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39 Years

Proposed Mixed-Use Development
1166 Bank Street, Ottawa
Transportation Impact Assessment

Proposed Mixed-Use Development
1166 Bank Street

Transportation Impact Assessment

Prepared By:

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

March 2023

Novatech File: 122103
Ref: R-2023-001

NOVATECH
Engineers, Planners & Landscape Architects

March 28, 2023

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: **1166 Bank Street**
Transportation Impact Assessment
Novatech File No. 122103

We are pleased to submit the following Transportation Impact Assessment (TIA), in support of Zoning By-Law Amendment and Site Plan Control applications at 1166 Bank Street, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa's *Transportation Impact Assessment Guidelines* (June 2017).

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

Yours truly,

NOVATECH

Joshua Audia, P.Eng.
Project Engineer | Transportation

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 __28th__ day of _____March_____, 2023.
(City)

Name: _____Jennifer Luong, P.Eng._____
(Please Print)

Professional Title: _____Senior Project Manager, Transportation_____

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

Office Contact Information (Please Print)	
Address:	240 Michael Cowpland Drive, Suite 200
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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared, in support of Zoning By-Law Amendment and Site Plan Control applications at 1166 Bank Street. The subject site is approximately 0.25 acres in size, and is currently occupied by a convenience store. The subject site is currently served by one driveway to Bank Street, and one driveway to Grove Avenue.

The subject site is surrounded by the following:

- Commercial uses, followed by Glen Avenue to the north,
- Grove Avenue, followed by commercial and residential uses to the south,
- Bank Street, followed by commercial uses to the east, and
- Residences, followed by Grosvenor Avenue to the west.

The proposed development consists of a single six-storey mixed-use building with 37 dwellings and approximately 4,534 ft^2 GFA of ground-floor retail. A total of 14 parking spaces will be provided in an underground parking garage. Access to the development will be provided via a single left-in/left-out access to Grove Avenue. The development will be constructed in a single phase, with a buildout year of 2024.

The subject site is located in the Inner Urban Transect, and designated as 'Corridor – Mainstreet' (Bank Street) on Schedule B2 of the City of Ottawa's Official Plan with an Evolving Neighbourhood overlay. The implemented zoning for the property is 'Traditional Mainstreet' (TM2), and the site is within the Bank Traditional Mainstreet Design Priority Area (DPA).

The study area for this report includes the boundary roadways Bank Street and Grove Avenue, as well as the following intersections:

- Bank Street/Glen Avenue/Belmont Avenue
- Bank Street/Grove Avenue

The selected time periods for this TIA are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The buildout year 2024 and horizon year 2029 will be considered.

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

Forecasting

- The proposed development is estimated to generate 31 person trips (including eight vehicle trips) during the AM peak hour, and 55 person trips (including 15 vehicle trips) during the PM peak hour.

- Compared to the existing convenience store, the proposed development is anticipated to generate 169 fewer person trips (including 52 fewer vehicle trips) during the AM peak hour, and 102 fewer person trips (including 32 fewer vehicle trips) during the PM peak hour.

Development Design and Parking

- Pedestrian walkways will connect all building entrances to the existing sidewalks on the west side of Bank Street and north side of Grove Avenue.

- A total of eight exterior bicycle parking spaces will be provided adjacent to the southernmost entrance to Bank Street and the easternmost entrance to Grove Avenue, and a total of 60 interior bicycle parking spaces will be provided in storage rooms on the ground level or underground parking level. A bike maintenance station will also be located on the ground floor.

- The subject site is within 400m walking distance of stops that are served by OC Routes 5, 6, and 7. The proposed development will not impact the location of the existing bus stop shelter at the southeast corner of the site (stop #7654).

- Garbage bins will be wheeled from the garbage room within the underground parking garage, and collection will take place curbside on Grove Avenue. Vehicles for residents moving in/out and loading/deliveries for the retail uses will park on-street. The fire route for the development will be located along the boundary streets Bank Street and Grove Avenue.

- The minimum parking and loading requirements will be met.

Boundary Streets

- Based on the results of the segment multi-modal level of service (MMLOS) analysis:

    - Both Bank Street and Grove Avenue do not meet the target pedestrian level of service (PLOS) B/C;
    - Grove Avenue meets the target bicycle level of service (BLOS) D, while Bank Street does not meet the target BLOS C;
    - Bank Street does not meet the target transit level of service (TLOS) D;
    - Bank Street meets the target truck level of service (TkLOS) D.

- Both sides of Bank Street include sidewalks with a width greater than 2.0m and no boulevard separating pedestrians from the roadway. The target PLOS B is achieved if there is the presence of on-street parking and therefore the target is met outside of the weekday peak periods. During these periods, the target PLOS B can only be met if sidewalks with a minimum width of 2.0m and minimum boulevard width of 2.0m are implemented. However, there is no room in the Bank Street ROW to accommodate this, based on the current cross-section of Bank Street. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street.

- Both sides of Grove Avenue include sidewalks with a width of approximately 1.5m and no boulevard. As the planned roadway improvements for Grove Avenue will include 2.0m-wide sidewalks on both sides of the roadway, the target PLOS C will be achieved.

- Bank Street currently does not have any cycling facilities within the study area. The *Ontario Traffic Manual (OTM) – Book 18* indicates that separated facilities (such as separated bike lanes or cycle tracks) are appropriate. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street. South of the study area, the City has developed a recommended plan for Bank Street from Riverside Drive to Ledbury Avenue, which will include cycle tracks and protected intersections. Cycle tracks on Bank Street within the study area would be consistent with this plan.

- The City's 2031 Affordable Rapid Transit and Transit Priority (RTTP) Network identifies Bank Street as a Transit Priority Corridor, with transit signal priority and queue jump lanes at select intersections between Wellington Street and Billings Bridge Station. It is anticipated that these isolated measures will improve transit operations on Bank Street.

Access Design

- The proposed two-way access to Grove Avenue is anticipated to meet all relevant provisions of the Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads*, and the City's *Zoning By-Law* and *Private Approach By-Law*.

Transportation Demand Management

- The proponent will consider providing the following TDM measures:
    - Display local area maps with walking/cycling access routes and key destinations at major entrances;
    - Unbundle parking cost from monthly rent (for residents);
    - Provide a multi-modal travel information package to new residents or new/relocating employees.

- In addition, bicycle parking will be provided at a rate of more than 1.5 bicycle spaces per dwelling, more than three times the minimum zoning requirement.

Based on the foregoing, the proposed development is recommended from a transportation perspective.

1.0 SCREENING

1.1 Introduction

This Transportation Impact Assessment (TIA) has been prepared, in support of Zoning By-Law Amendment and Site Plan Control applications at 1166 Bank Street. The subject site is approximately 0.25 acres in size, and is currently occupied by a convenience store. The subject site is currently served by one driveway to Bank Street, and one driveway to Grove Avenue.

The subject site is surrounded by the following:

- Commercial uses, followed by Glen Avenue to the north,
- Grove Avenue, followed by commercial and residential uses to the south,
- Bank Street, followed by commercial uses to the east, and
- Residences, followed by Grosvenor Avenue to the west.

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

Figure 1: View of the Subject Site

1.2 Proposed Development

The proposed development consists of a single six-storey mixed-use building with 37 dwellings and approximately 4,534 ft^2 GFA of ground-floor retail. A total of 14 parking spaces will be provided in an underground parking garage. Access to the development will be provided via a single left-in/left-out access to Grove Avenue. The development will be constructed in a single phase, with a buildout year of 2024.

The subject site is located in the Inner Urban Transect, and designated as 'Corridor – Mainstreet' (Bank Street) on Schedule B2 of the City of Ottawa's Official Plan with an Evolving Neighbourhood overlay. The implemented zoning for the property is 'Traditional Mainstreet' (TM2), and the site is within the Bank Traditional Mainstreet Design Priority Area (DPA). A copy of the preliminary site plan is included in **Appendix A**. A site context plan, which includes the site plan and shows all details of the roadway network immediately surrounding the site, is included in **Figure 2**.

1.3 Screening Form

The City's *2017 TIA Guidelines* identify 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, which is included in **Appendix B**. The trigger results are as follows:

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

- Location Triggers – The development is located within the Bank Traditional Mainstreet DPA; further assessment is **required** based on this trigger.

- Safety Triggers – The proposed development does not meet any safety triggers; further assessment is **not required** based on this trigger.

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadways

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

Bank Street is an arterial roadway that generally runs on a north-south alignment between Wellington Street and Belmeade Road/Marionville Road (i.e. the City of Ottawa boundary). South of the City boundary, the roadway continues as County Road 31. Within the study area, Bank Street has a four-lane urban cross-section, sidewalks on both sides of the roadway, and a posted speed limit of 40 km/h. Bank Street is classified as a truck route, allowing full loads. For the curbside northbound lane, street parking is prohibited between 7:00am and 9:00am on weekdays, restricted to one hour between 9:00am and 7:00pm on weekdays, and permitted outside of these hours. For the curbside southbound lane, street parking is prohibited between 3:30pm and 5:30pm on weekdays, restricted to one hour between 7:00am and 3:30pm on weekdays, and permitted outside of these hours. The City of Ottawa's Official Plan identifies a right-of-way (ROW) protection of 23m at Bank Street within the study area. As shown in **Figure 2**, a widening had previously been taken for the northernmost 12m of the subject site's frontage. City staff have agreed to an approximate 1.05m widening for the remainder of the frontage, equating to a ROW protection of 18.7m for Bank Street.

PRIVACY FENCE

PLANTER

ROOF OVER
GARAGE ENTRY

U/G PARKING
ENTRANCE

LEVEL 2-4

GROVE AVENUE

MAIN
ENTRANCE

1166 BANK STREET
6 STORY BUILDING

PENTHOUSE

UNDERGROUND
LIMIT

LEVEL 5-6

LEVEL 2-4

ROAD WIDENING
LIMIT

LAND PREVIOUSLY CONVEYED TO CITY

1.05m

1.05m WIDENING TO BE
DEDICATED BY OWNER

18.7m COMPROMISED ROW

17.7m EXISTING ROW

BANK STREET

NOTES:

1. PROPERTY LINES ARE APPROXIMATED FROM geo OTTAWA

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1166 BANK STREET

CONCEPT PLAN CONTEXT

SCALE 1 : 250 (0 2 4 6 8 10)

DATE FEB 2023 | JOB 122103 | FIGURE FIGURE-2

M:\2022\122103\CAD_Base\122103-BP.dwg, Concept, Feb 16, 2023 - 9:36am, zali

SHT11X17.DWG - 279mmX432mm

Glen Avenue is a one-way local roadway that runs in the westbound direction from Bank Street to Seneca Street, and Grove Avenue is a one-way local roadway that runs in the eastbound direction from Seneca Street to Bank Street. West of Seneca Street, Glen Avenue and Grove Avenue become two-way roadways and form a loop with each other.

Between Bank Street and Grosvenor Avenue, Glen Avenue has a two-lane urban cross-section (one travel lane and one parking lane), sidewalks on both sides of the roadway, and a posted speed limit of 30 km/h. Glen Avenue is not classified as a truck route. Within the study area, street parking on Glen Avenue is generally prohibited on the south side and restricted to one-hour parking on weekdays from 7:00am to 7:00pm on the north side.

Between Bank Street and Grosvenor Avenue, Grove Avenue has a two-lane urban cross-section (one travel lane and one parking lane), sidewalks on both sides of the roadway, and a posted speed limit of 30 km/h. Grove Avenue is not classified as a truck route. Within the study area, street parking on Grove Avenue is generally prohibited on the north side and permitted on the south side, outside of the vicinity of any bus stops.

Grosvenor Avenue is a local roadway that generally runs on a north-south alignment from approximately 90m north of Aylmer Avenue to Cameron Avenue. Between Glen Avenue and Grove Avenue, Grosvenor Avenue has a two-lane urban cross-section, sidewalks on both sides of the roadway, and an unposted speed limit of 30 km/h. Grosvenor Avenue is not classified as a truck route. Within the study area, street parking on Grosvenor Avenue is generally prohibited on the east side and permitted on the west side.

Belmont Avenue is a local roadway that generally runs on an east-west alignment between Bank Street and Rideau River Drive South. Between Bank Street and Riverdale Avenue, Belmont Avenue has a two-lane urban cross-section, sidewalks on both sides of the roadway, and a posted speed limit of 30 km/h. Belmont Avenue is not classified as a truck route. Within the study area, street parking on Belmont Avenue is generally prohibited on the south side, and restricted to one-hour parking on weekdays from 7:00am to 7:00pm (permit holders exempt) or permitted outside of these hours on the north side.

2.1.2 Intersections

Bank Street/Glen Avenue/Belmont Avenue

- Signalized four-legged intersection
- North/South Approaches (Bank Street):
  one shared left turn/through lane and one shared through/right turn lane
- East Approach (Belmont Avenue):
  one shared left turn/through/right turn lane
- West Approach (Glen Avenue):
  one receiving lane for westbound traffic
- Zebra-striped crosswalks on all approaches

Bank Street/Grove Avenue

- Unsignalized, offset four-legged intersection
- North/South Approaches (Bank Street): two through lanes (no entry onto Grove Avenue)
- East Approach (access to 1159 Bank Street): one shared left turn/right turn lane
- West Approach (Grove Avenue): one shared left turn/right turn lane
- Standard crosswalk on west approach

2.1.3 Driveways

In accordance with the *2017 TIA Guidelines*, a review of the existing adjacent driveways along the boundary roadways are provided as follows:

Bank Street, east side

- Eight driveways to commercial uses at 1123-1255 Bank Street

Bank Street, west side

- None

Grove Avenue, north side

- Ten driveways to residences at 5-39 Grove Avenue

Grove Avenue, south side

- One driveway to a mixed-use building at 1176 Bank Street
- 16 driveways to residences at 10-48 Grove Avenue

2.1.4 Pedestrian and Cycling Facilities

Sidewalks are provided on both sides of Bank Street, Glen Avenue, Grove Avenue, and Belmont Avenue. No study area roadways have cycling facilities, with the nearest bike lanes located on Cameron Avenue to the south and Seneca Street to the west.

In the City of Ottawa's primary cycling network, Bank Street is designated as a Local Route. Glen Avenue, Grove Avenue, and Belmont Avenue have no cycling route designation. Crosstown Bikeway #5 runs east of the study area, along O'Connor Street, Fifth Avenue, Echo Drive, Riverdale Avenue, and Bank Street (south of Riverdale Avenue).

2.1.5 Area Traffic Management

Within the study area, there are no Area Traffic Management (ATM) studies that are in progress. For all local roadways that intersect Bank Street in vicinity of the subject site, signage indicates that an area speed limit of 30 km/h applies to all streets within the neighbourhoods east and west of Bank Street. Glen Avenue has 'SLOW' pavement markings applied west of Bank Street.

2.1.6 Transit

The locations of OC Transpo bus stops in the vicinity of the subject site are shown in **Figure 3**, and are described in **Table 1**. A summary of the various routes which serve the study area is included in **Table 2**. Detailed route information and an excerpt from the OC Transpo System Map are included in **Appendix C**.

Figure 3: OC Transpo Bus Stop Locations

Table 1: OC Transpo Transit Stops

Stop	Location	Routes
#2414	East side of Bank Street, south of Belmont Avenue	6, 7
#3325	West side of Bank Street, south of Riverdale Avenue	5, 6
#6685	South side of Grove Avenue, west of Léonard Avenue	7
#6686	South side of Grove Avenue, west of Grosvenor Avenue	7
#6687	South side of Grove Avenue, west of Bank Street	7
#6740	West side of Bank Street, south of Cameron Avenue	6
#6741	East side of Bank Street, south of Riverdale Avenue	5, 6
#6742	East side of Riverdale Avenue, south of Belmont Avenue	5
#6751	West side of Riverdale Avenue, south of Cameron Avenue	5
#6773	East side of Bank Street, south of Aylmer Avenue	6, 7
#6774	West side of Bank Street, south of Aylmer Avenue	6, 7
#6775	North side of Sunnyside Avenue, west of Bank Street	7
#6776	North side of Sunnyside Avenue, east of Grosvenor Avenue	7
#6778	West side of Bank Street, north of Hopewell Avenue	6
#6785	North side of Sunnyside Avenue, west of Rosedale Avenue	7
#7646	West side of Riverdale Avenue, north of Sunnyside Avenue	5
#7647	West side of Riverdale Avenue, south of Belmont Avenue	5
#7649	East side of Riverdale Avenue, south of Sunnyside Avenue	5
#7650	East side of Riverdale Avenue, south of Windsor Avenue	5
#7653	East side of Bank Street, south of Cameron Avenue	6
#7654	West side of Bank Street, north of Grove Avenue (adjacent to subject site)	6
#7655	East side of Bank Street, north of Sunnyside Avenue	6, 7

Table 2: OC Transpo Route Information

Route	From ↔ To	Frequency
5	Billings Bridge ↔ Rideau	All day service, seven days a week; 30-minute headways
6	Greenboro ↔ Rockcliffe	All day service, seven days a week; 10- to 30-minute headways
7	Carleton ↔ St. Laurent	All day service, seven days a week; 12- to 30-minute headways

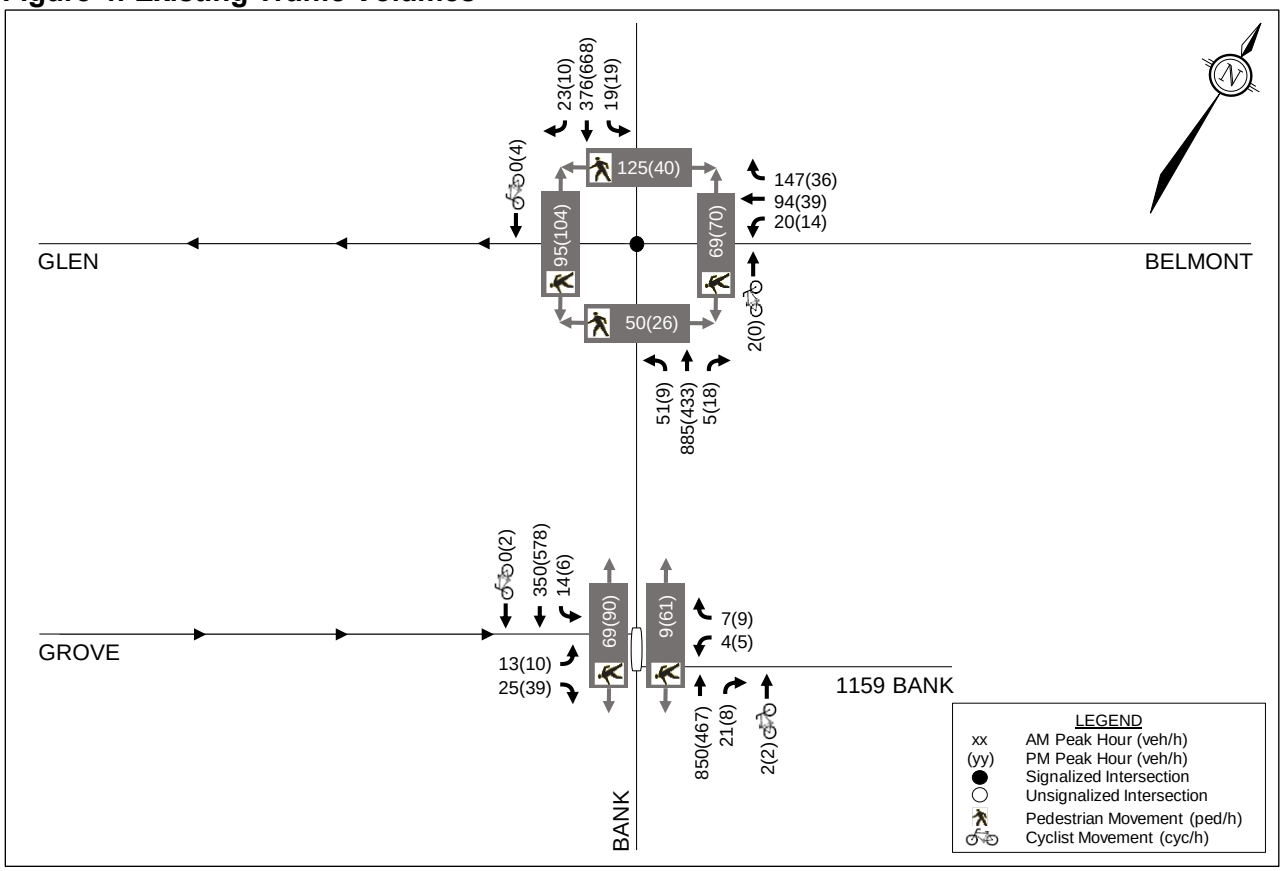
2.1.7 Existing Traffic Volumes

Weekday traffic counts have been completed by the City of Ottawa at Bank Street/Glen Avenue/ Belmont Avenue and coordinated by Novatech at Bank Street/Grove Avenue, to determine the existing pedestrian, cyclist, and vehicle volumes at these intersections. The counts was completed on the following dates:

- Bank Street/Glen Avenue/Belmont Avenue January 28, 2020 (City)
- Bank Street/Grove Avenue January 31, 2023 (Novatech)

Traffic count data previously discussed is included in **Appendix D**. In the AM peak hour, northbound through volumes at Bank Street/Grove Avenue have been balanced, based on the pre-pandemic count data collected at Bank Street/Glen Avenue/Belmont Avenue. Traffic volumes within the study area are shown in **Figure 4**.

Figure 4: Existing Traffic Volumes



2.1.8 Collision Records

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

The collision data has been evaluated to determine if there are any identifiable collision patterns, which are defined in the *2017 TIA Guidelines* as 'more than six collisions in five years' for any one movement. The number of collisions at each intersection from January 1, 2016 to December 31, 2020 is summarized in **Table 3**.

Table 3: Reported Collisions

Intersection or Segment	Impact Types						Total
	Approach	Angle	Rear End	Sideswipe	Turning Movement	SMV[1]/ Other	
Bank Street/ Glen Avenue/Belmont Avenue	-	-	2	1	2	1	**6**
Bank Street/ Grove Avenue	-	1	2	-	-	1	**4**
Bank Street btwn Glen Ave & Grove Ave	-	3	-	2	4	-	**9**
Grove Avenue btwn Bank St & Grosvenor Ave	-	-	-	-	-	1	**1**

1. SMV = Single Motor Vehicle

Bank Street/Glen Avenue/Belmont Avenue
A total of six collisions were reported at this intersection over the last five years, of which there were two rear-end impacts, one sideswipe impact, two turning movement impacts, and one single vehicle/other impact. One collision resulted in injuries, but did not cause any fatalities. One of the six collisions occurred in poor driving conditions. No collisions involved pedestrians or cyclists.

Bank Street/Grove Avenue
A total of four collisions were reported at this intersection over the last five years, of which there were one angle impact, two rear-end impacts, and one single vehicle/other impact. No collisions resulted in injuries or fatalities, occurred in poor driving conditions, or involved pedestrians or cyclists.

Bank Street between Glen Avenue/Belmont Avenue and Grove Avenue
A total of nine collisions were reported along this segment over the last five years, of which there were three angle impacts, two sideswipe impacts, and four turning movement impacts. Four collisions resulted in injuries, but none caused fatalities. Two of the nine collisions occurred in poor driving conditions. No collisions involved pedestrians, and three collisions involved cyclists.

All three cyclist collisions involved cyclists travelling southbound on Bank Street. The three impacts involved one sideswipe impact with a southbound vehicle, one turning movement impact involving a northbound left turning vehicle, and one turning movement impact involving a southbound right turning vehicle.

Grove Avenue between Bank Street and Grosvenor Avenue
One collision was reported along this segment over the last five years. This was a single vehicle impact involving a municipal transit bus travelling eastbound in poor driving conditions, and did not result in injuries or fatalities.

2.2 Planned Conditions

2.2.1 Planned Transportation Projects

In the City's 2013 Transportation Master Plan (TMP), the 2031 Affordable Rapid Transit and Transit Priority (RTTP) Network identifies Bank Street as a Transit Priority Corridor with Isolated Measures between Wellington Street and Billings Bridge Station. Transit signal priority and queue jump lanes will be implemented at select intersections. The 2031 RTTP Network Concept extends the Transit Priority Corridor on Bank Street from Billings Bridge Station to Hunt Club Road, with transit signal priority and queue jump lanes implemented to additional intersections.

The City has identified necessary upgrades to the existing roadway, sewer, and watermain infrastructure on Grove Avenue and Grosvenor Avenue. The recommended plan includes a reduced pavement width for Grove Avenue to 6.5m, narrowing to 5.0m at all intersections including at Bank Street, raised intersections at Seneca Street, Léonard Avenue, and Grosvenor Avenue, flat-top speed humps, and 2.0m-wide concrete sidewalks on both sides east of Seneca Street. The recommended roadway improvement plans for Grove Avenue and Grosvenor Avenue are included in **Appendix F**.

The 2013 Ottawa Cycling Plan identifies a Phase 3 (2026-2031) project south and east of the study area. The Old Ottawa South Neighbourhood Bikeway project will include shared use lanes on Riverdale Avenue between Main Street and Cameron Avenue, as well as on select sections of Cameron Avenue.

The City's Draft 2024 TMP identifies a cycling project on Riverdale Avenue between Main Street and Bank Street, and a feasibility study project for active transportation facilities on Bank Street between Colonel By Drive and Riverside Drive.

The 2013 Ottawa Pedestrian Plan does not identify any pedestrian infrastructure projects in vicinity of the subject site.

2.2.2 Other Area Developments

In proximity of the proposed development, there are two other developments that are in the approval process. A summary of each proposed development is included below.

1335 and 1339 Bank Street
A TIA was prepared by Parsons in December 2021, in support of a 26-storey apartment building with 391 dwellings and 5,640 ft^2 of ground-floor commercial space. The TIA identified a buildout year of 2022.

1330-1346 Bank Street and 2211 Riverside Drive
A TIA was prepared by Parsons in May 2021, in support of a two-phase development. Phase 1 will include a 27-storey building at 1330-1346 Bank Street, with 309 dwellings and 3,603 ft^2 of ground-floor commercial space. Phase 2 will include a 29-storey building at 2211 Riverside Drive, with 228 dwellings. The TIA identified buildout years of 2023 for Phase 1 and 2026 for Phase 2.

2.3 Study Area and Time Periods

The study area for this report includes the boundary roadways Bank Street and Grove Avenue, as well as the following intersections:

- Bank Street/Glen Avenue/Belmont Avenue
- Bank Street/Grove Avenue

The selected time periods for this TIA are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. The buildout year 2024 and horizon year 2029 will be considered.

2.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the *2017 TIA Guidelines*. The applicable exemptions for this site are shown in **Table 4**.

Table 4: TIA Exemptions

Module	Element	Exemption Criteria	Status
Design Review Component			
4.1 Development Design	*4.1.2* Circulation and Access	• Only required for site plans	Not Exempt
	4.1.3 New Street Networks	• Only required for plans of subdivision	Exempt
4.2 Parking	*4.2.1* Parking Supply	• Only required for site plans	Not Exempt
	4.2.2 Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	Exempt

As discussed in Section 1.3, the Trip Generation Trigger has not been met, and therefore all Network Impact components are exempt from this TIA. As requested by City staff, Module 4.5: Transportation Demand Management has been included in this TIA. Therefore, the following modules will be included in the TIA report:

Design Review Component
- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design

Network Impact Component
- Module 4.5: Transportation Demand Management

3.0 FORECASTING

3.1 Development-Generated Travel Demand

3.1.1 Trip Generation

Existing Trip Generation

The estimated gross floor area of the existing convenience store equals approximately 2,500 ft^2, based on aerial photography. The number of peak hour trips generated by this use has been estimated using the trip generation rates outlined in the *ITE Trip Generation Manual, 11th Edition*, corresponding to the Convenience Store (code 851) land use. Trips estimated using the *ITE Trip Generation Manual* have been converted to person trips using an adjustment factor of 1.28, consistent with the City's *2017 TIA Guidelines*.

The estimated number of person trips generated by the existing convenience store are shown in **Table 5**.

Table 5: Existing Development – Peak Hour Trip Generation

Land Use	ITE Code	GFA	AM Peak Hour (pph[1])			PM Peak Hour (pph)		
			IN	OUT	TOT	IN	OUT	TOT
Convenience Store	851	2,500 ft^2	100	100	*200*	80	77	*157*

1. pph: Person Trips per Hour

The *TRANS Trip Generation Manual Summary Report*, prepared in October 2020 by WSP, includes data to estimate the mode shares for commercial trip generators, based on the district. The observed commercial mode shares for the Ottawa Inner Area can be summarized as follows:

- Auto Driver: 39% in AM peak hour, 22% in PM peak hour;
- Auto Passenger: 2% in AM peak hour, 4% in PM peak hour;
- Transit: 16% in AM peak hour, 12% in PM peak hour;
- Cyclist: 3% in AM peak hour, 4% in PM peak hour;
- Pedestrian: 40% in AM peak hour, 58% in PM peak hour.

The assumed mode shares for the existing convenience store are a blend of the mode shares above, and can be summarized as 30% driver, 5% passenger, 15% transit, 5% cyclist, and 45% pedestrian. A breakdown of the existing site-generated trips by mode share is included in **Table 6**.

Table 6: Existing Development – Peak Hour Trips by Mode Share

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Existing Person Trips		**100**	**100**	***200***	**80**	**77**	***157***
Auto Driver	30%	30	30	*60*	24	23	*47*
Auto Passenger	5%	5	5	*10*	4	4	*8*
Transit	15%	15	15	*30*	12	11	*23*
Cyclist	5%	5	5	*10*	4	4	*8*
Pedestrian	45%	45	45	*90*	36	35	*71*

Proposed Trip Generation

The proposed development will include 37 apartment dwellings and approximately 4,534 ft^2 GFA of ground-floor retail.

The number of peak hour trips generated by the proposed residences has been estimated using the trip generation rates outlined in the *TRANS Trip Generation Manual*, corresponding to the High-Rise Multifamily Housing (three or more storeys) land use and Ottawa Inner Area district. Per the *TRANS Trip Generation Manual*, the observed mode shares for High-Rise Multifamily Housing in the Ottawa Inner Area can be summarized as follows:

- Auto Driver: 26% in AM peak hour, 25% in PM peak hour;
- Auto Passenger: 6% in AM peak hour, 8% in PM peak hour;
- Transit: 28% in AM peak hour, 21% in PM peak hour;
- Cyclist: 5% in AM peak hour, 6% in PM peak hour;
- Pedestrian: 34% in AM peak hour, 39% in PM peak hour.

The assumed mode shares for the proposed residences are a blend of the mode shares above, and can be summarized as 25% driver, 5% passenger, 25% transit, 5% cyclist, and 40% pedestrian.

The process of converting the trip generation estimates from peak period to peak hour is shown in the following tables. The estimated number of person trips generated by the proposed dwellings for the AM and PM peak periods are shown in **Table 7**. A breakdown of these trips by mode share is shown in **Table 8**.

Table 7: Proposed Residential – Peak Period Trip Generation

Land Use	TRANS Rate	Units	AM Peak Period (ppp[1])			PM Peak Period (ppp)		
			IN	OUT	TOT	IN	OUT	TOT
High-Rise Multifamily Housing	AM: 0.80 PM: 0.90	37	9	21	*30*	19	14	*33*

1. ppp: Person Trips per Peak Period

Table 8: Proposed Residential – Peak Period Trips by Mode Share

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		IN	OUT	TOT	IN	OUT	TOT
Residential Person Trips		**9**	**21**	***30***	**19**	**14**	***33***
Auto Driver	25%	2	5	*7*	5	3	*8*
Auto Passenger	5%	1	1	*2*	1	1	*2*
Transit	25%	2	5	*7*	5	3	*8*
Cyclist	5%	1	1	*2*	1	1	*2*
Pedestrian	40%	3	9	*12*	7	6	*13*

Table 4 of the *TRANS Trip Generation Manual* includes adjustment factors to convert the estimated number of trips generated for each mode from peak period to peak hour. A breakdown of the peak hour trips by mode is shown in **Table 9**.

Table 9: Proposed Residential – Peak Hour Trips by Mode Share

Travel Mode	Adj. Factor		AM Peak Hour			PM Peak Hour		
	AM	PM	IN	OUT	TOT	IN	OUT	TOT
Auto Driver	0.48	0.44	1	3	*4*	2	2	*4*
Auto Passenger	0.48	0.44	-	1	*1*	1	-	*1*
Transit	0.55	0.47	1	3	*4*	2	2	*4*
Cyclist	0.58	0.48	-	1	*1*	1	-	*1*
Pedestrian	0.58	0.52	2	5	*7*	4	3	*7*
Peak Hour Person Trips			**4**	**13**	***17***	**10**	**7**	***17***

The number of peak hour trips generated by the proposed ground-floor retail has been estimated using the trip generation rates outlined in the *ITE Trip Generation Manual, 11th Edition*, corresponding to the Strip Retail Plaza (code 822) land use. The trip to person trip adjustment factor of 1.28 has been applied, as described in the previous section.

The estimated number of person trips generated by the proposed ground-floor retail are shown in **Table 10**.

Table 10: Proposed Retail – Peak Hour Trip Generation

Land Use	ITE Code	GFA	AM Peak Hour (pph)			PM Peak Hour (pph)		
			IN	OUT	TOT	IN	OUT	TOT
Strip Retail Plaza	822	4,534 ft^2	8	6	*14*	19	19	*38*

The mode shares for the proposed ground-floor retail are assumed to follow the same mode shares as the existing convenience store. A breakdown of the peak hour retail trips by mode share is included in **Table 11**.

Table 11: Proposed Retail – Peak Hour Trips by Mode Share

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOT	IN	OUT	TOT
Retail Person Trips		**8**	**6**	***14***	**19**	**19**	***38***
Auto Driver	30%	2	2	*4*	6	5	*11*
Auto Passenger	5%	-	1	*1*	1	1	*2*
Transit	15%	1	1	*2*	3	3	*6*
Cyclist	5%	1	-	*1*	1	1	*2*
Pedestrian	45%	4	2	*6*	8	9	*17*

For the purposes of this TIA, it is conservatively assumed that all trips generated by the proposed development are external (i.e. no residents will travel to/from the retail uses during the peak hours).

Net Trip Generation

A comparison of the existing and proposed site-generated person trip generation is included in **Table 12**.

Table 12: Net Peak Hour Trips by Mode Share

Travel Mode	AM Peak Hour			PM Peak Hour		
	IN	OUT	TOT	IN	OUT	TOT
Existing Person Trips	**100**	**100**	***200***	**80**	**77**	***157***
Auto Driver	30	30	*60*	24	23	*47*
Auto Passenger	5	5	*10*	4	4	*8*
Transit	15	15	*30*	12	11	*23*
Cyclist	5	5	*10*	4	4	*8*
Pedestrian	45	45	*90*	36	35	*71*
Proposed Person Trips	**12**	**19**	***31***	**29**	**26**	***55***
Auto Driver	3	5	*8*	8	7	*15*
Auto Passenger	-	2	*2*	2	1	*3*
Transit	2	4	*6*	5	5	*10*
Cyclist	1	1	*2*	2	1	*3*
Pedestrian	6	7	*13*	12	12	*24*
Net Person Trips	**-88**	**-81**	***-169***	**-51**	**-51**	***-102***
Auto Driver	-27	-25	*-52*	-16	-16	*-32*
Auto Passenger	-5	-3	*-8*	-2	-3	*-5*
Transit	-13	-11	*-24*	-7	-6	*-13*
Cyclist	-4	-4	*-8*	-2	-3	*-5*
Pedestrian	-39	-38	*-77*	-24	-23	*-47*

From the previous table, the proposed development is estimated to generate 169 fewer person trips (including 52 fewer vehicle trips) during the AM peak hour, and 102 fewer person trips (including 32 fewer vehicle trips) during the PM peak hour.

3.1.2 Trip Distribution and Assignment

The proposed development is not projected to generate a net additional 60 person trips during the peak hours, and therefore the Trip Generation trigger is not met. Therefore, the distribution and assignment of site-generated trips is exempt from this TIA.

It is noted that all inbound trips will arrive from the west on Grove Avenue, and all outbound trips will depart to Bank Street. During the AM and PM peak hours, the proposed development is anticipated to generate three to eight inbound trips and five to seven outbound trips.

3.2 Background Traffic

3.2.1 General Background Growth Rate

A review of snapshots of the City's *Strategic Long-Range Model* and *Intersection Traffic Growth Rates (2000-2016)* has been conducted. Both resources are included in **Appendix G**. Comparing snapshots of the 2011 and 2031 AM peak hour traffic volumes, the *Strategic Long-Range Model* generally suggests negative or negligible growth on Bank Street. The *Intersection Traffic Growth Rates* figures, which determine growth rates based on total vehicular volumes entering select intersections, identify the growth rates of -0.2% to -2.0% at Bank Street/Riverdale Avenue between 2000 and 2016.

For the purposes of this study, no growth rate has been applied to the future background traffic volumes.

3.2.2 Other Area Developments

In proximity of the proposed development, there are two other development applications that are in the approval process. A summary of each proposed development is included below, and relevant excerpts of the TIAs prepared in support of these developments are included in **Appendix H**.

1335 and 1339 Bank Street
The development will include 391 apartment dwellings and 5,640 ft^2 of ground-floor commercial space. The TIA prepared by Parsons identified a buildout year of 2022. Therefore, traffic generated by this development has been added to the 2024 and 2029 background volumes.

1330-1346 Bank Street and 2211 Riverside Drive
Phase 1 of the development will include 309 apartment dwellings and 3,603 ft^2 of ground-floor commercial space. Phase 2 will include 228 apartment dwellings. The TIA identified buildout years of 2023 for Phase 1 and 2026 for Phase 2. Therefore, traffic generated by Phase 1 has been added to the 2024 and 2029 background volumes, and traffic generated by Phase 2 has been added to the 2029 background volumes only.

Background traffic volumes in 2024 are shown in **Figure 5**, and background traffic volumes in 2029 are shown in **Figure 6**.

3.3 Demand Rationalization

Based on the City's *2017 TIA Guidelines*, the Demand Rationalization module includes identifying any locations and approaches where total auto demand is projected to exceed capacity, and what reduction in peak hour volumes are required for demand to meet capacity. However, determining whether any approach has volumes that exceed capacity requires intersection analysis. Since the Trip Generation Trigger has not been met, all Network Impacts modules (including intersection analysis) are outside the scope of this study.

Figure 5: 2024 Background Volumes

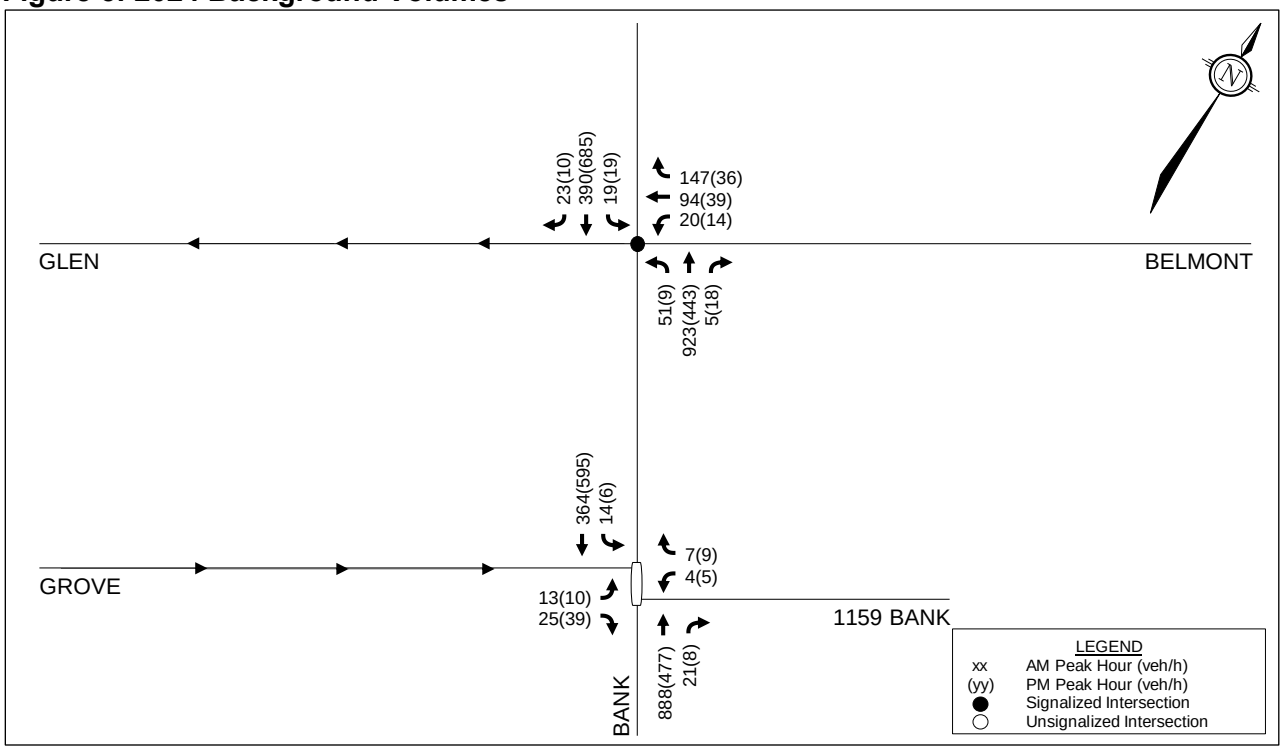
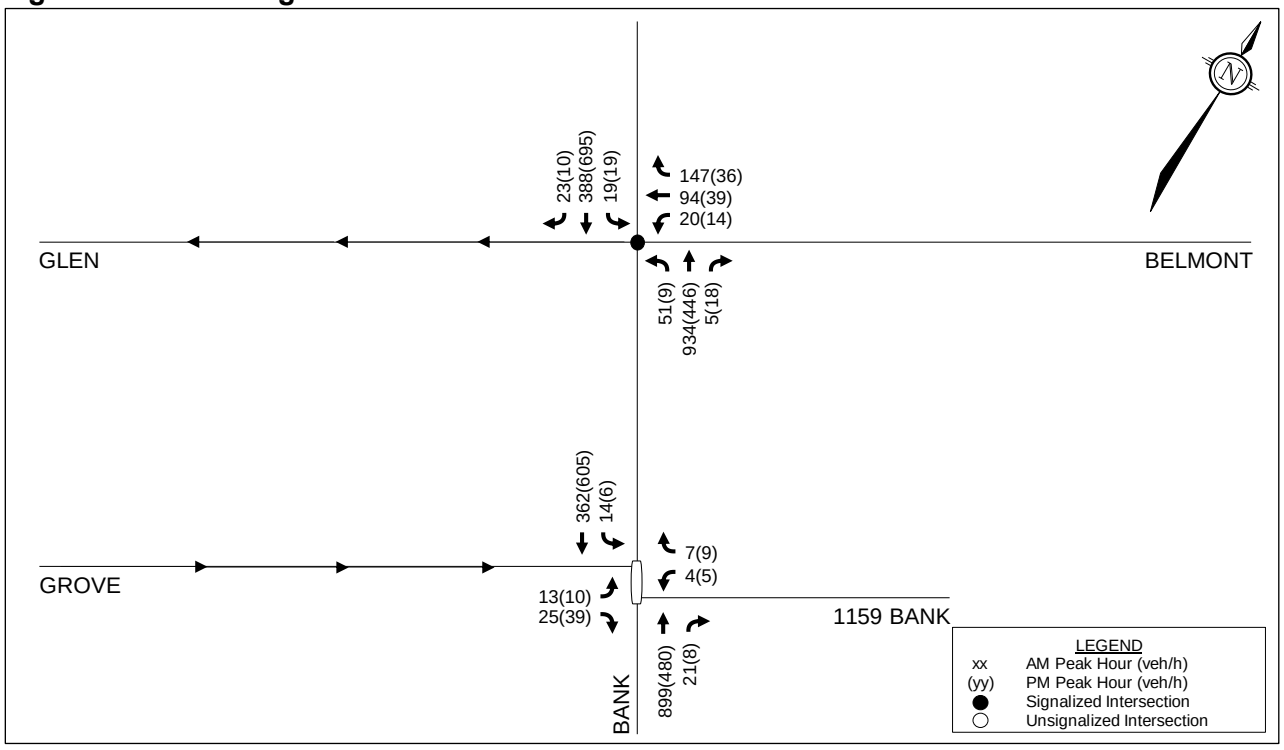


Figure 6: 2029 Background Volumes



4.0 ANALYSIS

4.1 Development Design

4.1.1 Design for Sustainable Modes

Pedestrian walkways will connect all building entrances to the existing sidewalks on the west side of Bank Street and north side of Grove Avenue.

A total of eight exterior bicycle parking spaces will be provided adjacent to the southernmost entrance to Bank Street and the easternmost entrance to Grove Avenue, and a total of 60 interior bicycle parking spaces will be provided in storage rooms on the ground level or underground parking level. A bike maintenance station will also be located on the ground floor. A review of the parking requirements per the City's *Zoning By-Law* (ZBL) is included in Section 4.2.

The nearest bus stops to the subject site are discussed in Section 2.1.6 and shown in **Figure 3**. OC Transpo's service design guidelines for peak period service is to provide service within a five-minute (400m) walk of home, work, or school for 95% of urban residents. The subject site is within 400m walking distance of stops that are served by OC Routes 5, 6, and 7. The proposed development will not impact the location of the existing bus stop shelter at the southeast corner of the site (stop #7654).

A review of the City's *Transportation Demand Management (TDM)-Supportive Development Design and Infrastructure Checklists* has been conducted. Any required TDM-supportive design and infrastructure measures in the TDM checklist for residential and non-residential developments have been met. A copy of the checklists are included in **Appendix I**. In addition to the required measures, the proposed development also meets the following 'basic' or 'better' measures as defined in the checklists:

- Locate building close to the street, and do not locate parking areas between the street and building entrances;
- Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations;
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort;
- Provide safe, direct, and attractive walking routes from building entrances to nearby transit stops;
- Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer to encourage other cyclists and ensure adequate capacity in peak cycling season;
- Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists, assuming the cycling mode share target is met;
- Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments;
- Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main/secure bicycle parking area.

4.1.2 Circulation and Access

Garbage bins will be wheeled from the garbage room within the underground parking garage, and collection will take place curbside on Grove Avenue. Vehicles for residents moving in/out and loading/deliveries for the retail uses will park on-street.

No on-site fire route is proposed. Therefore, the fire route for the development will be located along the boundary streets Bank Street and Grove Avenue.

4.2 Parking

The subject site is located in Area B of Schedule 1 and Area Y of Schedule 1A of the City's ZBL. Minimum vehicle parking rates, accessible parking rates, bicycle parking rates, and loading space rates for the proposed development are identified in Section 101, 102, 111, and 113 of the ZBL, and the City's *Accessibility Design Standards*. The parking requirements and proposed parking supply for these different criteria are summarized in **Table 13**.

Table 13: Required and Proposed Parking

Land Use	Rate	Units	Required	Provided
Minimum Vehicle Parking				
Apartment, Mid-Rise	0.5 spaces per dwelling unit after the first 12 units, and reduced by 10% since all parking is below grade (for residents), and 0.1 spaces per dwelling unit after the first 12 units (for visitors)	37 units	11	14
			3	
Retail Store	No parking required for ground floor non-residential uses with less than 500 m^2 GFA	421 m^2	0	
		Total	**14**	**14**
Minimum Accessible Parking				
-	1 space required when 13 to 25 spaces are provided	14 spaces	1	1
Minimum Bicycle Parking				
Apartment, Mid-Rise	0.5 spaces per dwelling unit	37 units	19	60
Retail Store	1.0 space per 250 m^2 GFA	421 m^2	2	8
		Total	**21**	**68**
Minimum Loading Spaces				
Retail Store	0 spaces required when GFA is less than 2,000 m^2	421 m^2	0	0

Based on the previous table, the minimum parking and loading requirements will be met.

4.3 Boundary Streets

This section provides a review of the boundary streets Bank Street and Grove Avenue, using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines* produced by IBI Group in October 2015 were used to evaluate the levels of service for the boundary roadways for each mode of transportation, based on existing conditions. Targets for the pedestrian level of service (PLOS), bicycle level of service (BLOS), transit level of service (TLOS), and truck level of service (TkLOS) are based on the Traditional Mainstreet targets for Bank Street and the General Urban Area targets for Grove Avenue.

A summary of the MMLOS review is included in **Table 14**, and the detailed MMLOS review is included in **Appendix J**.

Table 14: Segment MMLOS Summary

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Bank Street	**C**	B	**E**	C	**F**	D	C	D
Grove Avenue	**E**	C	A	D	F	-	B	-

Based on the results of the segment MMLOS analysis:

- Both Bank Street and Grove Avenue do not meet the target PLOS B/C;
- Grove Avenue meets the target BLOS D, while Bank Street does not meet the target BLOS C;
- Bank Street does not meet the target TLOS D;
- Bank Street meets the target TkLOS D.

Pedestrian Level of Service

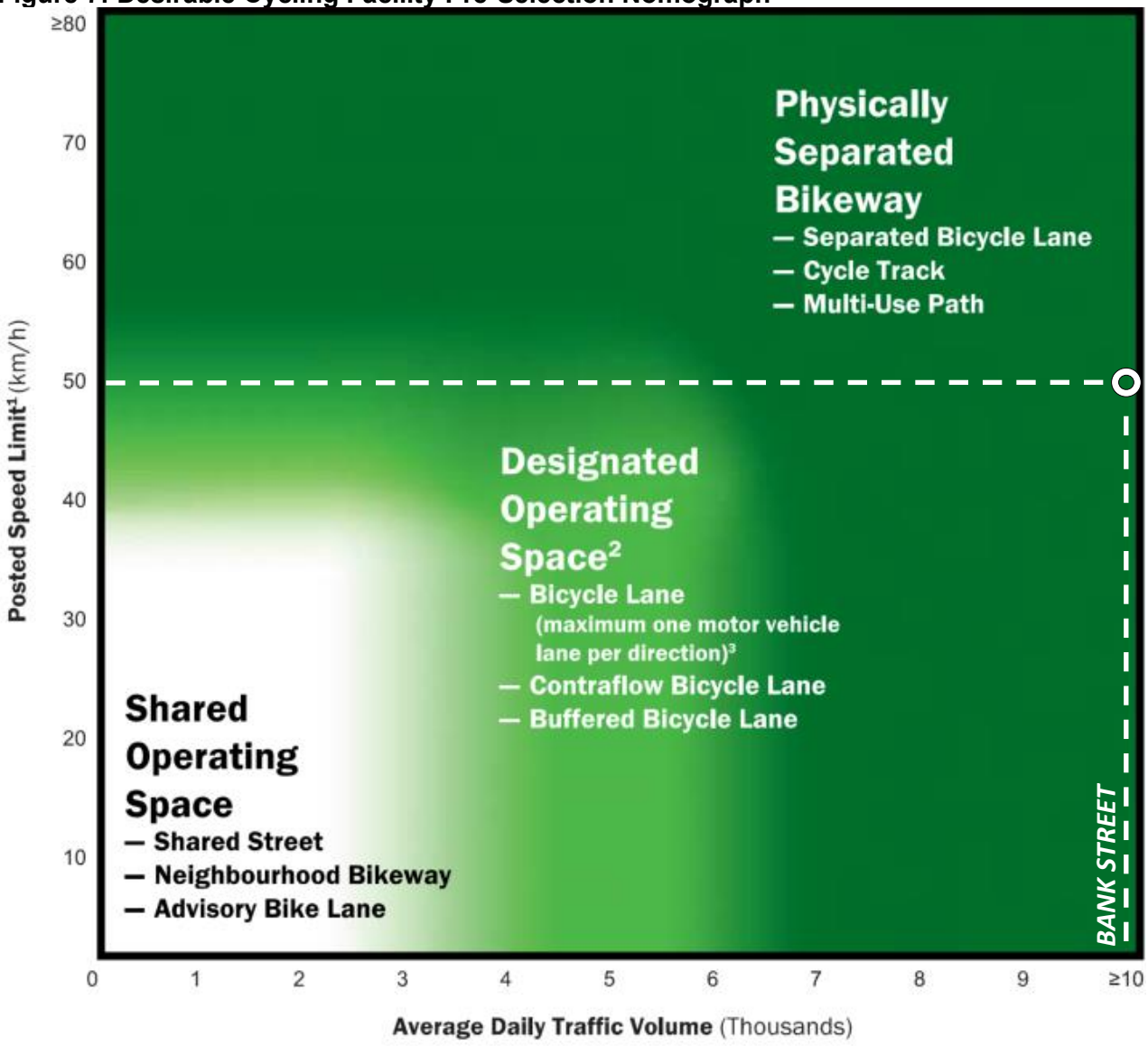
Both sides of Bank Street include sidewalks with a width greater than 2.0m and no boulevard separating pedestrians from the roadway. Based on Exhibit 4 of the *MMLOS Guidelines*, the target PLOS B is achieved if there is the presence of on-street parking and therefore the target is met outside of the weekday peak periods (i.e. parking is restricted in the northbound direction from 7:00am to 9:00am, and in the southbound direction from 3:30pm to 5:30pm). During these periods, the target PLOS B can only be met if sidewalks with a minimum width of 2.0m and minimum boulevard width of 2.0m are implemented. However, there is no room in the Bank Street ROW to accommodate this, based on the current cross-section of Bank Street. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street.

Both sides of Grove Avenue include sidewalks with a width of approximately 1.5m and no boulevard. As the planned roadway improvements for Grove Avenue will include 2.0m-wide sidewalks on both sides of the roadway, the target PLOS C will be achieved.

Bicycle Level of Service

Bank Street currently does not have any cycling facilities within the study area. Per Exhibit 11 of the *MMLOS Guidelines*, bike lanes that are either adjacent to the curb or a dedicated parking lane would achieve the target BLOS C. The *Ontario Traffic Manual (OTM) – Book 18* includes a desirable cycling facility pre-selection tool, based on the operating speed and AADT of a roadway. The pre-selection is included in **Figure 7**. For roadways with an operating speed of 50 km/h and AADT volumes greater than 10,000 vehicles per day, OTM Book 18 indicates that separated facilities (such as separated bike lanes or cycle tracks) are appropriate. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street. South of the study area, the City has developed a recommended plan for Bank Street from Riverside Drive to Ledbury Avenue, which will include cycle tracks and protected intersections. Cycle tracks on Bank Street within the study area would be consistent with this plan.

Figure 7: Desirable Cycling Facility Pre-Selection Nomograph



1 Operating speeds are assumed to be similar to posted speeds. If evidence suggests this is not the case, practitioners may consider using 85th percentile speeds or implementing measures to reduce operating speeds.
2 Physically separated bikeways may always be considered in the designated operating space area of the nomograph.
3 On roadways with two or more lanes per direction (including multi-lane one-way roadways), a buffered bicycle lane should be considered the minimum with a typical facility being a physically separated bikeway.

Transit Level of Service

As noted in Section 2.2.1, the City's 2031 Affordable RTTP Network identifies Bank Street as a Transit Priority Corridor, with transit signal priority and queue jump lanes at select intersections between Wellington Street and Billings Bridge Station. It is anticipated that these isolated measures will improve transit operations on Bank Street.

4.4 Access Design

The proposed two-way access to Grove Avenue has been evaluated based on the relevant requirements of the City's ZBL and *Private Approach By-Law* (PABL), and the Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads*.

Section 25(a) of the PABL identifies a maximum of one two-way private approach to a given roadway is permitted when a site's frontage is between 20m and 34m to that roadway. This requirement is met, as the subject site has approximately 27m of frontage to Grove Avenue.

Section 107(1)(a)(iii) of the ZBL identifies that, in the case of a parking garage for apartments, a maximum width of 3.6m is permitted when leading to fewer than 20 parking spaces. As the proposed access is 3.6m in width, this requirement is met.

Section 25(p) of the PABL identifies a minimum separation requirement of 3.0m between the nearest edge of a private approach and the closest property line, as measured at the street line. As the nearest edge of the proposed access is located approximately 3.0m east of the western property line, this requirement is met.

Section 25(t) of the PABL identifies a requirement that any private approach serving a parking area with fewer than 50 parking spaces shall not have a grade exceeding 2% to 6% for the first 6m inside the property line. Within the first 6m of the property line, the proposed driveway has a maximum grade of 6%, meeting this requirement.

TAC's *Geometric Design Guide* identifies a minimum corner clearance requirement of 15m for accesses to local roadways, measuring between the nearest edge of the private approach and the nearest edge of the intersecting roadway. The proposed access to Grove Avenue is approximately 25m from the nearest edge of Bank Street, and meets this requirement.

For accesses to local roadways, it is generally recommended that a minimum clear throat length of 8m be provided between the ends of the driveway curb radii to the first point of conflict. This requirement will be met, as it is anticipated that approximately 20m of clear throat length will be provided between the garage door and the end of the driveway.

TAC's *Geometric Design Guide* identifies minimum stopping sight distance (SSD) and intersection sight distance (ISD) requirements, based on the roadway grade and design speed (taken as the speed limit plus 10 km/h). Assuming level grade and a design speed of 40 km/h, the SSD requirement is 50m and the ISD requirement is 85m for left-turning vehicles. As Grove Avenue is a straight and level roadway, adequate SSD can be provided at the proposed access location. It is anticipated that adequate ISD can be provided for any vehicles exiting the proposed access as well, provided any vegetation on the neighbouring lot is trimmed and maintained.

4.5 Transportation Demand Management

4.5.1 Context for TDM

The proposed development will be constructed in a single phase. The ground floor is proposed to include four retail units, ranging in gross floor areas from approximately 955 ft^2 to 1,311 ft^2. A total of 37 dwellings are proposed on the upper five storeys, consisting of 20 one-bedroom units and 17 two-bedroom units.

4.5.2 Need and Opportunity

The subject site is designated as 'Corridor – Mainstreet' on Schedule B2 of the City's Official Plan with an Evolving Neighbourhood overlay, and within the Bank Street Traditional Main Street DPA. As shown in Section 3.1.1, the peak hour driver shares observed within the Ottawa Inner Area district are assumed to be generally similar to the driver shares of the proposed development (25% driver share for residential and 30% driver share for commercial). If the proposed development achieved a driver share of 50% during the peak hours, which is much higher than the observed driver shares of the area, this would equate to an increase of approximately seven vehicles during the AM peak hour and 12 vehicles during the PM peak hour.

A failure to meet the mode share targets (included in Section 3.1.1) is not anticipated, as the mode share targets are attainable. The subject site is located within a high-density commercial area, parks, and recreation areas, and is approximately one kilometre east of Carleton University.

4.5.3 TDM Program

A review of the City's *TDM Measures Checklist* has been conducted by the proponent. A copy of the completed residential checklist is included in **Appendix I**. The proponent will consider providing the following TDM measures:

- Display local area maps with walking/cycling access routes and key destinations at major entrances;
- Unbundle parking cost from monthly rent (for residents);
- Provide a multi-modal travel information package to new residents or new/relocating employees.

In addition, bicycle parking will be provided at a rate of more than 1.5 bicycle spaces per dwelling, more than three times the minimum zoning requirement.

5.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

- The proposed development is estimated to generate 31 person trips (including eight vehicle trips) during the AM peak hour, and 55 person trips (including 15 vehicle trips) during the PM peak hour.

- Compared to the existing convenience store, the proposed development is anticipated to generate 169 fewer person trips (including 52 fewer vehicle trips) during the AM peak hour, and 102 fewer person trips (including 32 fewer vehicle trips) during the PM peak hour.

Development Design and Parking

- Pedestrian walkways will connect all building entrances to the existing sidewalks on the west side of Bank Street and north side of Grove Avenue.

- A total of eight exterior bicycle parking spaces will be provided adjacent to the southernmost entrance to Bank Street and the easternmost entrance to Grove Avenue, and a total of 60 interior bicycle parking spaces will be provided in storage rooms on the ground level or underground parking level. A bike maintenance station will also be located on the ground floor.

- The subject site is within 400m walking distance of stops that are served by OC Routes 5, 6, and 7. The proposed development will not impact the location of the existing bus stop shelter at the southeast corner of the site (stop #7654).

- Garbage bins will be wheeled from the garbage room within the underground parking garage, and collection will take place curbside on Grove Avenue. Vehicles for residents moving in/out and loading/deliveries for the retail uses will park on-street. The fire route for the development will be located along the boundary streets Bank Street and Grove Avenue.

- The minimum parking and loading requirements will be met.

Boundary Streets

- Based on the results of the segment multi-modal level of service (MMLOS) analysis:

    - Both Bank Street and Grove Avenue do not meet the target pedestrian level of service (PLOS) B/C;
    - Grove Avenue meets the target bicycle level of service (BLOS) D, while Bank Street does not meet the target BLOS C;
    - Bank Street does not meet the target transit level of service (TLOS) D;
    - Bank Street meets the target truck level of service (TkLOS) D.

- Both sides of Bank Street include sidewalks with a width greater than 2.0m and no boulevard separating pedestrians from the roadway. The target PLOS B is achieved if there is the presence of on-street parking and therefore the target is met outside of the weekday peak periods. During these periods, the target PLOS B can only be met if sidewalks with a minimum width of 2.0m and minimum boulevard width of 2.0m are implemented. However, there is no room in the Bank Street ROW to accommodate this, based on the current cross-section of Bank Street. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street.

- Both sides of Grove Avenue include sidewalks with a width of approximately 1.5m and no boulevard. As the planned roadway improvements for Grove Avenue will include 2.0m-wide sidewalks on both sides of the roadway, the target PLOS C will be achieved.

- Bank Street currently does not have any cycling facilities within the study area. The *Ontario Traffic Manual (OTM) – Book 18* indicates that separated facilities (such as separated bike lanes or cycle tracks) are appropriate. This is identified for the City's consideration, as part of any planned renewal of the aboveground/underground infrastructure for this section of Bank Street. South of the study area, the City has developed a recommended plan for Bank Street from Riverside Drive to Ledbury Avenue, which will include cycle tracks and protected intersections. Therefore, cycle tracks on Bank Street within the study area would be consistent with this plan.

- The City's 2031 Affordable Rapid Transit and Transit Priority (RTTP) Network identifies Bank Street as a Transit Priority Corridor, with transit signal priority and queue jump lanes at select intersections between Wellington Street and Billings Bridge Station. It is anticipated that these isolated measures will improve transit operations on Bank Street.

Access Design

- The proposed two-way access to Grove Avenue is anticipated to meet all relevant provisions of the Transportation Association of Canada (TAC)'s *Geometric Design Guide for Canadian Roads*, and the City's *Zoning By-Law* and *Private Approach By-Law*.

Transportation Demand Management

- The proponent will consider providing the following TDM measures:
    - Display local area maps with walking/cycling access routes and key destinations at major entrances;
    - Unbundle parking cost from monthly rent (for residents);
    - Provide a multi-modal travel information package to new residents or new/relocating employees.

- In addition, bicycle parking will be provided at a rate of more than 1.5 bicycle spaces per dwelling, more than three times the minimum zoning requirement.

Based on the foregoing, the proposed development is recommended from a transportation perspective.

NOVATECH

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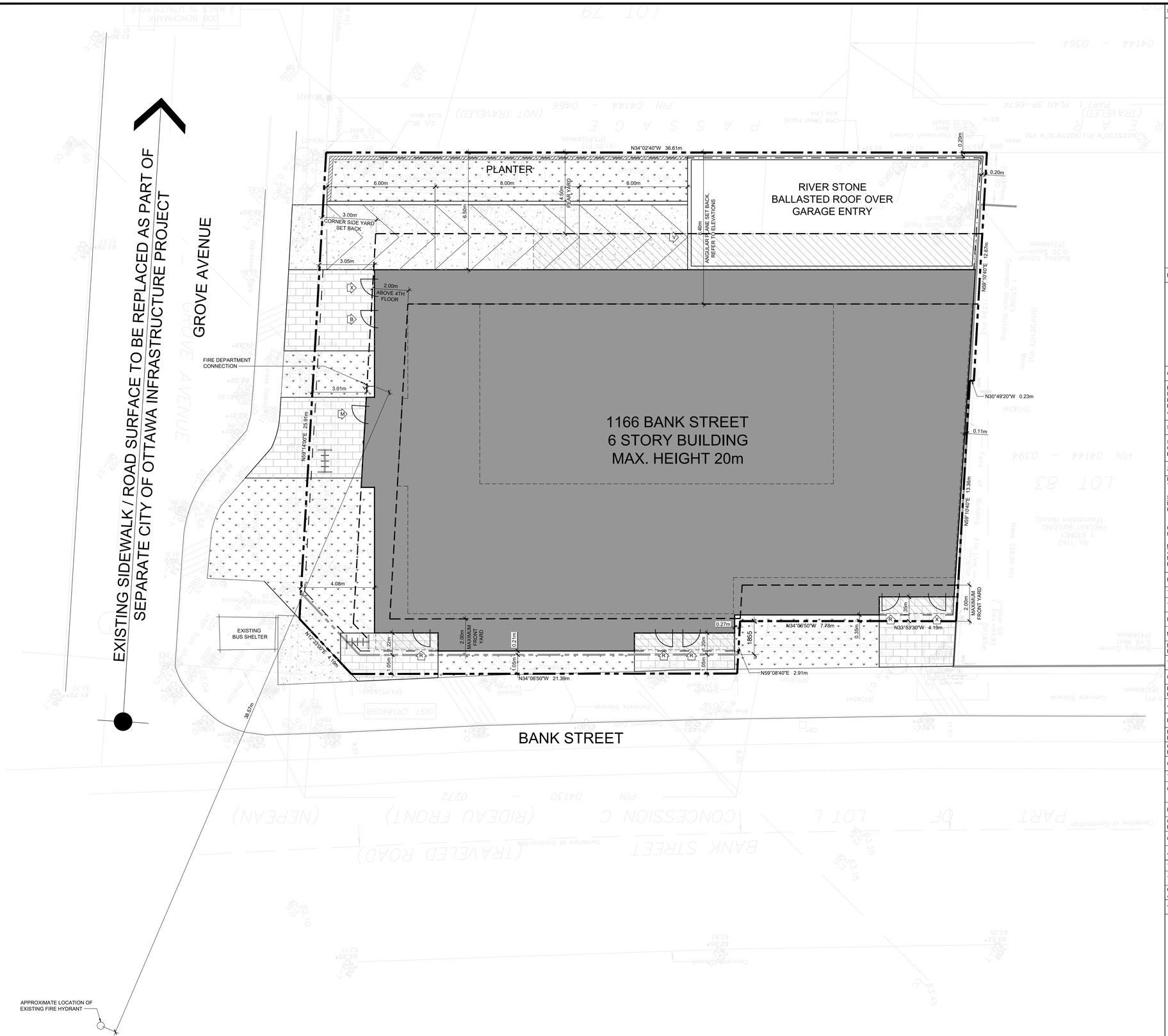
APPENDIX A

Preliminary Site Plan



SITE PLAN LEGEND:

- EXTENT OF REMOVALS
- EXISTING PROPERTY LINE
- PROPERTY LINE AFTER ROAD WIDENING
- SET BACK LINE
- NEW PRIVACY FENCE TO APPROX.1.4m ABOVE GRADE
- EXTENT OF FOUNDATION BELOW GRADE
- EXTENT OF BUILDING AT GROUND FLOOR
- BUILDING OVERHANGS ABOVE, REFER TO ELEVATIONS
- CONCRETE WALKING / DRIVING SURFACE, REFER TO CIVIL DOCUMENTS
- SOFT LANDSCAPING, REFER TO LANDSCAPING DOCUMENTS
- HARD LANDSCAPING, REFER TO LANDSCAPING DOCUMENTS
- RAISED LANDSCAPING BLOCKS
- LOCATION FOR NEW BICYCLE RACK

EXTERIOR DOOR LEGEND:

LOCATION OF EXTERIOR DOORS:

- B = BICYCLE STORAGE ROOM
- M = MAIN RESIDENTIAL ENTRANCE
- R = RETAIL UNIT
- V = VEHICLE ENTRANCE / EXIT
- X = EXIT DOOR

GENERAL SITE PLAN NOTES:

PROPERTY BOUNDARY INFORMATION, AND TOPOGRAPHIC INFORMATION DERIVED FROM SURVEY OF LOT 81 PART OF LOTS 80 & 82 REGISTERED PLAN 109930, CITY OF OTTAWA. PREPARED BY ANNIS, O'SULLIVAN, VOLLEBEKK LTD., SIGNED AND DATED FEBRUARY 12, 2022

SITE & BUILDING DATA, 166 BANK STREET:

SITE AREA:	1015.47m²
GROSS FLOOR AREA (CITY OF OTTAWA):	2980.87m²
BUILDING AREA (OBC):	709.60m²

ZONING:

PART 10 - MIXED USE:
TM2 H(15) - TRADITIONAL MAIN STREET SUBZONE 2

SETBACKS:

FRONT:	
REAR:	2m MAX. + 2m ABOVE THE 4TH FLOOR 4.5m (ABUTS LANEWAY), REFER TO ELEVATIONS FOR ANGULAR SETBACK ABOVE 15m
CORNER SIDE YARD:	3m MIN. + 2m ABOVE THE 4TH FLOOR
INTERIOR SIDE YARD:	0m

BUILDING HEIGHT:

AVERAGE GRADE:	62.89m
MAXIMUM HEIGHT:	82.89m (20m)
PROPOSED HEIGHT:	82.39m (19.5m)

RESIDENTIAL PARKING:

TYPE	REQUIRED	PROVIDED
TENANT PARKING	11	11
MIN. VISITOR PARKING	3	3
MAX. VISITOR PARKING	30	3
BARRIER FREE PARKING	1 (TYPE B)	1 (TYPE B)
TOTAL:		14

COMMERCIAL PARKING:

BASEMENT + GROUND FLOOR GFA	REQUIRED	PROVIDED
456.11m²	0	0

BICYCLE PARKING:

RESIDENTIAL BICYCLE PARKING	19	60
COMMERCIAL BICYCLE PARKING	2	8

GARBAGE ROOM REQUIREMENTS:

TYPE	REQUIRED	PROVIDED
GARBAGE	8.55cu YARDS OF CONTAINER	1x 6cu YARD & 1x 4cu YARD CONTAINER
FIBRE RECYCLING	2.30cu YARDS OF CONTAINER	1x 3cu YARD CONTAINER
GLASS, METAL, & PLASTIC RECYCLING	0.67cu YARDS OF CONTAINER	3x 0.25cu YARD (50gl) CONTAINERS
ORGANICS	1x 240L GREEN CONTAINER	1x 240L GREEN CONTAINER

AMENITY AREAS

TYPE	REQUIRED	PROVIDED
TOTAL AMENITY AREA	222m²	113.35m²
COMMUNAL AMENITY AREA	MIN. 111m²	59.60m²

*CALCULATIONS ARE BASED ON 37 RESIDENTIAL UNITS

GENERAL NOTES

1. DO NOT SCALE DRAWINGS; ONLY FIGURED DIMENSIONS ARE TO BE USED. WHERE DOUBT EXISTS; FILE REQUEST FOR INTERPRETATION AND REQUEST CLARITY.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO VERIFY DIMENSIONS ON SITE; REPORT DISCREPANCIES TO THE ARCHITECT PROMPTLY.
3. GENERAL CONTRACTOR TO TAKE INTO ACCOUNT CONSTRUCTION TOLERANCE; GENERAL CONTRACTOR TO COORDINATE THE WORK OF DIFFERENT TRADES TO COMPLY WITH DESIGN INTENT.
4. ALL WORK DESCRIBED IN THESE DRAWINGS AND SPECIFICATIONS ARE TO COMPLY WITH THE CURRENT EDITION OF THE ONTARIO BUILDING CODE (2012) OR NATIONAL BUILDING CODE (2010) INCLUDING MOST RECENT AMENDMENTS.
5. DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND ARE TO BE READ TOGETHER.

project north
ACTUAL NORTH

ONTARIO ASSOCIATION OF ARCHITECTS
TOON F. DREESSEN
LICENCE
5910

ISSUE RECORD:

NO.	DESCRIPTION	DATE
1	ISSUED FOR SITE PLAN COORDINATION	2022-11-03
2	ISSUED FOR SITE PLAN COORDINATION	2022-12-09
3	ISSUED FOR COORDINATION	2023-01-20
4	ISSUED FOR COORDINATION	2023-02-01
5	ISSUED FOR SITE PLAN CONTROL	2023-03-10

CONSULTANTS

EXP
CIVIL ENGINEERS
TEL: 613-688-1899

JAMES B. LENNOX & ASSOCIATES INC.
LANDSCAPE ARCHITECTS
TEL: 613-722-5168

NOVATECH
PLANNERS
TEL: 613-254-9643

CLIENT

AMBASSADOR REALTY INC.
185 SOMERSET ST. W., OTTAWA, ONTARIO
TEL: 613-233-1104

DCA
A GROUP OF ARCHITECTS
201-1339 WELLINGTON ST. WEST OTTAWA ON K1Y 3B8
WWW.ARCHITECTSDCA.COM 613.725.2294

PROJECT TITLE
1166 BANK STREET

DRAWING TITLE
SITE PLAN: NEW WORK

DATE	DRAWN	JOB NO.	DRAWING NO.
OCT. 2022	IC	3038	A101
SCALE 1 : 100	REVIEWED TD | DR		

ARCHITECTURAL

APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	**1166 Bank Street**
Description of Location	**Northwest corner of Bank Street and Grove Avenue**
Land Use Classification	**Residential and Ground Floor Retail**
Development Size (units)	**37 dwellings**
Development Size (m^2)	**421 m^2 (4,534 ft^2) of ground-floor retail**
Number of Accesses and Locations	**One on Grove Avenue**
Phase of Development	**1**
Buildout Year	**2024**

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?		✓
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	✓	

**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 are 80 km/hr or greater?		✓
Are there any horizontal/vertical curvatures on a boundary street limiting sight lines at a proposed driveway?		✓
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)?		✓
Is the proposed driveway within auxiliary lanes of an intersection?		✓
Does the proposed driveway make use of an existing median break that serves an existing site?		✓
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		✓
Does the development include a drive-thru facility?		✓

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?		✓
Does the development satisfy the Location Trigger?	✓	
Does the development satisfy the Safety Trigger?		✓

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).

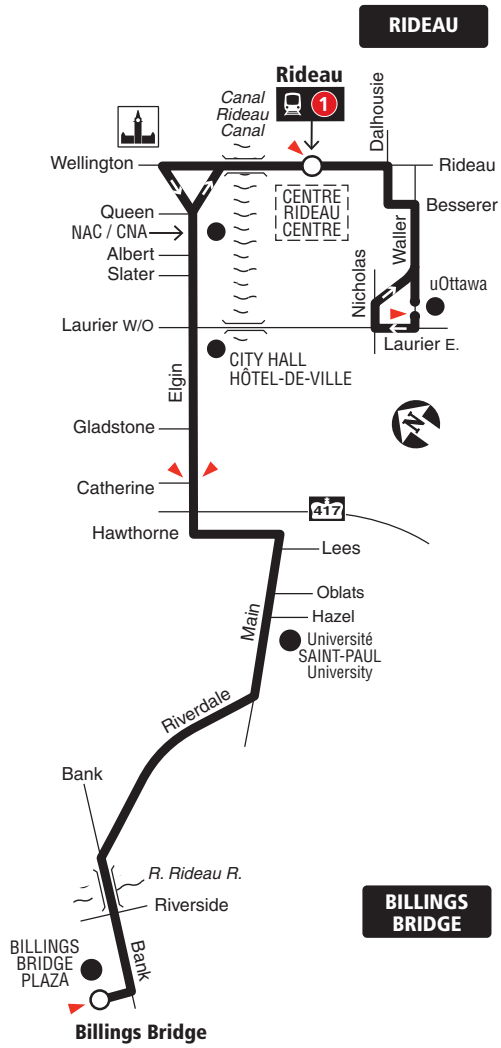
APPENDIX C

OC Transpo Route Maps

5 BILLINGS BRIDGE / RIDEAU

Local

7 days a week / 7 jours par semaine
All day service
Service toute la journée



Station

Timepoint / Heures de passage

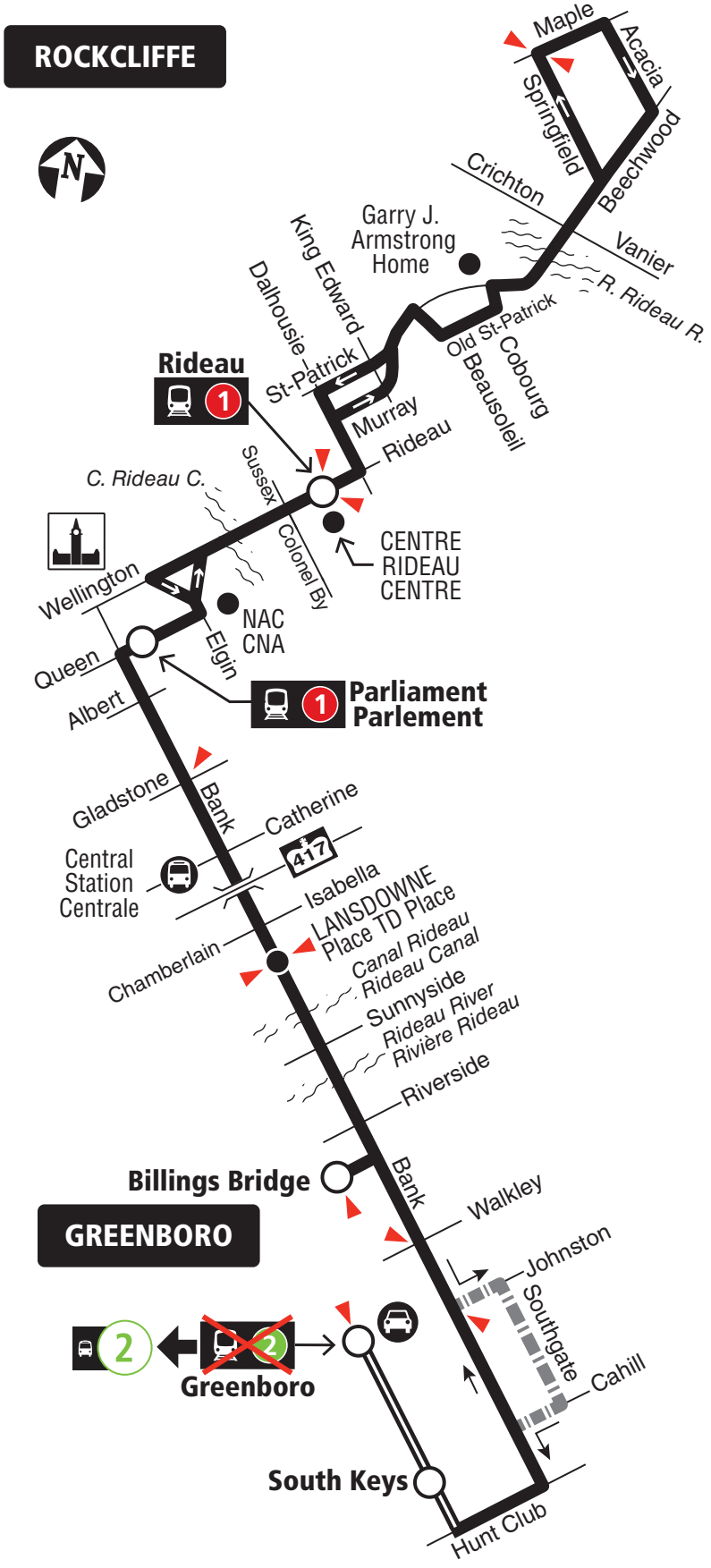
2020.08

Schedule / Horaire.....613-560-1000
Text / Texto 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

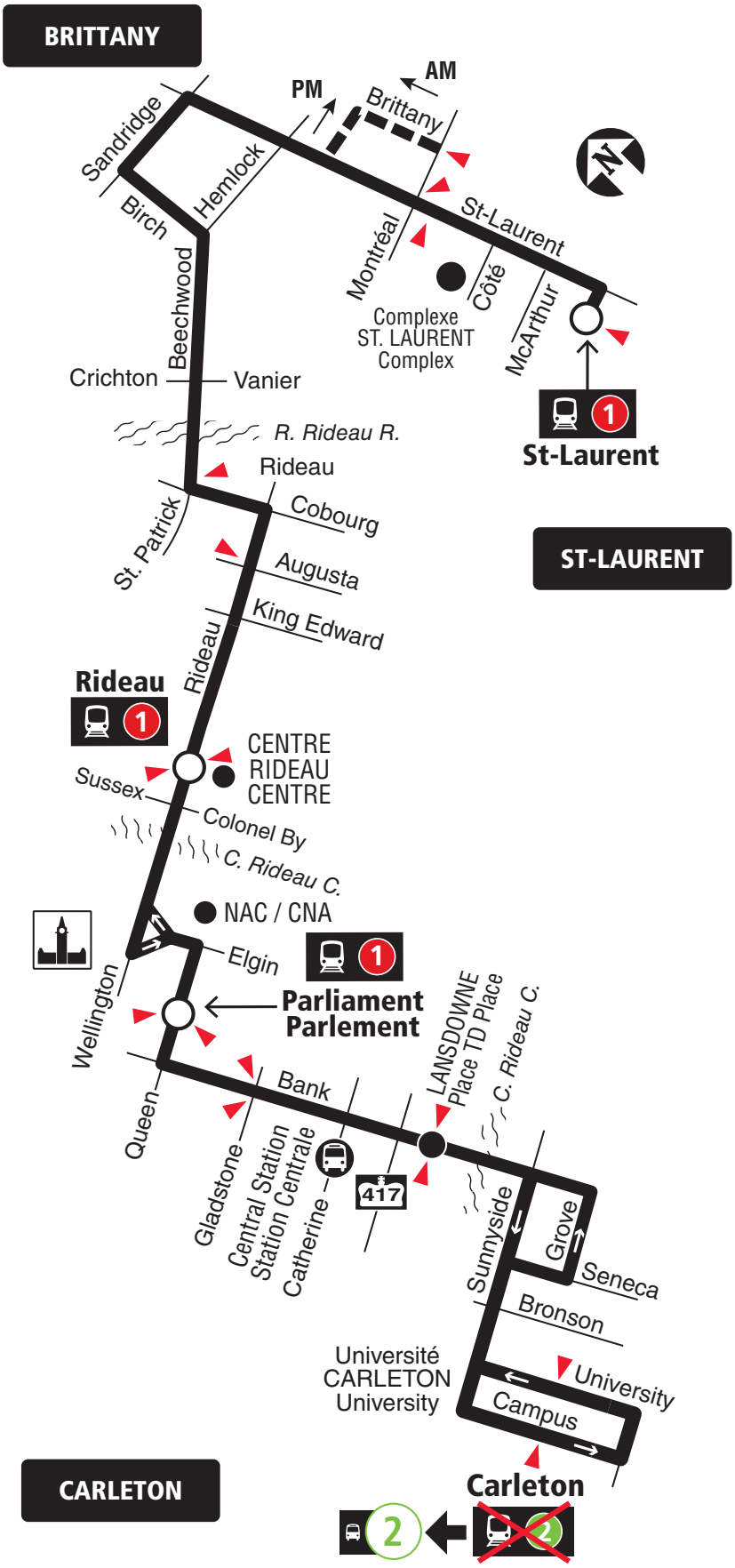
Customer Service
Service à la clientèle **613-741-4390**
Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

Effective April 26, 2020
En vigueur 26 avril 2020

OC Transpo
INFO 613-741-4390
octranspo.com


ROCKCLIFFE
N
Maple
Acacia
Springfield
Beechwood
Crichton
Vanier
R. Rideau R.
Garry J. Armstrong Home
King Edward
Dalhousie
St-Patrick
Old St-Patrick
Cobourg
Beausoleil
Rideau
1
Murray
Rideau
Sussex
C. Rideau C.
Colonel By
CENTRE RIDEAU CENTRE
Wellington
NAC CNA
Elgin
Queen
Albert
1
Parliament Parlement
Gladstone
Bank
Catherine
417
Central Station Centrale
Isabella
LANSDOWNE Place TD Place
Chamberlain
Canal Rideau Rideau Canal
Sunnyside
Rideau River Rivière Rideau
Riverside
Billings Bridge
Bank
Walkley
GREENBORO
Johnston
Southgate
Cahill
2
2
Greenboro
South Keys
Hunt Club
Transitway & Station
No early morning service / Aucun service matinal
Park & Ride / Parc-o-Bus
Timepoint / Heures de passage

2020.08


BRITTANY
PM
AM
Brittany
Sandridge
Birch
Hemlock
Beechwood
Montréal
St-Laurent
Côté
McArthur
Complexe
ST. LAURENT
Complex
Crichton
Vanier
R. Rideau R.
Rideau
St. Patrick
Cobourg
Augusta
King Edward
St-Laurent
ST-LAURENT
Rideau
CENTRE
RIDEAU
CENTRE
Sussex
Colonel By
C. Rideau C.
NAC / CNA
Elgin
Parliament
Parlement
Wellington
Queen
Bank
LANSDOWNE
Place TD Place
C. Rideau C.
Gladstone
Central Station
Station Centrale
Catherine
417
Sunnyside
Grove
Seneca
Bronson
University
Campus
Université
CARLETON
University
Carleton
CARLETON
N
Station
Peak periods only / Périodes de pointe seulement
Timepoint / Heures de passage

2020.08


56
6
7
Strathcona
O'Connor
Metcalfe
Reine-Élizabeth
Colonel By
Glebe
56
Glebe
First
56
5
55
Bank
TD Place
Place TD
Lansdowne Park
Parc Lansdowne
Lansdowne
Queen Elizabeth
Canal Rideau
Riverdale
Windsor
Riversi
7
SITE
Seneca
Grove
5
49
Pleasant Park
111
Billings Bridge
Billings Estate
Domaine Billings

APPENDIX D

Traffic Count Data

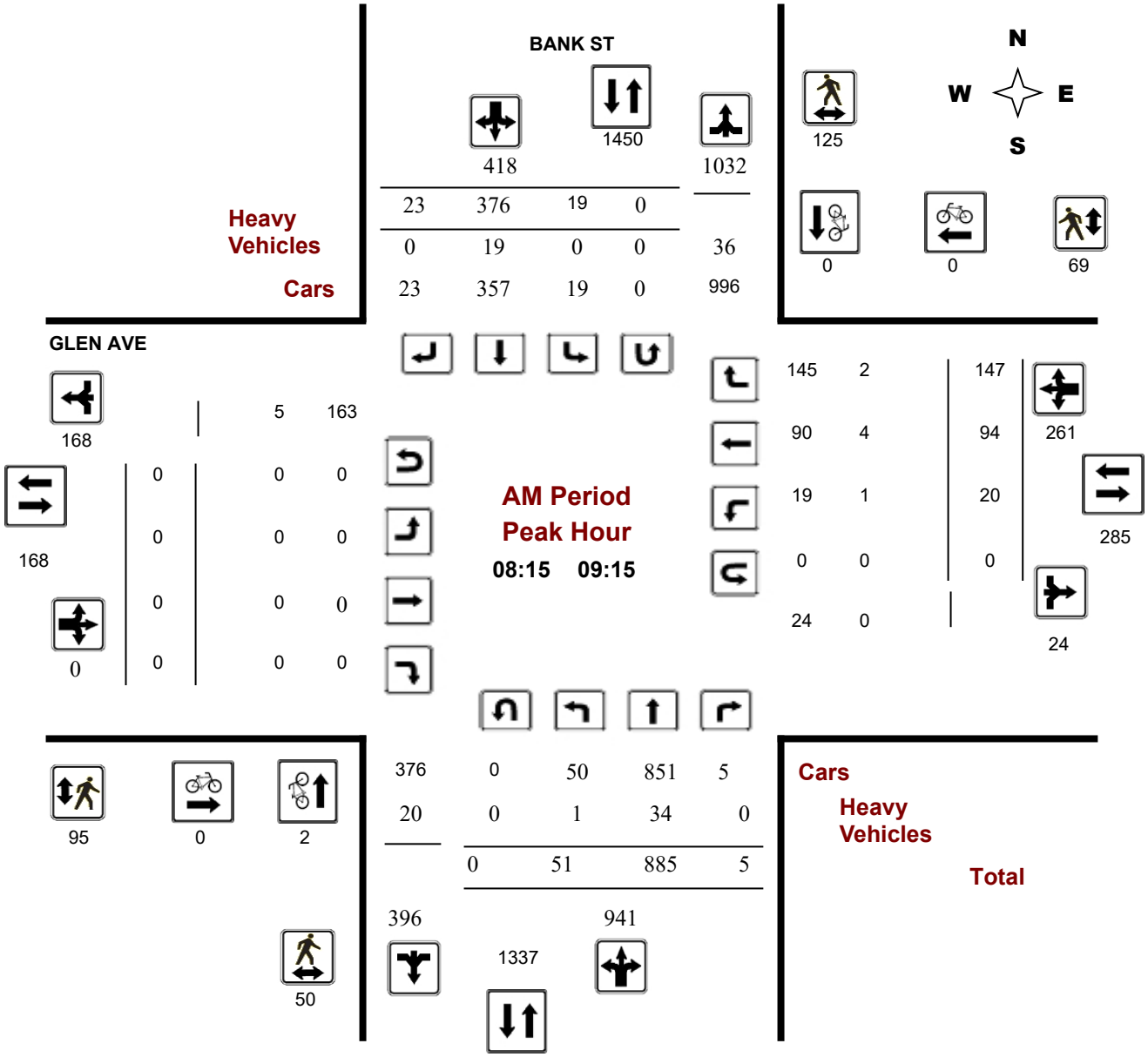
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BANK ST @ GLEN AVE

Survey Date: Tuesday, January 28, 2020 **WO No:** 39397

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



Comments 5473138 - TUE JAN 28, 2020 - 8HRS - LORETTA

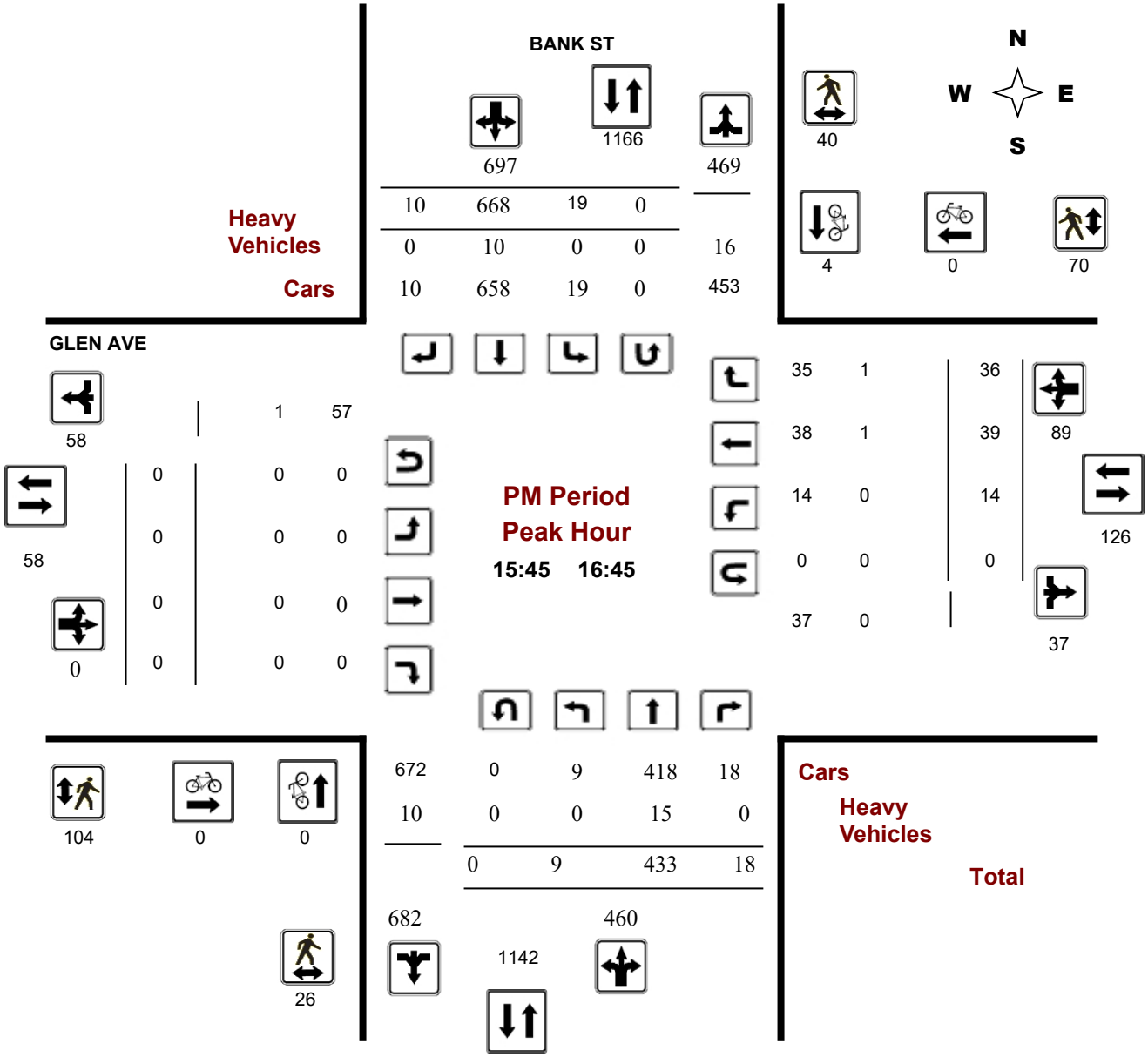
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BANK ST @ GLEN AVE

Survey Date: Tuesday, January 28, 2020 **WO No:** 39397

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



Comments 5473138 - TUE JAN 28, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BANK ST @ GLEN AVE

Survey Date: Tuesday, January 28, 2020 **WO No:** 39397

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

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, January 28, 2020

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

1.10

	BANK ST									GLEN AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	7	703	8	**718**	5	294	6	**305**	**1023**	0	0	0	**0**	7	10	23	**40**	**40**	**1063**
08:00 09:00	44	901	7	**952**	15	398	16	**429**	**1381**	0	0	0	**0**	18	86	120	**224**	**224**	**1605**
09:00 10:00	28	603	7	**638**	10	381	18	**409**	**1047**	0	0	0	**0**	20	33	54	**107**	**107**	**1154**
11:30 12:30	15	427	20	**462**	12	467	14	**493**	**955**	0	0	0	**0**	20	19	25	**64**	**64**	**1019**
12:30 13:30	18	424	11	**453**	13	495	18	**526**	**979**	0	0	0	**0**	20	7	12	**39**	**39**	**1018**
15:00 16:00	14	435	20	**469**	14	605	17	**636**	**1105**	0	0	1	**1**	18	27	33	**78**	**79**	**1184**
16:00 17:00	10	429	16	**455**	22	637	10	**669**	**1124**	0	0	1	**1**	13	43	29	**85**	**86**	**1210**
17:00 18:00	22	371	17	**410**	26	587	16	**629**	**1039**	0	0	0	**0**	26	39	24	**89**	**89**	**1128**
Sub Total	158	4293	106	**4557**	117	3864	115	**4096**	**8653**	0	0	2	**2**	142	264	320	**726**	**728**	**9381**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	158	4293	106	**4557**	117	3864	115	**4096**	**8653**	0	0	2	**2**	142	264	320	**726**	**728**	**9381**
EQ 12Hr	220	5967	147	**6334**	163	5371	160	**5693**	**12028**	0	0	3	**3**	197	367	445	**1009**	**1012**	**13040**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	242	6564	162	**6967**	179	7740	230	**6262**	**13231**	0	0	3	**3**	217	404	490	**1110**	**1113**	**14344**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1.10**					
AVG 24Hr	317	8599	212	**9127**	234	10139	301	**8203**	**17333**	0	0	4	**4**	284	529	642	**1454**	**1458**	**18791**
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.

ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count

Summary Report Including Peak Hours, AADT and Expansion Factors

All Vehicles Except Bicycles

Bank Street & Grove Avenue — Ottawa, ON

Survey Date: Tuesday, January 31, 2023 **Start Time:** 0700 **AADT Factor:** 1.1

Weather AM: Partly Cloudy -15º C **Survey Duration:** 8 Hrs. **Survey Hours:** 0700-1000, 1130-1330 & 1500-1800

Weather PM: Clear & Sunny -10º C **Surveyor(s):** T. Carmody

	Grove Ave.					Pkg. Lot 1159-1187						Bank St.					Bank St.					
	Eastbound					Westbound						Northbound					Southbound					
Time Period	LT	ST	RT	UT	E/B Tot	LT	ST	RT	UT	W/B Tot	Street Total	LT	ST	RT	UT	N/B Tot	LT	ST	RT	UT	S/B Tot	Street Total	Grand Total
0700-0800	12	0	12	0	24	0	0	2	0	2	26	0	412	10	0	422	2	267	0	2	271	693	719
0800-0900	13	0	25	0	38	4	0	7	0	11	49	0	662	21	0	683	14	350	0	0	364	1047	1096
0900-1000	14	0	28	0	42	3	0	14	0	17	59	0	398	11	0	409	7	322	0	0	329	738	797
1130-1230	14	0	23	0	37	3	0	8	0	11	48	0	400	8	0	408	3	427	0	0	430	838	886
1230-1330	12	0	25	0	37	2	0	9	0	11	48	1	393	6	0	400	6	422	0	1	429	829	877
1500-1600	16	1	32	0	49	7	0	12	0	19	68	0	433	8	0	441	10	515	0	0	525	966	1034
1600-1700	11	0	33	0	44	6	0	7	0	13	57	0	445	5	0	450	10	590	0	0	600	1050	1107
1700-1800	11	0	41	0	52	4	0	11	0	15	67	0	473	6	0	479	5	538	0	2	545	1024	1091
Totals	103	1	219	0	323	29	0	70	0	99	422	1	3616	75	0	3692	57	3431	0	5	3493	7185	7607

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

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

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

Equ. 12 Hr	143	1	304	0	449	40	0	97	0	138	587	1	5026	104	0	5132	79	4769	0	7	4855	9987	10574

Average daily 12-hour vehicle volumes. These volumes are calculated by multiplying the equivalent 12-hour totals by the AADT factor of: 1.1

AADT 12-hr	157	2	335	0	494	44	0	107	0	151	645	2	5529	115	0	5645	87	5246	0	8	5341	10986	11631

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

AADT 24 Hr	206	2	439	0	647	58	0	140	0	198	845	2	7243	150	0	7395	114	6872	0	10	6996	14391	15237

AADT and expansion factors provided by the City of Ottawa

AM Peak Hour Factor ➡ 0.93												Highest Hourly Vehicle Volume Between 0700h & 1000h											
AM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
0800-0900	13	0	25	0	38	4	0	7	0	11	49	0	662	21	0	683	14	350	0	0	364	1047	1096
OFF Peak Hour Factor ➡ 0.97												Highest Hourly Vehicle Volume Between 1130h & 1330h											
OFF Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1145-1245	12	0	25	0	37	3	0	9	0	12	49	0	396	6	0	402	3	452	0	0	455	857	906
PM Peak Hour Factor ➡ 0.95												Highest Hourly Vehicle Volume Between 1500h & 1800h											
PM Peak Hr	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	LT	ST	RT	UT	Total	LT	ST	RT	UT	Total	Str. Tot.	Gr. Tot.
1630-1730	10	0	39	0	49	5	0	9	0	14	63	0	467	8	0	475	6	578	0	1	585	1060	1123

Comments:

OC Transpo and Para Transpo buses and school buses comprise 44.70% of the heavy vehicle traffic. The bicycle totals include 1 E-bicycle. One N/B driver turned left onto Grove Avenue (wrong way) and several other drivers during this count attempted to turn left but noticed the one-way designation at the last minute. The westbound approach is a parking lot access located 10 m south of Grove Avenue.

Notes:

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

ACCURATE TRUSTED TRAFFIC DATA

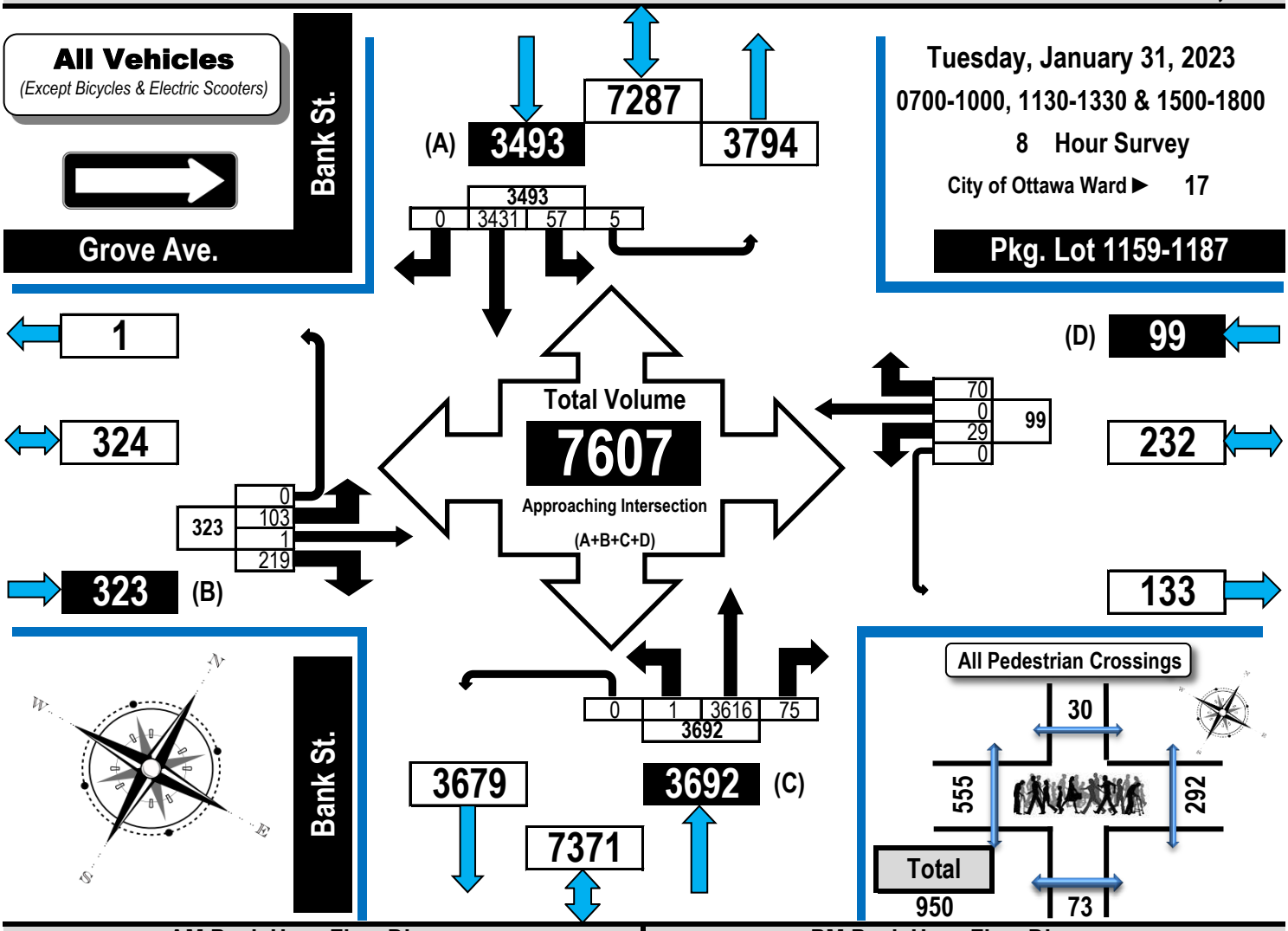
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Bank Street & Grove Avenue — Ottawa, ON

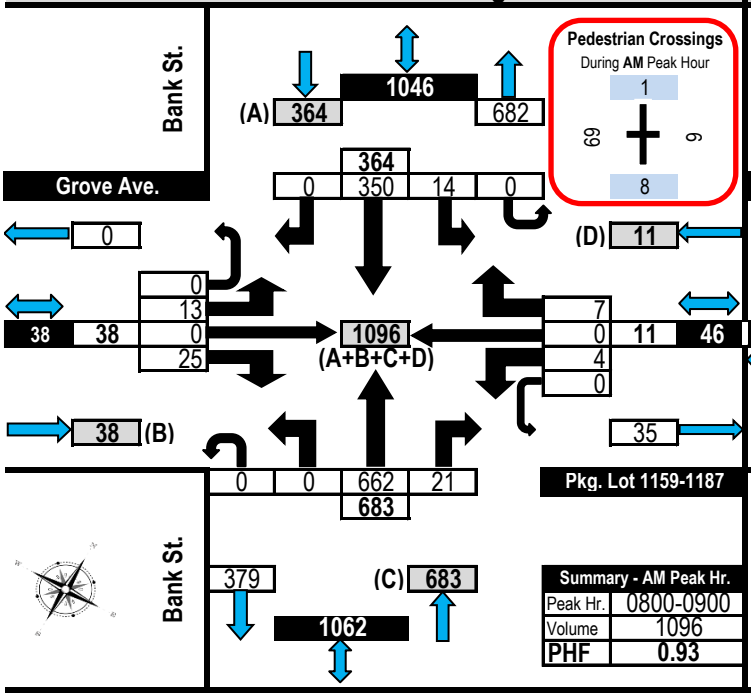
All Vehicles
(Except Bicycles & Electric Scooters)

Bank St. / Grove Ave.

Tuesday, January 31, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 17
Pkg. Lot 1159-1187

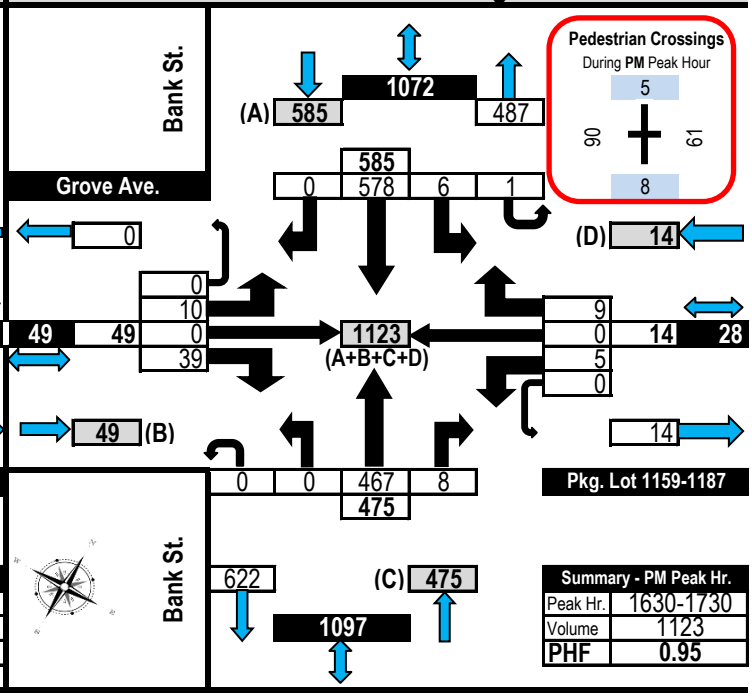


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	1096
PHF	0.93

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	1123
PHF	0.95

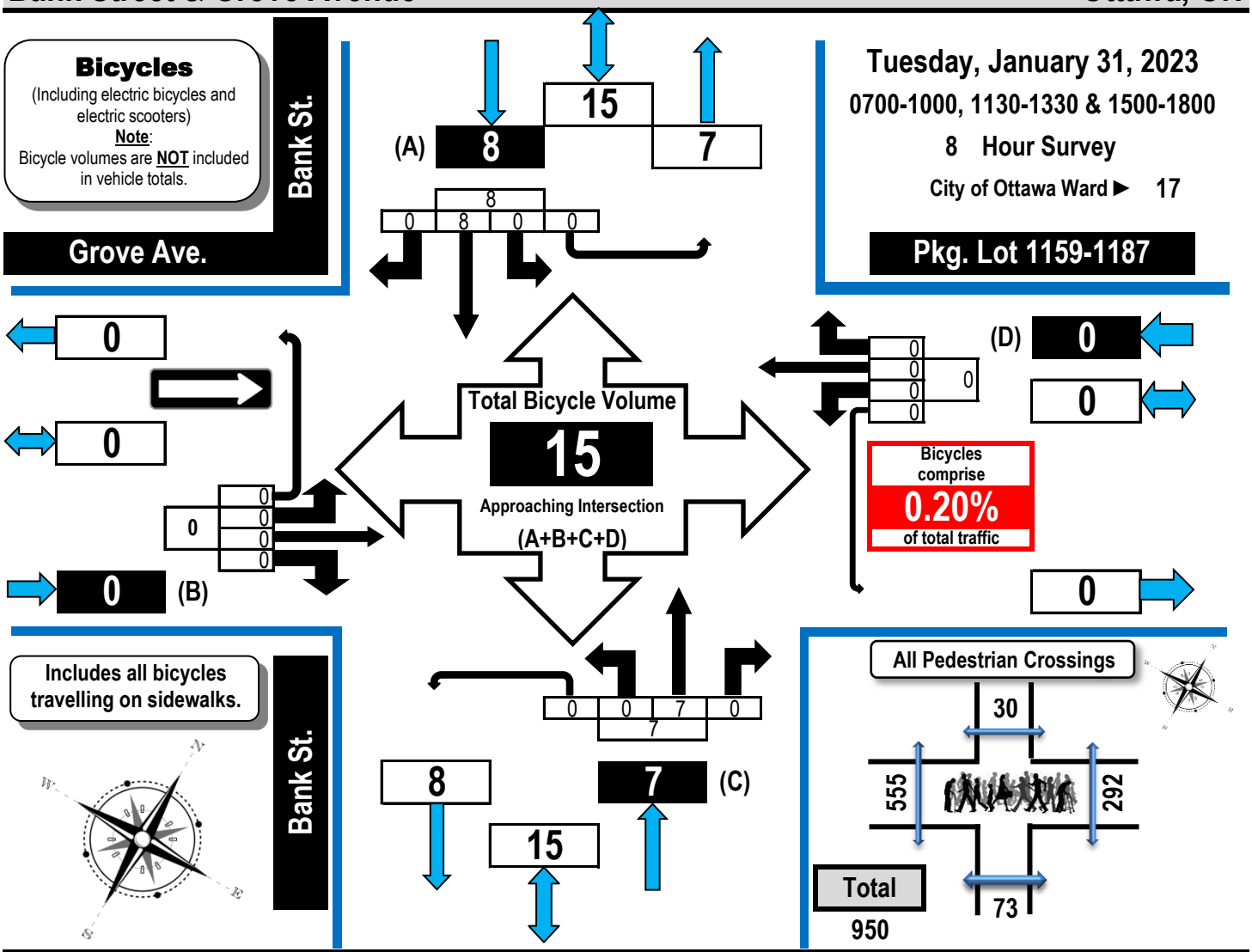
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Bicycle Summary
Flow Diagram

Bank Street & Grove Avenue — Ottawa, ON

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

Tuesday, January 31, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 17



Includes all bicycles travelling on sidewalks.

	Grove Ave.				Eastbound	Pkg. Lot 1159-1187				Westbound	Bank St.				Northbound	Bank St.				Southbound	
Time Period	LT	ST	RT	UT	EB Tot	LT	ST	RT	UT	WB Tot	LT	ST	RT	UT	NB Tot	LT	ST	RT	UT	SB Tot	GR Tot
0700-0800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
0800-0900	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
0900-1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1130-1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
1230-1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1500-1600	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
1600-1700	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
1700-1800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3	4
Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**	**0**	**7**	**0**	**8**	**0**	**0**	**8**	**15**

Comments:

OC Transpo and Para Transpo buses and school buses comprise 44.70% of the heavy vehicle traffic. The bicycle totals include 1 E-bicycle. One N/B driver turned left onto Grove Avenue (wrong way) and several other drivers during this count attempted to turn left but noticed the one-way designation at the last minute. The westbound approach is a parking lot access located 10 m south of Grove Avenue.

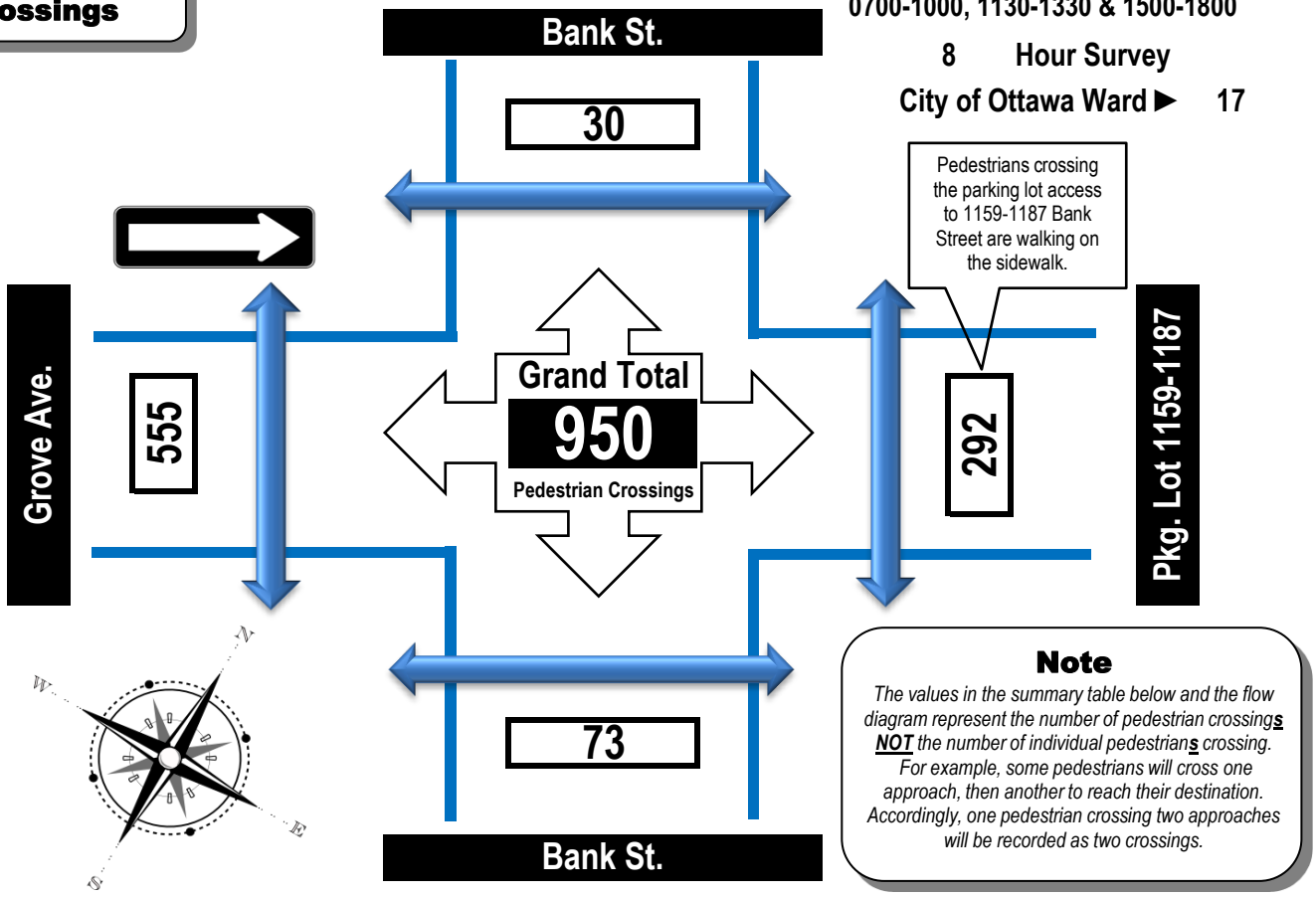
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Pedestrian Crossings Summary and Flow Diagram

Bank Street & Grove Avenue — Ottawa, ON

Pedestrian Crossings

Tuesday, January 31, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► 17



Note

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

Time Period	West Side Crossing Grove Ave.	East Side Crossing Pkg. Lot 1159-1187	Street Total	South Side Crossing Bank St.	North Side Crossing Bank St.	Street Total	Grand Total
0700-0800	28	7	35	0	1	1	36
0800-0900	69	9	78	8	1	9	87
0900-1000	51	22	73	9	1	10	83
1130-1230	48	29	77	12	0	12	89
1230-1330	71	40	111	11	4	15	126
1500-1600	98	59	157	17	9	26	183
1600-1700	93	71	164	7	6	13	177
1700-1800	97	55	152	9	8	17	169
Totals	**555**	**292**	**847**	**73**	**30**	**103**	**950**

Comments:

OC Transpo and Para Transpo buses and school buses comprise 44.70% of the heavy vehicle traffic. The bicycle totals include 1 E-bicycle. One N/B driver turned left onto Grove Avenue (wrong way) and several other drivers during this count attempted to turn left but noticed the one-way designation at the last minute. The westbound approach is a parking lot access located 10 m south of Grove Avenue.

APPENDIX E

Collision Records

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: BANK ST @ GLEN AVE

Traffic Control: Traffic signal **Total Collisions:** 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Aug-01, Tue,15:00	Clear	Rear end	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					North	Slowing or stopping	Pick-up truck	Other motor vehicle	
2017-Aug-05, Sat,08:19	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2018-Feb-13, Tue,09:14	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Passenger van	Other motor vehicle	
2018-Dec-08, Sat,17:23	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Apr-25, Thu,15:45	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Nov-22, Sun,15:00	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST @ GROVE AVE

Traffic Control: Stop sign **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Sep-24, Sun,11:57	Clear	SMV unattended vehicle	P.D. only	Dry	East	Overtaking	Municipal transit bus	Unattended vehicle	0
2019-Feb-17, Sun,14:10	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-May-23, Thu,09:00	Clear	Rear end	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-21, Tue,09:00	Clear	Angle	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: BANK ST btwn BELMONT AVE & GLEN AVE

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-Dec-05, Mon,15:59	Snow	Turning movement	P.D. only	Slush	South	Turning left	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: BANK ST btwn BELMONT AVE & GROVE AVE

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jun-01, Wed,06:46	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Pick-up truck	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2017-Feb-16, Thu,10:20	Clear	Angle	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-May-20, Sat,13:47	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-21, Wed,09:05	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-02, Thu,19:36	Rain	Angle	Non-fatal injury	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-19, Sun,16:42	Clear	Sideswipe	Non-fatal injury	Dry	South	Stopped	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2019-Jan-11, Fri,13:06	Clear	Angle	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Sep-10, Thu,14:00	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	

APPENDIX F

Grove and Grosvenor Avenues Recommended Roadway Improvements

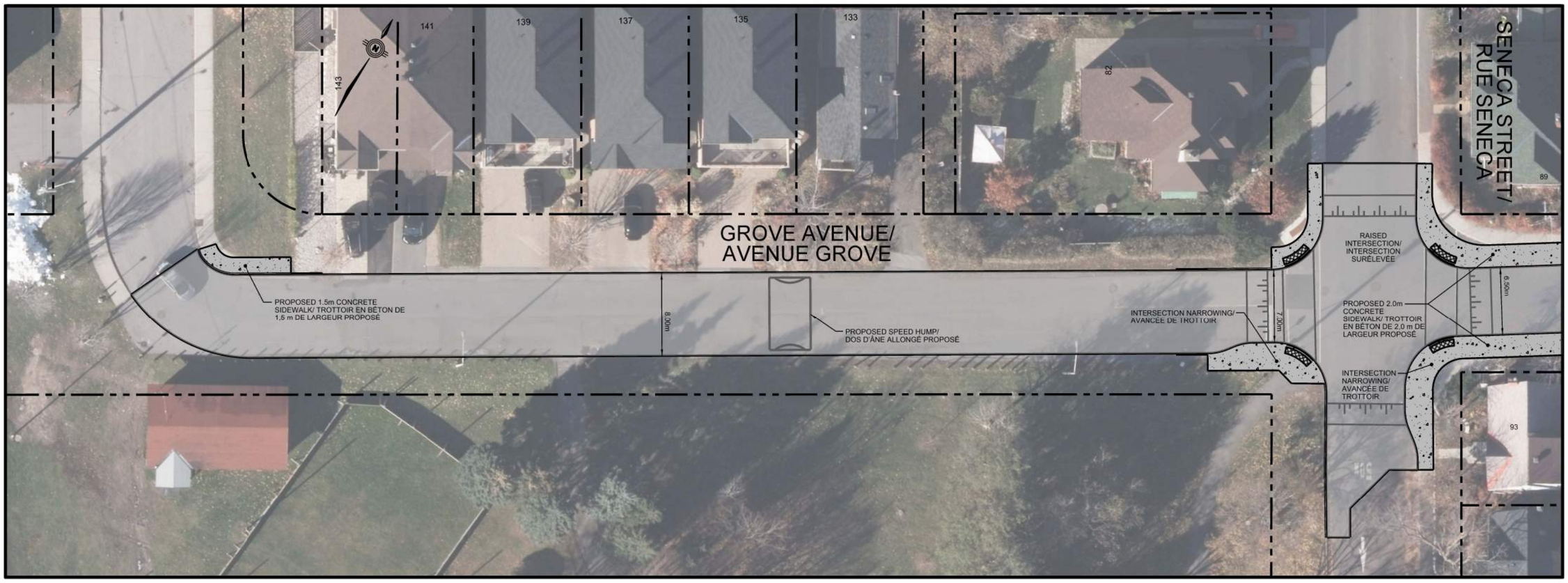
Grove and Grosvenor Avenues
Integrated Road, Sewer & Watermain Replacement
Public Information Session - July 2020

Réfection intégrée de la route, du réseau d'égouts et de la conduite d'eau principale des avenues Grove et Grosvenor
Séance d'information publique - juillet 2020

Robinson Consultants

Ottawa

PROPOSED ROADWAY IMPROVEMENTS/ AMÉLIORATIONS À LA CHAUSSÉE PROPOSÉES



Grove and Grosvenor Avenues
Integrated Road, Sewer & Watermain Replacement
Public Information Session - July 2020

Réfection intégrée de la route, du réseau d'égouts et de la conduite d'eau principale des avenues Grove et Grosvenor
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Ottawa

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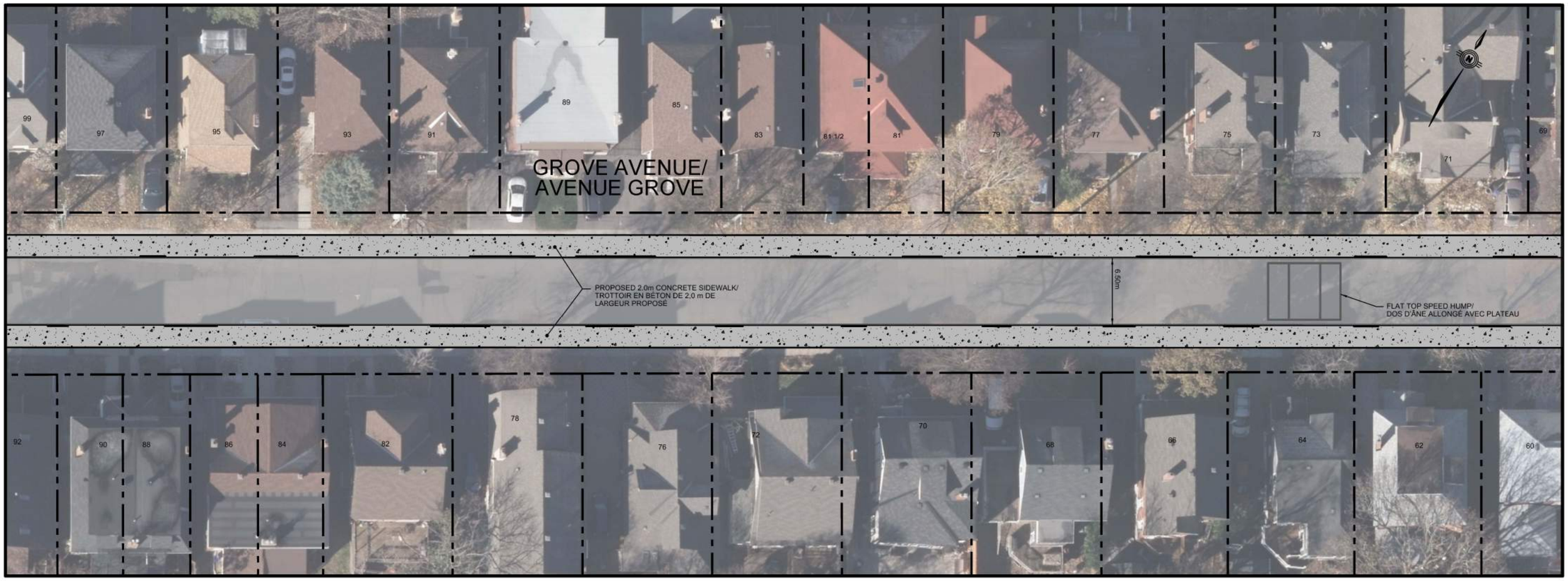

Grove and Grosvenor Avenues
Integrated Road, Sewer & Watermain Replacement
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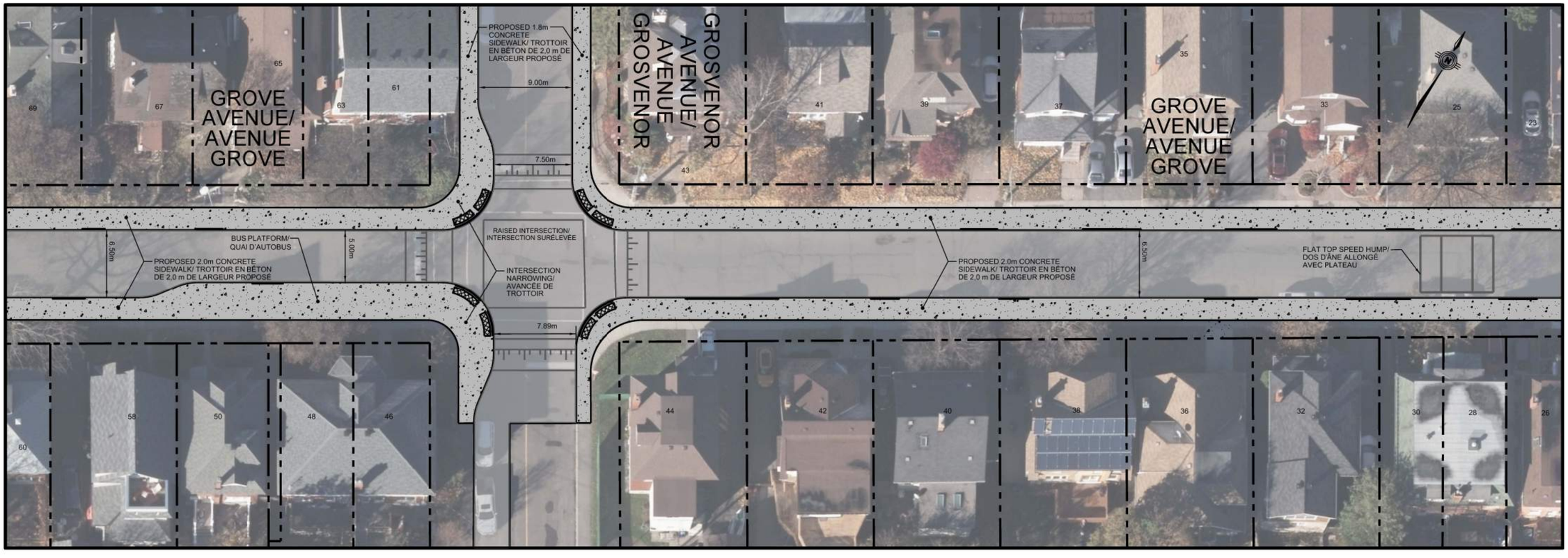

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Integrated Road, Sewer & Watermain Replacement
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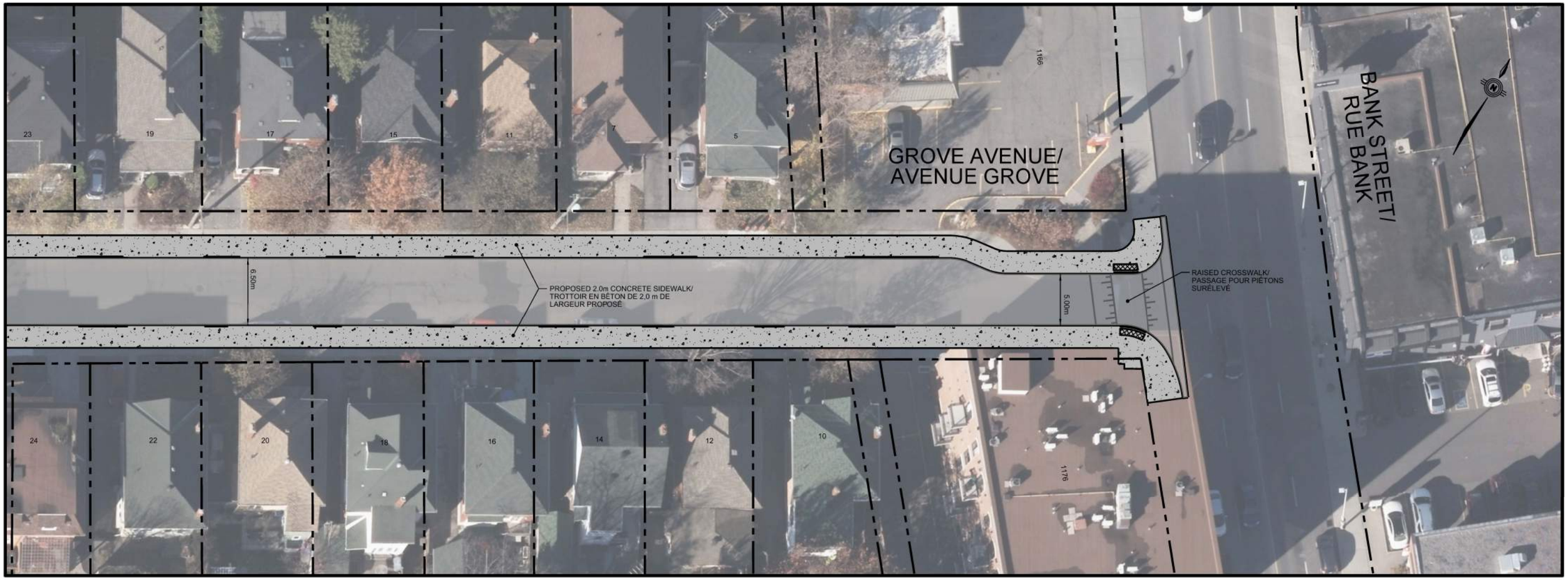

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Public Information Session - July 2020

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PROPOSED ROADWAY IMPROVEMENTS

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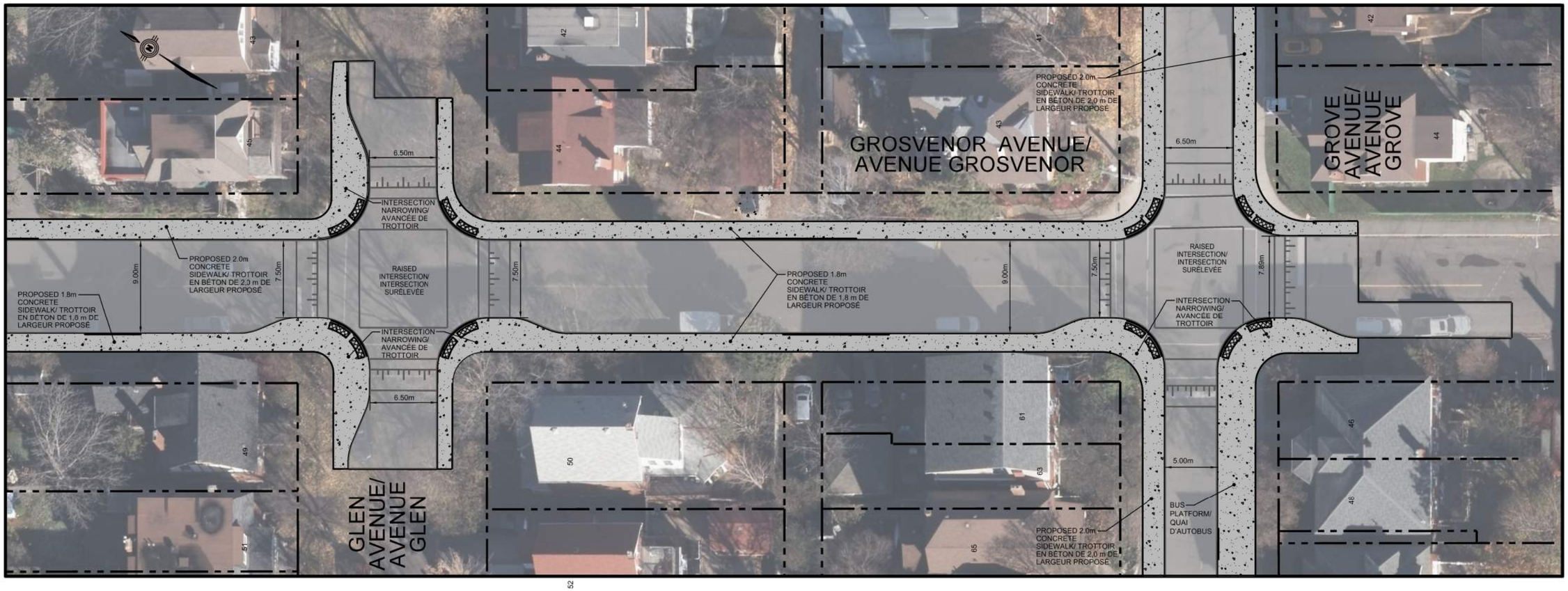


APPENDIX G

Long-Range Model Snapshots and Intersection Growth Rate Figures

TRANS Regional Model

Version 2.15 - Assigned May 5, 2021

AM Peak Hour Total Traffic Volume

Bank Street

2011 Model

N/A

User Initials: TW
Plot Prepared: Jan 3, 2023
EMME Scenario: 21711

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Bank Street

2031 Model - Basecase

N/A

User Initials: TIMW
Plot Prepared: Jan 3, 2023
EMME Scenario: 21715

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

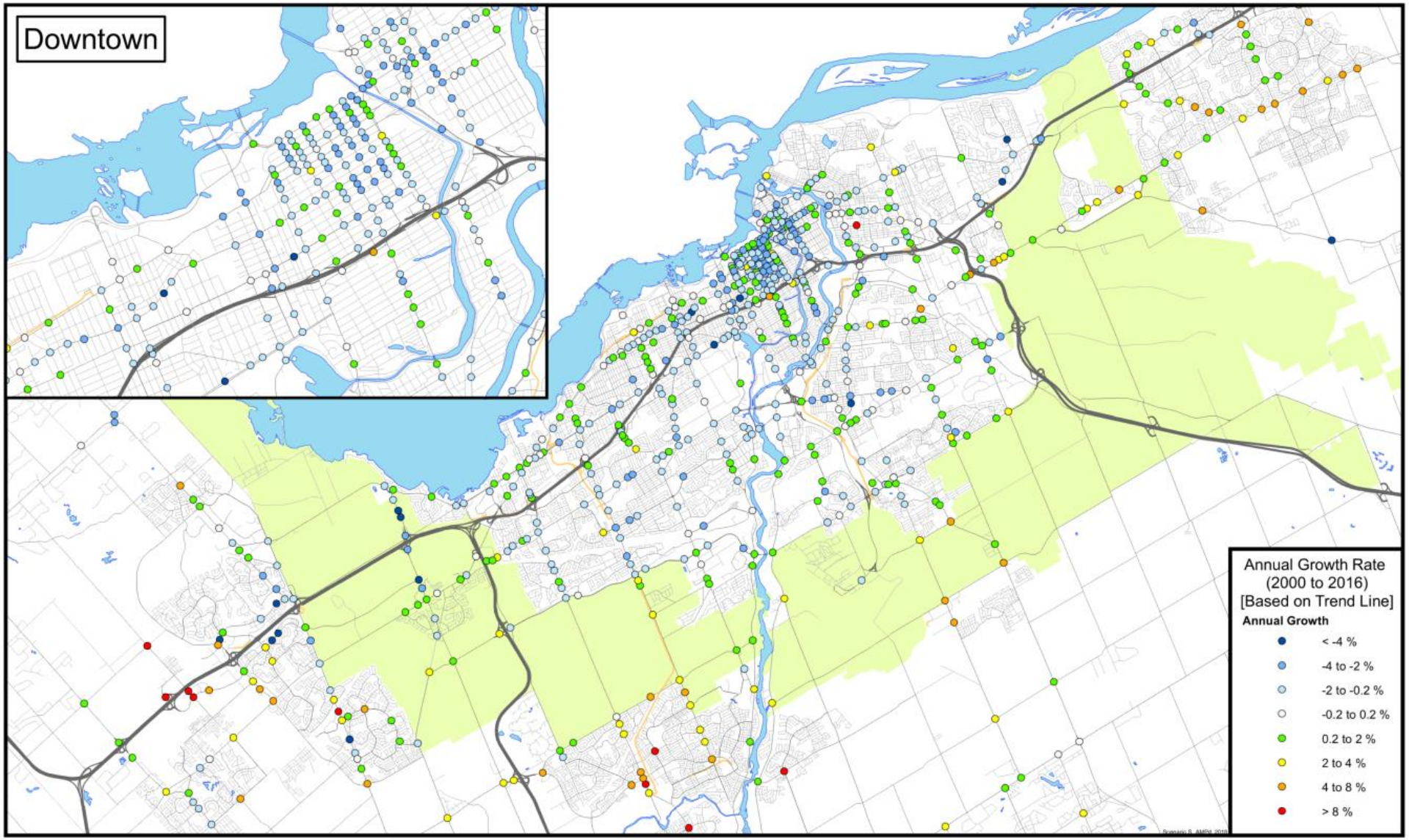
Distance (m)

50 100 150 200 250

N

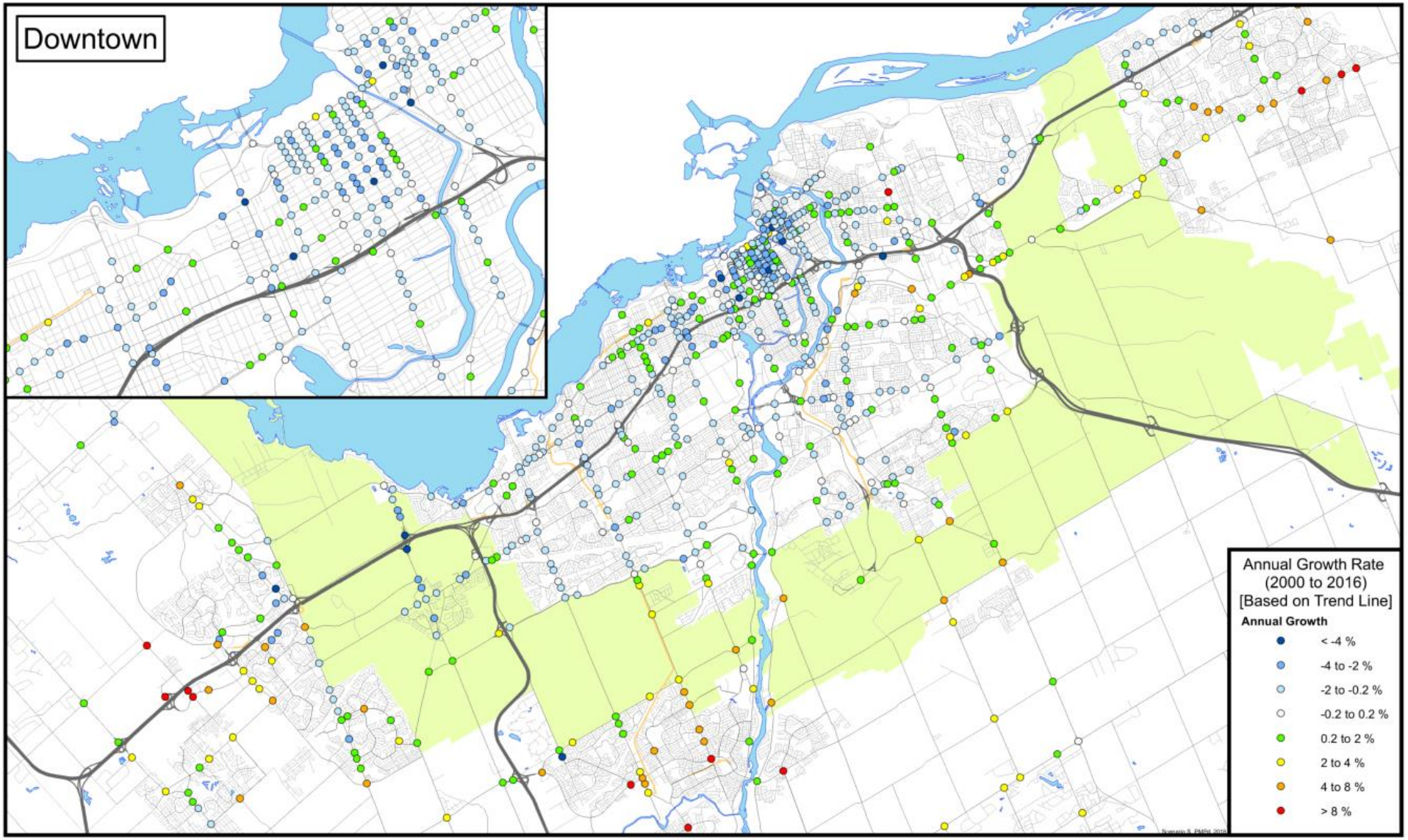
INTERSECTION TRAFFIC GROWTH RATE, AM PEAK PERIOD

Total Vehicular Volume Entering the Intersection, 2000 to 2016



INTERSECTION TRAFFIC GROWTH RATE, PM PEAK PERIOD

Total Vehicular Volume Entering the Intersection, 2000 to 2016



APPENDIX H

Other Area Developments

Figure 1: Local Context

Riverside Drive is a municipal arterial roadway in Ottawa, that extends from its north terminus at Tremblay Road and the Hwy 417 EB Off Ramps, to its south terminus at Limebank Road, where it continues as River Road until the City's limits. Within the study area and east of Data Centre Road, the Riverside Drive eastbound and Riverside Drive westbound travel lanes diverge from one another to form two separate intersections at Bank Street, with the development site located between the two roadways. Three ramps on the east and west sides of Bank Street connect the two Riverside Drive roadways. The two roadways converge again at their intersection with Neil Way, approximately 385 m east of Bank Street. Riverside Drive provides a four-lane cross-section, with auxiliary turn lanes at major intersections. The posted speed limit is 60 km/h.

Riverdale Avenue is a municipal collector roadway in Ottawa, that runs from Bank Street in the west to Main Street in the east. The roadway provides a two-lane cross-section, with space for on-street parking. The posted speed limit is 40 km/h.

Billings Transit is an east-west local municipal roadway in Ottawa that is restricted to buses only. The roadway extends from Bank Street in the east to the Data Centre Road in the west and connects buses to the Transitway.

Data Centre Road is a north-south arterial municipal roadway that connects Riverside Drive in the north to Heron Road in the south. The roadway provides a two-lane cross-section and auxiliary turn lanes at major intersections. The posted speed limit is 50 km/h.

Pleasant Park Rd is a collector municipal roadway that extends from Riverside Dr in the west to St Laurent Blvd in the east. The roadway provides a two-lane cross-section and a posted speed limit of 50km/h.

As shown in Table 10 above, the anticipated 'new' vehicle trips of the proposed development are 62 and 34 vehicle trips/hour during the morning and afternoon peak hours, respectively.

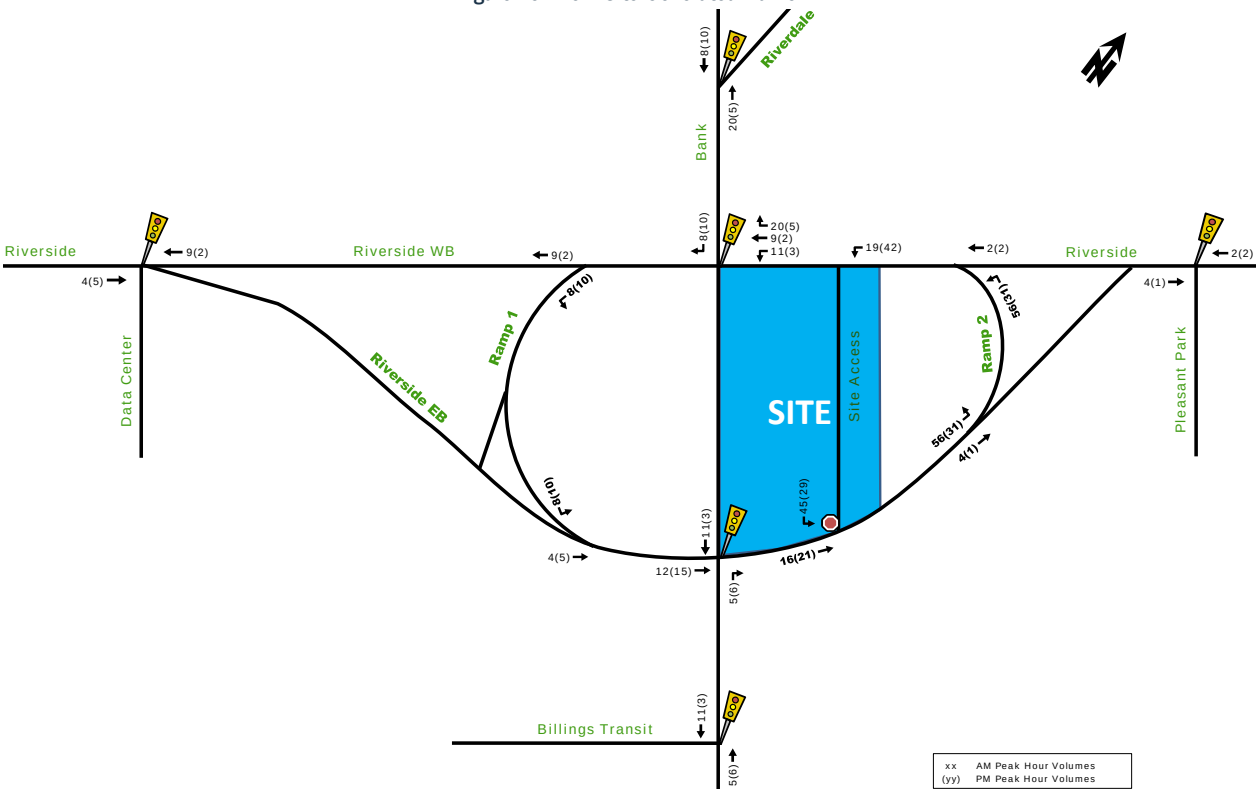
3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

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

- 45% to/from the north;
- 25% to/from the south;
- 10% to/from the east; and,
- 20% to/from the west.

The anticipated 'new' site-generated auto trips of the proposed development (Table 10) were then assigned to the study area road networks as shown in Figure 10. At site accesses, the in/out volumes are reflective of the actual total auto trips in Table 8.

Figure 10: 'New' Site-Generated Traffic



TIA Report

Parsons has been retained by Cushman & Wakefield to prepare a TIA in support of a Zoning By-law Amendment (ZBLA) application for a two mixed-use (predominantly residential) buildings development, located in Ward 17: Capital. The following report represents Step 5 – TIA Report, of the TIA process.

1.0 SCREENING FORM

The Screening Form was submitted to the City of Ottawa for review and verification of the need to complete a Transportation Impact Assessment (TIA). The Trip Generation, Location and Safety triggers of the Screening Form were all met based on the checklist provided by the TIA Guidelines. As such, a TIA Report was deemed required. The Screening Form is provided in **Appendix A**, along with responses to City comments.

2.0 SCOPING REPORT

2.1. EXISTING AND PLANNED CONDITIONS

2.1.1. PROPOSED DEVELOPMENT

The proposed future development will be located at 1330, 1340 and 1346 Bank St, as well as 2211 Riverside Dr, and will consist of a total of approximately 537 apartment units and ground floor commercial space, housed within two high-rise buildings. Currently, the site is occupied by a 5-storey commercial/office building at 2211 Riverside Dr, a restaurant and a café at 1340 Bank St and a retail store at 1346 Bank St, all of which will be replaced by the future development. The residential development will be constructed in two phases. In Phase 1, a 27-storey building containing 309 residential units and 3,603 ft^2 commercial space will be constructed at 1340 and 1346 Bank St by year 2023. In Phase 2, a 29-storey building containing 228 residential units will be constructed at 2211 Riverside Dr by year 2026. **Figure 1** below provides the local context of the development site, while **Figure 2** provides the current Concept Plan. The site is currently zoned as an Arterial Mainstreet (AM).

Figure 1: Local Context

Figure 8: Phase 1 (2023) 'New' Site-Generated Traffic

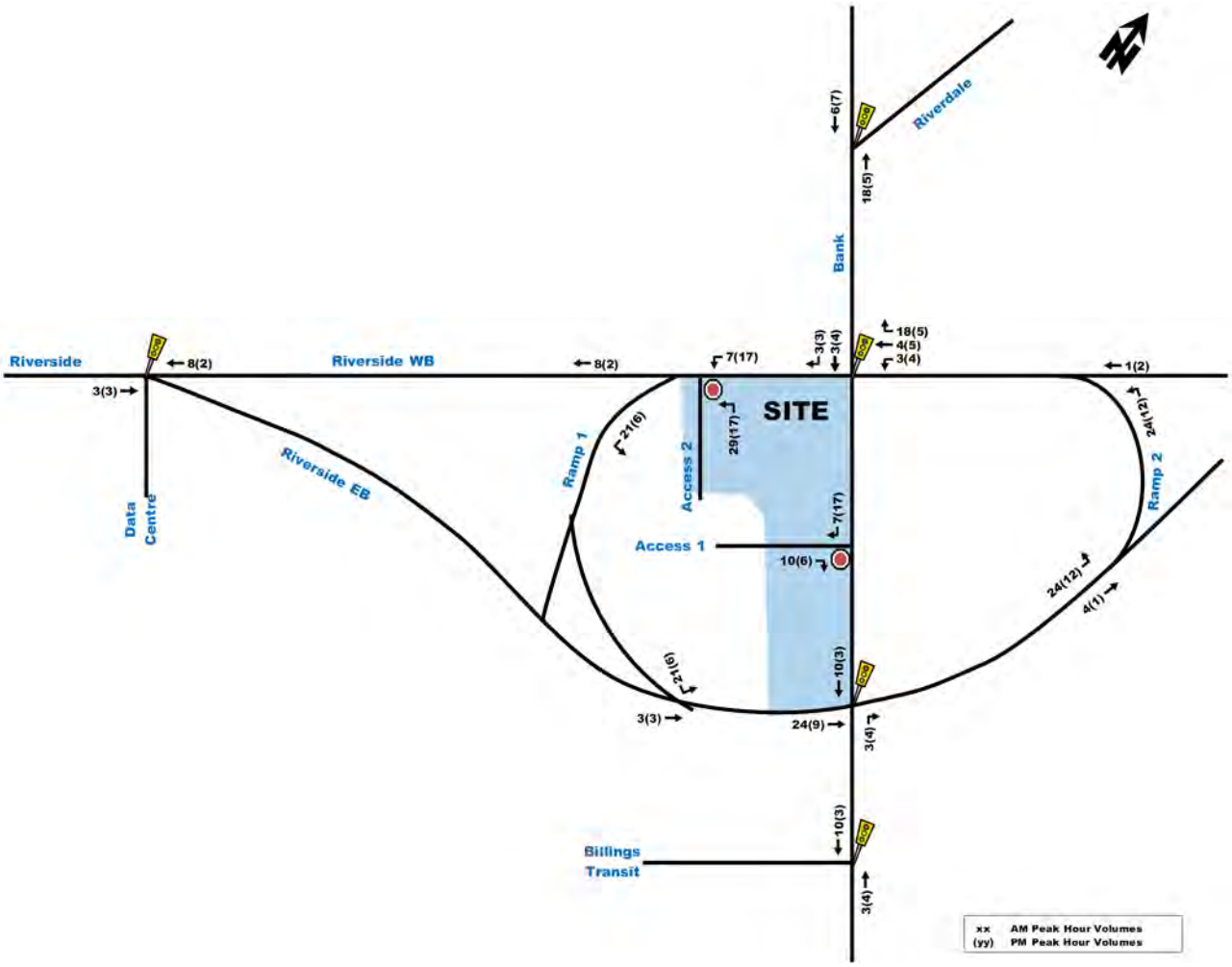
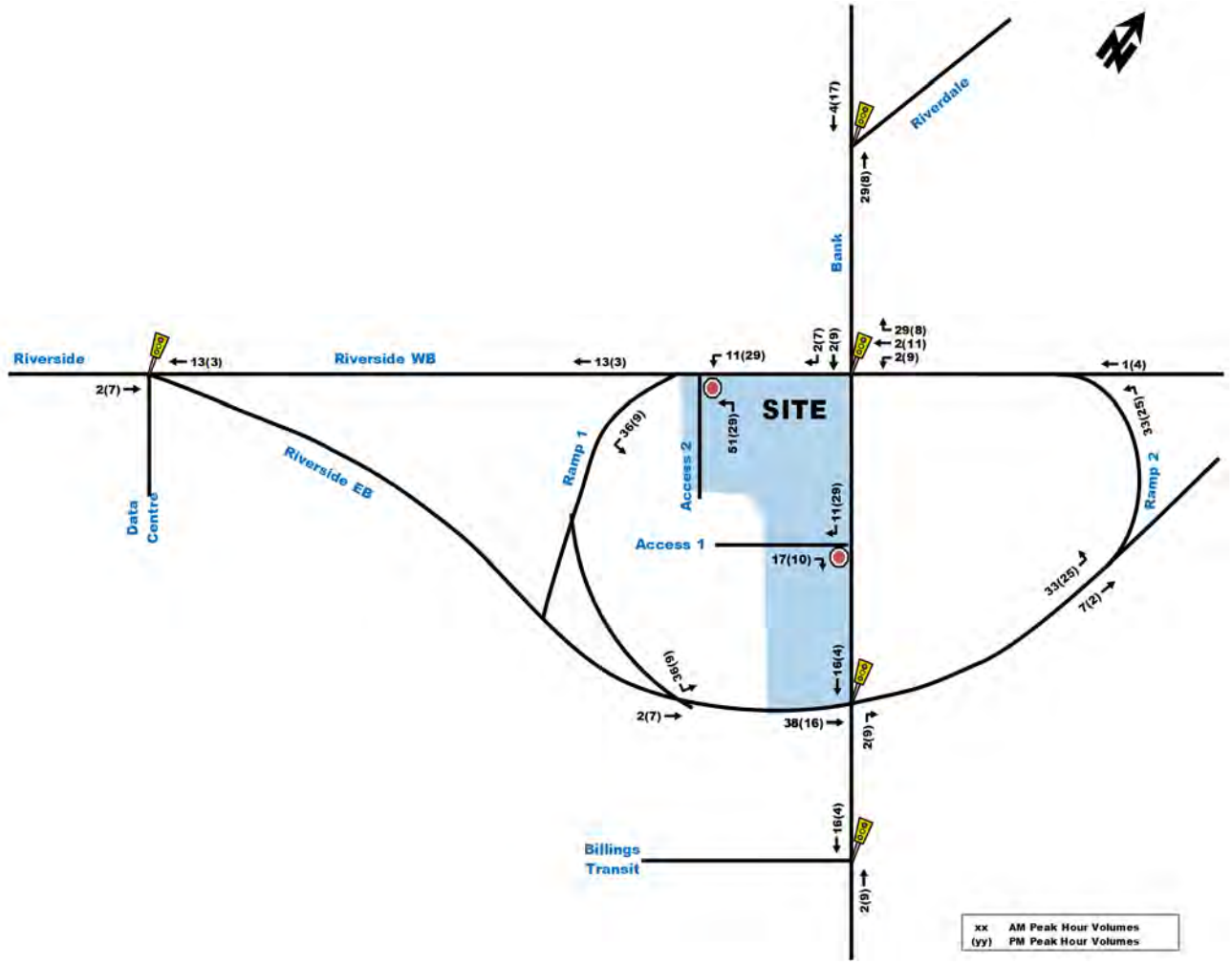


Figure 9: Phase 2 (2026) 'New' Site-Generated Traffic



3.2. BACKGROUND NETWORK TRAFFIC

3.2.1. TRANSPORTATION NETWORK PLANS

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

3.2.2. BACKGROUND GROWTH

Since the lands surrounding the study area are well developed, with not many major other area developments planned near the subject site, traffic within the study area is not anticipated to increase significantly in the next few years. As a conservative estimate, traffic growth is assumed to be 1% per year along both Bank St and Riverside Dr for the future horizon years 2023, 2026 and 2031. Along Billings Transit, Riverdale Ave and Data Centre Rd, the traffic growth was assumed to be negligible. Traffic volumes anticipated for the future background horizon years are illustrated in **Figure 10**, **Figure 11** and **Figure 12**.

APPENDIX I

Transportation Demand Management

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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)*	☐ - N/A
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: *Non-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: *Non-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 commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☑
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office 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 the expected number of commuter cyclists (assuming the cycling mode share target is met)	☑
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	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)	☑

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☑ - existing transit shelter for Stop #7654 will remain
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	☐
	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	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(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	☐

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	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	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

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)*	☐ - N/A
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	☑ - existing transit shelter for Stop #7654 will remain
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:
Non-Residential Developments (office, institutional, retail or industrial)

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: *Non-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	☑
		2.2 Bicycle skills training *Commuter travel*	
BETTER	★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3 Valet bike parking *Visitor travel*	
BETTER		2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-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	☑
BASIC		3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER		3.1.3	Provide real-time arrival information display at entrances	☐
		3.2	**Transit fare incentives**	
			Commuter travel	
BETTER		3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER	★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
			Visitor travel	
BETTER		3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3	**Enhanced public transit service**	
			Commuter travel	
BETTER		3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4	**Private transit service**	
			Commuter travel	
BETTER		3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
			Visitor travel	
BETTER		3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4.	**RIDESHARING**	
		4.1	**Ridematching service**	
			Commuter travel	
BASIC	★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2	**Carpool parking price incentives**	
			Commuter travel	
BETTER		4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3	**Vanpool service**	
			Commuter travel	
BETTER		4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5.	**CARSHARING & BIKESHARING**	
		5.1	**Bikeshare stations & memberships**	
BETTER		5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
			Commuter travel	
BETTER		5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2	**Carshare vehicles & memberships**	
			Commuter travel	
BETTER		5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER		5.2.2	Provide employees with carshare memberships for local business travel	☐
		6.	**PARKING**	
		6.1	**Priced parking**	
			Commuter travel	
BASIC	★	6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC		6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
			Visitor travel	
BETTER		6.1.3	Charge for short-term parking (hourly)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7.	**TDM MARKETING & COMMUNICATIONS**	
		7.1	**Multimodal travel information**	
			Commuter travel	
BASIC	★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☑
			Visitor travel	
BETTER	★	7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2	**Personalized trip planning**	
			Commuter travel	
BETTER	★	7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3	**Promotions**	
			Commuter travel	
BETTER		7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8.	**OTHER INCENTIVES & AMENITIES**	
		8.1	**Emergency ride home**	
			Commuter travel	
BETTER	★	8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2	**Alternative work arrangements**	
			Commuter travel	
BASIC	★	8.2.1	Encourage flexible work hours	☐
BETTER		8.2.2	Encourage compressed workweeks	☐
BETTER	★	8.2.3	Encourage telework	☐
		8.3	**Local business travel options**	
			Commuter travel	
BASIC	★	8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4	**Commuter incentives**	
			Commuter travel	
BETTER		8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5	**On-site amenities**	
			Commuter travel	
BETTER		8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

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 J

MMLOS Analysis

This section provides a review of the boundary streets using complete streets principles. The *Multi-Modal Level of Service (MMLOS) Guidelines*, produced by IBI Group in October 2015, were used to evaluate the levels of service for each alternative mode of transportation. Bank Street has been evaluated using the targets for Traditional Mainstreets, and Grove Avenue has been evaluated using the targets for roadways within the General Urban Area.

Exhibit 4 of the *MMLOS Guidelines* has been used to evaluate the segment pedestrian level of service (PLOS) of the boundary streets. Exhibit 22 of the *MMLOS Guidelines* suggest a target PLOS B for Traditional Mainstreets (Bank Street) and a target PLOS C for roadways within the General Urban Area (Grove Avenue). The results of the segment PLOS analysis are summarized in **Table 1**.

Exhibit 11 of the *MMLOS Guidelines* has been used to evaluate the segment bicycle level of service (BLOS) of the boundary streets. Exhibit 22 of the *MMLOS Guidelines* suggest a target BLOS C for Traditional Mainstreets with a Local Route designation (Bank Street) and a target BLOS D for General Urban Area roadways with no cycling route designation (Grove Avenue). The results of the segment BLOS analysis are summarized in **Table 2**.

Exhibit 15 of the *MMLOS Guidelines* has been used to evaluate the segment transit level of service (TLOS) of the boundary streets. Exhibit 22 of the *MMLOS Guidelines* suggest a target TLOS D for Transit Priority Corridors with Isolated Measures (Bank Street) and no target for roadways without a RTTP designation (Grove Avenue). The results of the segment TLOS analysis are summarized in **Table 3**.

Exhibit 20 of the *MMLOS Guidelines* has been used to evaluate the segment truck level of service (TkLOS) of the boundary streets. Exhibit 22 of the *MMLOS Guidelines* suggest a target TkLOS D for Traditional Mainstreets with a Truck Route designation (Bank Street) and no target for General Urban Area roadways without a Truck Route designation (Grove Avenue). The results of the segment TkLOS analysis are summarized in **Table 4**.

Table 1: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed[1]	PLOS
Bank Street (Belmont Avenue to Grove Avenue, east side)					
≥ 2.0m	0m	> 3,000 vpd	No	50 km/h	**C**
Bank Street (Glen Avenue to Grove Avenue, west side)					
≥ 2.0m	0m	> 3,000 vpd	No	50 km/h	**C**
Grove Avenue (Grosvenor Avenue to Bank Street, north side)					
1.5m	0m	N/A	N/A	40 km/h	**E**
Grove Avenue (Grosvenor Avenue to Bank Street, south side)					
1.5m	0m	N/A	N/A	40 km/h	**E**

1. Operating speed taken as the speed limit plus 10 km/h.

Table 2: BLOS Segment Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Centerline Type	Operating Speed	BLOS
Bank Street (Glen Avenue/Belmont Avenue to Grove Avenue)						
Arterial	Local Route	Mixed Traffic	4	Marked Centerline	50 km/h	**E**
Grove Avenue (Grosvenor Avenue to Bank Street)						
Local	No Class	Mixed Traffic	1	No Marked Centerline	40 km/h	A

Table 3: TLOS Segment Analysis

Facility Type	Level of Congestion Delay, Friction and Incidents			TLOS
	Congestion	Friction	Incident Potential	
Bank Street (Glen Avenue/Belmont Avenue to Grove Avenue)				
Mixed Traffic – Frequent Parking/Driveway Friction	Yes	High	High	**F**
Grove Avenue (Grosvenor Avenue to Bank Street)				
Mixed Traffic – Frequent Parking/Driveway Friction	Yes	High	High	F

Table 4: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes Per Direction	TkLOS
Bank Street (Glen Avenue/Belmont Avenue to Grove Avenue)		
≤ 3.3m	2	C
Grove Avenue (Grosvenor Avenue to Bank Street)		
> 3.7m	1	B