	Sideswipe	P.D. only	Wet	West	Overtaking	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2015-May-12, Tue,13:52	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Feb-06, Sat,21:12	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Turning left	Passenger van	Other motor vehicle
					South	Turning left	Passenger van	Other motor vehicle
2015-May-06, Wed,13:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2016-Feb-12, Fri,18:12	Snow	Rear end	Non-fatal injury	Ice	East	Turning right	Unknown	Other motor vehicle

					East	Turning right	Automobile, station wagon	Other motor vehicle
2016-Feb-05, Fri,17:13	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2016-Mar-28, Mon,06:40	Rain	Rear end	P.D. only	Wet	West	Turning right	Pick-up truck	Other motor vehicle
					West	Turning right	Automobile, station wagon	Other motor vehicle
2016-Apr-02, Sat,16:48	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2016-Feb-08, Mon,17:08	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2016-Jan-08, Fri,11:46	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2016-Feb-19, Fri,22:30	Snow	Rear end	P.D. only	Loose snow	East	Changing lanes	Unknown	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

2016-Apr-29, Fri,00:46	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2016-May-13, Fri,19:43	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Motorcycle	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
					West	Turning left	Bus (other)	Other motor vehicle
2016-May-19, Thu,17:39	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle
2016-Jun-03, Fri,17:10	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2016-May-03, Tue,17:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Sep-02, Fri,14:38	Clear	Other	P.D. only	Dry	West	Reversing	Truck and trailer	Other motor vehicle
					East	Stopped	Pick-up truck	Other motor vehicle
2016-Sep-20, Tue,00:25	Clear	Angle	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle

2016-Jun-23, Thu,15:44	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Jul-25, Mon,16:10	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Pole (utility, power)
2016-Nov-15, Tue,16:50	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2016-Dec-15, Thu,10:26	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Feb-19, Fri,10:52	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2016-Apr-19, Tue,14:00	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Jul-19, Tue,14:40	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Truck - closed	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle

2016-Aug-11, Thu,16:06	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					East	Stopped	Passenger van	Other motor vehicle
2016-Aug-28, Sun,16:26	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Pick-up truck	Other motor vehicle
					East	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Aug-31, Wed,17:36	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Slowing or stopping	Pick-up truck	Other motor vehicle
2016-Nov-24, Thu,08:45	Clear	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Pick-up truck	Other motor vehicle
2016-Nov-30, Wed,12:41	Rain	Sideswipe	P.D. only	Wet	North	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2017-Jan-05, Thu,22:29	Rain	Rear end	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Skidding/sliding
					North	Stopped	Pick-up truck	Other motor vehicle
2017-Feb-10, Fri,12:40	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Intercity bus	Other motor vehicle

					East	Stopped	Delivery van	Other motor vehicle
2016-Jan-18, Mon,08:28	Snow	Rear end	P.D. only	Loose snow	West	Turning right	Delivery van	Other motor vehicle
					West	Turning right	Pick-up truck	Other motor vehicle
2017-Feb-14, Tue,00:08	Clear	SMV other	P.D. only	Dry	South	Reversing	Construction equipment	Pole (utility, power)
2017-Jan-06, Fri,11:04	Clear	Rear end	P.D. only	Ice	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2017-Jul-30, Sun,20:38	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Apr-17, Mon,13:56	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Passenger van	Curb
2017-Apr-24, Mon,20:57	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Apr-25, Tue,05:17	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Pick-up truck	Other motor vehicle
2017-Jul-29, Sat,15:29	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle

					West	Slowing or stopping	Unknown	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
					West	Stopped	Unknown	Other motor vehicle
2017-Sep-06, Wed,17:55	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Passenger van	Other motor vehicle
					North	Stopped	Passenger van	Other motor vehicle
2017-May-09, Tue,05:51	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Sep-02, Sat,09:41	Clear	Angle	P.D. only	Dry	North	Going ahead	Truck - dump	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle
2017-Sep-30, Sat,11:00	Clear	Rear end	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-29, Fri,13:00	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Oct-10, Tue,14:00	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle

2017-Feb-02, Thu,07:10	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Jun-12, Mon,18:00	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle
					North	Turning right	Automobile, station wagon	Other motor vehicle
2017-Jun-22, Thu,17:20	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle
					West	Stopped	Pick-up truck	Other motor vehicle
2017-Aug-29, Tue,10:42	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Turning left	Automobile, station wagon	Other motor vehicle
2017-Nov-09, Thu,12:08	Rain	SMV other	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Pole (utility, power)
2017-Nov-28, Tue,15:40	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2017-Sep-25, Mon,14:53	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Bicycle	Other motor vehicle
					East	Going ahead	Pick-up truck	Cyclist
2017-Dec-28, Thu,08:10	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle

					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2018-Jan-02, Tue,12:26	Snow	Rear end	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
2018-Feb-22, Thu,20:15	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Mar-02, Fri,08:30	Clear	Rear end	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-11, Sun,15:35	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jan-11, Thu,14:47	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Feb-09, Fri,03:30	Clear	SMV other	P.D. only	Packed snow	South	Going ahead	Automobile, station wagon	Pole (sign, parking meter)
2018-Mar-26, Mon,12:11	Clear	Rear end	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					North	Turning left	Automobile, station wagon	Other motor vehicle

2018-Apr-26, Thu,14:27	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2018-May-10, Thu,19:30	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Jun-11, Mon,16:00	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jul-27, Fri,19:00	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jun-22, Fri,16:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2018-Jul-05, Thu,21:04	Clear	Rear end	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle
					East	Turning right	Automobile, station wagon	Other motor vehicle
2018-Sep-09, Sun,22:44	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Turning left	Automobile, station wagon	Other motor vehicle

2018-Oct-07, Sun,19:40	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-30, Fri,15:20	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Stopped	Automobile, station wagon	Other motor vehicle
2018-Oct-30, Tue,09:33	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle
					West	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-17, Sat,22:39	Clear	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Nov-12, Mon,07:31	Clear	SMV other	Non-fatal injury	Ice	East	Turning left	Automobile, station wagon	Pole (utility, power)
2018-Oct-02, Tue,15:52	Clear	Rear end	Non-fatal injury	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Nov-02, Fri,16:52	Rain	Other	P.D. only	Wet	South	Reversing	Truck - closed	Other motor vehicle
					North	Stopped	Automobile, station wagon	Other motor vehicle
2018-Oct-17, Wed,08:05	Clear	Rear end	Non-fatal injury	Dry	North	Changing lanes	Pick-up truck	Other motor vehicle

					North	Stopped	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn 112 N OF ALBION RD & OT/GL BOUNDARY

Traffic Control: No control

Total Collisions: 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Sep-25, Mon,17:06	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-01, Tue,10:46	Clear	Angle	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	
					East	Going ahead	Truck - tractor	Other motor vehicle	
2017-Feb-10, Fri,09:01	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Pick-up truck	Other motor vehicle	

Location: BANK ST btwn BANK ST & ALBION RD

Traffic Control: No control

Total Collisions: 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Aug-25, Mon,13:15	Clear	Angle	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Feb-17, Tue,07:32	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Delivery van	Other motor vehicle	

					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Passenger van	Other motor vehicle	
2018-May-07, Mon,18:21	Clear	Angle	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-31, Mon,17:00	Clear	Angle	P.D. only	Wet	West	Turning right	Unknown	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-12, Thu,17:59	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn CAHILL DR & TURN LANE (1)

Traffic Control: No control

Total Collisions: 15

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jul-08, Tue,18:14	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2014-Jul-31, Thu,16:28	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	

2014-Aug-28, Thu,15:45	Clear	Angle	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2014-Oct-30, Thu,18:34	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Pick-up truck	Other motor vehicle
2015-May-22, Fri,22:09	Clear	Rear end	P.D. only	Dry	South	Going ahead	Unknown	Other motor vehicle
					South	Turning right	Pick-up truck	Other motor vehicle
2015-Oct-08, Thu,17:07	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2015-Jul-22, Wed,09:44	Clear	Angle	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Mar-26, Sat,15:56	Clear	SMV other	P.D. only	Dry	East	Turning left	Pick-up truck	Pole (sign, parking meter)
2016-Apr-02, Sat,13:45	Clear	Turning movement	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Aug-31, Thu,17:12	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle

					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Mar-08, Wed,15:01	Clear	Angle	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Mar-26, Mon,16:07	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	School bus	Other motor vehicle
2017-Mar-27, Mon,17:41	Rain	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Dec-19, Wed,17:25	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2018-Jun-08, Fri,19:42	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Bicycle	Other motor vehicle
					East	Turning right	Automobile, station wagon	Cyclist

Location: BANK ST btwn CAHILL DR & TURN LANE (2)

Traffic Control: No control

Total Collisions: 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-22, Wed,11:19	Clear	SMV other	P.D. only	Dry	East	Turning left	Pick-up truck	Curb	

2014-Nov-20, Thu,18:00	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Truck and trailer	Other motor vehicle
2014-Jun-17, Tue,21:43	Rain	Turning movement	Non-fatal injury	Wet	North	Going ahead	Bicycle	Other motor vehicle
					North	Turning left	Automobile, station wagon	Cyclist
2015-Apr-13, Mon,12:57	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle
					North	Turning left	Pick-up truck	Other motor vehicle
2015-May-26, Tue,13:51	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle
2015-Sep-26, Sat,16:03	Clear	Turning movement	P.D. only	Dry	North	Turning left	Passenger van	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2017-Jan-05, Thu,15:18	Clear	Approaching	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2018-Feb-22, Thu,15:38	Clear	Angle	P.D. only	Dry	East	Turning left	Passenger van	Other motor vehicle
					North	Going ahead	Pick-up truck	Other motor vehicle

2018-May-02, Wed,09:29	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Passenger van	Other motor vehicle	
2018-Nov-21, Wed,19:28	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST NB btwn 80 S OF HUNT CLUB RD & 112 N OF ALBION RD

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Apr-19, Thu,13:49	Clear	Angle	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	

Location: BANK ST SB btwn 80 S OF HUNT CLUB RD & 112 N OF ALBION RD

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Aug-17, Mon,17:04	Clear	Rear end	Non-fatal injury	Dry	South	Stopped	Unknown	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Apr-29, Fri,18:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-12, Mon,20:47	Snow	SMV other	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Debris on road	

2018-Mar-31, Sat,11:44	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST SB btwn HUNT CLUB RD & 80 S OF HUNT CLUB RD/TOWNGATE PLAZA SC

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-13, Tue,16:30	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Truck-other	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-06, Tue,12:17	Clear	Rear end	P.D. only	Dry	South	Merging	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

APPENDIX F

Relevant Excerpts from Other Transportation Studies

The number of car trips that the hotel land use will generate has been estimated by categorizing the person trips by modal share. The modal shares are based on observed percentages in the *2011 TRANS O-D Survey Report* that are specific to the region referred to as the Hunt Club area.

The modal share values applied to the trips generated by the proposed development are based on all observed trips within the Hunt Club area, including those with an origin or destination beyond that area.

A full breakdown of the projected person trips by modal share and arrival/departure is shown in the following table.

Table 4: Site-Generated Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Congregate Care Facility Person Trips		6	5	11	17	15	32
Auto Driver	**60%**	**4**	**3**	**7**	**11**	**9**	**20**
Auto Passenger	15%	1	1	2	3	3	6
Transit	20%	1	1	2	3	3	6
Non-Auto	5%	0	0	0	0	0	0
Hotel Person Trips		6	5	11	17	15	32
Auto Driver	**60%**	**45**	**34**	**79**	**41**	**42**	**83**
Auto Passenger	15%	12	9	21	10	11	21
Transit	20%	15	11	26	13	14	27
Non-Auto	5%	3	2	5	3	3	6

Based on the above calculations, the multi-modal trip generation characteristics of the proposed development can be summarized as follows:

- the proposed development is expected to generate a total of **86** and **103** vehicle trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **23** and **27** auto passenger trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **28** and **33** transit trips during the weekday AM and PM peak hours respectively;
- the proposed development is expected to generate a total of **5** and **6** non-motorized trips during the weekday AM and PM peak hours respectively.

3.5 Trip Distribution

The projected distribution of vehicular trips generated by the proposed development has been derived with appropriate consideration given to several key factors, including:

- the size and nature of the proposed development;
- existing traffic patterns;
- the location of the site accesses with respect to the adjacent roadway system; and
- the principles of logical trip routing.

The cardinal direction of all trips generated by the retirement home during the weekday AM and PM peak hours is summarized in the following table. It is noteworthy that the distribution of traffic generated by the hotel is anticipated be highly influenced by the sites proximity to the MacDonald-Cartier International Airport.

Table 5: Trip Distribution

Cardinal Direction	Retirement Home	Hotel
North	55%	15%
South	10%	55%
East	10%	15%
West	25%	15%

As the subject site will be restricted to right-in right-out access along Hunt Club Road, the following trip distribution assumptions have been made:

- Traffic to/from the north:
    - Traffic arriving will use Prince of Wales Drive, Riverside Drive, Airport Parkway and Bank Street to connect to Hunt Club Road.
        - Traffic arriving from Prince of Wales Drive and Riverside Drive will enter the study area from the west.
        - Traffic arriving from the Airport Parkway and Bank Street will enter the study area from the north/east and perform a U-turn at the Hunt Club Road/McCarthy Road/Downpatrick Road intersection.
    - Traffic departing will use Airport Parkway and Bank Street.
        - Traffic departing to Bank Street will exit the study area to the east.
- To/from the south:
    - Traffic arriving will use Uplands Drive and Downpatrick Road to connect to Hunt Club Road
        - Traffic arriving from Uplands Drive will enter the study area from the west.
    - Traffic departing will exit the study area to the south via Airport Parkway.
- To/from the west:
    - Traffic arriving will enter the study area from west via Hunt Club Road.
    - Traffic departing will exit the study area to the east and make a U-turn at the Hunt Club Road/Dazé Street/Bridle Path Drive intersection.
- To/from the east:
    - Traffic arriving will enter the study area from the east and make a U-turn at the Hunt Club Road/McCarthy Drive/Downpatrick Road intersection.
    - Traffic departing will exit the study area to the east via Hunt Club Road.

Traffic volumes generated by the subject site are shown in **Figure 12**. Total traffic volumes for the 2021 build-out year and 2026 horizon year are shown in **Figure 13** and **Figure 14**.

Figure 12: Site Generated Traffic Volumes

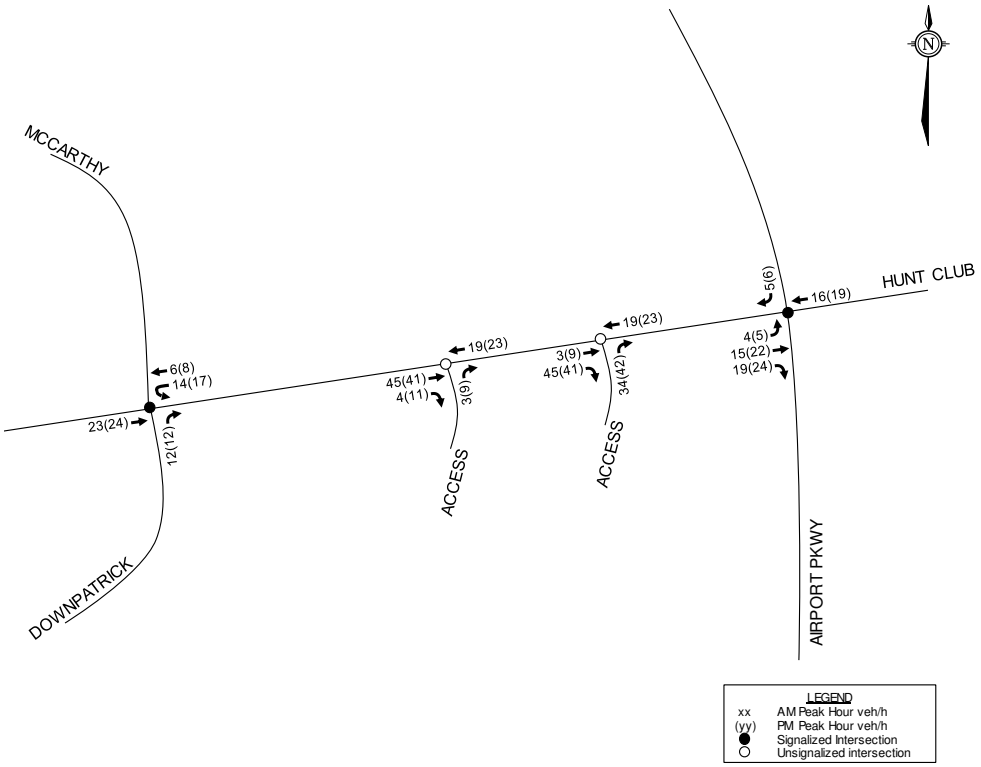
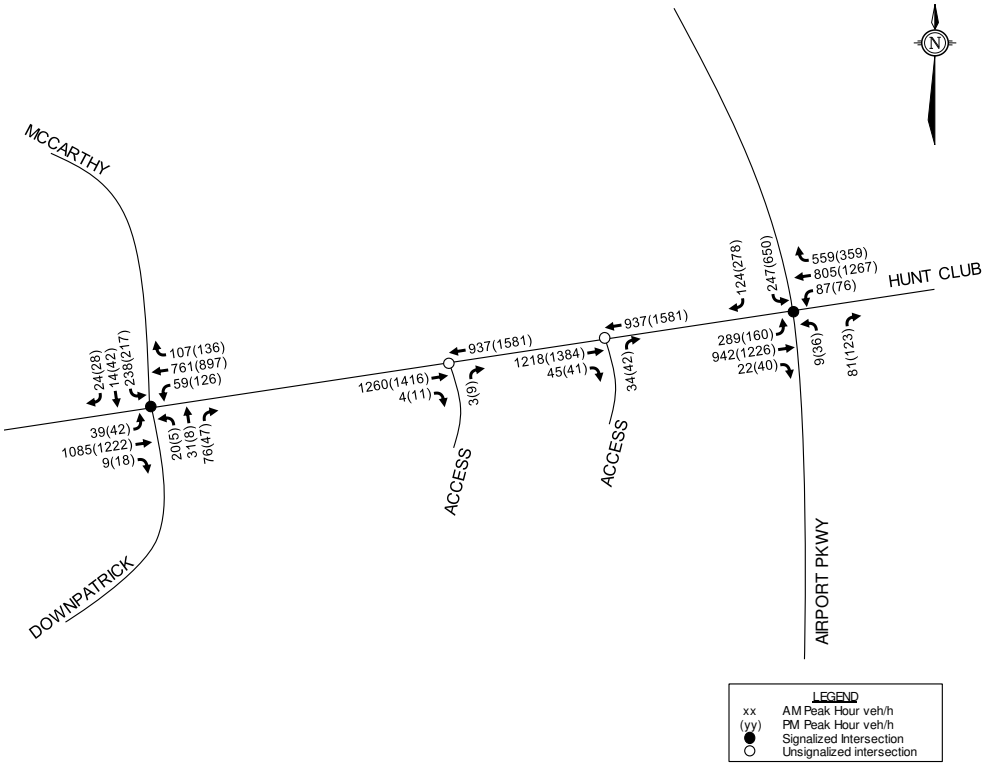


Figure 13: 2021 Total Traffic Volumes



APPENDIX G

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

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

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

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

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

Legend

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

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

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

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

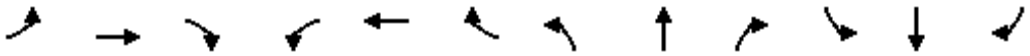
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	✓
BETTER		3.1.2	Provide real-time arrival information display at entrances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

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

APPENDIX H

Synchro Reports

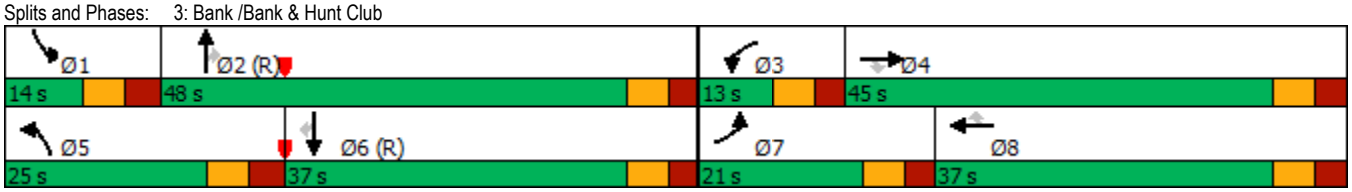
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Future Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97	0.97		0.96	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3022	3202	1488	1631	3232	1517	3195	3357	1517	3288	3262	1381
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3004	3202	1452	1624	3232	1475	3085	3357	1457	3251	3262	1321
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			266			275			214			277
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			135.4			115.1	
Travel Time (s)		7.5			7.0			8.1			6.9	
Confl. Peds. (#/hr)	10		9	9		10	25		20	20		25
Confl. Bikes (#/hr)						3			3			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	11%	8%	4%	6%	7%	2%	5%	3%	2%	2%	6%	12%
Adj. Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	33.7	33.7	11.4	33.7	33.7	12.0	34.5	34.5	12.0	34.5	34.5
Total Split (s)	21.0	45.0	45.0	13.0	37.0	37.0	25.0	48.0	48.0	14.0	37.0	37.0
Total Split (%)	17.5%	37.5%	37.5%	10.8%	30.8%	30.8%	20.8%	40.0%	40.0%	11.7%	30.8%	30.8%
Maximum Green (s)	14.6	38.3	38.3	6.6	30.3	30.3	18.0	41.5	41.5	7.0	30.5	30.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

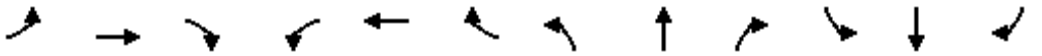


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		20.0	20.0		20.0	20.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		7	7		7	7		12	12		18	18
Act Effct Green (s)	10.7	43.5	43.5	6.4	34.2	34.2	15.6	44.3	44.3	6.8	32.9	32.9
Actuated g/C Ratio	0.09	0.36	0.36	0.05	0.28	0.28	0.13	0.37	0.37	0.06	0.27	0.27
v/c Ratio	0.51	0.63	0.38	0.37	1.06	0.32	0.70	0.77	0.03	0.46	0.36	0.27
Control Delay	58.3	35.8	5.3	67.2	87.8	2.0	59.1	39.4	0.1	63.0	37.1	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	35.8	5.3	67.2	87.8	2.0	59.1	39.4	0.1	63.0	37.1	1.2
LOS	E	D	A	E	F	A	E	D	A	E	D	A
Approach Delay		31.3			73.3			43.2			31.3	
Approach LOS		C			E			D			C	
90th %ile Green (s)	13.9	38.3	38.3	6.6	31.0	31.0	18.0	41.5	41.5	7.0	30.5	30.5
90th %ile Term Code	Gap	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	12.0	38.3	38.3	6.6	32.9	32.9	17.9	41.5	41.5	7.0	30.6	30.6
70th %ile Term Code	Gap	Max	Max	Max	Max	Max	Gap	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	10.7	38.3	38.3	6.6	34.2	34.2	16.1	41.5	41.5	7.0	32.4	32.4
50th %ile Term Code	Gap	Hold	Hold	Max	Max	Max	Gap	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	9.4	51.3	51.3	0.0	35.5	35.5	14.3	41.5	41.5	7.0	34.2	34.2
30th %ile Term Code	Gap	Hold	Hold	Skip	Max	Max	Gap	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	7.5	51.3	51.3	0.0	37.4	37.4	11.7	55.5	55.5	0.0	36.8	36.8
10th %ile Term Code	Gap	Hold	Hold	Skip	Max	Max	Gap	Coord	Coord	Skip	Coord	Coord
Stops (vph)	126	598	26	32	824	3	273	828	0	81	256	0
Fuel Used(l)	12	47	5	3	102	2	25	67	0	8	21	2
CO Emissions (g/hr)	217	880	90	56	1904	44	473	1245	5	142	386	31
NOx Emissions (g/hr)	42	170	17	11	367	9	91	240	1	27	74	6
VOC Emissions (g/hr)	50	203	21	13	439	10	109	287	1	33	89	7
Dilemma Vehicles (#)	0	26	0	0	36	0	0	40	0	0	14	0
Queue Length 50th (m)	16.0	79.6	0.0	7.4	~132.4	0.0	33.9	107.6	0.0	10.3	32.5	0.0
Queue Length 95th (m)	25.4	101.4	18.3	17.8	#183.7	2.5	47.6	134.0	0.0	18.7	46.8	0.0
Internal Link Dist (m)		101.4			93.4			111.4			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	367	1160	696	89	921	617	479	1238	672	191	894	563
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.63	0.38	0.36	1.06	0.32	0.61	0.77	0.03	0.45	0.36	0.27

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 65 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.06			
Intersection Signal Delay: 47.1		Intersection LOS: D	
Intersection Capacity Utilization 86.8%		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: 3: Bank /Bank & Hunt Club

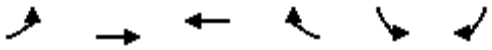




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	0	4	2	0	1	4	1280	3	2	558	4
Future Volume (Veh/h)	2	0	4	2	0	1	4	1280	3	2	558	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	0	4	2	0	1	4	1280	3	2	558	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								115				
pX, platoon unblocked	0.74	0.74		0.74	0.74	0.74				0.74		
vC, conflicting volume	1211	1853	279	1576	1856	642	562			1283		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	573	1444	279	1069	1447	0	562			671		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	98	100	100	100			100		
cM capacity (veh/h)	295	96	718	128	95	799	1005			675		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	6	3	4	853	430	2	279	279	4
Volume Left	2	2	4	0	0	2	0	0	0
Volume Right	4	1	0	0	3	0	0	0	4
cSH	486	178	1005	1700	1700	675	1700	1700	1700
Volume to Capacity	0.01	0.02	0.00	0.50	0.25	0.00	0.16	0.16	0.00
Queue Length 95th (m)	0.3	0.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Control Delay (s)	12.5	25.6	8.6	0.0	0.0	10.3	0.0	0.0	0.0
Lane LOS	B	D	A			B			
Approach Delay (s)	12.5	25.6	0.0			0.0			
Approach LOS	B	D							

Intersection Summary					
Average Delay	0.1				
Intersection Capacity Utilization	47.4%	ICU Level of Service		A	
Analysis Period (min)	15				

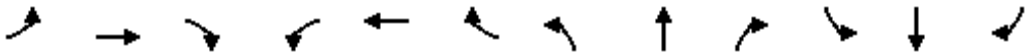


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	839	1197	3	0	2
Future Volume (Veh/h)	0	839	1197	3	0	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	839	1197	3	0	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		117				
pX, platoon unblocked					0.82	
vC, conflicting volume	1200				1616	598
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1200				1308	598
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	577				123	445

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	420	420	598	598	3	2
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	3	2
cSH	1700	1700	1700	1700	1700	445
Volume to Capacity	0.25	0.25	0.35	0.35	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.1
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.1
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Future Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.98	0.97		0.96	0.98		0.92
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3135	3325	1517	1662	3390	1517	3288	3390	1517	3288	3390	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3126	3325	1451	1650	3390	1485	3189	3390	1454	3214	3390	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			309			183			155			206
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			135.4			115.1	
Travel Time (s)		7.5			7.0			8.1			6.9	
Confl. Peds. (#/hr)	4		21	21		4	55		22	22		55
Confl. Bikes (#/hr)			5			4			2			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	4%	2%	4%	2%	2%	2%	2%	2%	2%	2%	5%
Adj. Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	33.7	33.7	11.4	33.7	33.7	12.0	34.5	34.5	12.0	34.5	34.5
Total Split (s)	17.0	38.0	38.0	17.0	38.0	38.0	19.0	46.0	46.0	19.0	46.0	46.0
Total Split (%)	14.2%	31.7%	31.7%	14.2%	31.7%	31.7%	15.8%	38.3%	38.3%	15.8%	38.3%	38.3%
Maximum Green (s)	10.6	31.3	31.3	10.6	31.3	31.3	12.0	39.5	39.5	12.0	39.5	39.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7



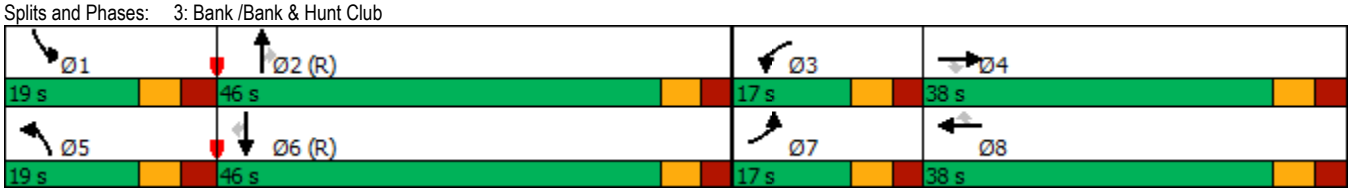
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		20.0	20.0		20.0	20.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		15	15		3	3		15	15		40	40
Act Effct Green (s)	10.1	35.7	35.7	8.6	31.8	31.8	12.0	39.9	39.9	11.6	39.5	39.5
Actuated g/C Ratio	0.08	0.30	0.30	0.07	0.26	0.26	0.10	0.33	0.33	0.10	0.33	0.33
v/c Ratio	0.63	0.93	0.57	0.42	0.92	0.35	1.02	0.47	0.10	0.72	0.88	0.37
Control Delay	64.3	58.8	11.0	63.3	59.9	6.9	107.1	33.5	0.3	66.3	48.4	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	58.8	11.0	63.3	59.9	6.9	107.1	33.5	0.3	66.3	48.4	6.6
LOS	E	E	B	E	E	A	F	C	A	E	D	A
Approach Delay		47.4			50.9			58.1			44.9	
Approach LOS		D			D			E			D	
90th %ile Green (s)	10.6	31.3	31.3	10.6	31.3	31.3	12.0	39.5	39.5	12.0	39.5	39.5
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	10.6	31.6	31.6	10.3	31.3	31.3	12.0	39.5	39.5	12.0	39.5	39.5
70th %ile Term Code	Max	Max	Max	Gap	Max	Max	Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	10.6	33.0	33.0	8.9	31.3	31.3	12.0	39.5	39.5	12.0	39.5	39.5
50th %ile Term Code	Max	Max	Max	Gap	Max	Max	Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	10.2	34.4	34.4	7.5	31.7	31.7	12.0	39.5	39.5	12.0	39.5	39.5
30th %ile Term Code	Gap	Max	Max	Gap	Max	Max	Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	8.3	48.3	48.3	0.0	33.6	33.6	12.0	41.6	41.6	9.9	39.5	39.5
10th %ile Term Code	Gap	Max	Max	Skip	Hold	Hold	Max	Coord	Coord	Gap	Coord	Coord
Stops (vph)	157	778	70	45	748	22	291	411	0	217	882	26
Fuel Used(l)	15	77	9	4	71	4	41	33	1	21	75	4
CO Emissions (g/hr)	279	1432	174	81	1318	66	758	618	13	390	1390	76
NOx Emissions (g/hr)	54	276	34	16	254	13	146	119	2	75	268	15
VOC Emissions (g/hr)	64	330	40	19	304	15	175	143	3	90	321	18
Dilemma Vehicles (#)	0	35	0	0	32	0	0	22	0	0	40	0
Queue Length 50th (m)	19.5	~116.8	10.3	11.2	101.2	0.0	~41.7	52.2	0.0	27.3	114.1	1.6
Queue Length 95th (m)	30.9	#166.1	40.6	23.5	#139.2	17.1	#71.3	68.6	0.0	#40.6	#149.1	18.6
Internal Link Dist (m)		101.4			93.4			111.4			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	276	989	648	146	899	528	328	1127	587	328	1115	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.93	0.57	0.34	0.92	0.35	1.02	0.47	0.10	0.70	0.88	0.37

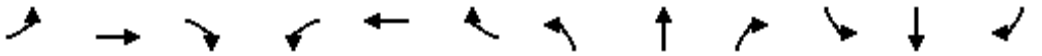
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 23 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 49.4		Intersection LOS: D	
Intersection Capacity Utilization 91.9%		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: 3: Bank /Bank & Hunt Club

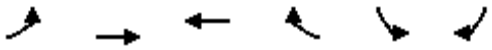




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	42	4	0	3	0	873	7	5	1381	22
Future Volume (Veh/h)	0	0	42	4	0	3	0	873	7	5	1381	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	42	4	0	3	0	873	7	5	1381	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								115				
pX, platoon unblocked	0.88	0.88		0.88	0.88	0.88				0.88		
vC, conflicting volume	1830	2271	690	1619	2290	440	1403			880		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1668	2170	690	1427	2191	84	1403			585		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	89	95	100	100	100			99		
cM capacity (veh/h)	55	40	387	74	39	841	483			865		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3	SB 4
Volume Total	42	7	582	298	5	690	690	22
Volume Left	0	4	0	0	5	0	0	0
Volume Right	42	3	0	7	0	0	0	22
cSH	387	122	1700	1700	865	1700	1700	1700
Volume to Capacity	0.11	0.06	0.34	0.18	0.01	0.41	0.41	0.01
Queue Length 95th (m)	2.8	1.4	0.0	0.0	0.1	0.0	0.0	0.0
Control Delay (s)	15.4	36.3	0.0	0.0	9.2	0.0	0.0	0.0
Lane LOS	C	E			A			
Approach Delay (s)	15.4	36.3	0.0		0.0			
Approach LOS	C	E						

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	57.0%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1209	1053	5	0	8
Future Volume (Veh/h)	0	1209	1053	5	0	8
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1209	1053	5	0	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		117				
pX, platoon unblocked					0.73	
vC, conflicting volume	1058				1658	526
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1058				1166	526
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	98
cM capacity (veh/h)	654				137	496

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	604	604	526	526	5	8
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	5	8
cSH	1700	1700	1700	1700	1700	496
Volume to Capacity	0.36	0.36	0.31	0.31	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	12.4
Lane LOS						B
Approach Delay (s)	0.0		0.0			12.4
Approach LOS						B

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

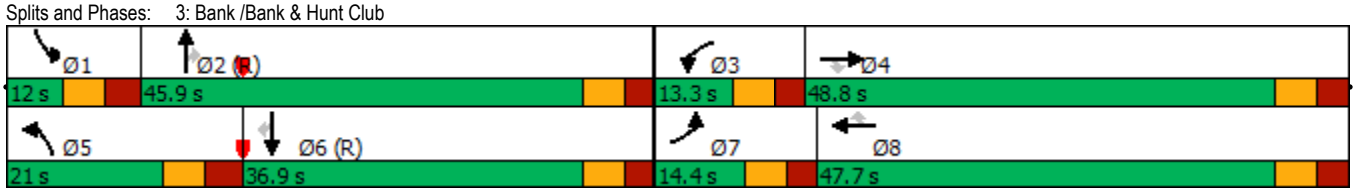
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Future Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	0.99		0.98	1.00		0.97	0.97		0.96	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3022	3202	1488	1631	3232	1517	3195	3357	1517	3288	3262	1381
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3004	3202	1452	1624	3232	1476	3085	3357	1457	3251	3262	1321
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			266			217			155			219
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			135.4			115.1	
Travel Time (s)		7.5			7.0			8.1			6.9	
Confl. Peds. (#/hr)	10		9	9		10	25		20	20		25
Confl. Bikes (#/hr)						3			3			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	11%	8%	4%	6%	7%	2%	5%	3%	2%	2%	6%	12%
Adj. Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	33.7	33.7	11.4	33.7	33.7	12.0	34.5	34.5	12.0	34.5	34.5
Total Split (s)	14.4	48.8	48.8	13.3	47.7	47.7	21.0	45.9	45.9	12.0	36.9	36.9
Total Split (%)	12.0%	40.7%	40.7%	11.1%	39.8%	39.8%	17.5%	38.3%	38.3%	10.0%	30.8%	30.8%
Maximum Green (s)	8.0	42.1	42.1	6.9	41.0	41.0	14.0	39.4	39.4	5.0	30.4	30.4
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		20.0	20.0		20.0	20.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		7	7		7	7		12	12		18	18
Act Effct Green (s)	7.9	46.3	46.3	6.6	39.9	39.9	13.6	40.3	40.3	5.3	31.9	31.9
Actuated g/C Ratio	0.07	0.39	0.39	0.06	0.33	0.33	0.11	0.34	0.34	0.04	0.27	0.27
v/c Ratio	0.68	0.59	0.37	0.36	0.91	0.31	0.80	0.85	0.04	0.60	0.37	0.30
Control Delay	72.5	32.6	4.8	66.2	50.9	3.9	69.1	45.8	0.1	73.9	38.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.5	32.6	4.8	66.2	50.9	3.9	69.1	45.8	0.1	73.9	38.0	2.4
LOS	E	C	A	E	D	A	E	D	A	E	D	A
Approach Delay		30.9			43.6			50.3			33.8	
Approach LOS		C			D			D			C	
90th %ile Green (s)	8.0	42.1	42.1	6.9	41.0	41.0	14.0	39.4	39.4	5.0	30.4	30.4
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.0	42.1	42.1	6.9	41.0	41.0	14.0	39.4	39.4	5.0	30.4	30.4
70th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	8.0	42.1	42.1	6.9	41.0	41.0	14.0	39.4	39.4	5.0	30.4	30.4
50th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	8.0	55.4	55.4	0.0	41.0	41.0	14.0	39.4	39.4	5.0	30.4	30.4
30th %ile Term Code	Max	Hold	Hold	Skip	Max	Max	Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	7.7	49.8	49.8	0.0	35.7	35.7	12.0	43.7	43.7	6.3	38.0	38.0
10th %ile Term Code	Gap	Hold	Hold	Skip	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
Stops (vph)	128	572	24	32	884	13	270	851	0	81	259	3
Fuel Used(l)	13	45	5	3	77	3	28	72	0	8	21	2
CO Emissions (g/hr)	245	832	87	56	1424	56	512	1346	5	156	392	36
NOx Emissions (g/hr)	47	161	17	11	275	11	99	260	1	30	76	7
VOC Emissions (g/hr)	57	192	20	13	329	13	118	311	1	36	90	8
Dilemma Vehicles (#)	0	25	0	0	38	0	0	39	0	0	14	0
Queue Length 50th (m)	16.4	75.6	0.0	7.4	113.1	0.0	34.6	110.8	0.0	10.4	33.3	0.0
Queue Length 95th (m)	#29.3	96.4	17.4	17.8	#149.0	11.7	#53.7	#139.7	0.0	#21.3	46.8	3.4
Internal Link Dist (m)		101.4			93.4			111.4			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	201	1235	723	93	1104	647	372	1126	591	144	867	512
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.59	0.37	0.34	0.88	0.30	0.78	0.85	0.04	0.60	0.37	0.30

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 65 (54%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 40.9 Intersection LOS: D
Intersection Capacity Utilization 86.8% 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: 3: Bank /Bank & Hunt Club



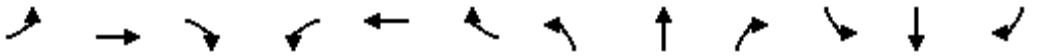
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Future Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.98	0.97		0.96	0.98		0.92
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3135	3325	1517	1662	3390	1517	3288	3390	1517	3288	3390	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3126	3325	1451	1650	3390	1486	3189	3390	1454	3214	3390	1350
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			283			183			155			155
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			135.4			115.1	
Travel Time (s)		7.5			7.0			8.1			6.9	
Confl. Peds. (#/hr)	4		21	21		4	55		22	22		55
Confl. Bikes (#/hr)			5			4			2			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	4%	2%	4%	2%	2%	2%	2%	2%	2%	2%	5%
Adj. Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	33.7	33.7	11.4	33.7	33.7	12.0	34.5	34.5	12.0	34.5	34.5
Total Split (s)	14.0	42.0	42.0	12.0	40.0	40.0	20.0	45.0	45.0	21.0	46.0	46.0
Total Split (%)	11.7%	35.0%	35.0%	10.0%	33.3%	33.3%	16.7%	37.5%	37.5%	17.5%	38.3%	38.3%
Maximum Green (s)	7.6	35.3	35.3	5.6	33.3	33.3	13.0	38.5	38.5	14.0	39.5	39.5
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		20.0	20.0		20.0	20.0		21.0	21.0		21.0	21.0
Pedestrian Calls (#/hr)		15	15		3	3		15	15		40	40
Act Effct Green (s)	7.6	37.0	37.0	5.6	32.6	32.6	13.4	40.5	40.5	12.7	39.8	39.8
Actuated g/C Ratio	0.06	0.31	0.31	0.05	0.27	0.27	0.11	0.34	0.34	0.11	0.33	0.33
v/c Ratio	0.83	0.90	0.57	0.64	0.90	0.34	0.91	0.47	0.09	0.66	0.87	0.39
Control Delay	87.8	53.2	12.6	90.8	56.2	6.6	82.2	33.4	0.3	61.0	47.6	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.8	53.2	12.6	90.8	56.2	6.6	82.2	33.4	0.3	61.0	47.6	11.7
LOS	F	D	B	F	E	A	F	C	A	E	D	B
Approach Delay		46.9			49.3			49.0			44.3	
Approach LOS		D			D			D			D	
90th %ile Green (s)	7.6	35.3	35.3	5.6	33.3	33.3	13.0	38.5	38.5	14.0	39.5	39.5
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	7.6	35.3	35.3	5.6	33.3	33.3	13.0	38.5	38.5	14.0	39.5	39.5
70th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	7.6	35.3	35.3	5.6	33.3	33.3	13.0	38.9	38.9	13.6	39.5	39.5
50th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	7.6	35.3	35.3	5.6	33.3	33.3	13.0	40.5	40.5	12.0	39.5	39.5
30th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	7.6	43.8	43.8	0.0	29.8	29.8	14.8	46.2	46.2	9.8	41.2	41.2
10th %ile Term Code	Max	Hold	Hold	Skip	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
Stops (vph)	150	818	88	43	761	21	296	409	0	215	878	55
Fuel Used(l)	18	74	10	5	69	3	35	33	1	20	74	6
CO Emissions (g/hr)	331	1381	193	99	1283	65	642	616	13	372	1376	109
NOx Emissions (g/hr)	64	267	37	19	248	12	124	119	2	72	266	21
VOC Emissions (g/hr)	76	319	45	23	296	15	148	142	3	86	317	25
Dilemma Vehicles (#)	0	35	0	0	32	0	0	22	0	0	40	0
Queue Length 50th (m)	20.1	111.8	14.8	11.5	98.7	0.0	40.7	52.6	0.0	26.9	114.1	10.1
Queue Length 95th (m)	#38.8	#151.8	45.4	#30.5	#131.9	16.7	#67.9	69.5	0.0	39.7	#149.1	29.8
Internal Link Dist (m)		101.4			93.4			111.4			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	198	1025	643	77	940	544	366	1144	593	383	1125	551
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.90	0.57	0.64	0.88	0.34	0.91	0.47	0.09	0.60	0.87	0.39

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 23 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 47.0 Intersection LOS: D
Intersection Capacity Utilization 91.9% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bank /Bank & Hunt Club



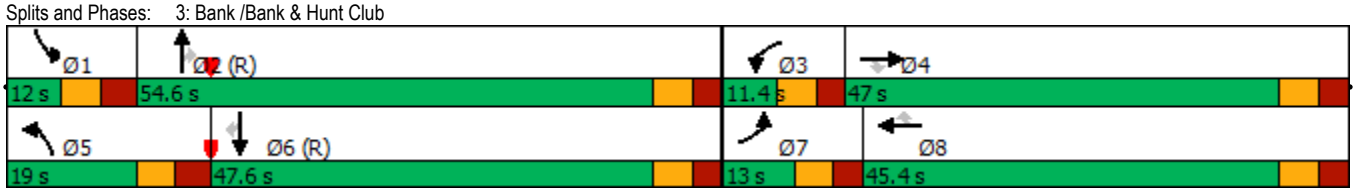
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Future Volume (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.98	1.00		0.98	0.98		0.97	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3022	3202	1488	1631	3232	1517	3195	3357	1517	3288	3262	1381
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3009	3202	1457	1626	3232	1481	3115	3357	1468	3261	3262	1333
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			266			147			149			149
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			171.1			115.1	
Travel Time (s)		7.5			7.0			10.3			6.9	
Confl. Peds. (#/hr)	10		9	9		10	25		20	20		25
Confl. Bikes (#/hr)						3			3			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	11%	8%	4%	6%	7%	2%	5%	3%	2%	2%	6%	12%
Adj. Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	730	266	32	974	195	290	956	23	86	324	153
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	44.7	44.7	11.4	44.7	44.7	12.0	46.5	46.5	12.0	46.5	46.5
Total Split (s)	13.0	47.0	47.0	11.4	45.4	45.4	19.0	54.6	54.6	12.0	47.6	47.6
Total Split (%)	10.4%	37.6%	37.6%	9.1%	36.3%	36.3%	15.2%	43.7%	43.7%	9.6%	38.1%	38.1%
Maximum Green (s)	6.6	40.3	40.3	5.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

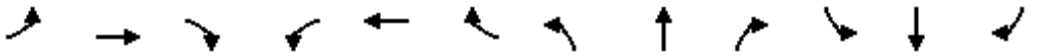
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		31.0	31.0		31.0	31.0		33.0	33.0		33.0	33.0
Pedestrian Calls (#/hr)		7	7		7	7		12	12		18	18
Act Effct Green (s)	6.6	44.9	44.9	5.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
Actuated g/C Ratio	0.05	0.36	0.36	0.04	0.31	0.31	0.10	0.38	0.38	0.04	0.33	0.33
v/c Ratio	0.86	0.64	0.38	0.49	0.97	0.35	0.95	0.74	0.04	0.66	0.30	0.28
Control Delay	99.9	37.4	5.3	83.7	65.7	11.3	95.9	37.3	0.1	82.3	32.2	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	99.9	37.4	5.3	83.7	65.7	11.3	95.9	37.3	0.1	82.3	32.2	6.5
LOS	F	D	A	F	E	B	F	D	A	F	C	A
Approach Delay		37.3			57.3			50.0			32.9	
Approach LOS		D			E			D			C	
90th %ile Green (s)	6.6	40.3	40.3	5.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	6.6	40.3	40.3	5.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
70th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	6.6	40.3	40.3	5.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
50th %ile Term Code	Max	Hold	Hold	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	6.6	51.7	51.7	0.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
30th %ile Term Code	Max	Hold	Hold	Skip	Max	Max	Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	6.6	51.7	51.7	0.0	38.7	38.7	12.0	48.1	48.1	5.0	41.1	41.1
10th %ile Term Code	Max	Hold	Hold	Skip	Max	Max	Max	Coord	Coord	Max	Coord	Coord
Stops (vph)	121	601	25	31	875	44	258	802	0	81	236	19
Fuel Used(l)	16	48	5	3	87	5	34	68	0	9	19	3
CO Emissions (g/hr)	295	899	89	63	1626	95	633	1256	6	166	351	54
NOx Emissions (g/hr)	57	174	17	12	314	18	122	243	1	32	68	10
VOC Emissions (g/hr)	68	207	21	15	375	22	146	290	1	38	81	12
Dilemma Vehicles (#)	0	24	0	0	37	0	0	38	0	0	13	0
Queue Length 50th (m)	17.4	82.7	0.0	7.9	124.4	8.4	37.1	105.3	0.0	10.9	31.1	0.7
Queue Length 95th (m)	#35.6	104.7	18.5	#21.2	#168.0	26.9	#63.9	129.9	0.0	#22.4	43.4	15.3
Internal Link Dist (m)		101.4			93.4			147.1			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	159	1149	693	65	1000	560	306	1291	656	131	1072	538
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.64	0.38	0.49	0.97	0.35	0.95	0.74	0.04	0.66	0.30	0.28

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 46.4 Intersection LOS: D
Intersection Capacity Utilization 97.7% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bank /Bank & Hunt Club





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Future Volume (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	150.0		0.0	40.0		0.0	120.0		50.0	50.0		0.0
Storage Lanes	2		1	1		1	2		1	2		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Ped Bike Factor	1.00		0.96	0.99		0.98	0.98		0.97	0.98		0.93
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3135	3325	1517	1662	3390	1517	3288	3390	1517	3288	3390	1473
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3128	3325	1463	1653	3390	1488	3216	3390	1466	3234	3390	1377
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			241			183			149			149
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		125.4			117.4			135.4			115.1	
Travel Time (s)		7.5			7.0			8.1			6.9	
Confl. Peds. (#/hr)	4		21	21		4	55		22	22		55
Confl. Bikes (#/hr)			5			4			2			4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	7%	4%	2%	4%	2%	2%	2%	2%	2%	2%	2%	5%
Adj. Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Shared Lane Traffic (%)												
Lane Group Flow (vph)	165	924	367	49	831	183	333	532	56	229	980	216
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.4	44.7	44.7	11.4	44.7	44.7	12.0	46.5	46.5	12.0	46.5	46.5
Total Split (s)	13.7	47.0	47.0	11.4	44.7	44.7	20.0	48.6	48.6	18.0	46.6	46.6
Total Split (%)	11.0%	37.6%	37.6%	9.1%	35.8%	35.8%	16.0%	38.9%	38.9%	14.4%	37.3%	37.3%
Maximum Green (s)	7.3	40.3	40.3	5.0	38.0	38.0	13.0	42.1	42.1	11.0	40.1	40.1
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
All-Red Time (s)	2.7	3.0	3.0	2.7	3.0	3.0	3.3	2.8	2.8	3.3	2.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.4	6.7	6.7	6.4	6.7	6.7	7.0	6.5	6.5	7.0	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		31.0	31.0		31.0	31.0		33.0	33.0		33.0	33.0
Pedestrian Calls (#/hr)		15	15		3	3		15	15		40	40
Act Effct Green (s)	7.3	41.0	41.0	5.0	36.5	36.5	13.7	43.7	43.7	10.9	40.9	40.9
Actuated g/C Ratio	0.06	0.33	0.33	0.04	0.29	0.29	0.11	0.35	0.35	0.09	0.33	0.33
v/c Ratio	0.90	0.85	0.57	0.74	0.84	0.33	0.92	0.45	0.09	0.80	0.88	0.39
Control Delay	103.3	47.9	15.5	113.4	50.2	6.1	86.9	33.3	0.3	76.6	50.7	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.3	47.9	15.5	113.4	50.2	6.1	86.9	33.3	0.3	76.6	50.7	13.1
LOS	F	D	B	F	D	A	F	C	A	E	D	B
Approach Delay		46.0			45.5			50.7			49.2	
Approach LOS		D			D			D			D	
90th %ile Green (s)	7.3	40.3	40.3	5.0	38.0	38.0	13.0	42.1	42.1	11.0	40.1	40.1
90th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	7.3	40.3	40.3	5.0	38.0	38.0	13.0	42.1	42.1	11.0	40.1	40.1
70th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	7.3	40.3	40.3	5.0	38.0	38.0	13.0	42.1	42.1	11.0	40.1	40.1
50th %ile Term Code	Max	Max	Max	Max	Max	Max	Max	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	7.3	40.3	40.3	5.0	38.0	38.0	13.0	42.1	42.1	11.0	40.1	40.1
30th %ile Term Code	Max	Max	Max	Max	Hold	Hold	Max	Coord	Coord	Max	Coord	Coord
10th %ile Green (s)	7.3	44.0	44.0	0.0	30.3	30.3	16.7	50.3	50.3	10.5	44.1	44.1
10th %ile Term Code	Max	Hold	Hold	Skip	Gap	Gap	Gap	Coord	Coord	Gap	Coord	Coord
Stops (vph)	146	828	113	42	762	19	293	402	0	213	882	59
Fuel Used(l)	20	71	12	6	65	3	36	33	1	23	77	6
CO Emissions (g/hr)	365	1317	224	114	1212	62	663	611	12	422	1423	116
NOx Emissions (g/hr)	70	254	43	22	234	12	128	118	2	81	275	22
VOC Emissions (g/hr)	84	304	52	26	280	14	153	141	3	97	328	27
Dilemma Vehicles (#)	0	35	0	0	30	0	0	21	0	0	38	0
Queue Length 50th (m)	21.1	111.8	23.9	12.2	99.1	0.0	42.7	53.9	0.0	28.9	120.9	11.7
Queue Length 95th (m)	#41.7	#138.8	55.3	#34.1	123.5	16.2	#72.2	70.3	0.0	#48.0	#157.6	32.5
Internal Link Dist (m)		101.4			93.4			111.4			91.1	
Turn Bay Length (m)	150.0			40.0			120.0		50.0	50.0		
Base Capacity (vph)	183	1091	641	66	1030	579	361	1186	609	289	1109	550
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.85	0.57	0.74	0.81	0.32	0.92	0.45	0.09	0.79	0.88	0.39

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 125
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 125
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 47.7 Intersection LOS: D
Intersection Capacity Utilization 99.0% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Bank /Bank & Hunt Club