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12-24 Hawthorne Avenue Transportation Impact Assessment



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**Proposed Mid-Rise Mixed-Use Building
12-24 Hawthorne Avenue
Transportation Impact Assessment**

Prepared By:

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Suite 200, 240 Michael Cowpland Drive
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Dated: March 2023

Novatech File: 122152
Ref: R-2022-148

March 29, 2023

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

Attention: Mr. Wally Dubyk
Transportation Project Manager, Transportation Review

Dear Mr. Dubyk:

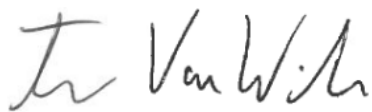
Reference: 12-24 Hawthorne Avenue
Transportation Impact Assessment
Novatech File No. 122152

We are pleased to submit the following Transportation Impact Assessment (TIA), in support of a Site Plan application at 12-24 Hawthorne Avenue, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

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

Yours truly,

NOVATECH



Trevor Van Wiechen, M.Eng.
E.I.T. | Transportation



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 licensed¹ or registered² 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 29 day of March, 2023 .
(City)

Name: Brad Byvelds
(Please Print)

Professional Title: P. Eng. - Project Manager

B. Byvelds

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

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared for the property located at 12-24 Hawthorne Avenue, in support of a Site Plan application. The subject site is currently occupied by a two-storey apartment building as well as two vacant lots at 20 and 24 Hawthorne Avenue. The subject site is currently served by two driveways to Hawthorne Avenue, one approximately 40m east of Colonel By Drive and one 60m east of Colonel By Drive, both driveways serve the existing building at 12-18 Hawthorne Avenue.

The subject site is surrounded by the following:

- Hawthorne Avenue, followed by low-rise residential, Ballantyne Park and the Highway 417 to the north,
- Low-rise residential and commercial uses, followed by Main Street to the east,
- Single detached residential units, followed by Graham Avenue, and St. Nicholas Adult High School to the south, and
- Low-rise residential and commercial uses, followed by Colonel By Drive and the Rideau Canal to the west.

The proposed development is a six-storey mixed-use building, containing a total of 64 dwelling units, 3,060ft² of ground floor commercial and 47 vehicle parking spaces in an underground parking lot. Access to the underground parking garage is proposed near the eastern property limits. The proposed development is anticipated to be completed in one phase, with buildout occurring in 2025.

The City of Ottawa's Official Plan locates the subject site within the Inner Urban Transect, with an 'Evolving Neighbourhood' overlay and a 'Corridor - Mainstreet' (Hawthorne Road) designation on Schedule B2. The subject site is also located within the Old Ottawa East Secondary Plan.

The study area for this report includes the boundary street Hawthorne Avenue, and the study area intersections at Hawthorne Avenue/Colonel By Drive/Pretoria Bridge and Hawthorne Avenue/Main Street.

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

Development Design

- Sidewalk connections will be provided between the building entrance and Hawthorne Avenue.
- At the proposed accesses, the sidewalk on Hawthorne Avenue will be continuous, and any depressed curb at the existing accesses will be reinstated in accordance with City standards.
- A total of 64 bicycle parking spaces will be provided in the underground parking garage, ten exterior spaces will be provided at the rear of the building, and two will be provided near the main building entrance.
- The entrances to the proposed development will be within 400m walking distance of stops that are served by OC Routes 5, 16, 55, 56, and 97.

- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- The fire route will be located along Hawthorne Avenue and garbage collection will occur curbside on Hawthorne Avenue.

Parking

- The proposed number of vehicle parking spaces (47) and bicycle parking spaces (76) meet the minimum requirements outlined in the City's *Zoning By-Law*.

Boundary Streets

- The City of Ottawa has recently completed a complete street concept for Hawthorne Avenue, and is scheduled for construction in 2023. The proposed design includes improved facilities for all modes of transportation.

Access Design

- Section 25(p), of the City's Private Approach By-law identifies that the proposed access shall have a minimum separation of 3m from the nearest property line. As the access is 2.2m away from the property line and is not anticipated to create a traffic hazard or negatively impact sightlines, the General Manager has flexibility to reduce the minimum separation to a minimum of 0.3m, per Section 25(r) of the PABL. A waiver to Section 25(p) of the By-law is requested.

Transportation Demand Management

- The proponent has agreed to implement the following Transportation Demand Management measures within the proposed development:
 - Unbundle parking from monthly rent; and
 - Provide multimodal travel information package to new residents
- In addition to the above TDM measures, bicycle parking is proposed at a rate of one per unit to promote the cyclist mode share.

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 for the property located at 12-24 Hawthorne Avenue, in support of a Site Plan application. The subject site is currently occupied by a two-storey apartment building as well as two vacant lots at 20 and 24 Hawthorne Avenue. The subject site is currently served by two driveways to Hawthorne Avenue, one approximately 40m east of Colonel By Drive and one 60m east of Colonel By Drive, both driveways serve the existing building at 12-18 Hawthorne Avenue.

The subject site is surrounded by the following:

- Hawthorne Avenue, followed by low-rise residential, Ballantyne Park and the Highway 417 to the north,
- Low-rise residential and commercial uses, followed by Main Street to the east,
- Single detached residential units, followed by Graham Avenue, and St. Nicholas Adult High School to the south, and
- Low-rise residential and commercial uses, followed by Colonel By Drive and the Rideau Canal to the west.

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

1.2 Proposed Development

The proposed development is a six-storey mixed-use building with residential and ground floor commercial uses and underground parking. Included within the development is a total of 64 dwelling units, 3,060ft² of commercial space, and 47 vehicle parking spaces in an underground parking lot. Access to the underground parking garage is proposed near the eastern property limits. The proposed development is anticipated to be completed in one phase, with buildout occurring in 2025.

The City of Ottawa's Official Plan locates the subject site within the Inner Urban Transect, with an 'Evolving Neighbourhood' overlay and a 'Corridor - Mainstreet' (Hawthorne Road) designation on Schedule B2. The subject site is also located within the Old Ottawa East Secondary Plan.

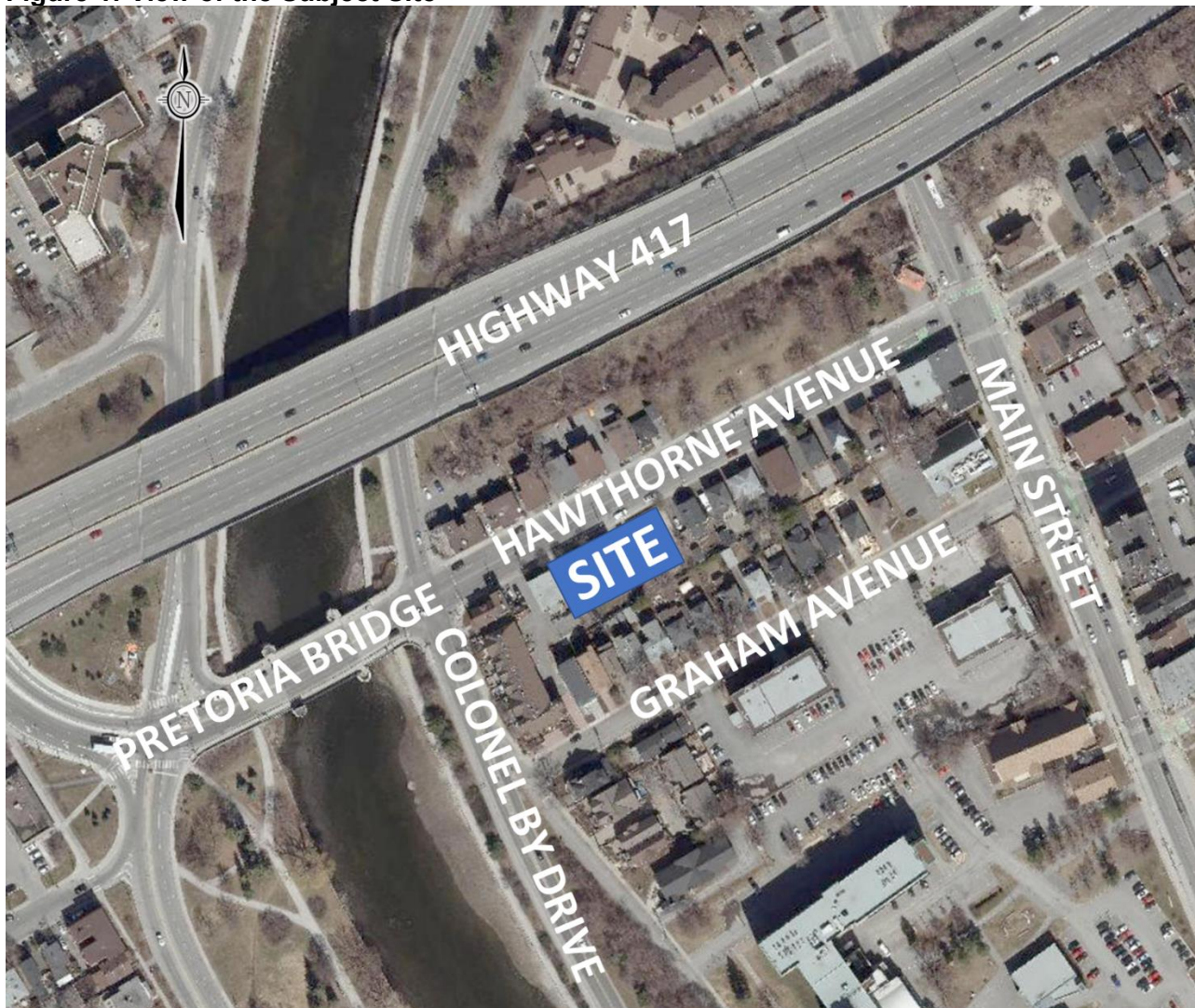
A copy of the site plan is included in **Appendix A**.

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 expected 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 Hawthorne Traditional Mainstreet Design Priority Area; further assessment is **required** based on this trigger.
- Safety Triggers – The proposed driveway is located within 150m of an adjacent traffic signal; further assessment is **required** based on this trigger.

Figure 1: View of the Subject Site



2.0 SCOPING

2.1 Existing Conditions

The City of Ottawa recently completed the detailed design for the Greenfield - Main - Hawthorne et al. Reconstruction Project. As part of this project, Hawthorne Avenue from Colonel By Drive to Main Street will be reconstructed to provide a physically separated westbound bike lane and intersection modifications to improve the level of service for all modes of transportation. The approved Pavement Marking and Signage drawing for Hawthorne Avenue is included in **Appendix C**.

As the Hawthorne Avenue section of this project is scheduled for construction in 2023, the foregoing existing conditions review reflects the post Greenfield - Main - Hawthorne et al. Reconstruction Project.

2.1.1 Roadways

Colonel By Drive is a federally owned road that generally runs on a north-south alignment between Hogs Back Road and Rideau Street. Within the study area, Colonel By Drive has a two-lane undivided urban cross-section, an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act, and sidewalks on both sides of the roadway.

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

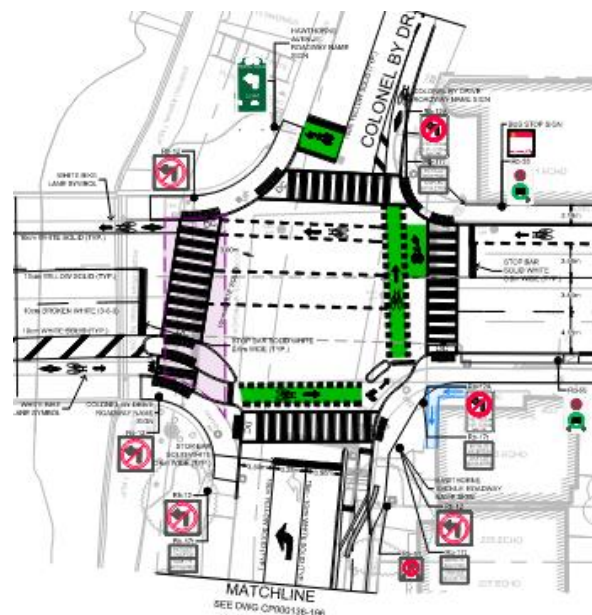
Hawthorne Avenue is an arterial roadway that generally runs on an east-west alignment between Queen Elizabeth Driveway and Concord Street South. Within the study area, Hawthorne Avenue has a three-lane undivided urban cross-section, an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act, sidewalks on both sides of the roadway, and a bike lane on the north side of the roadway. Schedule C16 of the City of Ottawa's Official Plan identifies a right-of-way protection of 20m for Hawthorne Avenue adjacent to the site.

Main Street is an arterial roadway that generally runs on a north-south alignment between Colonel By Drive and Rideau River Drive/Smyth Road. Within the study area, Main Street has a four-lane undivided urban cross-section, a posted speed limit of 40km/h, sidewalks on both sides of the roadway, and a cycle track on the east side of the roadway.

2.1.2 Intersections

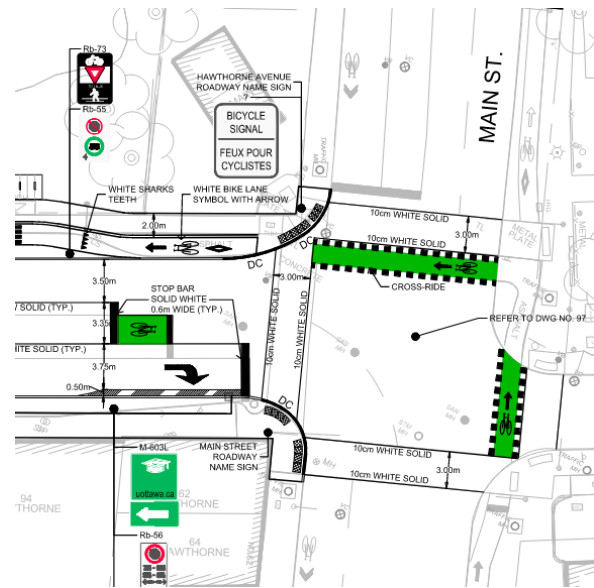
Hawthorne Avenue/Colonel By Drive/Pretoria Bridge

- Signalized four-legged intersection
- Northbound Approach (Colonel By Drive): one left turn lane and one shared through/right turn lane
- Southbound Approach (Colonel By Drive): one shared through/right turn lane (left turns prohibited for general traffic and permitted for bicycles)
- Eastbound Approach (Pretoria Bridge): one through lane and one shared through/right lane (left turns prohibited for general traffic during peak periods and permitted for bicycles)
- Westbound Approach (Hawthorne Avenue): one shared through/right turn lane (left turns prohibited)
- Bike lanes are provided on the eastbound and westbound approaches
- A bi-directional multi-use pathway is provided on the northbound approach
- Protected southeast/southwest corners and two stage left-turn bike boxes for northbound, eastbound, and westbound cyclists
- Ladder marked crosswalks are provided on all approaches



Hawthorne Avenue/Main Street

- Signalized four-legged intersection
- Northbound Approach (Main Street): one shared through/left turn lane and one shared through/right turn lane
- Southbound Approach (Main Street): one shared through/left turn lane and one shared through/right turn lane
- Eastbound Approach (Hawthorne Avenue): one shared through/left turn lane and one right turn lane
- Westbound Approach (Hawthorne Avenue) one lane one-lane road traveling in the east direction
- A cycle track is provided on the northbound approach
- Sharrows are provided on the southbound approach
- Protected northeast corner and a bike box is provided on the eastbound approach
- Standard crosswalks on all approaches



2.1.3 Driveways

A review of adjacent driveways along the boundary roads are provided as follows:

Hawthorne Avenue, North Side:

- One driveway to a restaurant at 221 Echo Drive
- One driveway to a sports store and apartment buildings at 21 and 25 Hawthorne Avenue
- One driveway to an antique store at 27 Hawthorne Avenue

Hawthorne Avenue, South Side:

- One driveway to a dental office and various residential buildings at 223-237 Echo Drive and 8 Hawthorne Avenue
- Two driveways to an apartment building at 12-18 Hawthorne Avenue-
- Seven driveways to residences at 26, 30, 34, 40, 44, 48, and 52 Hawthorne Avenue
- One driveway to an animal grooming service at 56 Hawthorne Avenue
- One driveway to an esthetics store at 94 Hawthorne Avenue

2.1.4 Pedestrian and Cycling Facilities

Sidewalks are provided on both sides of Hawthorne Avenue and Main Street.

In the City’s primary cycling network, Hawthorne Avenue is a Local Route, and Main Street, Colonel By Drive between Hawthorne Avenue and Graham Avenue, and Graham Avenue are Spine Routes. West of the Hawthorne Avenue/Colonel By Drive intersection Hawthorne Avenue becomes a Spine Route. A westbound physically separated bike lane is provided on the north side of Hawthorne Avenue within the study area. Additional cycling treatments at the Hawthorne Avenue/Colonel By Drive and Hawthorne Avenue/Main Street intersections are summarized in Section 2.1.2 above.

2.1.5 Transit

The closest OC Transpo bus stops in the vicinity of the subject site are described in **Table 1** and all bus stops within the vicinity of the study area are shown in **Figure 2**. A summary of 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 D**.

Table 1: OC Transpo Transit Stops

Stop	Location	Routes Served
#2447	Southeast corner of Hawthorne Avenue and Colonel By Drive	5, 55, 56
#6799	Southeast corner of Lees Avenue and Main Street	5, 16, 55, 56
#7624	Northeast corner of Lees Avenue and Main Street	5, 16, 55, 56
#7626	Southeast corner of Harvey Street and Main Street	55, 97
#7633	Northeast corner of Hawthorne Avenue and Colonel By Drive	5, 55, 56

Table 2: OC Transpo Route Information

Route	From ↔ To	Frequency
5	Billings Bridge ↔ uOttawa	30-minute headways, all-day service, 7-days per week
16	Main ↔ Tunney's Pasture/Westboro	30-minute headways, all-day service, 7-days per week
55	Elmvale ↔ Westgate	15-minute headways for most of the day on weekdays and 30-minute headways during evenings and weekends, 7-days per week
56	King Edward ↔ Tunney's Pasture	Weekday peak period service near subject site
97	Airport ↔ Hurdman/N Rideau	30-minute headways overnight service, 7-days per week

Figure 2: OC Transpo Bus Stop Locations



Detailed route information and an excerpt from the OC Transpo System Map are included in **Appendix D**.

2.1.6 Area Traffic Management

There are no Area Traffic Management (ATM) studies within the study area that have been completed or are currently in progress.

2.1.7 Existing Traffic Volumes

Weekday traffic counts completed by the City of Ottawa were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. These counts were completed on the dates listed below:

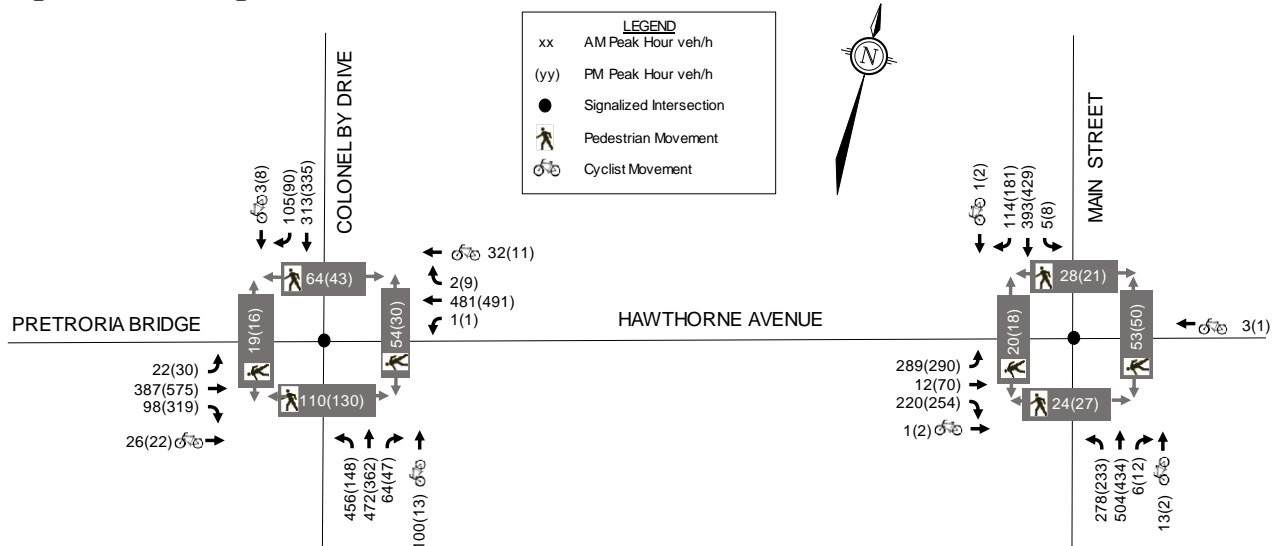
- Colonel By Drive/Hawthorne Avenue/Pretoria Bridge January 10, 2018 and
October 29, 2019
- Hawthorne Avenue/Main Street March 3, 2020

The October 2019 traffic count at the Colonel By Drive/Hawthorne Avenue/Pretoria Bridge intersection was collected during the Elgin Street renewal project when construction activity may have resulted in vehicular traffic temporarily shifting to other routes. Significant volume differences between the 2019 count and the previous 2018 count were found for some major movements, particularly the northbound left turn movement during the AM peak hour and the eastbound right turn movement during the PM peak hour. As such, the vehicular volumes collected in 2019 are not considered representative of typical vehicular volumes and existing vehicle, pedestrian, and cyclist volumes have been estimated based on the following:

- Vehicle volumes from the January 2018 traffic count; and
- Pedestrian/cyclist volumes from the October 2019 traffic count.

All traffic count data previously discussed are included in **Appendix E**. Traffic volumes within the study area are shown in **Figure 3**.

Figure 3: Existing Traffic Volumes



2.1.8 Collision Records

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

The collision data has been evaluated to determine if there are any identifiable collision patterns, 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 1**.

Table 3: Reported Collisions

Location	Impact Types						Total
	Approach	Angle	Rear End	Sideswipe	Turning Mvmt	SMV ⁽¹⁾ / Other	
Colonel By Drive/Hawthorne Avenue/Pretoria Bridge	-	8	12	8	6	4	38
Hawthorne Avenue/Main Street	-	3	8	11	14	3	39
Hawthorne Avenue btwn Colonel By Drive & Main Street	-	-	-	3	1	6	8

1. SMV = Single Motor Vehicle

Colonel By Drive/Hawthorne Avenue/Pretoria Bridge

A total of 38 collisions were reported at this intersection over the last five years, of which there was eight angle impacts, 12 rear-end impacts, eight sideswipe impacts, six turning movement impact, and four single vehicle/other impacts. Two collisions resulted in injuries, but none caused fatalities. Seven of the collisions occurred in poor driving conditions. Two collisions involved cyclists and one involved a pedestrian.

Of the eight angle impacts, three involved a northbound vehicle colliding with an eastbound vehicle, two involved a southbound vehicle colliding with an eastbound vehicle, two involved a southbound vehicle colliding with a westbound vehicle, and one involved a northbound vehicle colliding with a westbound vehicle. Five of the angle impacts occurred in dark lighting conditions.

Of the 12 rear end impacts, five occurred at the westbound approach, three occurred at the eastbound approach, two occurred at the southbound approach, and two occurred at the westbound approach.

Of the eight sideswipe impacts, four occurred at the eastbound approach, two occurred at the northbound approach, and two occurred at the westbound approach.

All six turning movement impacts involved eastbound left turning vehicles. Two of these collisions occurred during snowy conditions and two occurred during weekday AM and PM peak periods while left turns are prohibited.

Proposed modifications to this intersection as part of the Greenfield - Main - Hawthorne et al. Reconstruction Project are anticipated to improve overall safety at this intersection. Monitoring of the collisions at this intersection following the improvements is recommended.

Hawthorne Avenue/Main Street

A total of 39 collisions were reported at this intersection over the last five years, of which there was three angle impacts, eight rear-end impacts, 11 sideswipe impact, 14 turning movement impact, and three single vehicle/other impact. Four collisions resulted in injuries (including two involving pedestrians), but none caused fatalities. Nine of the collisions occurred in poor driving conditions.

Of the eight rear-end impacts, three occurred at the eastbound approach, three occurred at the southbound approach, and two occurred at the northbound approach.

Of the 11 side swipe impacts, four occurred at the eastbound approach, four occurred at the southbound approach, and three occurred at the northbound approach.

Of the 14 turning movement impacts, six involved northbound left turning vehicles, five involved southbound left turning vehicles, two involved eastbound right turning vehicles, and one involved an eastbound left turning vehicle.

Proposed modifications to this intersection as part of the Greenfield - Main - Hawthorne et al. Reconstruction Project are anticipated to improve overall safety at this intersection. Monitoring of the collisions at this intersection following the improvements is recommended.

Hawthorne Avenue between Colonel By Drive & Main Street

A total of eight collisions were reported along this segment over the last five years, of which there were three sideswipe impacts, one turning movement impacts, and six SMV/other type collisions. None of the collisions resulted in injuries.

Of the six SMV impacts, two involved an eastbound vehicle, one involved a southbound vehicle, and three involved a vehicle with an unknown direction.

2.2 Planned Conditions

2.2.1 Planned Roadway and Transit Projects

Within proximity of the study area, the 2013 Ottawa Cycling Plan and the 2013 Ottawa Pedestrian Plan do not identify any improvements.

The City's 2013 Transportation Master Plan (TMP) 2031 Affordable Road Network and Rapid Transit and Transit Priority (RTTP) Network does not identify any projects within the study area. However, the 2031 RTTP Network Concept includes the Catherine Street/Chamberlain Avenue/Isabelle Street project, which will provide transit signal priority between Bronson Avenue to Lees Station. This project will reduce travel time and improve reliability for transit trips bypassing the downtown core.

The City of Ottawa's Draft 2024 TMP identifies the following additional cycling projects within the study area:

- 'Lees Ave and Hawthorne Ave': Westbound bike lanes on Lees Ave and Hawthorne Ave from Lees O-Train Station to Main Street, and eastbound bike lane to address the missing link just east of Lees Station. Scope may include parking removal on Lees Ave.
- 'Main St Southbound Cycling Link': Feasibility study of adding southbound cycling facilities on Main Street from the Hwy 417 bridge to Lees Ave to address the missing link.

2.2.2 Other Area Developments

In proximity of the proposed development, the City’s Development Application Search Tool identifies no other developments at this time.

2.3 Study Area and Time Periods

The study area for this report includes the boundary roadway Hawthorne Avenue, as well as the following intersections:

- Colonel By Drive/Pretoria Bridge/Hawthorne Avenue
- Main Street/Hawthorne Avenue

Analysis will be completed for the weekday AM and PM peak hours, as this represents the worst-case combination of site generated traffic and adjacent street traffic.

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 2**.

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

Since the trip generation trigger is not met, all Network Impact modules (Modules 4.5 through 4.9) are exempt from further analysis. Per City request, Module 4.5 - Transportation Demand Management will be included in the analysis. Therefore, the following modules will be included in the TIA report:

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

3.0 FORECASTING

3.1 Development-Generated Traffic

The proposed development is a six-storey mixed-use building, including a total of 64 dwelling units (25 two-bedroom units and 39 single bedroom units) and 3,060 sf of ground floor commercial space. Trip generation has been broken up into each of its uses separately and then combined in the following sections.

Proposed Residential Development

Trips generated by the proposed residential development have been estimated using the 2020 *TRANS Trip Generation Manual*. The trip generation rates for the residential portion of the development are taken from Table 3 and correspond to High-Rise Residential in the Ottawa Inner Area. The directional split between inbound and outbound trips are based on the blended splits presented in Table 9 of the report. The estimated trip generation are summarized in **Table 5**.

Table 5: Residential Person Trip Generation

Land Use	Trip Rate	Units/GFA	AM Peak (ppp) ⁽¹⁾			PM Peak (ppp) ⁽¹⁾		
			IN	OUT	TOT	IN	OUT	TOT
High-Rise Residential, Ottawa Inner Area	AM: 0.80 PM: 0.90	64	16	35	51	33	24	57

1. ppp: person trips per period

The 2020 *TRANS Trip Generation Manual* provides modal shares for residential developments within the Ottawa Inner Area. The AM and PM modal shares identified in Table 8 of the report have been averaged and rounded to the nearest 5%. A breakdown of the projected person trips by modal share is shown in **Table 6**.

Table 6: Residential Peak Period Person Trips by Mode

Travel Mode	Mode Share	AM Peak (ppp) ⁽¹⁾			PM Peak (ppp) ⁽¹⁾		
		IN	OUT	TOT	IN	OUT	TOT
TOTAL		16	35	51	33	24	57
Auto Driver	25%	4	9	13	8	6	14
Auto Passenger	10%	2	3	5	3	3	6
Transit	25%	4	9	13	8	6	14
Cyclist	5%	1	2	3	2	1	3
Pedestrian	35%	5	12	17	12	8	20

1. ppp: person trips per period

Table 4 of the 2020 *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 7**.

Table 7: Residential Peak Hour Person Trips by Mode

Travel Mode	Adjustment Factor		AM Peak (pph) ⁽¹⁾			PM Peak (pph) ⁽¹⁾		
	AM	PM	IN	OUT	TOT	IN	OUT	TOT
TOTAL			9	19	28	16	12	28
Auto Driver	0.48	0.44	2	4	6	4	3	7
Auto Passenger	0.48	0.44	1	2	3	1	1	2
Transit	0.55	0.47	2	5	7	4	3	7
Cyclist	0.58	0.48	1	1	2	1	0	1
Pedestrian	0.58	0.52	3	7	10	6	5	11

1. pph: person trips per hour

Proposed Commercial Development

Person trips for the commercial uses have been estimated using rates from the Institute of Transportation Engineer's (ITE) Trip Generation Manual, 11th Edition and a 1.28-person trip adjustment factor.

Peak hour person trips for the proposed retail development are summarized in the following table:

Table 8: Trips Generated by the Proposed Commercial Development

Land Use	ITE Code	GFA	AM Peak Hour (pph ⁽¹⁾)			PM Peak Hour (pph)		
			IN	OUT	TOT	IN	OUT	TOT
Retail	822	3,060ft ²	5	4	9	13	13	26

1. PPH=Person Trips per Hour

The 2020 TRANS Trip Generation Manual provides modal shares for commercial developments within the Ottawa Inner Area. Although the manual provides AM and PM peak hour modal shares, the sample size for shopping trips during the AM and PM peak hours tends to be low and the results should be used with caution. As such, the PM modal shares identified in Table 13 of the report have been used in this report and are rounded to the nearest 5%. A breakdown of the projected person trips by modal share is shown in **Table 9**.

Table 9: Proposed Development – Peak Hour Person Trips

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Commercial Person Trips		5	4	9	13	13	26
Auto Driver	20%	1	1	2	3	2	5
Auto Passenger	5%	0	0	0	1	0	1
Transit	10%	1	1	2	1	2	3
Cyclist	5%	0	0	0	0	1	1
Pedestrian	60%	3	2	5	8	8	16

Total Trip Generation

A full breakdown of the net person trips generated by modal share is shown in **Table 10**.

Table 10: Net Person Trip Generation

Travel Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
<i>Residential Development</i>						
Auto Driver	2	4	6	4	3	7
Auto Passenger	1	2	3	1	1	2
Transit	2	5	7	4	3	7
Cyclist	1	1	2	1	0	1
Pedestrian	3	7	10	6	5	11
Total	9	19	28	16	12	28
<i>Commercial Development</i>						
Auto Driver	1	1	2	3	2	5
Auto Passenger	0	0	0	1	0	1
Transit	1	1	2	1	2	3
Cyclist	0	0	0	0	1	1
Pedestrian	3	2	5	8	8	16
Total	5	4	9	13	13	26
<i>Net Trips</i>						
Auto Driver	3	5	8	7	5	12
Auto Passenger	1	2	3	2	1	3
Transit	3	6	9	5	5	10
Cyclist	1	1	2	1	1	2
Pedestrian	6	9	15	14	13	27
Total	14	23	37	29	25	54

From the previous table, the proposed development is projected to generate 37 person trips during the AM peak hour and 54 person trips during the PM peak hour. Therefore, the trip generation trigger of 60 additional peak hour person trips is not met, as described in Section 1.3.

3.2 Trip Distribution

As the trip generation trigger is not met, trip distribution assumptions have not been included.

3.3 Background Traffic

3.3.1 Other Area Developments

As identified in Section 2.2.2, there are no other area developments in proximity of the subject site.

3.3.2 General Background Growth Rate

The *Intersection Traffic Growth Rates* figures, which determine growth rates based on total vehicular volumes entering the intersection, identify the following growth rates between 2000 and 2016:

- Colonel By Drive/Hawthorne Avenue/Pretoria Bridge
 - AM Peak Hour: negative growth between -0.2% and -2% per annum;
 - PM Peak Hour: negative growth between -0.2% and -2% per annum.

- Main Street/Hawthorne Avenue
 - AM Peak Hour: negligible growth between -0.2% and 0.2% per annum;
 - PM Peak Hour: positive growth between 0.2% and 2% per annum.

Snapshots from the City's 2011 and 2031 long range strategic model identify the following growth rates:

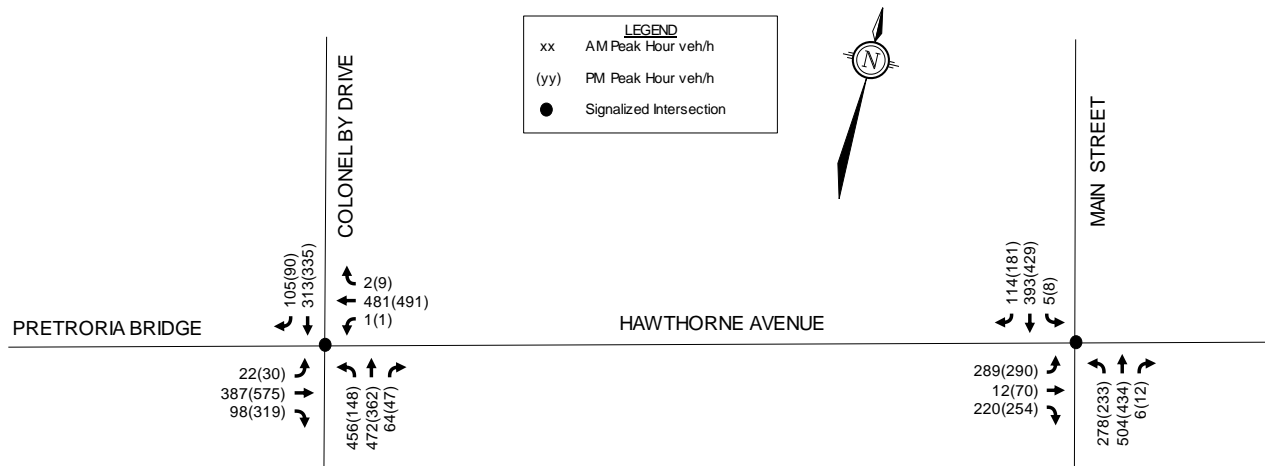
- Hawthorne Avenue: 0% to 0.25% per annum
- Colonel By Drive: 0.25% to 0.5% per annum
- Main Street: -1.25% to 0.25% per annum

Snapshots from the City's 2011 and 2031 long range strategic model can be found in **Appendix G**.

A review of historical traffic counts at the Colonel By Drive/Hawthorne Avenue/Pretoria Bridge intersection (2011, 2012, 2013, 2014, 2018, and 2019) suggests the Annual Average Daily Traffic (AADT) fluctuated between 26,000 and 29,000 vehicles per day. A review of historical traffic counts at the Main Street/Hawthorne Avenue intersection (2011, 2012, 2014, and 2020) suggests the AADT fluctuated between 21,000 and 23,000 vehicles per day. All traffic count data discussed are included in **Appendix E**.

Based on the above, no background growth has been assumed on the study area roadways. Background traffic for the 2025 build-out and 2030 horizon years are shown in **Figure 4**.

Figure 4: 2025/2030 Background Traffic



3.4 Demand Rationalization

As the trip generation trigger is not met, a detailed review of intersection operations within the study area is not required.

4.0 ANALYSIS

4.1 Development Design

4.1.1 Design for Sustainable Modes

Sidewalk connections will be provided between the building entrance and Hawthorne Avenue. Sidewalks will be continuous across the parking garage access in accordance with City standards.

Bicycle parking for the development will be in accordance with the City's *Zoning By-Law* (ZBL). A total of 64 bicycle parking spaces will be provided in the underground parking garage, ten exterior spaces will be provided at the rear of the building, and two will be provided near the main building entrance.

All bus stops discussed in Section 2.1.5 (and shown in **Figure 2**) are within 400m walking distance of the entrances to the proposed development. These stops are served by Routes 5, 16, 55, and 56. A 400m walking distance is equivalent to a five-minute walk, per OC Transpo's service design guidelines.

A review of the City's *Transportation Demand Management (TDM)-Supportive Development Design and Infrastructure Checklist* has been conducted. All required TDM-supportive design and infrastructure measures in the TDM checklist are met. A copy of this checklist is included in **Appendix H**.

In order to encourage the use of sustainable modes, the following 'basic' and 'better' design measures from the City's TDM Infrastructure Checklist will be implemented for the proposed redevelopment:

- The building will be located near the street and have no parking areas between the street and building entrances;
- The location of the building entrances will minimize the walking distance to sidewalks and transit stops/stations;
- Building doors and windows will ensure visibility of pedestrians from the building;
- Walking routes from the development to nearby transit stops will be safe, direct, and attractive;
- Walking routes from the development to nearby transit stops will be secure, visible, lighted, shaded, and wind protected whenever possible;
- Lighting, landscaping, and benches will be provided along walking between building entrances and streets, and sidewalks; and

4.1.2 Circulation and Access

The fire route will be located along Hawthorne Avenue and garbage collection will occur curbside on Hawthorne 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. Per Section 101(4)(b) and Section 102(2) no parking spaces or visitor parking spaces are required for the first 12 dwelling units on a lot and per Section 101(4)(d)(iii) no vehicle parking is required for

commercial portion of the development as it totals less than 500m² and is located entirely on the ground floor.

An evaluation of the proposed parking versus the requirements are summarized in **Table 11**.

Table 11: Parking Requirements

Land Use	Rate	Units/GFA	Required	Proposed
Minimum Vehicle Parking Requirements				
Mid-High Rise Apartment	0.5 per dwelling unit for each unit after the first 12 dwelling units	64	26	42
Mid-High Rise Apartment (visitor parking)	0.1 per dwelling unit for each unit after the first 12 dwelling units		5	5
Total			31	47
Minimum Bicycle Parking Requirements				
Mid-High Rise Apartment	0.5 per dwelling unit	64	32	76
Commercial	1.0 per 250m ² of GFA	284m ²	1	
Total			33	76

Based on the previous table, the proposed number of vehicle and bicycle parking spaces meet the minimum requirements.

4.3 Boundary Street Design

This section provides a review of the boundary street Hawthorne 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 each alternative mode of transportation on the boundary street. For the purposes of this analysis, it is assumed that the complete street concept for Hawthorne Avenue, scheduled for construction in 2023, has been completed. Hawthorne Avenue is located within a Traditional Main Street Area (per Schedule B of the City’s previous Official Plan, which is referenced by the MMLOS Guidelines).

A detailed segment MMLOS review of the boundary streets is included in **Appendix H**. A summary of the segment MMLOS analysis is provided below in **Table 13**.

Table 12: Segment MMLOS Summary

Segment	PLOS		BLOS		TLOS		TkLOS	
	Actual	Target	Actual	Target	Actual	Target	Actual	Target
Hawthorne Avenue	D	B	F	C	-	-	C	D

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

- Hawthorne Avenue does not meet the target pedestrian level of service (PLOS);
- Hawthorne Avenue does not meet the target bicycle level of service (BLOS); and
- Hawthorne Avenue meets the target truck level of service (TkLOS).

Pedestrian Level of Service

Both sides of Hawthorne Avenue do not meet the target PLOS B. Per Exhibit 4 of the *MMLOS Guidelines*. A PLOS B cannot be achieved on the north side due to the operating speed and traffic

volumes. To achieve the desired PLOS B, a reduced posted speed limit of 40km/hr is required. This is identified for the City's consideration.

Bicycle Level of Service

Within the study area the north side of Hawthorne Avenue a physically separated westbound bike lane and meets the target BLOS of C. The south side of Hawthorne Avenue does not achieve the target BLOS C however this is considered acceptable due to the presence of the eastbound physically separated bike lane provided on Graham Avenue.

4.4 Access Design

The proposed accesses to the subject site have been evaluated based on the relevant requirements of the City's *Private Approach By-Law* (PABL), ZBL and the Transportation Association of Canada.

Section 25(a) of the PABL identifies that a property with 46-150m of frontage may have a maximum of two two-way private approaches. This requirement is met, as the subject site has approximately 49m of frontage to Hawthorne Avenue and is proposing one two-way access.

Section 25(c) of the PABL identifies a maximum width requirement of 9.0m for any two-way private approach, as measured at the street line. Section 107(1)(a) of the City's ZBL identifies a minimum width of 6m and maximum width of 6.7m for a double traffic lane for an apartment use. Since the proposed access is approximately 6.6m in width, this requirement is met.

Section 25(m) of the PABL identifies a minimum space requirement of 18m for a private approach and the nearest intersecting street line and a minimum of 15m for a private approach and any other private approach to the same property. As the proposed access is roughly 50m from the nearest intersecting street line 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. Since the nearest edge of the access is proposed to be approximately 2.2m from the eastern property line, this requirement is not met. Section 25(r) of the PABL allows for a private approach to be constructed within 3m of the property line if it is approved through the Site Plan Control process. The General Manager can reduce the offset to a minimum of 0.3m, provided the proposed approach is located a safe distance from the access serving the adjacent property, in such a manner that adequate sight lines are provided for vehicles exiting the property, and in a manner that it does not create a traffic hazard. A waiver is requested per Section 25(r), as the proposed access is located 2.2m from the eastern property line, the access to the adjacent property is a low volume driveway (single detached residential unit), and adequate sight lines can be provided at the proposed access location.

Section 25(t) of the PABL identifies a maximum driveway grade of 2% for a distance of 6m within the property, for driveways serving less than 50 parking spaces. As a grade of 2% is proposed for 6m within the property, transition to 10% grade down to the underground lot, this requirement is met.

Intersection sight distance (ISD) at the proposed accesses have been determined using the TAC *Geometric Design Guidelines for Canadian Roads*. The ISD requirements for the Hawthorne Avenue access, based on a design speed of 60km/h, is as follows:

- Left Turn from Minor Road 130 metres
- Right Turn from Minor Road 110 metres

The Hawthorne Avenue access meets Hawthorne Avenue at a perpendicular angle and the only potential sightline obstructions that have been identified based on a desktop review are the trees that are to be planted behind the sidewalk as part of the proposed development. The TAC Geometric Design Guide designs for a typical driver eye height of 1.08m and for the driver to be positioned 4.4m away from the edge of the nearest travel lane, although this may be reduced to 2.4m as studies have shown that when needed drivers will typically stop less than 2.4m away from the nearest travel lane when needed. Assuming that the driver eye height is below the tree canopy and that drivers position themselves 2.4m away from the nearest travel lane the trees placed within the boulevard are not anticipated to create a sightline issue.

4.5 Transportation Demand Management

4.5.1 Context for TDM

The proposed development consists of a total of 64 residential units and ground floor commercial units. The development breakdown is summarized as follows:

- One Bedroom: 39 units
- Two Bedroom: 25 units
- 3,060 sf ground floor commercial

4.5.2 Need and Opportunity

The assumed modal shares for the development are consistent with the existing modal shares associated with high-rise (3+ storey) residential and commercial developments in the Ottawa Inner Area district. Based on this, the proposed development is anticipated to meet the assumed modal shares.

4.5.3 TDM Program

The proposed development conforms to the City's TDM initiatives by providing easy access to local pedestrian, bicycle, and transit systems as outlined in Section 4.1. A review of the TDM - Measures Checklist has been conducted and is included in **Appendix H**. The following measures will be implemented within the proposed development:

- Unbundle parking from monthly rent; and
- Provide multimodal travel information package to new residents.

In addition to the above TDM measures, bicycle parking is proposed at a rate of one per unit to promote the cyclist mode share.

5.0 CONCLUSIONS AND RECOMMENDATIONS

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

Development Design

- Sidewalk connections will be provided between the building entrance and Hawthorne Avenue.
- At the proposed accesses, the sidewalk on Hawthorne Avenue will be continuous, and any depressed curb at the existing accesses will be reinstated in accordance with City standards.
- A total of 64 bicycle parking spaces will be provided in the underground parking garage, ten exterior spaces will be provided at the rear of the building, and two will be provided near the main building entrance.
- The entrances to the proposed development will be within 400m walking distance of stops that are served by OC Routes 5, 16, 55, 56, and 97.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.
- The fire route will be located along Hawthorne Avenue and garbage collection will occur curbside on Hawthorne Avenue.

Parking

- The proposed number of vehicle parking spaces (47) and bicycle parking spaces (76) meet the minimum requirements outlined in the City's *Zoning By-Law*.

Boundary Streets

- The City of Ottawa has recently completed a complete street concept for Hawthorne Avenue, and is scheduled for construction in 2023. The proposed design includes improved facilities for all modes of transportation.

Access Design

- Section 25(p), of the City's Private Approach By-law identifies that the proposed access shall have a minimum separation of 3m from the nearest property line. As the access is 2.2m away from the property line and is not anticipated to create a traffic hazard or negatively impact sightlines, the General Manager has flexibility to reduce the minimum separation to a minimum of 0.3m, per Section 25(r) of the PABL. A waiver to Section 25(p) of the By-law is requested.

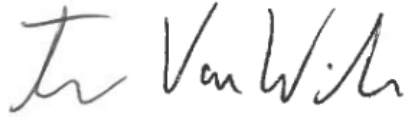
Transportation Demand Management

- The proponent has agreed to implement the following Transportation Demand Management measures within the proposed development:
 - Unbundle parking from monthly rent; and
 - Provide multimodal travel information package to new residents
- In addition to the above TDM measures, bicycle parking is proposed at a rate of one per unit to promote the cyclist mode share.

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

NOVATECH

Prepared by:



Trevor Van Wiechen, M.Eng.
E.I.T. | Transportation

Reviewed by:



Brad Byvelds, P.Eng.
Project Manager | Transportation

APPENDIX A

Site Plan

LANDSCAPE ARCHITECT
Kallala Design
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Low, Quebec, J0X 2C0
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CIVIL ENGINEER
Novatech Eng. Consultants Limited
200 - 240 Michael Cowland Drive
Ottawa, Ontario, K2M 1P6
Tel: 613 254-9643
Fax: 613 254-5867
Email: f.thauvette@novatech-eng.com

URBAN PLANNER
FoTenn Consultants Inc.
223 McLeod Street
Ottawa, ON Canada, K2P 0Z8
Tel: (613) 730-5709
Fax: (613) 730-1136
E-Mail: alain@fotenn.com

LEGAL DESCRIPTION
TOPOGRAPHIC PLAN OF SURVEY OF
LOTS 1 AND 2
(SOUTH PRETORIA AVENUE)
REGISTERED PLAN 53786
CITY OF OTTAWA

SURVEYOR
Farley, Smith & Denis Surveying Ltd.
10-190 Colonnade Road
Ottawa, Ontario K2E 7J5
Office: 613 727-8226
Fax: 613 727-1823
Cell: 613 862-1287
E-Mail: jleslie@bellnet.ca

PROJECT DEVELOPER
JB Holdings Inc.
107 Pretoria Ave.
Ottawa, Ontario K1S 1W8
Tel: (613) 695-6767
Cell: (613) 618-2582
Email: kfgan@jbpa.ca

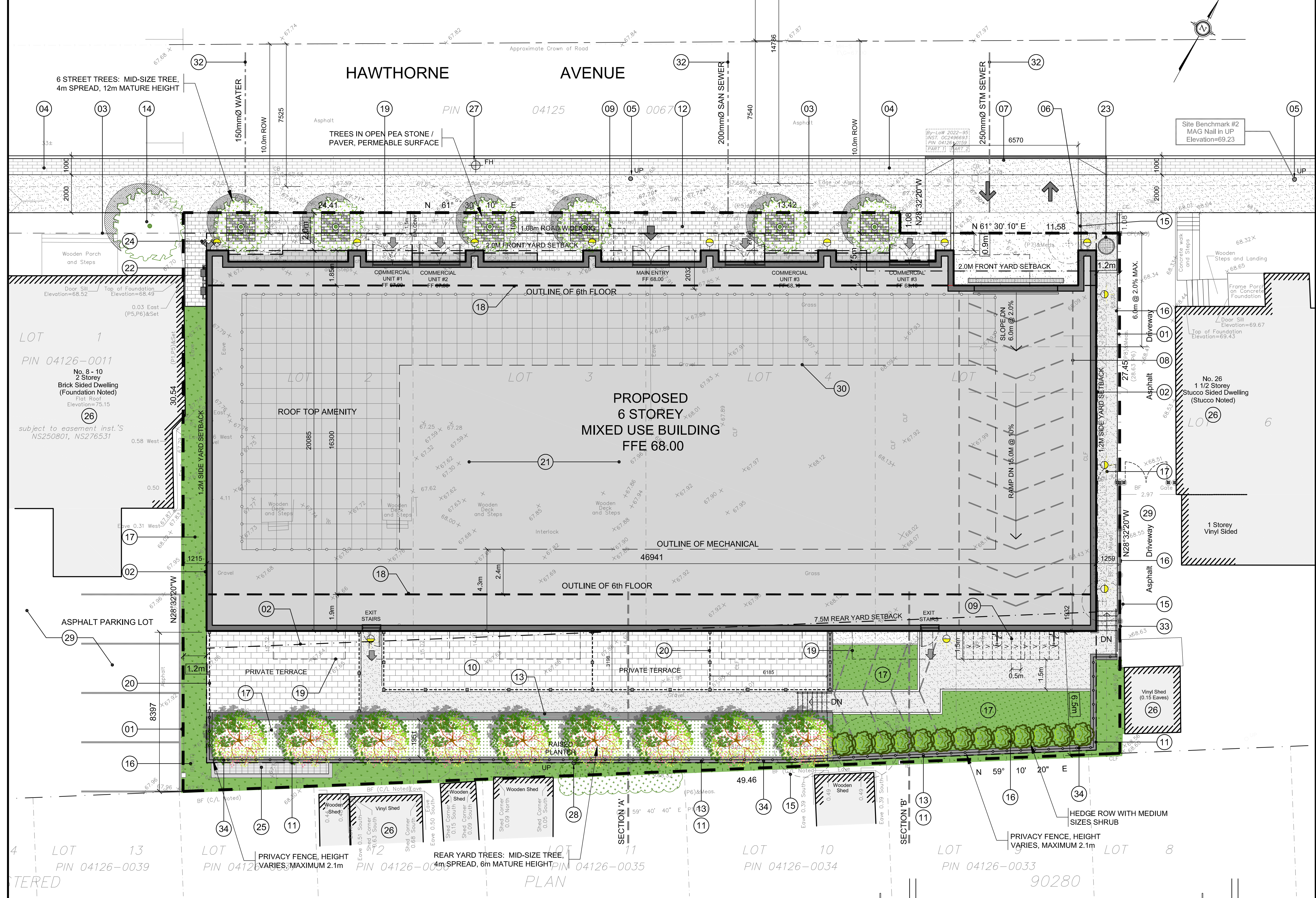
PROJECT INFORMATION

Zoning By-law 2006-250 Consolidation	TM12(183) M(14.5)	SITE AREA	0.109 ha.	1,093.0 sq. m. (11,745 sq. ft.)
ZONING		REQUIRED		PROVIDED
BUILDING HEIGHT	4 STOREYS / 14.5m	6 STOREYS / 20.0m		
GRADE (GEODETIC ELEVATION - ASL)	(GEO. ELEV.) 68.10	(GEO. ELEV.) 68.10		
ALLOWABLE PROJECTION - AMENITY LEVEL	0.0m	0.0m		
FRONT YARD SETBACK - MAXIMUM	3.0m	2.0m		
FRONT YARD SETBACK - MINIMUM	2.0m	0.9m		
FRONT YARD SETBACK ABOVE 15m OR 4th FL.	+ 2.0m	16.5m / 5th FL.	2.0m	
INTERIOR YARD SETBACK	1.2m	1.2m / 1.2m		
REAR YARD SETBACK	7.5m	6.5m		
REAR YARD ANGULAR PLANE	7.5m SETBACK - 45% @ 15m ht.	6.5m SETBACK 45% @ 18.0m ht.		
AMENITY AREA - TOTAL PER UNIT - 6.0m ²	384m ²	535m ²		
AMENITY AREA - 50% COMMUNAL PER UNIT - 3.0m ²	192m ²	192m ²		
VEHICLE PARKING - RESIDENTIAL (AFTER 12 UNITS - 0.5 per unit)	26	46		
VEHICLE PARKING - VISITOR ONLY (AFTER 12 UNITS - 0.1 per unit)	5	5		
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT	32	70		
BICYCLE PARKING - COMMERCIAL - 1 PER 250m ² GFA	1	2		
aisle & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6.0m / 6.7m	6.0m		

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.
ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.
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NOTATION SYMBOLS:

- INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULED.
- INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A300 SERIES.
- INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A300 SERIES.
- DETAIL NUMBER
- TITLE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE



DRAWING NOTES

- PROPERTY LINE
- BUILDING SETBACKS
- PROPOSED ROAD WIDENING
- 1.0m BOULEVARD + 2.0m WIDE SIDEWALK AS PART OF HAWTHORNE RECONSTRUCTION PROJECT
- EXISTING HYDRO POLES TO BE BURIED AS PART OF HAWTHORNE RECONSTRUCTION PROJECT
- ENTRANCE DRIVEWAY WITH 150 BARRIER CURBS
- DEPRESSED CURB & SIDEWALK TO CITY STANDARDS
- INTERNAL PARKING GARAGE RAMP WITH TRENCH DRAIN
- BICYCLE PARKING SPACE
- PRIVATE TERRACE AT GRADE
- OUTLINE OF UNDERGROUND PARKING LEVEL
- HARD SURFACE WALKWAY
- LOW RETAINING / PLANTING WALL
- EXISTING TREE TO REMAIN
- EXISTING TREE TO BE REMOVED
- EXISTING CHAIN LINK TO BE REMOVED
- SOFT LANDSCAPING
- OUTLINE OF BUILDING ABOVE
- BALCONY ABOVE
- PRIVACY SCREEN
- EXISTING BUILDING TO BE REMOVED
- NATURAL GAS EQUIPMENT
- STORM WATER TANK WITH ACCESS COVER & OVERFLOW CATCH BASIN - SEE CIVIL PLAN
- SIAMENSE CONNECTION
- AIR INTAKE / EXHAUST GRILL
- EXISTING BUILDING ON ADJACENT LAND
- PROPOSED FIRE HYDRANT
- EXISTING UTILITY POLE TO BE ALTERED AS REQUIRED
- EXISTING ASPHALT PARKING AREA ON ADJACENT LAND
- OUTLINE OF MECHANICAL PENTHOUSE
- GROUND FLOOR CANOPY ABOVE
- PROPOSED SERVICES
- BOARD FENCE TO BE REPLACES
- SOLID PRIVACY FENCE 2.1m MAX. HEIGHT

PROJECT STATISTICS

GROSS BUILDING - AREAS
(CITY OF OTTAWA ZONING AREA)

BASEMENT LEVEL	0.0 sq. m.	0.0 sq. ft.
GROUND FLOOR	561.0 sq. m.	6,039 sq. ft.
2nd FLOOR	774.1 sq. m.	8,332 sq. ft.
3rd & 4th FLOOR	2 x 774.1 sq. m.	1,548.2 sq. m.
5th FLOOR	2 x 632.2 sq. ft.	16,684 sq. ft.
6th FLOOR	766.6 sq. m.	8,252 sq. ft.
MECHANICAL PENTHOUSE	0.0 sq. m.	0.0 sq. ft.
TOTAL AREA	4,135.3 sq. m.	44,512 sq. ft.

UNIT STATISTICS

ONE BEDROOM UNIT	22
ONE BEDROOM + DEN UNIT	17
TWO BEDROOM UNIT	20
TWO BEDROOM + DEN UNIT	5
TOTAL	64
COMMERCIAL AREA	284.5 sq. m.
	3,062 sq. ft.

CAR PARKING

REQUIRED BY ZONING BY-LAW

RESIDENCE	- 0.5 PER DWELLING UNIT (AFTER 12 UNITS)	26
VISITOR	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS)	5
COMMERCIAL RETAIL	- 1.25 PER 100m ² GFA (AFTER 200m ² GFA)	0
TOTAL		31

PROVIDED

RESIDENCE	- 0.66 PER DWELLING UNIT	42
VISITOR	- 0.1 PER DWELLING UNIT	5
COMMERCIAL RETAIL	- 1.25 PER 100m ² GFA	0
TOTAL		47

BICYCLE PARKING

REQUIRED

RESIDENCE	- 0.5 PER UNIT (64 UNITS)	34
COMMERCIAL	- 1.0 PER 250m ² GFA	1
TOTAL		35

PROVIDED

INTERIOR - P1 LEVEL	- 1.0 PER UNIT (64 UNITS)	64
EXTERIOR		12
TOTAL		76

LOT COVERAGE

PAVED SURFACE =	18.5 sq. m.	1.3%
BUILDING FOOTPRINT =	911.3 sq. m.	63.0%
LANDSCAPE OPEN SPACE =	517.2 sq. m.	35.7%
TOTAL =	1,447.0 sq. m.	100.0%

AMENITY SPACE

PRIVATE TERRACE AT GRADE =	100.0 sq. m.
ROOF TOP COMMUNAL TERRACE =	195.0 sq. m.
6th FLOOR PRIVATE TERRACE =	110.0 sq. m.
PRIVATE BALCONIES =	130.0 sq. m.
TOTAL =	535.0 sq. m.
TOTAL COMMUNAL =	195.0 sq. m.
REQUIRED - 6.0M ² PER UNIT (64) =	384.0 sq. m.
REQUIRED COMMUNAL @ 50% =	192.0 sq. m.

SITE PLAN SYMBOLS

- CONCRETE UNIT PAVERS SURFACE
- CITY SIDEWALK, BOULEVARD
- ASPHALT WALK / DRIVEWAY
- SOFT LANDSCAPING
- BIKE RACK
- TWO WAY VEHICLE CIRCULATION
- MAIN ENTRANCE
- COMMERCIAL DOOR / FIRE EXIT
- PROPERTY LINE
- CITY STREET LIGHTING

REFUGE REQUIREMENT (64 UNITS)

GARBAGE	- 0.11 PER UNIT	7 YARDS
RECYCLING GMP	- 0.018 PER UNIT	2 YARDS
RECYCLING FIBER	- 0.038 PER UNIT	3 YARDS
COMPOST	- 240L PER 50 UNITS	2

BUILDING CONSTRUCTION AREAS

P2 PARKING LEVEL	
P1 PARKING LEVEL	
GROUND FLOOR	
2nd FLOOR	
3rd & 4th FLOOR	
5th FLOOR	
6th FLOOR	
MECHANICAL LEVEL	
TOTAL AREA (ABOVE GROUND)	

REVISIONS:

No.	DESCRIPTION	DATE
1	ISSUED FOR Z.A. 1st ROUND REVIEW	Mar. 17, 22
2	ISSUED FOR ZONING AMENDMENT	Sept. 15, 22
3	ISSUED FOR CONSULTANT REVIEW	Aug. 17, 22
4	ISSUED FOR DESIGN CONCEPT	Aug. 11, 22

ARCHITECT SEAL

ARCHITECT
r/a / architecture
roderick lahey architect inc.
56 beech street, ottawa, ontario K1S 3J6
t. 613.724.9932 f. 613.724.1209 raarchitecture.ca

CLIENT:
REAL ESTATE
JB Holdings Inc.

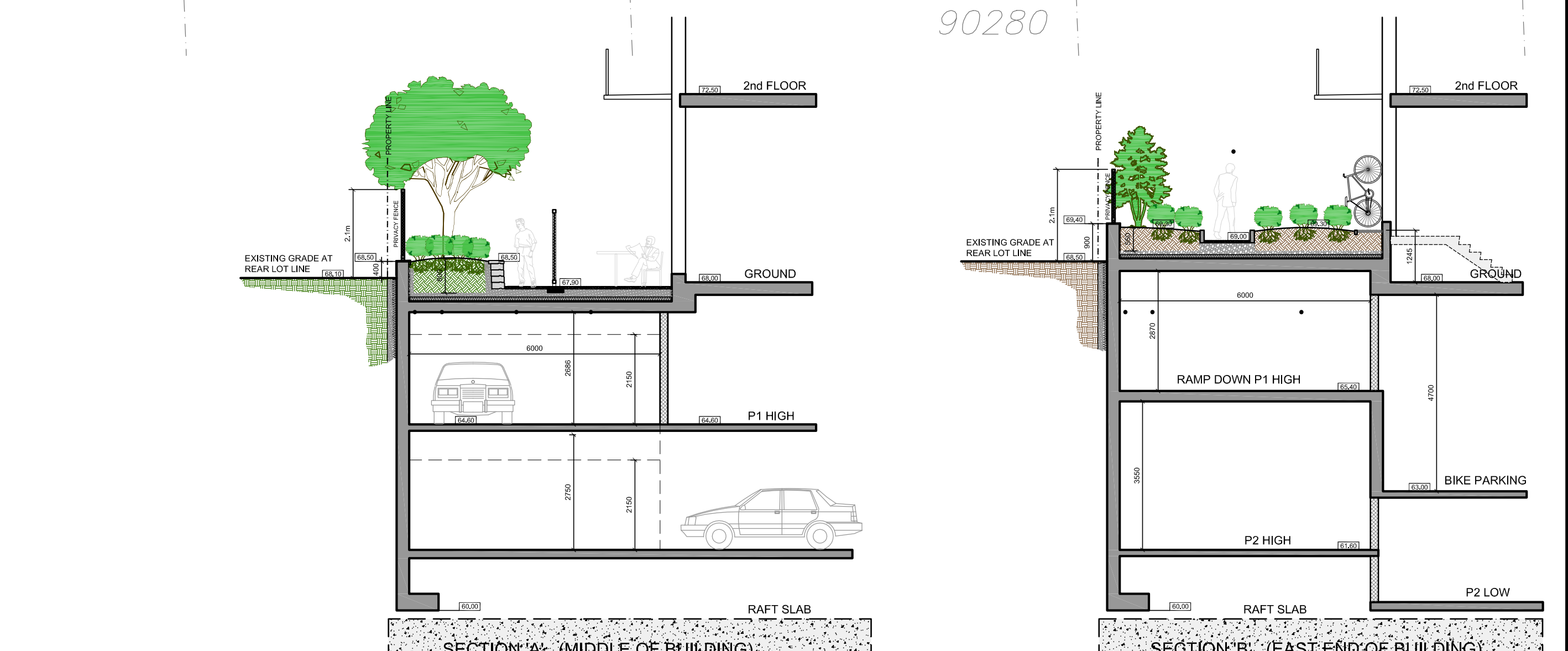
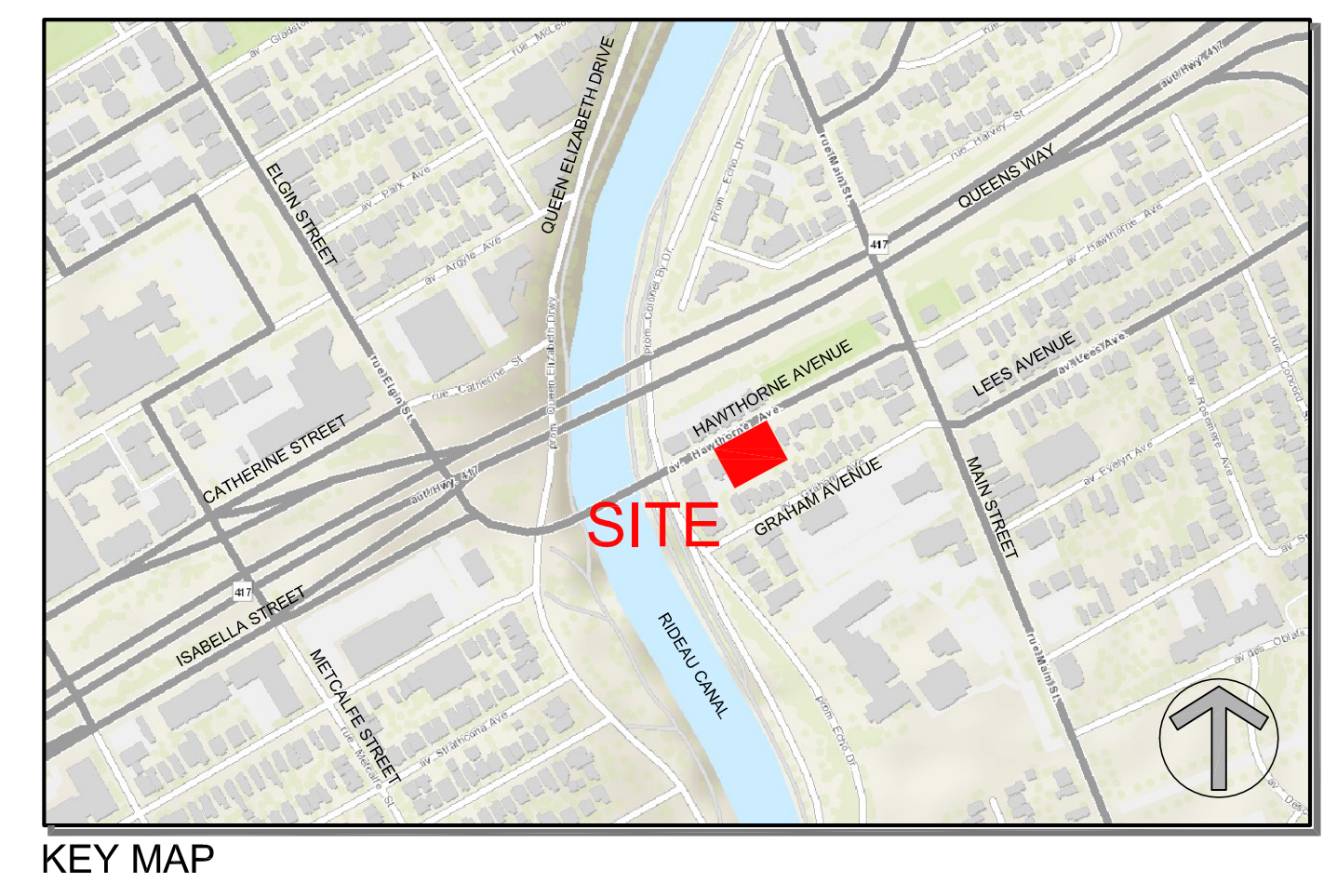
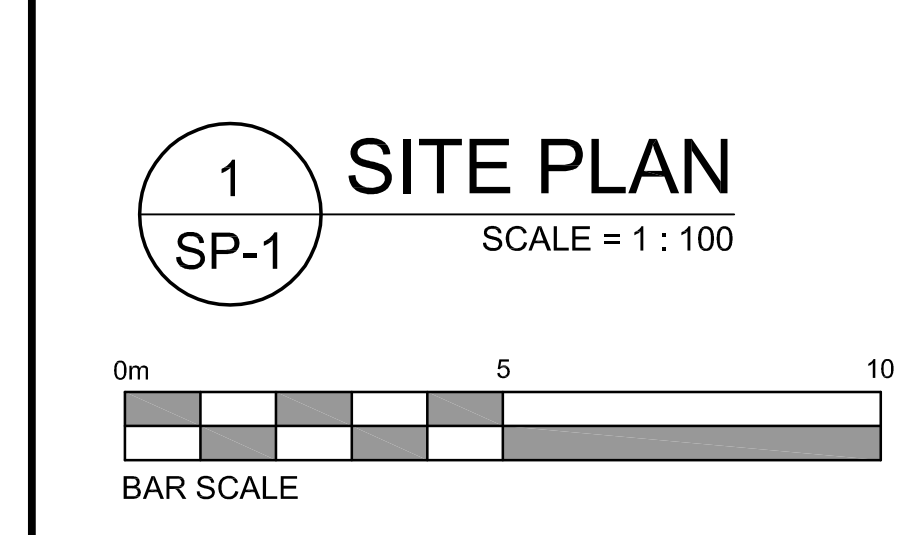
PROJECT TITLE:
18 HAWTHORNE AVENUE

OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN

DRAWN: R.V.
SCALE: 1:100
PROJECT No.: 2207

CHECKED: R.V.
SHEET No.: SP-1



APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	12-24 Hawthorne Avenue
Description of Location	South side of Hawthorne Avenue midblock between Colonel By Drive and Main Street
Land Use Classification	Mid-Rise Multifamily Housing
Development Size (units)	67
Development Size (m ²)	
Number of Accesses and Locations	One on Hawthorne Avenue
Phase of Development	One
Buildout Year	2025

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

2. Trip Generation Trigger

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

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

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

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

3. Location Triggers

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

*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?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	✓	
Is the proposed driveway within auxiliary lanes of an intersection?		X
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		X
Does the development include a drive-thru facility?		X

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

5. Summary

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



Transportation Impact Assessment Screening Form

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

Intersection Layout

PROPOSED PAVEMENT
MARKINGS AND SIGNAGE
HAWTHORNE AVENUE

CARINA DUCLOS, P.Eng. Acting Director, Infrastructure Services
PATRICK SAMMON, P.Eng. Sr. Engineer, Infrastructure Projects



Suite 200, 240 Michael Cowland Drive
Kanata, Ontario, Canada K2M 9P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Email novaint@novatech-eng.com

Asset No.

Asset Group

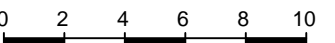
Des. N.T.Q. Chkd. ERD

Dwn. A.J.G. Chkd. ERD

Utility Circ. No. Index No.

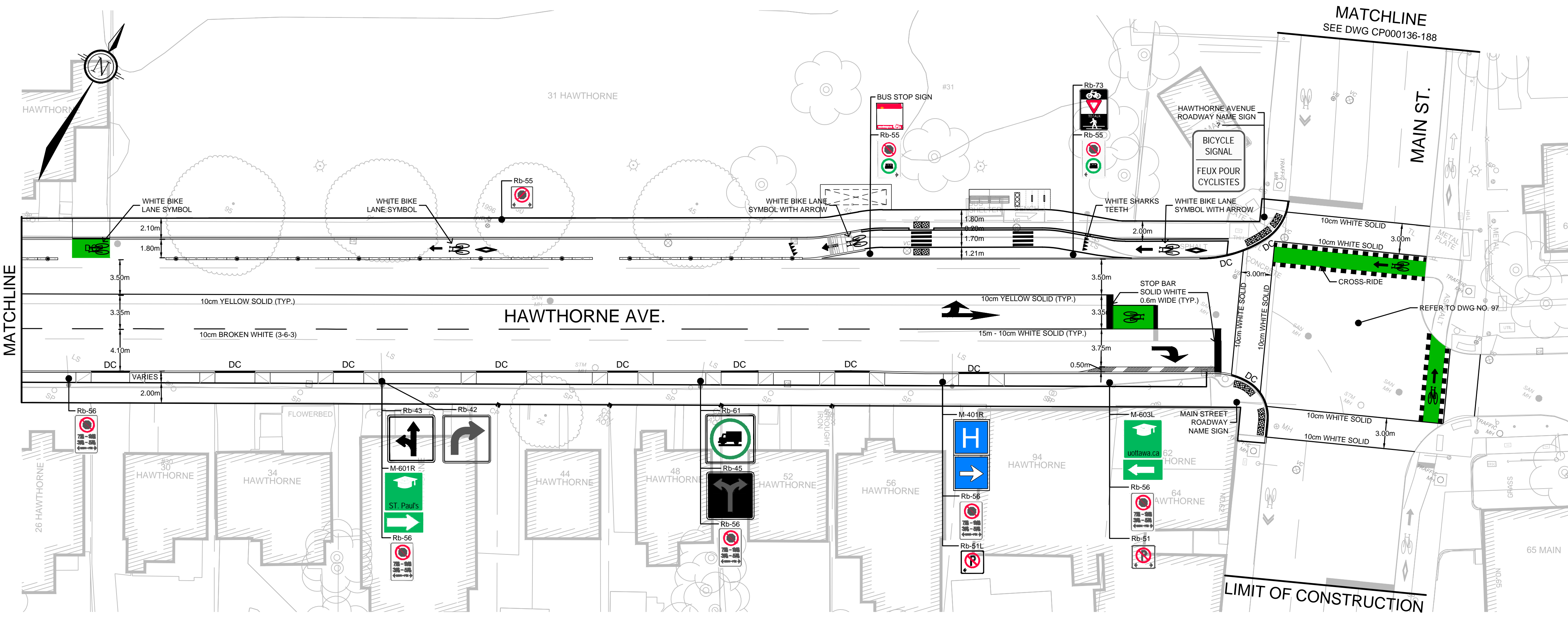
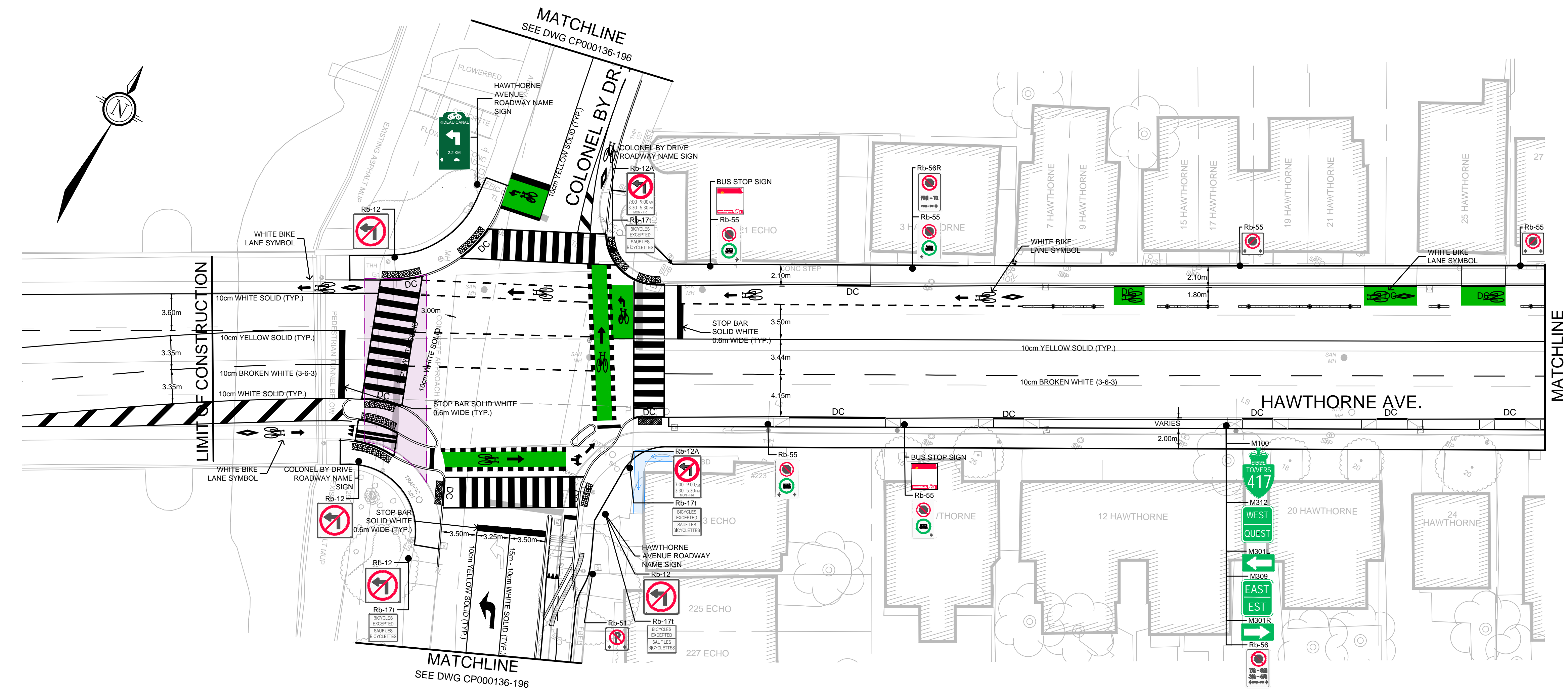
Const. Inspector

Scale: 1:250



NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

REVISIONS	No.	Description	By	Date (dd/mm/yy)
	6.	PRELIMINARY DESIGN SUBMISSION	NTQ	06/03/20
	7.	40% DETAILED DESIGN SUBMISSION	NTQ	30/10/20
	8.	80% DETAILED DESIGN SUBMISSION	NTQ	26/03/21
	9.	ISSUED FOR MUNICIPAL CONSENT	NTQ	18/05/22
	10.	ISSUED FOR TENDER	NTQ	19/05/22



APPENDIX D

OC Transpo Route Maps

5

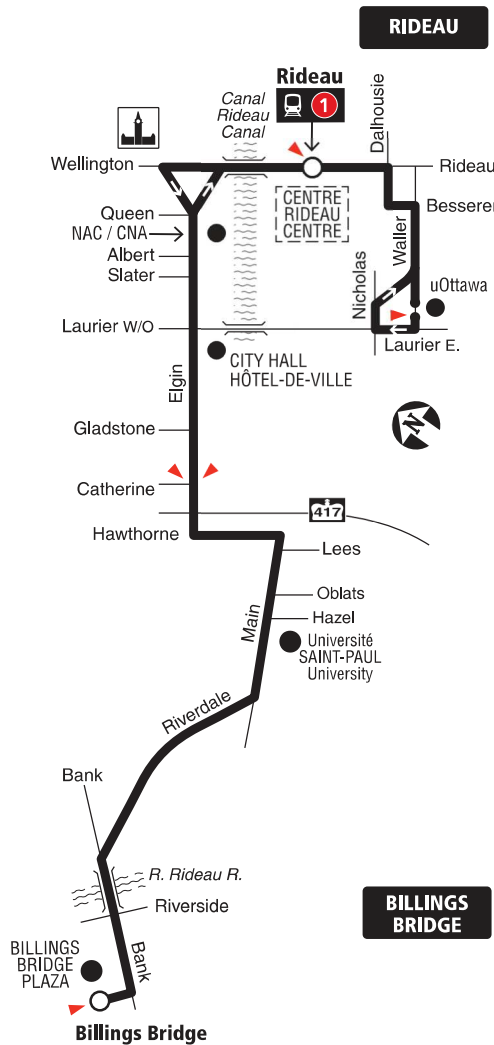
BILLINGS BRIDGE RIDEAU

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 / Texto560560

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

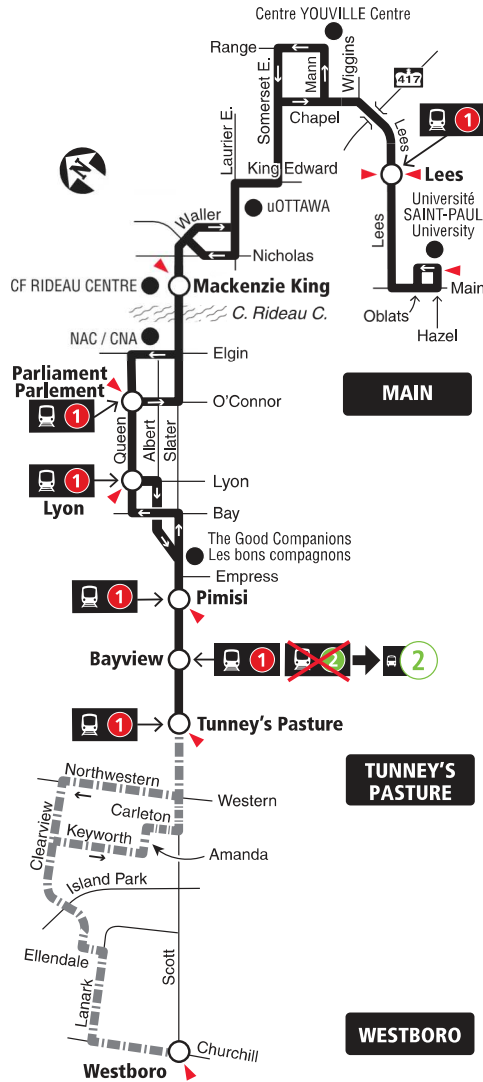


INFO 613-741-4390
octranspo.com

16

MAIN TUNNEY'S PASTURE WESTBORO

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



- Station
- No Sunday service / Aucun service le dimanche
- ▲ Timepoint / Heures de passage

2020.04

 **Schedule / Horaire.....613-560-1000**
Text / Texto560560
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 May 3, 2020
En vigueur 3 mai 2020



INFO 613-741-4390
 octranspo.com

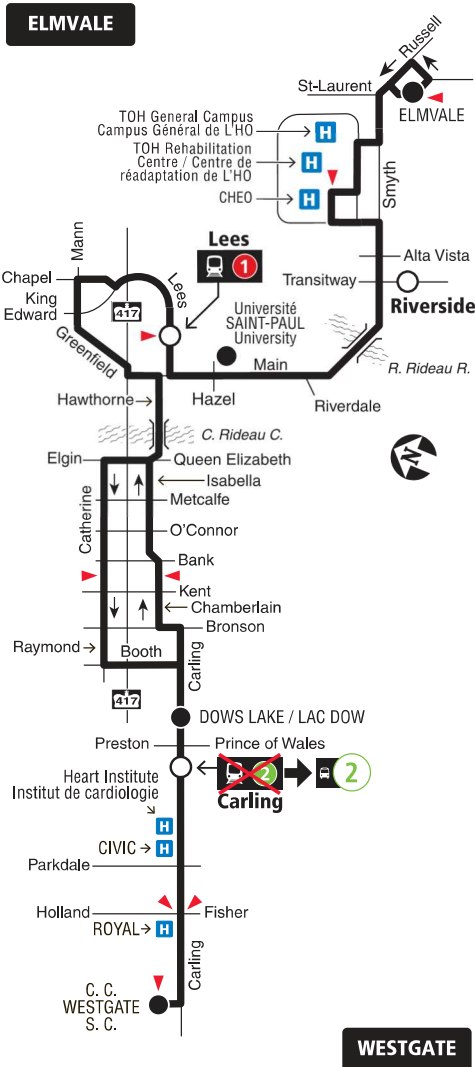


55

ELMVALE WESTGATE

Local

7 days a week / 7 jours par semaine



○ Stations
▲ Timepoint / Heures de passage

2021.06

Schedule / Horaire 613-560-1000
Text / Texto* 560560
plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres
*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

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

Effective June 20, 2021
En vigueur 20 juin 2021

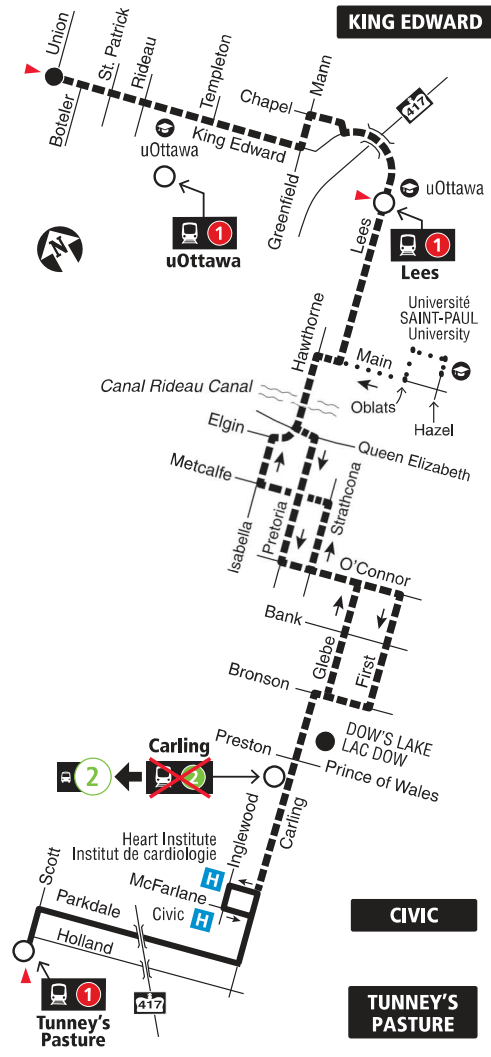


56

CIVIC KING EDWARD TUNNEY'S PASTURE

Local

7 days a week / 7 jours par semaine



- Station
- 7 days a week / 7 jours par semaine
- Monday to Friday only (Peak periods)
Lundi au vendredi seulement (Périodes de pointe)
- Some trips / Quelques trajets
- Timepoint / Heures de passage

2021.06

Schedule / Horaire 613-560-1000
Text / Texto* 560560
plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres
*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

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

**Effective June 20, 2021
En vigueur 20 juin 2021**

97

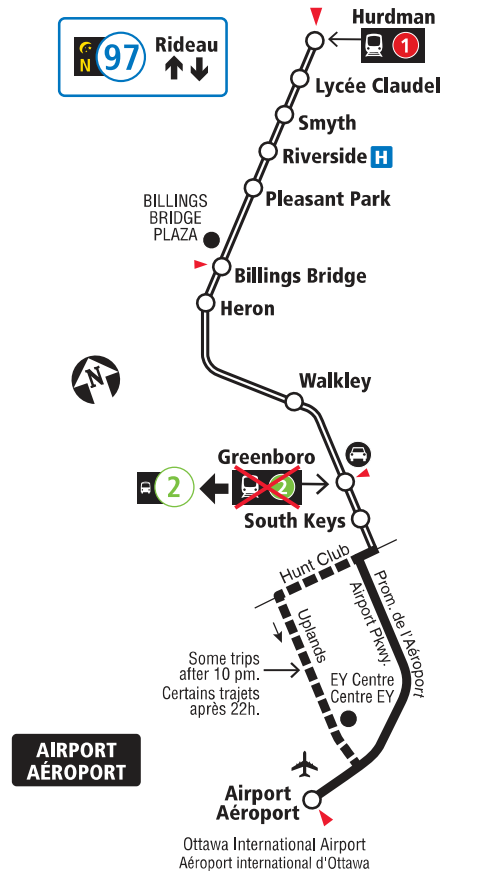
AIRPORT / AÉROPORT HURDMAN

Rapid^e

7 days a week / 7 jours par semaine

All day service and limited overnight
Service toute la journée et limité la nuit

HURDMAN



97 When O-Train Line 1 is not running overnight, Route 97 will be extended downtown to Rideau Station. / Lorsque la ligne 1 de l'O-Train ne circule pas la nuit, le circuit 97 sera prolongée au centre-ville jusqu'à la station Rideau.

2020.04

Schedule / Horaire.....613-560-1000
Text / Texto560560
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 May 3, 2020
En vigueur 3 mai 2020

OC Transpo INFO 613-741-4390
 octranspo.com

APPENDIX E

Traffic Count Data



Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

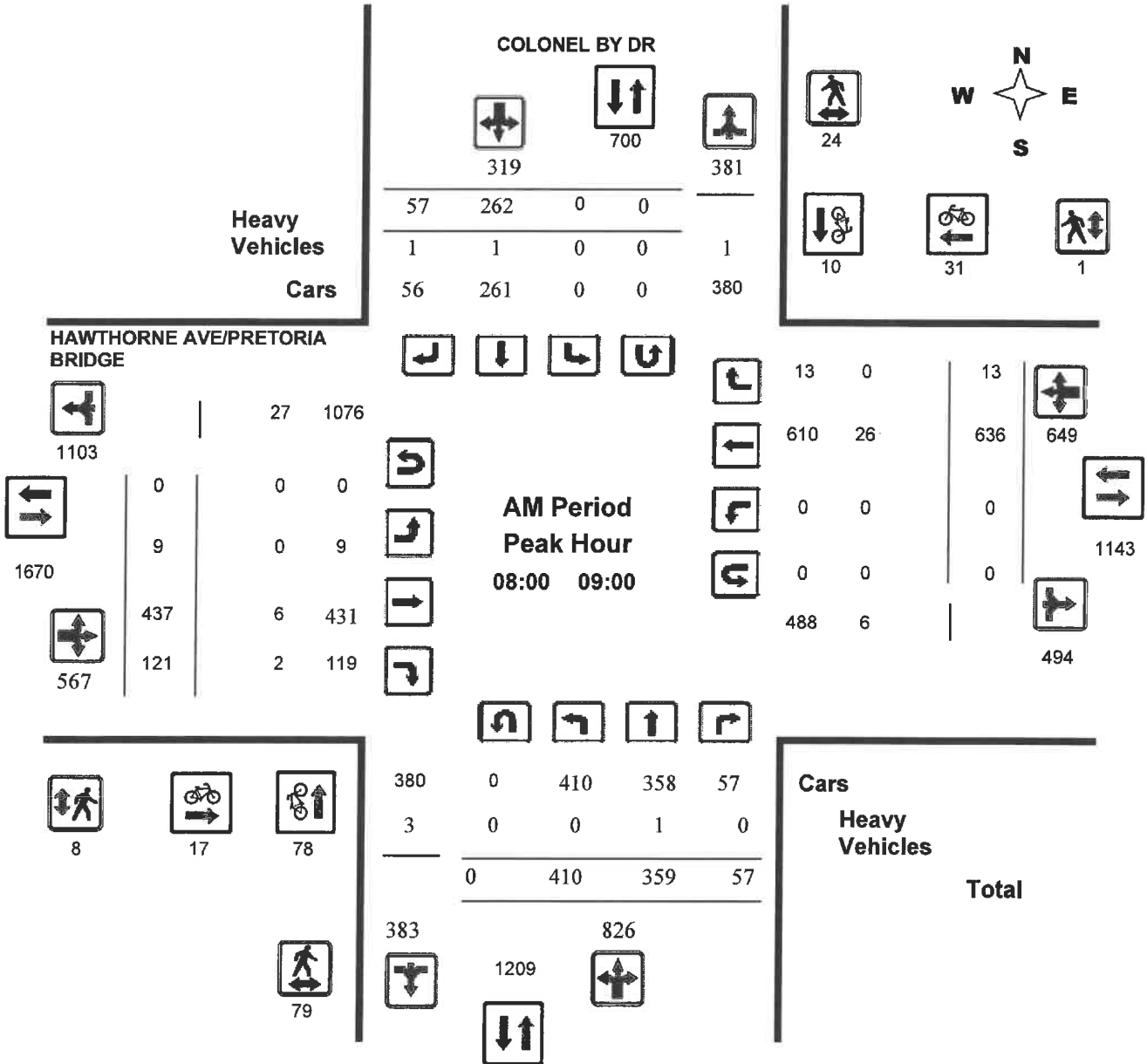
COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Survey Date: Friday, May 16, 2014

Start Time: 07:00

WO No: 29850

Device: Jamar Technologies, Inc





Public Works - Traffic Services

Turning Movement Count - Peak Hour Diagram

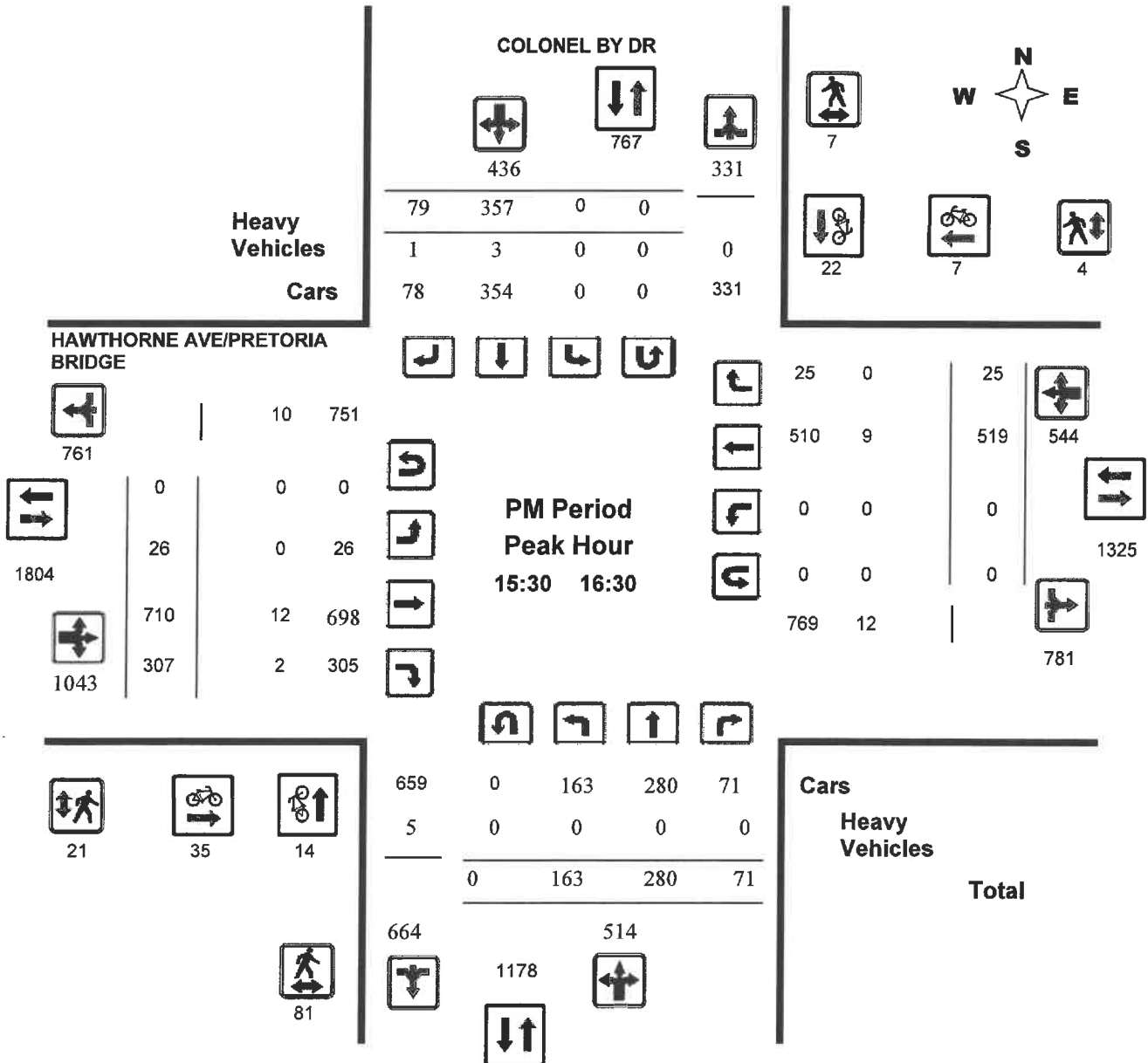
COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Survey Date: Friday, May 16, 2014

Start Time: 07:00

WO No: 29850

Device: Jamar Technologies, Inc



Comments



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

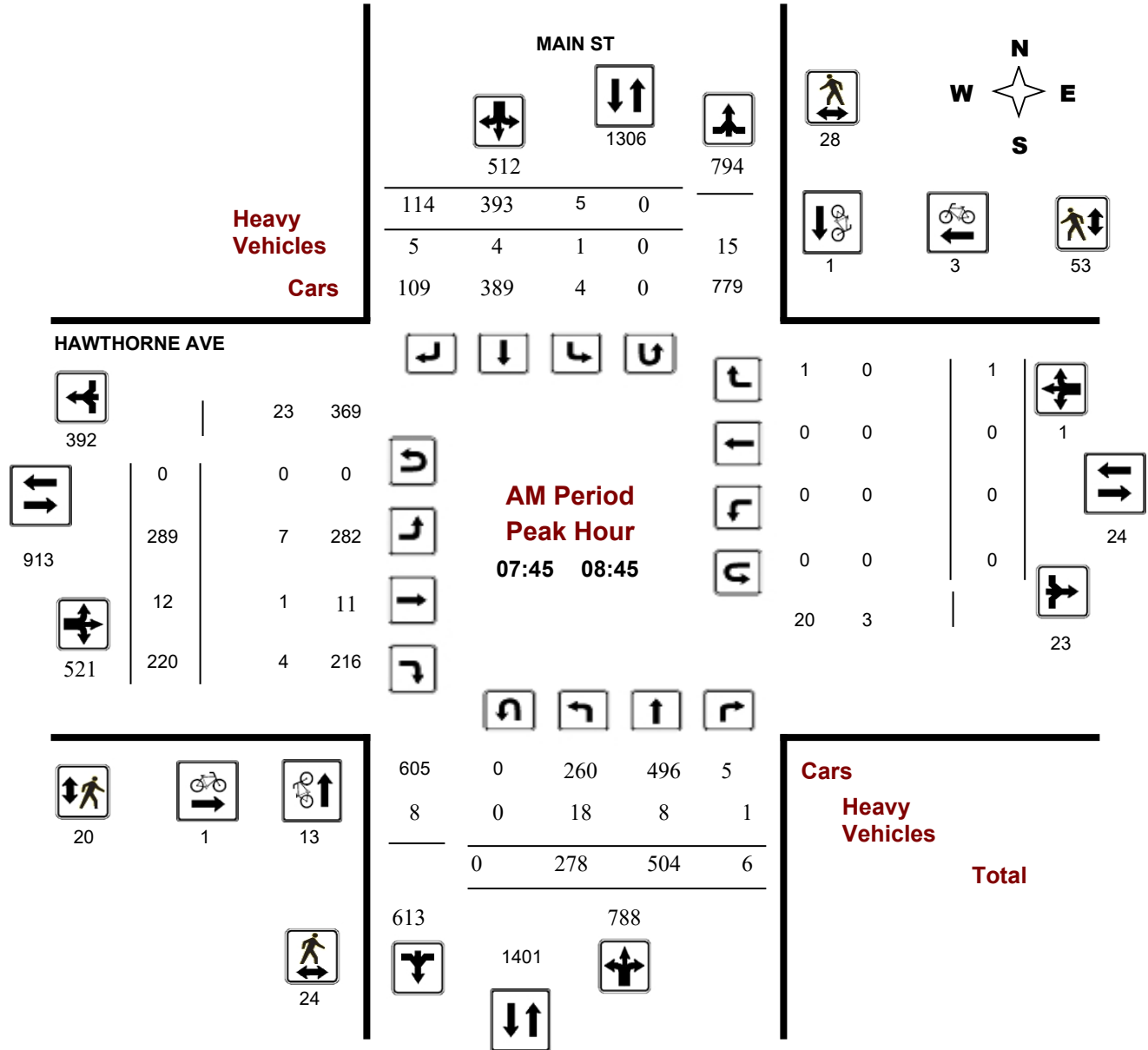
HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

Start Time: 07:00

WO No: 39570

Device: Miovision



Comments 5478558 - MAR 3, 2020 - 8HRS - VANESSA BLACK



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

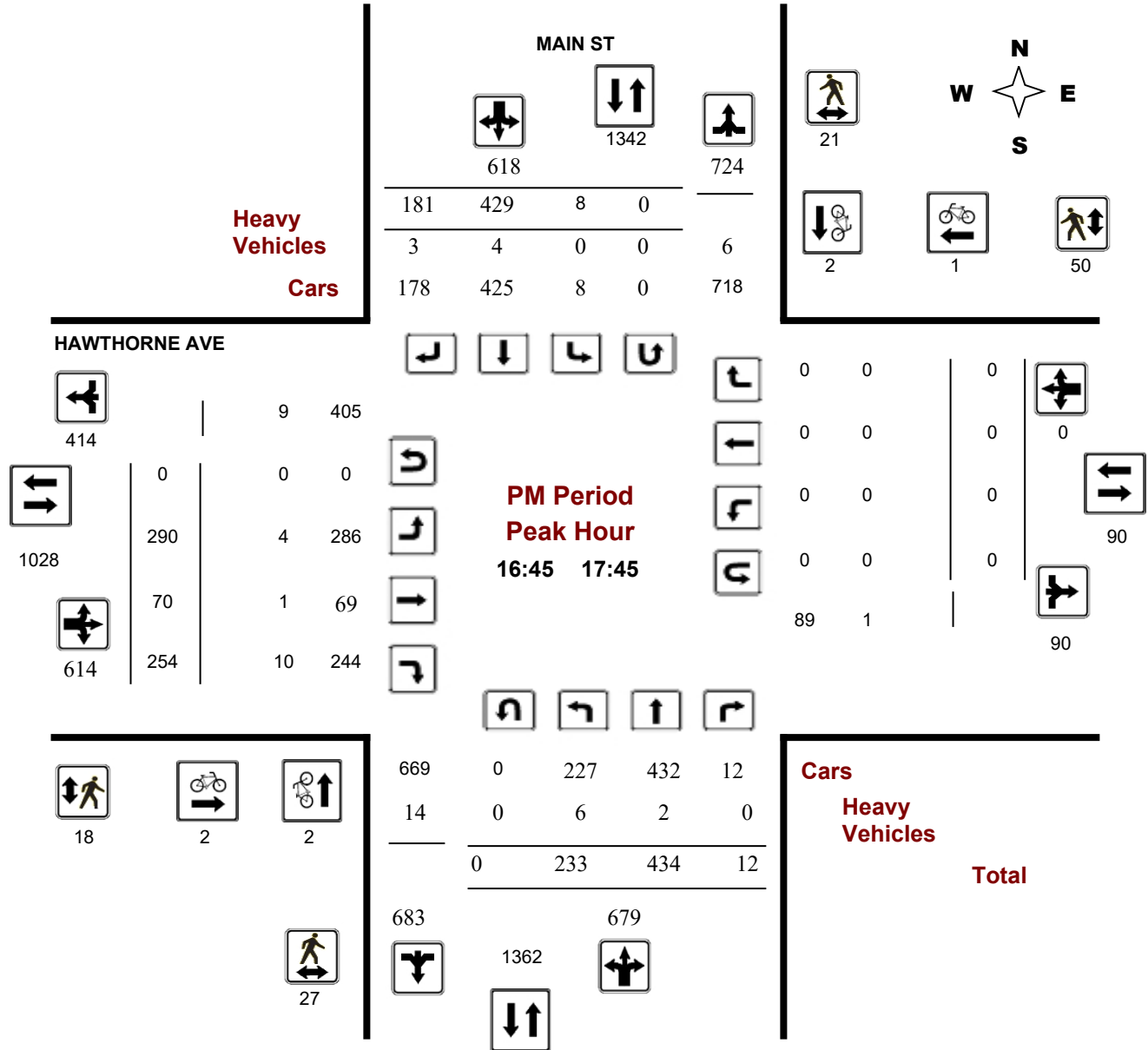
HAWTHORNE AVE @ MAIN ST

Survey Date: Tuesday, March 03, 2020

Start Time: 07:00

WO No: 39570

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

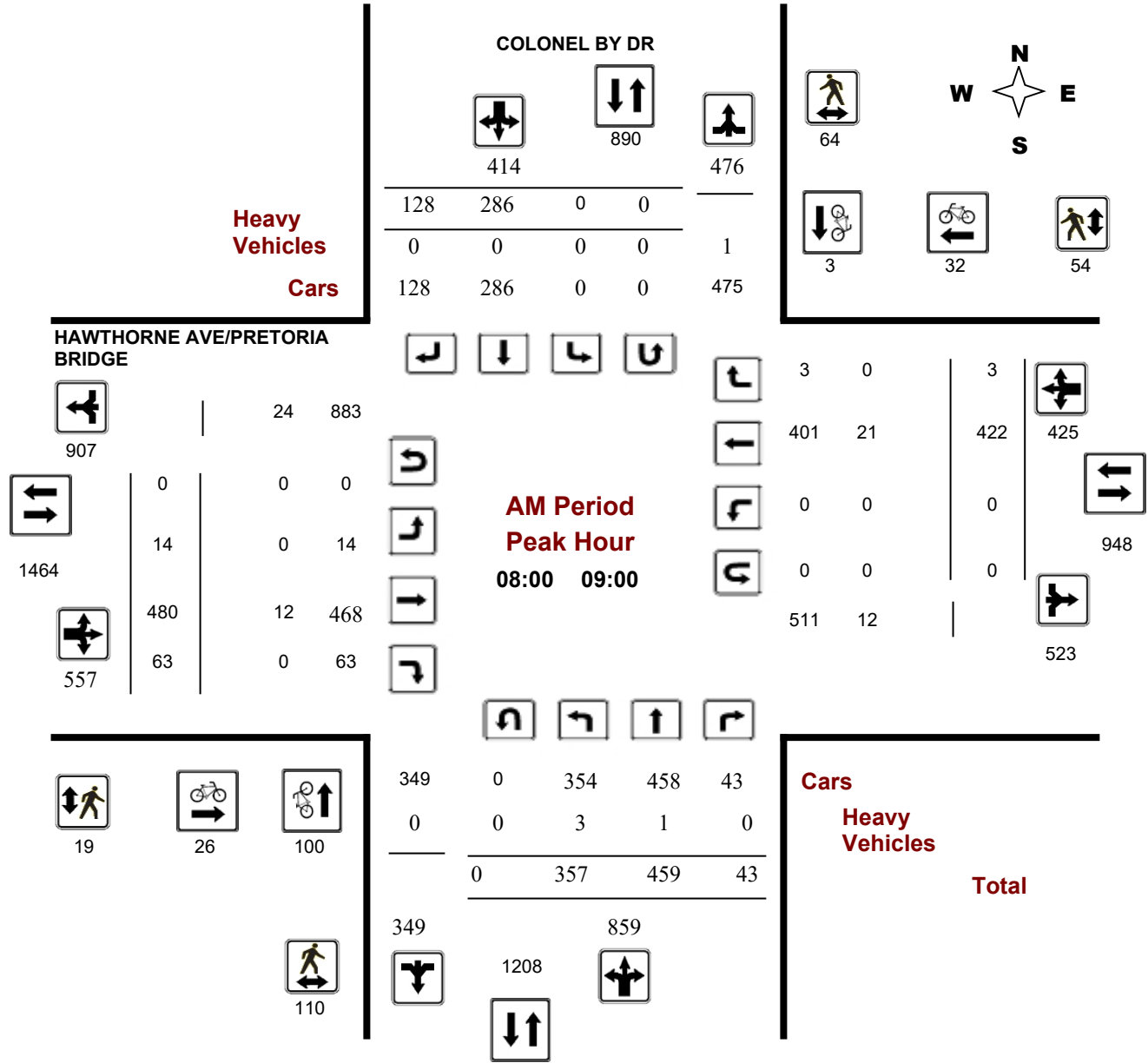
COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Survey Date: Tuesday, October 29, 2019

Start Time: 07:00

WO No: 38725

Device: Miovision



Turning Movement Count - Peak Hour Diagram

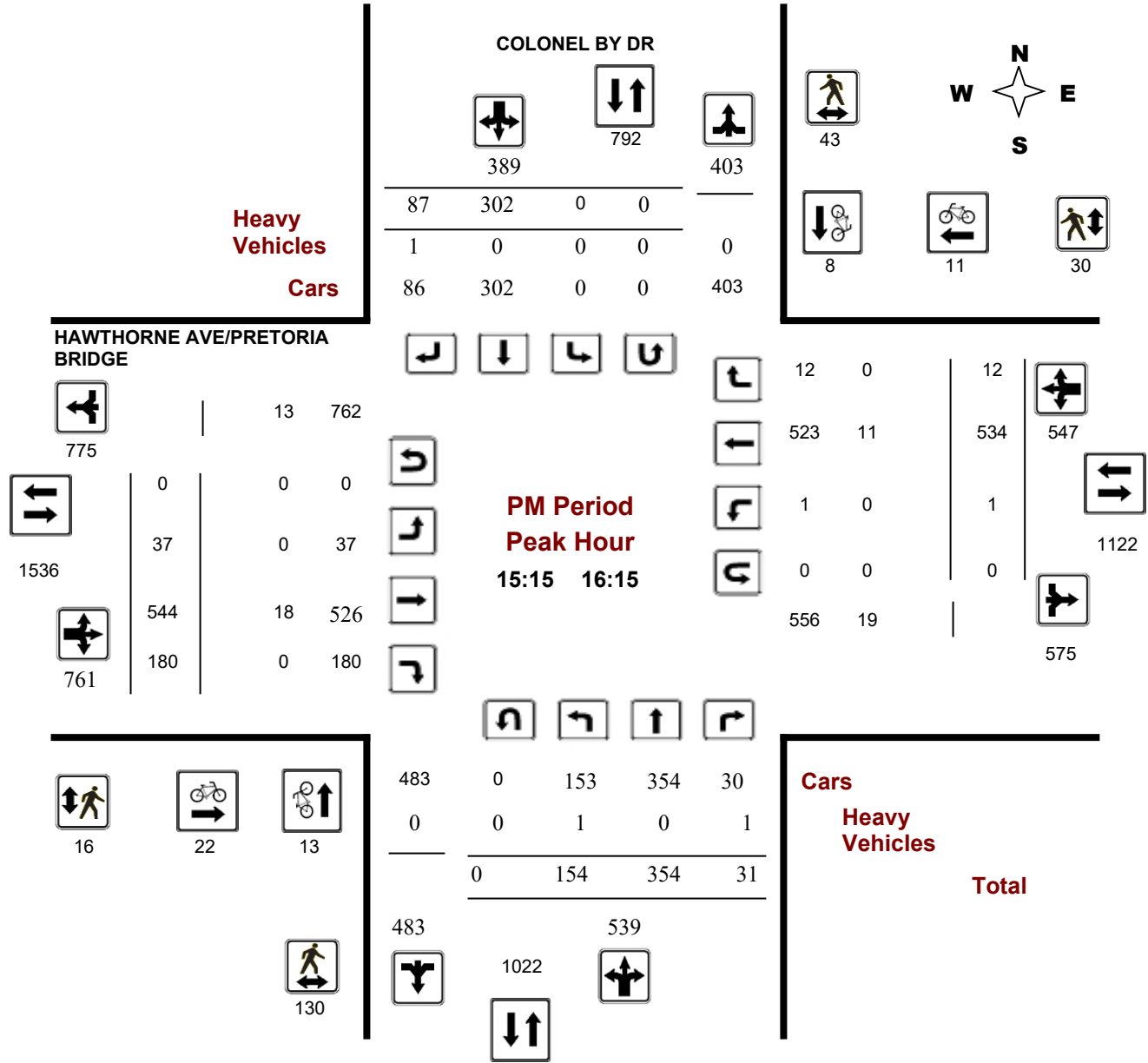
COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Survey Date: Tuesday, October 29, 2019

Start Time: 07:00

WO No: 38725

Device: Miovision



APPENDIX F

Collision Records



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Traffic Control: Traffic signal

Total Collisions: 38

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Feb-12, Fri,18:24	Snow	Turning movement	P.D. only	Loose snow	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Feb-14, Sun,17:39	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Feb-15, Mon,14:03	Clear	Angle	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2016-Feb-25, Thu,16:45	Snow	Turning movement	P.D. only	Slush	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-01, Wed,07:07	Clear	Other	P.D. only	Dry	East	Turning right	Pick-up truck	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2016-Jun-17, Fri,15:12	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Nov-07, Mon,22:29	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-22, Sun,11:30	Fog, mist, smoke, SMV other dust		Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Pedestrian	1
2017-Jan-23, Mon,15:19	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-23, Thu,17:00	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-May-08, Mon,16:49	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jun-09, Fri,14:26	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Traffic Control: Traffic signal

Total Collisions: 38

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-26, Mon,21:31	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Cyclist	0
					North	Turning left	Bicycle	Other motor vehicle	
2017-Jul-24, Mon,10:57	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-16, Wed,11:09	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,16:30	Rain	Rear end	P.D. only	Wet	North	Stopped	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-15, Wed,08:22	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Nov-16, Thu,18:50	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Nov-27, Mon,14:20	Clear	Turning movement	P.D. only	Dry	East	Making "U" turn	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-23, Fri,08:47	Clear	SMV other	P.D. only	Dry	North	Turning left	Automobile, station wagon	Ran off road	0
2018-Apr-16, Mon,14:00	Freezing Rain	Angle	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-04, Wed,20:13	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-31, Fri,19:04	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-28, Sun,22:14	Rain	Angle	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Bus (other)	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Traffic Control: Traffic signal

Total Collisions: 38

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-31, Thu,22:00	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Feb-19, Tue,09:00	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Feb-21, Thu,08:09	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-02, Tue,22:16	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-16, Tue,17:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2019-Aug-07, Wed,15:27	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-18, Sun,13:22	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Passenger van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Sep-06, Fri,14:45	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-28, Thu,09:07	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-08, Sun,00:53	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-11, Sat,19:10	Rain	Other	P.D. only	Wet	East	Reversing	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-05, Thu,14:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: COLONEL BY DR @ HAWTHORNE AVE/PRETORIA BRIDGE

Traffic Control: Traffic signal

Total Collisions: 38

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Apr-30, Thu,20:45	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2020-Oct-07, Wed,22:24	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: HAWTHORNE AVE @ MAIN ST

Traffic Control: Traffic signal

Total Collisions: 39

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-27, Fri,17:52	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jun-02, Thu,09:19	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Municipal transit bus	Other motor vehicle	
2016-Jun-27, Mon,16:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Unknown	Other motor vehicle	
2016-Nov-03, Thu,16:27	Clear	Turning movement	P.D. only	Dry	East	Overtaking	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Dec-03, Sat,15:50	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-04, Sun,18:57	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Cyclist	0
					North	Stopped	Bicycle	Other motor vehicle	
2016-Dec-30, Fri,14:30	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-24, Fri,10:44	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Snow plow	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: HAWTHORNE AVE @ MAIN ST

Traffic Control: Traffic signal

Total Collisions: 39

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-May-18, Thu,21:11	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Dec-05, Tue,07:30	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Changing lanes	Pick-up truck	Other motor vehicle	
2017-Dec-11, Mon,10:42	Clear	Turning movement	P.D. only	Dry	East	Overtaking	Delivery van	Other motor vehicle	0
					East	Turning right	Pick-up truck	Other motor vehicle	
2017-Dec-13, Wed,16:10	Clear	Turning movement	P.D. only	Slush	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2018-Jan-29, Mon,08:17	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-08, Thu,17:53	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Municipal transit bus	Other motor vehicle	
2018-Mar-29, Thu,08:15	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-06, Fri,16:44	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-09, Wed,08:00	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-09, Wed,15:10	Clear	Sideswipe	P.D. only	Dry	East	Stopped	Automobile, station wagon	Other motor vehicle	0
					East	Overtaking	Automobile, station wagon	Other motor vehicle	
2018-Jul-18, Wed,09:31	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	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: HAWTHORNE AVE @ MAIN ST

Traffic Control: Traffic signal

Total Collisions: 39

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Aug-07, Tue,14:40	Clear	Sideswipe	P.D. only	Dry	East	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-23, Thu,20:22	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2018-Aug-28, Tue,09:26	Clear	Rear end	P.D. only	Dry	South	Going ahead	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-09, Sun,20:51	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-22, Sat,15:16	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Oct-05, Fri,11:45	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-27, Sat,18:45	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-29, Mon,15:35	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Nov-16, Fri,05:59	Snow	Angle	P.D. only	Packed snow	North	Going ahead	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-18, Sun,20:47	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	
2018-Nov-28, Wed,18:37	Clear	SMV other	Non-fatal injury	Wet	East	Turning left	Automobile, station wagon	Pedestrian	1
2018-Dec-09, Sun,09:30	Clear	Sideswipe	Non-fatal injury	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: HAWTHORNE AVE @ MAIN ST

Traffic Control: Traffic signal

Total Collisions: 39

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Dec-26, Wed,14:19	Snow	Angle	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Municipal transit bus	Other motor vehicle	
2019-Feb-16, Sat,11:58	Clear	Other	P.D. only	Ice	North	Going ahead	Automobile, station wagon	Snowbank/drift	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-12, Sat,18:30	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-30, Wed,18:20	Rain	SMV other	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Pedestrian	1
2019-Dec-14, Sat,09:00	Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-17, Fri,09:37	Snow	Sideswipe	P.D. only	Wet	South	Overtaking	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jul-12, Sun,20:01	Clear	Sideswipe	P.D. only	Dry	North	Unknown	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Sep-15, Tue,14:57	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	

Location: HAWTHORNE AVE btwn COLONEL BY DR & MAIN ST

Traffic Control: No control

Total Collisions: 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Jun-30, Thu,18:11	Clear	SMV other	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other	0
2016-Jul-05, Tue,14:10	Clear	SMV other	P.D. only	Dry	South	Reversing	Truck - closed	Pole (utility, power)	0
2018-Jun-07, Thu,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2019-Feb-01, Fri,16:38	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Stopped	Municipal transit bus	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: HAWTHORNE AVE btwn COLONEL BY DR & MAIN ST

Traffic Control: No control

Total Collisions: 10

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Feb-01, Fri,19:49	Clear	Sideswipe	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Slowing or stopping	Municipal transit bus	Other motor vehicle	
2019-Mar-26, Tue,08:50	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-26, Wed,14:48	Clear	SMV unattended vehicle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Unattended vehicle	0
2019-Jul-18, Thu,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2019-Aug-21, Wed,19:25	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2020-Jan-21, Tue,11:50	Clear	SMV unattended vehicle	P.D. only	Slush	Unknown	Unknown	Unknown	Unattended vehicle	0

APPENDIX G

Strategic Long Range Models

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Hawthorne Avenue

2011 Model - Basecase

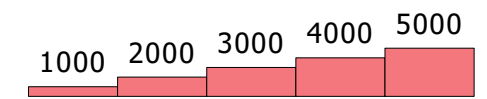
N/A

User Initials: KN
Plot Prepared: Aug 31, 2022
EMME Scenario: 21713

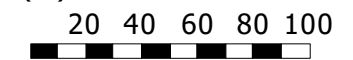


Legend

AM Peak Hour Total Traffic Volume



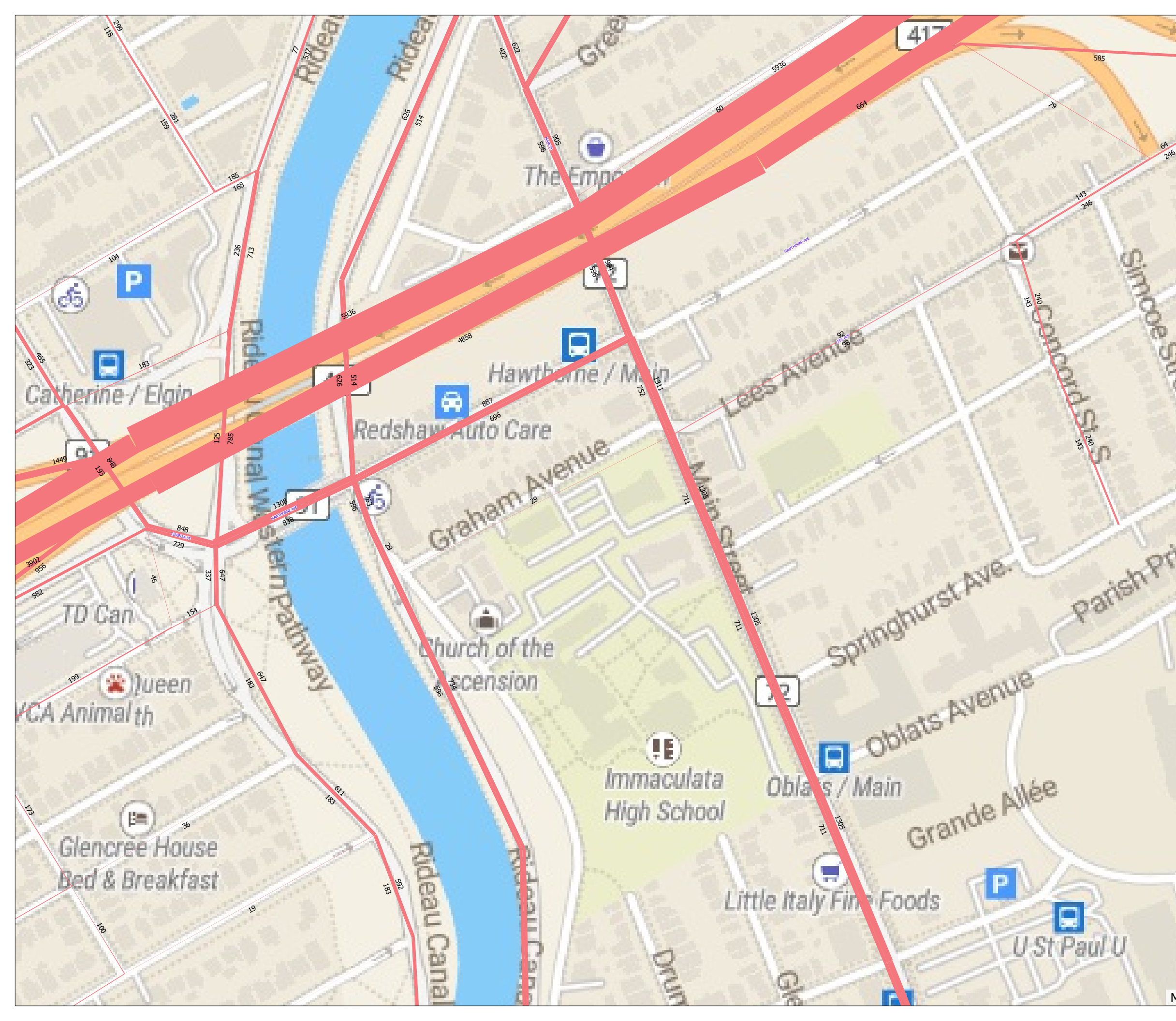
Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Hawthorne Avenue

2031 Model - Basecase

N/A

User Initials: KN

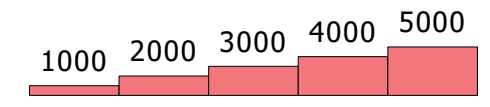
Plot Prepared: Aug 31, 2022

EMME Scenario: 21715

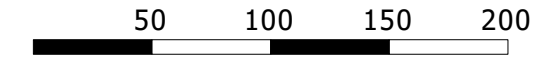


Legend

AM Peak Hour Total Traffic Volume



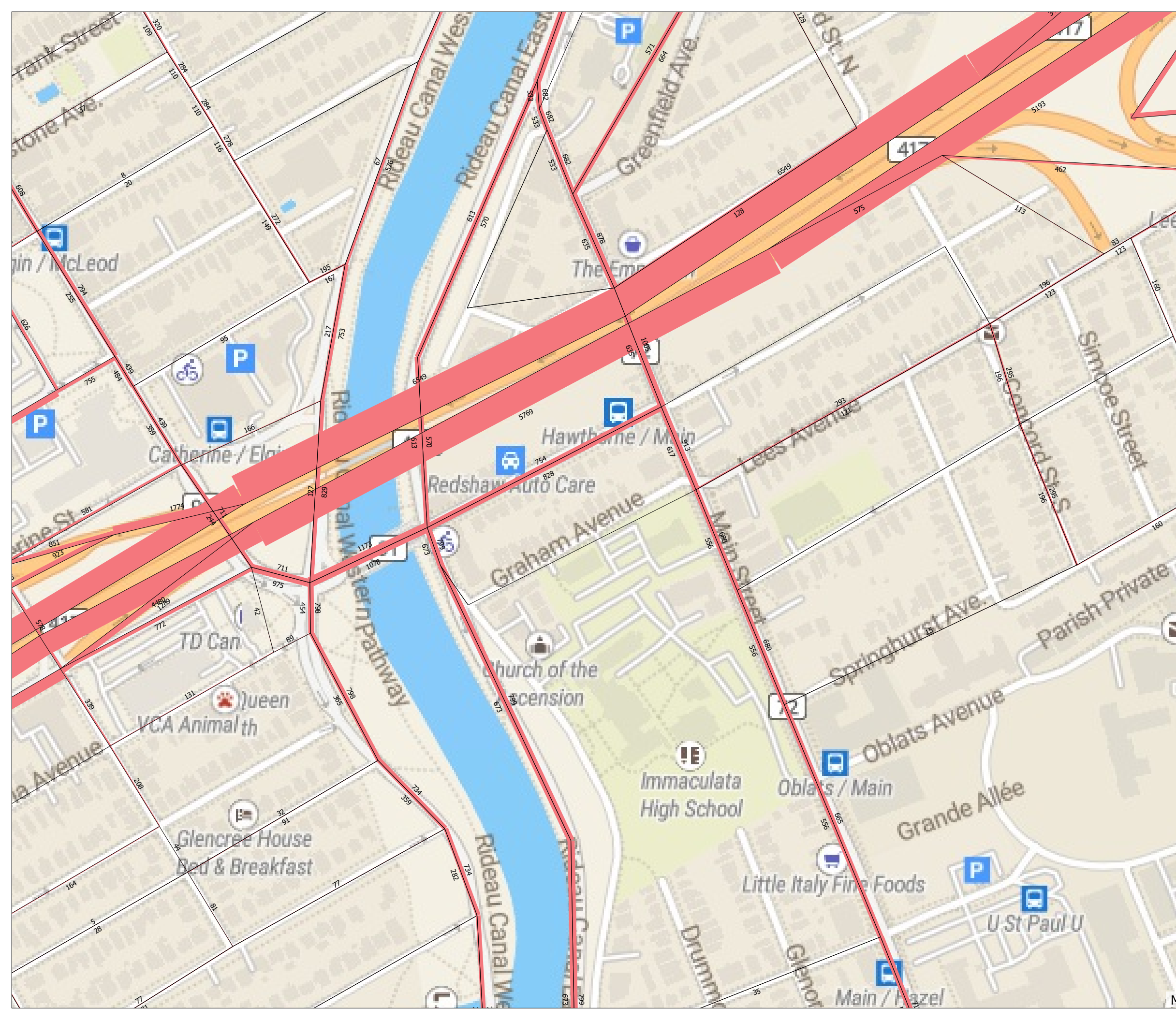
Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

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As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.



APPENDIX H

Boundary Street MMLOS

Segment MMLOS Analysis

This section provides a review of the boundary street Hawthorne 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 each alternative mode of transportation on Hawthorne Avenue, based on the targets for 'Traditional Main Street' areas. Hawthorne Avenue has been analyzed based on the complete street concept that is scheduled for construction in 2023.

Exhibit 4 of the *MMLOS Guidelines* has been used to evaluate the segment pedestrian level of service (PLOS) of Hawthorne Avenue. Exhibit 22 suggests a target PLOS B for arterial roadways within a traditional Main Street area. 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 Hawthorne Avenue. Within traditional main street areas, Exhibit 22 suggests a target BLOS C for arterial roadways with a Local Route designation. 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 Hawthorne Avenue. Within traditional mainstreet areas, Exhibit 22 does not identify a target TLOS for roadways that are not in the City's Transit Priority Network.

Exhibit 20 of the *MMLOS Guidelines* has been used to evaluate the segment truck level of service (TkLOS) of Hawthorne Avenue. Within traditional main street areas, Exhibit 22 suggests a target TkLOS D for arterial roadways with a truck route designation. The results of the segment TkLOS analysis are summarized in **Table 3**.

Table 1: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed ⁽¹⁾	PLOS
Hawthorne Avenue (north side)					
2.0m	0.5m to 2m	> 3,000 vpd	No	60 km/h	D
Hawthorne Avenue (south side)					
2.0m	0.5m to 2m	> 3,000 vpd	No	60 km/h	D

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

Table 2: BLOS Segment Analysis

Road Class	Type of Route	Type of Bikeway	Travel Lanes	Operating Speed	BLOS
Hawthorne Avenue (north side)					
Arterial	Local	Physically Separated	1	60 km/h	A
Hawthorne Avenue (south side)					
Arterial	Local	Mixed Traffic	2	60 km/h	F

Table 3: TkLOS Segment Analysis

Curb Lane Width	Number of Travel Lanes Per Direction	TkLOS
Hawthorne Avenue (north side)		
≤ 3.5m	1	C
Hawthorne Avenue (south side)		
> 3.7m	2	A

APPENDIX I

Transportation Demand Management Checklists

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

Legend	
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

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

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	<input type="checkbox"/>
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	<input type="checkbox"/>
BETTER	3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	<input type="checkbox"/>
3.3 Enhanced public transit service		
BETTER ★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels (<i>subdivision</i>)	<input type="checkbox"/>
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)	<input type="checkbox"/>
4. CARSHARING & BIKESHARING		
4.1 Bikeshare stations & memberships		
BETTER	4.1.1 Contract with provider to install on-site bikeshare station (<i>multi-family</i>)	<input type="checkbox"/>
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	<input type="checkbox"/>
4.2 Carshare vehicles & memberships		
BETTER	4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	<input type="checkbox"/>
BETTER	4.2.2 Provide residents with carshare memberships, either free or subsidized	<input type="checkbox"/>
5. PARKING		
5.1 Priced parking		
BASIC ★	5.1.1 Unbundle parking cost from purchase price (<i>condominium</i>)	<input type="checkbox"/>
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	<input checked="" type="checkbox"/>

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS		
6.1 Multimodal travel information		
BASIC ★	6.1.1 Provide a multimodal travel option information package to new residents	<input checked="" type="checkbox"/>
6.2 Personalized trip planning		
BETTER ★	6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

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

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

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

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (<i>see Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (<i>see Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (<i>see Official Plan policy 4.3.11</i>)	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>
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)	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
2. WALKING & CYCLING: END-OF-TRIP FACILITIES		
2.1 Bicycle parking		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i>)	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>
2.2 Secure bicycle parking		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/> N/A
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
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)	<input checked="" type="checkbox"/>
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
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	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
5. CARSHARING & BIKESHARING		
5.1 Carshare parking spaces		
BETTER	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (see <i>Zoning By-law Section 94</i>)	<input type="checkbox"/>
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	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (see <i>Zoning By-law Section 104</i>)	<input type="checkbox"/>
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (see <i>Zoning By-law Section 111</i>)	<input type="checkbox"/>
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)	<input type="checkbox"/>