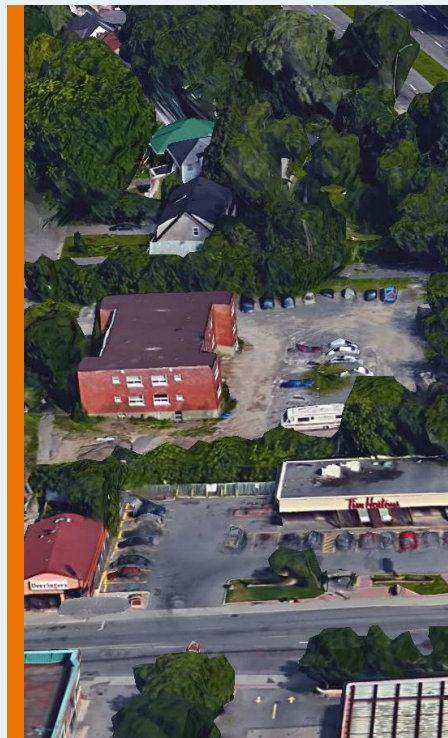


Manor Park Management Inc.



TIA Forecasting & Strategy Report

Manor Park Management 263 Greensway Ave



Manor Park Management 263 Greenway Avenue

TIA Forecasting and Strategy Report

prepared for:
Manor Park Management Inc.
150 Montreal Road
Vanier, ON
K1L 8H2

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

May 8, 2018

476653 – 01000

Table of Contents

1. SCREENING FORM.....	1
2. DESCRIPTION OF PROPOSED DEVELOPMENT.....	1
3. EXISTING CONDITIONS.....	3
3.1. AREA ROAD NETWORK.....	3
3.2. PEDESTRIAN/CYCLING NETWORK.....	3
3.3. TRANSIT NETWORK.....	3
3.4. EXISTING STUDY AREA INTERSECTIONS.....	4
3.5. EXISTING INTERSECTION VOLUMES.....	5
3.6. EXISTING ROAD SAFETY CONDITIONS.....	6
4. PLANNED CONDITIONS.....	6
4.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES.....	6
4.2. OTHER AREA DEVELOPMENT.....	8
5. STUDY AREA.....	9
5.1. TRANSIT.....	9
5.2. NETWORK CONCEPT.....	9
5.3. INTERSECTION DESIGN.....	9
6. TIME PERIODS.....	9
7. HORIZON YEARS.....	9
8. EXEMPTION REVIEW.....	9
9. DEVELOPMENT GENERATED TRAVEL DEMAND.....	10
9.1. TRIP GENERATION AND MODE SHARES.....	10
9.1.1. Trip Generation.....	10
9.1.2. Mode Shares.....	11
10. DEVELOPMENT DESIGN.....	11
10.1. DESIGN FOR SUSTAINABLE MODES.....	11
10.2. CIRCULATION AND ACCESS.....	13
11. ACCESS INTERSECTIONS DESIGN.....	13
11.1. LOCATION AND DESIGN OF ACCESS.....	13
12. NEIGHBOURHOOD TRAFFIC MANAGEMENT.....	13
12.1. ADJACENT NEIGHBOURHOODS.....	13
13. TRANSIT.....	13
13.1. ROUTE CAPACITY.....	13
14. INTERSECTION DESIGN.....	14
14.1. INTERSECTION DESIGN.....	14
15. SUMMARY OF IMPROVEMENTS INDICATED AND MODIFICATION OPTIONS.....	15

List of Figures

Figure 1: Local Context	1
Figure 2: Proposed Site Plan	2
Figure 3: Existing Peak Hour Traffic Volumes.....	5
Figure 4: Existing 8 Hours Pedestrian and Cyclist Volumes at Montreal Road / Vanier Parkway Intersection	5
Figure 5: Rideau-Vanier Ward Planned Construction Program	7
Figure 6: Montreal Road Revitalization Keyplan	8
Figure 7: Conceptual Design Plan for the Montreal Road / Vanier Parkway Intersection	12
Figure 8: Nearby Transit Stops Locations	13

List of Tables

Table 1: Exemptions Review Summary	9
Table 2: Additional Recommended Exemptions Summary.....	10
Table 3: TRANS Blended Trip Generation Rate	10
Table 4: TRANS Vehicle Trip Generation	11
Table 5: Total Site Trip Generation.....	11
Table 6: MMLOS – Vanier Parkway Road Segment (West Side of Southbound Roadway)	12
Table 7: Transit Capacity at Adjacent Transit Stops.....	14
Table 8: MMLOS – Signalized Study Area Intersection.....	14

List of Appendices

APPENDIX A – SCREENING FORM
APPENDIX B – INTERSECTION TURNING MOVEMENT COUNTS
APPENDIX C – COLLISION DATA AND ANALYSIS
APPENDIX D – MULTI-MODAL LEVEL OF SERVICE ANALYSIS
APPENDIX E – OC TRANSPOT TRANSIT DATA

TIA Scoping Report

1. SCREENING FORM

The screening form was prepared for the subject development and included as part of the subsequent report. The screening form confirmed the need for a Transportation Impact Assessment (TIA) based on the Location and Safety triggers, given that the site is located within the Montreal Road Design Priority Area and due to the proximity of the proposed cycling connection to the Montreal Road/Vanier Parkway intersection.

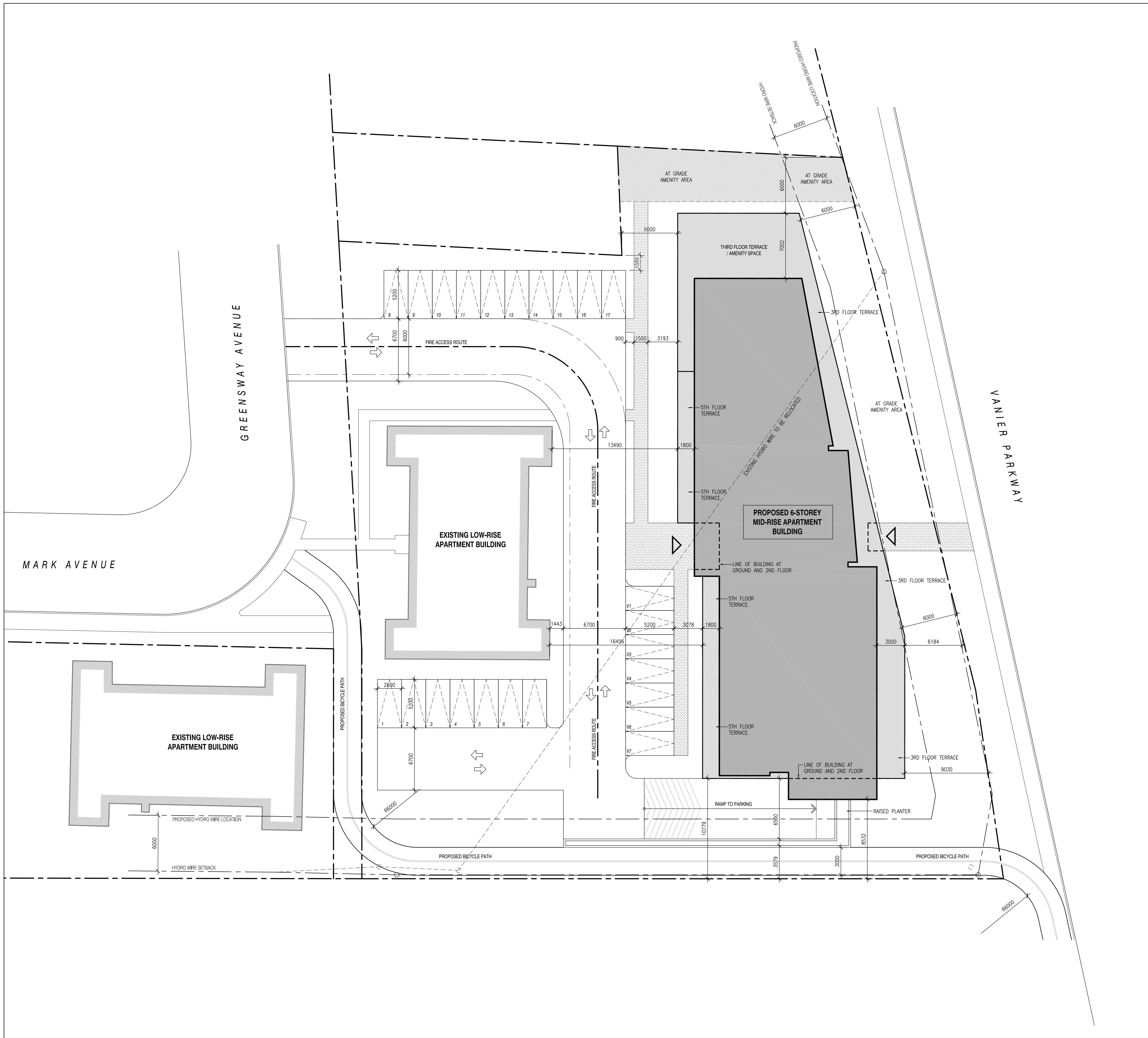
The screening form is provided in Appendix A.

2. DESCRIPTION OF PROPOSED DEVELOPMENT

From the information provided, it is our understanding that the proponent is proposing to construct a residential development located at 263 Greensway Avenue. The development will consist of a new 6-storey building consisting of 77 new residential apartment units. The site is currently occupied by 9 townhouses with an all-movement private access to Greensway Avenue. Existing dwellings will be maintained, for a total of 86 units in the site. A total of 136 parking spaces are proposed (24 surface, 112 underground). Pedestrian access will be provided via a connection to the sidewalk on the west side of Vanier Parkway and a multi-use pathway along the southern extent of the development that would link Mark Avenue to the Vanier Parkway. The local context of the site is provided as Figure 1 and the proposed Site Plan is provided as Figure 2. As the site is currently zoned as Residential Fourth Density (e.g. 4 storey apartment), a Zoning By-Law Amendment will need to be completed. A single-phase project with complete build-out and full occupancy on the year 2019 is assumed.

Figure 1: Local Context

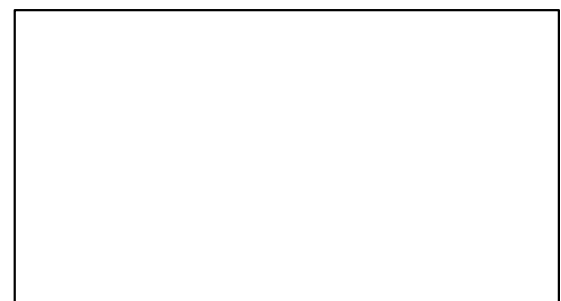




6 SITE PLAN
SP-01 SCALE: 1:75



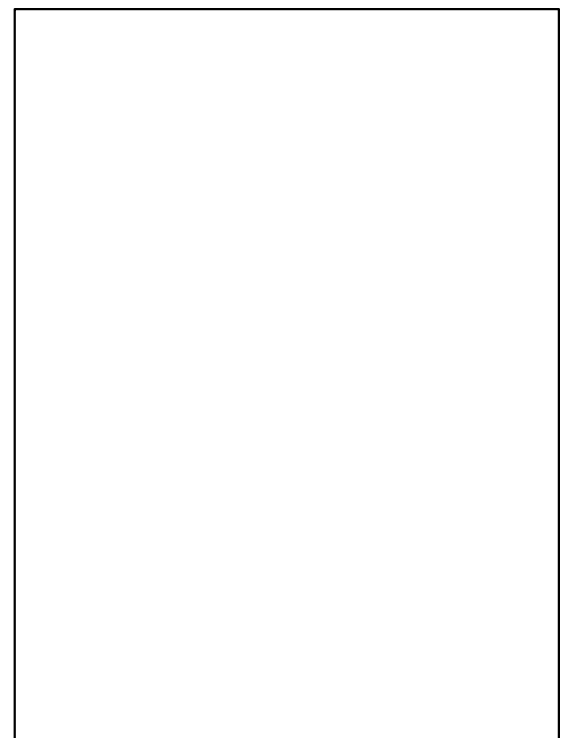
1 LOCATION PLAN
SP-01 SCALE: NTS



2 SURVEY INFO
SP-01 SCALE: NTS



3 SYMBOLS LEGEND
SP-01 SCALE: NTS



4 KEYNOTES
SP-01 SCALE: NTS

SITE & PROJECT STATISTICS	
GENERAL INFORMATION	
Zoning	--
Min. Lot Area	--
Max. Building Height	--
Min. Front Yard	--
Min. Rear Yard	--
Min. Int. Side Yard	--
PROJECT STATISTICS	
Lot Area	4,535m ²
Building Height	20m
Front Yard	--
Rear Yard	6m
Int. Side Yard	6m
Total Number of Units	77 units
PARKING CALCULATION	
As per Section 101	
Required Parking:	33 spaces
0 spaces for first 12 units - Section 101(3)	
0.5 spaces/unit for 125 units - Table 101	
Resident Parking Provided:	129 spaces
VISITOR PARKING CALCULATION	
As per Section 102	
Required Visitor Parking:	7 spaces
0 spaces for first 12 units - Section 102(3)	
0.1 spaces/unit for 125 units - Table 102	
Visitor Parking Provided:	7 spaces
Total Parking Provided:	136 spaces
BICYCLE PARKING CALCULATION	
As per Table 111	
Required Parking:	39 spaces
0.5 spaces/unit for 97 units (111A)(b)(i)	
Total Parking Provided:	40 spaces
AMENITY AREA CALCULATION	
As per Table 137	
Total Amenity Area Req'd:	462 m ²
6m ² /unit	
Communal Amenity Req'd:	231 m ²
Min of 50% of Total Amenity Area	
Amenity Area Provided:	531 m ²
Level 01:	91m ²
Level 02:	63m ²
Level 03:	211 m ²
Level 04:	58 m ²
Level 05:	54 m ²
Level 06:	54 m ²
Communal Amenity Provided:	270 m ²
At Grade Parkspace:	130 m ²
Level 03 Lounge:	74 m ²
Level 03 Terrace:	66 m ²
Total Amenity Area Provided:	801 m ²

ZONING
SCALE: NTS

- GENERAL ARCHITECTURAL NOTES:
- This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect.
 - Drawings are not to be scaled. The Contractor is responsible for checking and verifying all levels and dimensions and shall report all discrepancies to the Architect and obtain clarification prior to commencing work.
 - Upon notice in writing, the Architect will provide written clarification or supplementary information regarding the intent of the Contract Documents.
 - The Architectural drawings are to be read in conjunction with all other Contract Documents including Project Manuals and the Structural, Mechanical and Electrical Drawings.
 - Positions of exposed or finished Mechanical or Electrical devices, fittings and fixtures are indicated on the Architectural Drawings. Locations shown on the Architectural Drawings shall govern over Mechanical and Electrical Drawings. Mechanical and Electrical items not clearly located will be located as directed by the Architect.
 - These documents are not to be used for construction unless specifically noted for such purpose.

REVISION RECORD

ISSUED FOR COORDINATION	2018-02-13
ISSUED FOR COORDINATION	2017-12-11
ISSUED FOR COORDINATION	2017-11-24
ISSUED FOR COORDINATION	2017-11-02

ISSUE RECORD

project1
studio

Project1 Studio Incorporated
[613.233.3536] | info@project1studio.ca

263 GREENSWAY

263 Greensway Avenue
Ottawa, ON

PROJ	SCALE	DRAWN	REVIEWED
1722.1SP-01		LB	RMK

SITE PLAN & STATISTICS

SP-01

3. EXISTING CONDITIONS

3.1. AREA ROAD NETWORK

Vanier Parkway is a north-south arterial roadway, which extends from the Highway 417 in the south to Beechwood Avenue in the north and continues as Crichton Street. The cross section is divided roadway with two travel lanes in each direction with auxiliary left-turn and right-turn lanes at main intersections. It is designated as a Scenic Entry Route in the Official Plan. The posted speed limit within the study area is 60 km/h.

Montreal Road is an east-west arterial roadway designated as a transit priority road, which extends from St Joseph Blvd in the east to the Rideau River in the west. Although the cross section varies, within the study area it consists of two lanes in each direction with no median, parking mainly in the north side, one bus preferential lane per direction at peak hours and an auxiliary left-turn lane at Montreal Road/Vanier Parkway. It is designated as Traditional Mainstreet in the Official Plan. The unposted speed limit is assumed to be 50 km/h.

North River Road is a north-south local roadway extending north of Montreal Road. The cross section consists of a single travel lane in each direction with a multi-use pathway on the west side. The unposted speed limit assumed to be 40 km/h.

Greensway Avenue is a north-south neighbourhood local road extending north of Mark Avenue to Coupal Street. The cross section consists of a single travel lane in each direction. The unposted speed limit assumed to be 40 km/h. Vehicular access to the subject site is proposed on this roadway via private driveway, as it is the current condition. All movements are permitted for this access.

Mark Avenue is an east-west neighbourhood local road extending west of Greensway Avenue to North River road. The cross section consists of a single travel lane in each direction and one parking lane on both sides. There are sidewalks on the north and south sides and the unposted speed limit assumed to be 40 km/h.

3.2. PEDESTRIAN/CYCLING NETWORK

With respect to pedestrians, sidewalk facilities in the vicinity of the site are provided along both sides of Mark Avenue, the east side of N River Road, both sides of Montreal road and both sides Vanier Parkway. A north-south multi-use pathway is located along the west side of N River Road extending north to Rideau Falls Park and south to the Rideau River MUP Adàwe Crossing. The multi-use pathway continues along the east side of Rideau River, south of highway 417.

With respect to cyclists, according to the Ottawa Cycling Plan ultimate network, Montreal Road and Vanier Parkway are classified as “spine” cycling routes. However, there is no current specific cycling infrastructure on these roads within the area of study and are not included in the affordable 2031 cycling project list. An eastbound cycle track and a shared cycle lane are identified on the Cummings Bridge that connect to Rideau Street. The remaining cycling facilities are provided along the Rideau River eastern multi-use pathway, which extends north along the west side of N River Road connecting with the east-west Beechwood Avenue and Sussex Drive cycle-tracks. It also extends south and links to the east-west Rideau Street Cycle Track and the east-west MUP Adàwe crossing. The multi-use pathway continues along the east side of Rideau River, south of highway 417.

3.3. TRANSIT NETWORK

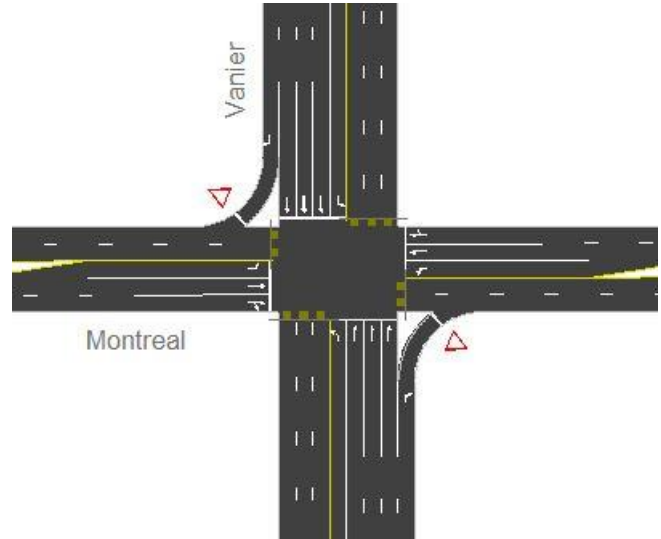
Transit service within the vicinity of the site is currently provided by OC Transpo Routes #12 and #9. Bus stops for route #12 are located along Montreal Road on the far side of the Vanier Parkway/ Montreal Road intersection for westbound route services and on the near-side for east-bound route services. Bus stops for route #9 are located along Vanier Parkway on the far sides of the Vanier Parkway/ Montreal Road intersection. The nearest eastbound stop is approximately 100m from the proposed site access and the nearest westbound stop is approximately 80m from the proposed site access. The

nearest northbound stop is approximately 150m from the proposed site access and the nearest southbound stop is approximately 120m from the proposed site access. Route 12 runs all day at approximately 15 to 30-minute intervals. Route 9 runs all day at approximately 15 to 20-minute intervals

3.4. EXISTING STUDY AREA INTERSECTIONS

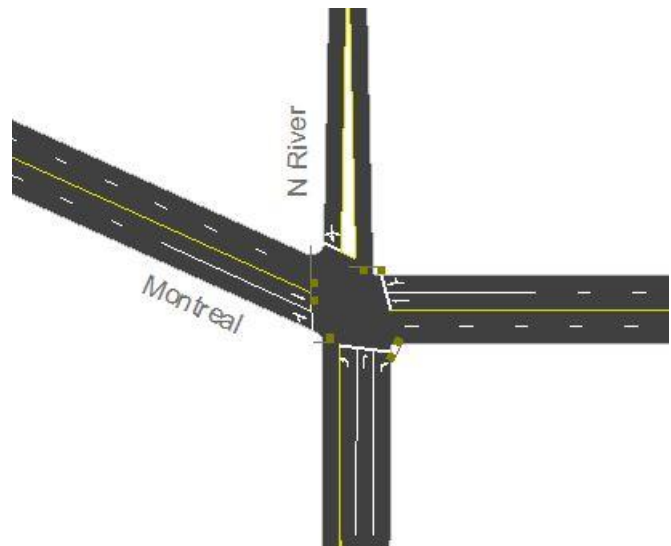
Vanier Parkway/Montreal Road

The Vanier Parkway/Montreal Road intersection is a signalized four-legged intersection. The east and westbound approaches consist of a left turn lane and two through lanes, the south and northbound approaches consist of one left turn lane, two through lanes and a channelized right turn lane. All movements are permitted at this location.



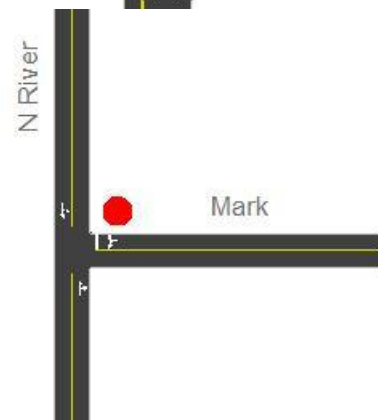
Montreal Road/North River Road

The Montreal Road/North River Road intersection is a four-legged signalized intersection. The southbound approach consists of a single all-movement lane and the Rideau River eastern pathway. The northbound approach consists of a left turn lane, one through lane and one right turn lane. The eastbound approach consists of one shared through/left turn lane which is also a bike shared lane and one shared through/right turn lane. Red-light right turns are not permitted and left turns are prohibited on peak hours. The westbound approach consists of one through lane and one shared through/right turn lane. Left turns are not permitted from the westbound approach.



Mark Avenue/North River Road

The Mark Avenue/North River Road intersection is a 'T' intersection with a stop sign on the minor approach. The north and southbound approaches consist of one all-movement lane. The westbound approach is the minor approach and consists of a single all-movement lane. All movements are permitted on this intersection.



3.5. EXISTING INTERSECTION VOLUMES

Illustrated as Figure 3, are the most recent weekday morning and afternoon peak hour traffic volumes obtained from the City of Ottawa at the study area intersections. Figure 4 shows the existing eight hours pedestrian and cyclist volumes for relevant intersections. The full traffic counts are provided in Appendix B.

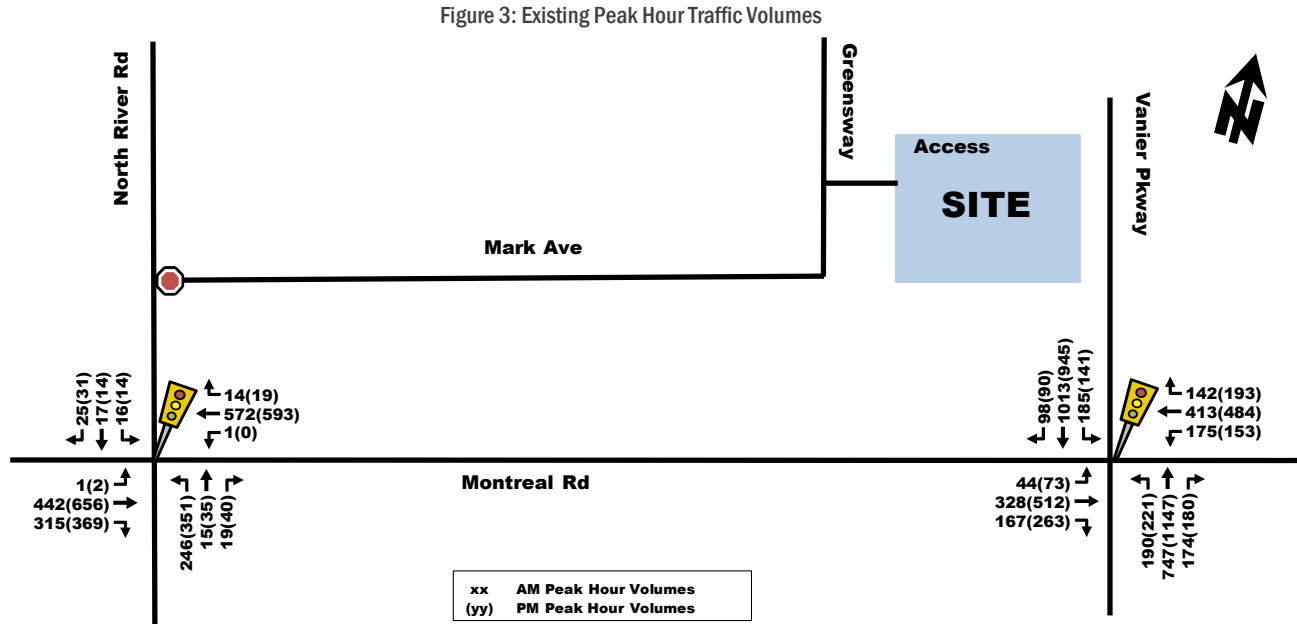
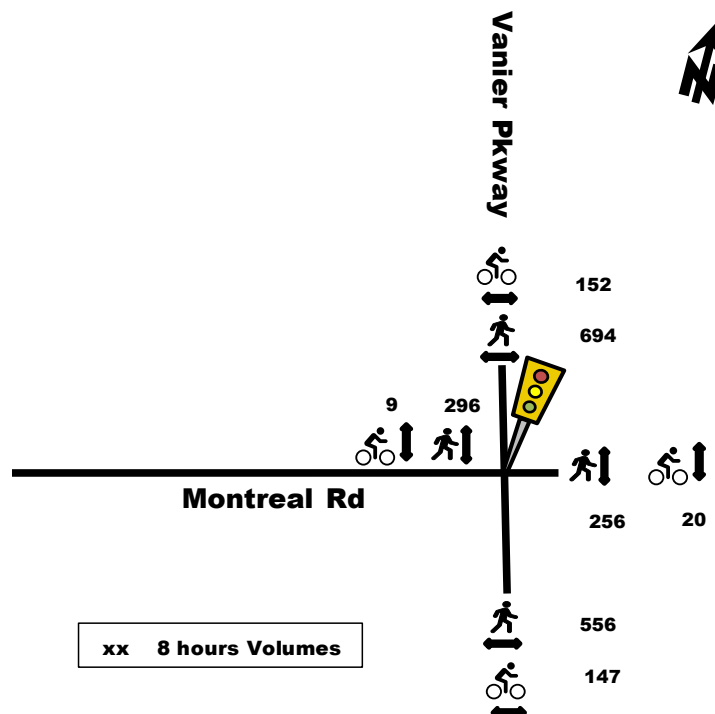


Figure 4: Existing 8 Hours Pedestrian and Cyclist Volumes at Montreal Road / Vanier Parkway Intersection



3.6. EXISTING ROAD SAFETY CONDITIONS

Collision history for the Montreal Road/Vanier Parkway, Montreal Road /North River Road, and mid-block on Montreal Road between Palace Street and Vanier Parkway (2012 to 2016, inclusive) was obtained from the City of Ottawa. Most collisions (82%) involved only property damage, indicating low impact speeds, and 18% involved personal injuries. None fatalities were noted at the area of study. The primary causes of collisions cited by police include; rear ends (36% or 66 collisions), turning movement (24% or 45 collisions), sideswipe (18% or 34 collisions), single vehicle/other (11% or 19 collisions), angle (10% or 19 collisions) and approaching (1% or 1 collision).

A standard unit of measure for assessing collisions at an intersection is based on the number collisions per million entering vehicles (MEV). At intersections and road segments within the study area, reported collisions have historically take place at a rate of:

- 1.17 collisions/MEV at the Montreal Road and Vanier Parkway intersection.
- 0.62 collisions/MEV along Montreal Road and North River Road intersection.
- 0.41 collisions/MEV at the Montreal Road and Montgomery Street intersection.

Based on the available data, there does not appear to be any prevailing safety issues along Montreal Road, between North River Road and Palace Street. For the segment on Montreal Road between Palace Street to Vanier Parkway, the prevailing cause of collision is the turning movement (50 collisions in 5 years).

The Montreal Road/ Vanier Parkway intersection is noted to have a high level of collisions (106) during the history review period. Rear end collisions (48) are the primary collision type observed at the intersection. Rear end collisions were broken down according to information for the last three years (2014-2016) of analysis (79 collisions, 34 rear end):

- Southbound approach: 9 collisions; Northbound approach: 14 collisions
- Westbound approach: 6 collisions; Eastbound approach: 5 collisions

Going ahead and slowing/stopping maneuvers accounted for 20 rear end collisions out of the 34 total collisions at the intersection that happened during the last three years of analysis. The north and southbound approaches to the intersection are relatively flat and straight, with approximately 220m and 200 m of clear sight lines respectively. It is recommended that the City consider increased speed limit enforcements along Vanier Parkway between Deschamps Avenue and McArthur Avenue. The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix C.

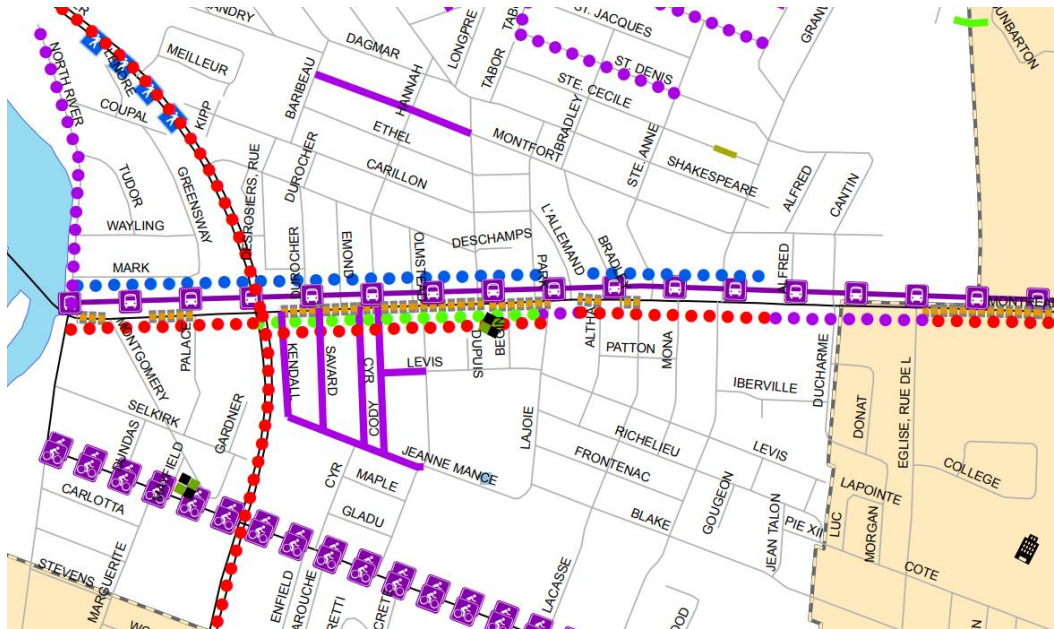
4. PLANNED CONDITIONS

4.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

Figure 5 depicts the 2017-2021 Rideau-Vanier Planned Construction Program. The scheduled projects within the area of study include:

- Vanier Parkway road resurfacing between Beechwood and Coventry Road
- Montreal Road watermain renewal, road resurfacing and transit priority between N River Road and Alfred Street
- Montreal Road sidewalk and curb renewal between Vanier Parkway and Park Street
- Cycling routes on McArthur Avenue

Figure 5: Rideau-Vanier Ward Planned Construction Program



Along these lines, in summer of 2017, the City of Ottawa completed the Montreal Road Functional Planning Study which outlined a vision for the 2km section of Montreal Road between North River Road and St. Laurent Boulevard. The City is now proceeding with the next phase of the project, which focuses on designing and refining the improvements proposed in the planning study. Once the detailed design is complete, the project will move forward into construction. The following aboveground and underground improvements are proposed:

- Construct a three-lane cross section between Vanier Parkway and St. Laurent Boulevard that includes two westbound lanes, one eastbound lane and cycling tracks/lanes in both directions;
- Implement streetscaping features along Montreal Road including but not limited to new street furniture, streetlights, trees, concrete sidewalks and paver stones;
- Review and improve bus stop and bus shelter locations;
- Replace the existing watermain between North River Road and St. Laurent Boulevard; and
- Replace sanitary and storm sewers along certain sections of Montreal Road.
- Replacement of the watermain, sanitary sewers and road drainage along the 560m long section of North River Road (north of Montreal Road).

Figure 6 depicts the scope of works within the Montreal Road revitalization keyplan.

Figure 6: Montreal Road Revitalization Keyplan



The anticipated project schedule follows:

- Project start: November 2017
- Conceptual design completed and public open house # 1: Winter/Spring 2018
- Preliminary design completed and public open house # 2: Summer 2018
- Detailed design completed and public open house # 3: Winter 2019
- Full construction start: Spring 2019 (some work possible in late 2018)
- Construction completion: Fall 2021

4.2. OTHER AREA DEVELOPMENT

According to the City's development application search tool, the following developments are planned within the vicinity of the subject site.

244 Fountain Place

A planned unit development consisting of two low-rise apartment buildings with 22 one-bedroom units is proposed. The site is located where Fountain Place branches off Rideau Street just before the Cummings Bridge. Vehicular access is provided from Fountain Place way of a 3m driveway on the south side of the site. A shared cycle lane is identified on the Cummings Bridge. Given the size and number of units proposed, it is expected that impacts will be negligible on the subject study area.

112 Montreal Road and 314 Gardner Street

1147310 Ontario Inc is proposing 6 new buildings ranging from 3 to 18 storeys, with a total of 607 residential dwellings and 300 m² of retail gross area. Access to site will be provided via an all-movements access driveway on Montreal Road and a right-in/right-out only access driveway on Vanier Parkway. The access driveway on Montreal Road is located approximately 78 m west of Vanier Parkway. The right-in/right-out access on Vanier Parkway is located approximately 175 m south of Montreal Road. The proposed development is expected to generate approximately 250 morning peak hour and 310 afternoon peak hour vehicle-trips. Given most of the traffic (50%) will be directed south on the Vanier Parkway towards Highway 417, the Vanier Parkway/Montreal Road intersection is expected to operate within City standards. 63 and 78 site-generated additional vehicles are expected to go west on Montreal Road, with negligible impacts on Montreal Road/ North River Road intersection. The corresponding transportation study suggests the removal of 2 parking spaces on the north

side of Montreal Road, west of Tim Hortons driveway, to provide space for westbound through vehicles to pass left-turning vehicles on the right.

5. STUDY AREA

5.1. TRANSIT

As mentioned previously, transit is served within the area with bus stops for Routes #9 and Routes #12 located within 200 m from the site along Montreal Road on the far side of the Vanier Parkway/ Montreal Road intersection for westbound route services, on the near-side for east-bound route services and along Vanier Parkway on the far sides of the Vanier Parkway/ Montreal Road intersection for north and southbound services.

5.2. NETWORK CONCEPT

No screenline is present in close proximity to the subject site. Given the low unit count for the development, is unlikely to impact the closest screenlines (SL32, SL33, SL 36, SL37 and SL38).

5.3. INTERSECTION DESIGN

Due to the low unit count of the subject development, vehicular impacts to nearby arterial intersections are expected to be negligible, reducing the requirements for analysis and design of study area intersections. Given the proximity of the Rideau River Eastern Multi-Use Pathway and the proposed cycling and pedestrian connections to the Vanier Parkway, analysis will focus on active modes connectivity to and on the Mark Avenue/North River Road intersection and on the Vanier Parkway/Montreal Road intersection.

6. TIME PERIODS

Given the majority of trips expected to be generated by this development will be residential trips, the time periods to be assessed are the weekday morning and afternoon commuter peak hours.

7. HORIZON YEARS

The expected build-out date for the proposed development is assumed to be 2019. Depending on the growth rate of the study area, the horizon year 2024 will be assessed for 5-years beyond site build out.

8. EXEMPTION REVIEW

Based on the City's TIA guidelines and the subject site, the following modules/elements of the TIA process, summarized in Table 1, are recommended to be exempt in the subsequent steps of the TIA process:

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Not required for applications involving site plans.
4.2 Parking	4.2.2 Spillover Parking	The site's residential parking rate is noted to meet the City's minimum By-Law for residential parking (45 stalls). As such, parking is not expected to spill out of the site.

4.5 Transportation Demand Management	All elements	Residential development with less than 60 auto trips.
4.8 Review of Network Concept	All elements	This development is not expected to generate 200-person trips more than the permitted zoning for the site.

In addition to the above recommendations of the Exemptions Review, the following exemptions are also proposed for both Step 3 – Forecasting and Step 4 – Analysis and are summarized in Table 2.

Table 2: Additional Recommended Exemptions Summary

Module	Element	Exemption Consideration
3.1 Development-generated Travel Demand	3.1.2 Trip Distribution	Minimal auto share anticipated given only 78 residential units on site, and negligible impact anticipated on road network.
	3.1.3 Trip Assignment	Minimal auto share anticipated given only 78 residential units on site, and negligible impact anticipated on road network.
3.2 Background Network Travel Demand	All Elements	Minimal auto share anticipated given only 78 residential units on site, and negligible impact anticipated on road network.
3.3 Demand Rationalization	All Elements	Minimal auto share anticipated given only 78 residential units on site, and negligible impact anticipated on road network.
4.2 Parking	4.2.1 Parking Supply	Auto and Bicycle parking requirements have been met.
4.3 Boundary Street Design	All Elements	Frontage is restricted to the site access which will operate as a private approach. Only an MUP proposed on-site, no concept or street design required.
4.4 Access Intersection Design	4.4.2 Intersection Control	Site access will operate at a private approach and will not require an intersection screening for a signal or roundabout.
	4.4.3 Intersection Design	Site access will operate at a private approach and will not require an intersection screening for a signal or roundabout.
4.7 Transit	4.7.2 Transit Priority	Site access will operate at a private approach and will not require an intersection screening for a signal or roundabout.
4.9 Intersection Design	4.9.1 Intersection Control	Site access will operate at a private approach and will not require an intersection screening for a signal or roundabout.

9. DEVELOPMENT GENERATED TRAVEL DEMAND

9.1. TRIP GENERATION AND MODE SHARES

9.1.1. TRIP GENERATION

Appropriate trip generation rates for the proposed development were obtained from the City's TRANS Trip Generation – Residential Trip Rates (Table 3.16 of the TRANS Trip Generation Study) and are summarized in Table 3.

Table 3: TRANS Blended Trip Generation Rate

Land Use	Data Source	Trip Rate	
		AM Peak	PM Peak
Apartments	TRANS	0.24	0.28

Using the TRANS Trip Generation rate, the total amount of vehicle trips generated by the proposed townhome units were projected and the results are summarized in Table 4.

Table 4: TRANS Vehicle Trip Generation

Land Use	Area	AM Peak (veh/h)			PM Peak (veh/h)		
		In	Out	Total	In	Out	Total
	Units	24%	76%		62%	38%	
Apartments	86 du	5	16	21	14	10	24
	Total	5	16	21	14	10	24

9.1.2. MODE SHARES

Using the TRANS Auto Trips projected in Table 4 and the modal share percentages from the 2011 NCR Household Origin – Destination Survey and Table 3.6 of the TRANS Trip Generation Study (urban apartments), the modal share for the proposed development is summarized in Table 5.

Table 5: Total Site Trip Generation

Travel Mode	AM Mode Share	AM Peak (persons/h)			PM Mode Share	PM Peak (persons/h)		
		In	Out	Total		In	Out	Total
Auto Driver	40%	5	16	21	49%	14	10	24
Auto Passenger	4%	1	1	2	11%	4	1	5
Transit	42%	5	17	22	36%	11	7	18
Non-motorized	14%	1	6	7	4%	1	1	2
Total People Trips	100%	12	40	53	100%	30	19	49

As shown in Table 5, based on the TRANS Trip Generation method, the proposed site is projected to generate approximately 53 two-way person-trips per hour during the weekday peak hours. The increase in two-way transit trips is estimated to be approximately 18 to 22 passengers per hour, and the increase in bike/walk trips is approximately 7 persons per hour.

10. DEVELOPMENT DESIGN

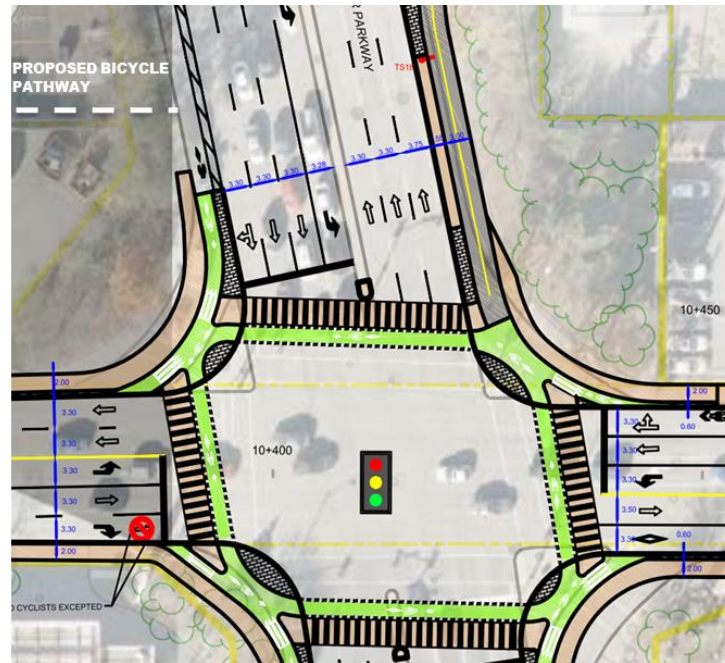
10.1. DESIGN FOR SUSTAINABLE MODES

The minimum parking requirements for this development are 43 car spaces for the residents (0.5 spaces per unit on any lot within 100 m of a main street. As per section 101(1)(a)(iii)), 8 car spaces for visitor parking (0.1 spaces per unit, 0 spaces for first 12 units), and 43 bike spaces (0.5 spaces per unit). The site provides 136 parking spaces, and 40 interior bike parking spaces. Small modifications to the planned provision of parking spaces are required to comply with minimum Zoning requirements of bicycle parking spaces. The proposal is consistent with City of Ottawa TDM's principles by providing interior bicycle parking spaces in the underground garage

A pedestrian access from the subject development to the Vanier Parkway west sidewalk and a multi-use pathway on the southern edge of the site that links Mark Avenue with the Vanier Parkway are proposed. Also, a brick paving pathway extends along the western face of the new residential units and connects to a concrete pedestrian pathway that leads to the existing building and to Mark Avenue. Given the proposed pedestrian access to the Vanier Parkway, all units within the subject site are within 200 m from the nearest transit stops.

The proposed bicycle pathway improves cycling connectivity to Montreal Road and has the potential to increase the walking and access to transit. The multi-use pathway is complimentary to the Montreal Road Revitalization Plan (construction estimated to start in spring 2019), by connecting to the southbound buffered cycle lane on Vanier Parkway, as shown in Figure 7.

Figure 7: Conceptual Design Plan for the Montreal Road / Vanier Parkway Intersection



Source: Montreal Road Transportation Planning and Functional Design Study

Given the development's location within a general urban area, the target levels of service for pedestrians and cyclists are both LoS 'C'. The multi-modal level of service analysis for the road segment along Vanier Parkway adjacent to the site is summarized in Table 6, with detailed analyses provided in Appendix D.

Table 6: MMLOS – Vanier Parkway Road Segment (West Side of Southbound Roadway)

Road Segment	Level of Service			
	Pedestrian (PLOS)		Bicycle (BLOS)	
	PLOS	Target	BLOS	Target
Existing Conditions				
Vanier Parkway	F	C	F	C
Proposed Montreal Road Revitalization				
Vanier Parkway	E	C	D	C

The MMLOS analysis shows that the existing Vanier Parkway and the improvements as part of the Montreal Road Revitalization are both below the general urban targets for pedestrian LoS and bicycle LoS. The proposed 1.8 m sidewalk and a 2.0 m curbside cycle track with a 1.0 m buffer along the west side of Vanier Parkway southbound roadway, will result in an incremental improvement from LoS 'F' to a PLoS 'E' and BLoS 'D'.

To potentially meet the target LoS of 'C' for Vanier Parkway, the City can consider the following changes to the proposed work on Vanier parkway, north of Montreal Road:

- Pedestrians - a PLoS 'C' can be achieved if a 2.0 m sidewalk and a boulevard greater than 2.0 m are provided and the vehicle speeds are reduced to 50 km/h along Vanier Parkway;
- Bicyclists - a BLoS 'C' can be achieved along this road segment if a physically separated bicycle lane is implemented, or the number of vehicle lanes are reduced along Vanier Parkway; and
- Providing a 3.0 m MUP with a 0.5 m to 2.0 m boulevard and reducing vehicle speeds on Vanier Parkway to 40 km/h would result in a PLoS 'C' and BLoS 'A', achieving the established MMLOS targets for the area (Option 'MUP').

10.2. CIRCULATION AND ACCESS

The proposal includes a two-way 6.7 m wide access route with turning radius at corners of 6.0 to 8.0 m. Given the fire access route is approximately 85 m long, no hammer heads or turn-around facilities for emergency vehicles are required as part of the design. However, to ensure adequate operations of municipal services vehicles, the location of garbage storage will have to be provided within the throat of the proposed driveway.

11.ACCESS INTERSECTIONS DESIGN

11.1. LOCATION AND DESIGN OF ACCESS

As mentioned before, site access will be provided via a two-way private driveway that connects to the Greensway Avenue. The proposed driveway width of 6.7 metres and 10.5 metres of clear throat length are sufficient to accommodate the subject development vehicle demand. There is an adjacent single-detached dwelling driveway approximately 18 m to the north and a multi-dwelling private driveway across Greensway Avenue. The access is recommended to have a minor stop-control. A minimum curb radius of 8.0 m will be required to accommodate the municipal services design vehicle.

12.NEIGHBOURHOOD TRAFFIC MANAGEMENT

12.1. ADJACENT NEIGHBOURHOODS

The subject development relies on local streets for access. Given the peak hour traffic generated by the development will be approximately 24 vehicles, local streets are expected to continue operating within ATM thresholds.

13.TRANSIT

13.1. ROUTE CAPACITY

Figure 8 depicts the location of nearby eastbound, westbound, northbound and southbound transit stops and Table 7 summarizes the average available seats on-vehicle for the corresponding transit routes.

Figure 8: Nearby Transit Stops Locations



Table 7: Transit Capacity at Adjacent Transit Stops

Intersection	Stop	Direction	Route		Average Boarding and Alighting	Average Load at Departure	Available Seats (%)
Vanier Parkway/Montreal	7052	Northbound	9	AM	2	14	63%
				PM	4	9	76%
	7085	Southbound	9	AM	4	13	66%
				PM	5	20	47%
	8783	Westbound	12	AM	5	46	13%
				PM	4	29	24%
	7053	Eastbound	12	AM	2	26	32%
				PM	4	41	23%

As outlined within Section 9, the forecasted ‘new’ two-way transit trips are estimated to be 22 trips (5 in, 17 out) during the AM peak and 18 trips (11 in, 7 out) during the PM peak. During the AM peak, the outbound trips represent approximately 31% of a single bus (55 passengers) or approximately 23% of an articulated bus (75 passengers).

The average load for transit vehicles is typically 25 passengers during the AM and PM peak periods, and as such, the additional forecasted transit trips can be accommodated on the existing Route 9 and 12 services. Transit information was provided by the City of Ottawa and is included in Appendix E.

14. INTERSECTION DESIGN

14.1. INTERSECTION DESIGN

The MMLOS analysis for the Montreal Road / Vanier Parkway signalized intersection is summarized in Table 8. The existing detailed MMLoS analysis is provided as Appendix D.

Table 8: MMLOS – Signalized Study Area Intersection

Intersection	Level of Service			
	Pedestrian (PLOS)		Bicycle (BLOS)	
	PLOS	Target	BLOS	Target
Existing Conditions				
Montreal Road / Vanier Parkway	F	B	F	C
Proposed Montreal Road Revitalization				
Montreal Road / Vanier Parkway	F	B	A	C

The MMLOS analysis shows that the existing Montreal Road/Vanier Parkway intersection is currently below the general urban targets for pedestrian LoS and bicycle LoS. The proposed improvements as part of the Montreal Road Revitalization will increase the bicycle to a LoS ‘A’ but the pedestrian LoS will remain as a ‘F’.

To potentially meet the target LoS for the Montreal Road/Vanier Parkway intersection, the City can consider the following changes to the proposed work in the Montreal Road Revitalization:

- Pedestrian – In general, high pedestrian level of service is difficult to achieve at signalized intersections larger than 2-lane roads. At this signalized intersection, pedestrians must cross 6 or more lanes of traffic if they wish to cross

Vanier parkway, and 5 or more lanes to cross Montreal Road. With restrictions on both left and right-turns, and pedestrian leading intervals, the PLoS would only be improved to a LoS 'E' on Vanier Parkway and LoS 'C' on Montreal Road. Given the nature of the two corridors, it is unlikely that turn restrictions are feasible for this intersection.

15. SUMMARY OF IMPROVEMENTS INDICATED AND MODIFICATION OPTIONS

Based on the results summarized herein the following conclusions are offered:

Proposed Site

- The proposed site will consist of 86 residential units, a private driveway located on Greensway Avenue, a Pedestrian access to the Vanier Parkway and bicycle pathway linking Mark Avenue to the Vanier Parkway,
- In total, the development is anticipated to generate approximately 53 and 49 two-way person trips during the AM and PM peak hours, respectively and split into the following modal shares:
 - 23 auto trips (6 in, 17 out) during the AM peak and 29 auto trips (18 in, 11 out) during the PM peak;
 - 22 transit trips (5 in, 17 out) during the AM peak and 18 transit trips (11 in, 7 out) during the PM peak; and
 - 7 active mode trips (1 in, 6 out) during the AM peak and 2 active mode trips (1 in, 1 out) during the PM peak.
- The proposed site is contained within 100 m of Montreal Road, which is a designated main street;
- A total of 136 parking spaces will be provided within the development, of which 8 will need to be designated as visitor parking and the remaining can be for residents; and
- A total of 40 interior bicycle parking spaces will be provided. A small adjustment will meet the City's Zoning By-Law requirements: 43 bicycle spaces.

Site Plan, Access and Circulation

- The proposal includes a two-way 6.7 m wide access route with turning radius at corners of 6.0 to 8.0 m. The proposed driveway width of 6.7 metres and 10.5 metres of clear throat length are sufficient to accommodate the subject development vehicle demand;
- To ensure adequate operations of municipal services vehicles, the location of garbage storage will have to be provided within the throat of the proposed driveway; and
- The proposed on-site multi-use pathway provides a desirable connection to the future spine bicycle routes along the Vanier Parkway and Montreal Road:
 - If the multi-use pathway is implemented prior to the Montreal Road Revitalization, the multi-use pathway can connect as an interim solution to the existing sidewalk along Vanier Parkway.

Transit

- Given the proposed pedestrian access to the Vanier Parkway, all units within the subject site are within 200 m from the nearest transit stops; and
- Existing capacity exists on the current transit service in the area (Routes 9 and 12) to accommodate the forecasted transit trips.

Boundary Streets and Intersection Design

- No local improvements are required for the proposed vehicular access configuration as it will operate within the Private Approach By-Law;
- The Montreal Road and Vanier Parkway intersection was noted to experience a significant number of rear end collisions (48), with approximately 40% of these involving going ahead, slowing and stopping vehicles. It is recommended that the City consider increased speed limit enforcements along Vanier Parkway between Deschamps Avenue and McArthur Avenue;
- Beyond the scope of the proposed site, the following improvements should be considered by the City during the Montreal Road Revitalization project to improve the Vanier Parkway and the intersection with Montreal Road:

- Provide a 3.0 m MUP with a 0.5 m to 2.0 m boulevard (such as shown in Figure 7 for the east sidewalk along Vanier Parkway) and potential options to reduce vehicle speeds on Vanier Parkway to 50 km/h or below to meet the MMLOS targets for PLOS and BLOS; and
- The measures proposed within the planned City intervention to the Montreal Road/ Vanier Parkway intersection, which is part of the Montreal Road Revitalization project, would result in PLoS 'F' and BLoS 'A'. It is noted that high pedestrian level of service is difficult to achieve at signalized intersections. The best PLoS achievable at these intersection, without narrowing Vanier Parkway, is PLoS 'E'.

Based on the foregoing conclusions, this report satisfies the TIA requirements for Manor Park Management Inc. 263 Greensway Avenue development and is recommended to proceed from a transportation perspective.

Appendix A

Screening Form

City of Ottawa 2017 TIA Guidelines

Date

7-Mar-18

TIA Screening Form

Project

M. P. Mangement, 263 Greensway

Project Number

476653

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

Module 1.1 - Description of Proposed Development

Municipal Address	263 Greensway
Description of location	Existing 3 storey Apartment building with parking lot. Adjacent but without access to Vanier Parkway. Only access on Greensway Ave. K1L 7V3
Land Use	Proposed Residential
Development Size	86 Apartments
Number of Accesses and Locations	Existing access to Greensway
Development Phasing	Single Phase
Buildout Year	2019
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger

Land Use Type	Townhomes or Apartments	
Development Size	86	Units
Trip Generation Trigger Met?	No	

Module 1.3 - Location Triggers

Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes	Vanier Pkwy Spine Bicycle Network according to TMP Map1
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes	Property parcel partially within Montreal Rd Design Priority Area
Location Trigger Met?	Yes	

Module 1.4 - Safety Triggers

Posted Speed Limit on any boundary road	<80	km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	No	No driveway within the area of influence of an adjacent traffic signal.
A proposed driveway makes use of an existing median break that serves an existing site	No	
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	Yes	Montreal Rd/Vanier Pkwy intersections reports 106 collisions with 22 injured between 2012 - 2016
The development includes a drive-thru facility	No	
Safety Trigger Met?	Yes	

Appendix B

Traffic Count Data



Turning Movement Count - 15 Minute Summary Report

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

NORTH RIVER RD

MONTREAL RD

		Northbound			Southbound						Eastbound						Westbound					
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total		
07:00	07:15	30	2	7	39	5	4	0	9	48	0	98	68	166	0	81	3	84	250	298		
07:15	07:30	38	0	3	41	2	2	4	8	49	1	79	76	156	0	75	1	76	232	281		
07:30	07:45	45	2	9	56	6	3	2	11	67	1	109	71	181	1	115	1	117	298	365		
07:45	08:00	45	0	6	51	4	0	0	4	55	0	122	69	191	0	141	1	142	333	388		
08:00	08:15	59	4	8	71	5	6	4	15	86	0	115	70	185	1	126	2	129	314	400		
08:15	08:30	64	3	3	70	4	5	8	17	87	0	84	80	164	0	149	6	155	319	406		
08:30	08:45	62	5	4	71	2	5	11	18	89	0	117	83	200	0	161	4	165	365	454		
08:45	09:00	61	3	4	68	5	1	2	8	76	1	126	82	209	0	136	2	138	347	423		
09:00	09:15	43	4	7	54	4	5	0	9	63	1	102	62	165	0	112	4	116	281	344		
09:15	09:30	47	0	7	54	1	4	1	6	60	1	94	64	159	1	79	0	80	239	299		
09:30	09:45	46	4	3	53	4	3	0	7	60	1	110	49	160	1	90	6	97	257	317		
09:45	10:00	52	4	9	65	3	6	1	10	75	2	113	70	185	0	80	0	80	265	340		
11:30	11:45	61	0	8	69	2	6	2	10	79	1	98	68	167	0	106	1	107	274	353		
11:45	12:00	45	3	12	60	6	7	4	17	77	2	128	54	184	0	98	7	105	289	366		
12:00	12:15	59	6	10	75	5	8	2	15	90	3	116	72	191	1	87	2	90	281	371		
12:15	12:30	62	2	10	74	3	1	2	6	80	1	113	52	166	2	89	5	96	262	342		
12:30	12:45	55	2	9	66	6	3	2	11	77	3	117	51	171	0	94	4	98	269	346		
12:45	13:00	66	4	9	79	4	4	5	13	92	4	128	65	197	0	100	2	102	299	391		
13:00	13:15	52	3	14	69	2	3	4	9	78	1	130	67	198	0	92	5	97	295	373		
13:15	13:30	52	3	10	65	2	4	2	8	73	2	119	55	176	0	82	2	84	260	333		
15:00	15:15	88	4	11	103	6	7	6	19	122	6	125	80	211	0	118	3	121	332	454		
15:15	15:30	77	11	4	92	5	5	5	15	107	4	171	100	275	1	141	2	144	419	526		
15:30	15:45	76	6	9	91	5	8	4	17	108	0	154	94	248	1	178	7	186	434	542		
15:45	16:00	100	7	11	118	5	4	8	17	135	0	117	100	217	0	133	12	145	362	497		
16:00	16:15	82	10	17	109	6	2	8	16	125	0	170	78	248	0	149	3	152	400	525		
16:15	16:30	93	14	7	114	5	5	12	22	136	2	142	83	227	0	162	7	169	396	532		
16:30	16:45	99	6	12	117	2	0	5	7	124	0	140	99	239	0	168	2	170	409	533		
16:45	17:00	84	9	11	104	3	6	9	18	122	0	185	90	275	0	128	4	132	407	529		
17:00	17:15	75	6	10	91	4	4	5	13	104	0	189	97	286	0	135	6	141	427	531		
17:15	17:30	68	6	14	88	4	2	7	13	101	0	167	80	247	0	145	7	152	399	500		
17:30	17:45	84	5	11	100	2	6	7	15	115	0	120	68	188	0	114	3	117	305	420		
17:45	18:00	74	8	8	90	5	4	7	16	106	7	149	89	245	0	98	6	104	349	455		
TOTAL:		2044	146	277	2467	127	133	139	399	2866	44	4047	2386	6477	9	3762	120	3891	10368	13234		

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35162

MONTREAL RD @ NORTH RIVER RD

Count Date: Tuesday, January 19, 2016

Start Time: 07:00

Time Period	NORTH RIVER RD			MONTREAL RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	3	3	0	0	0	3
08:00 09:00	0	1	1	1	1	2	3
09:00 10:00	0	0	0	1	3	4	4
11:30 12:30	2	0	2	1	0	1	3
12:30 13:30	0	0	0	1	0	1	1
15:00 16:00	0	0	0	4	0	4	4
16:00 17:00	3	0	3	4	2	6	9
17:00 18:00	1	0	1	1	2	3	4
Total	6	4	10	13	8	21	31

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

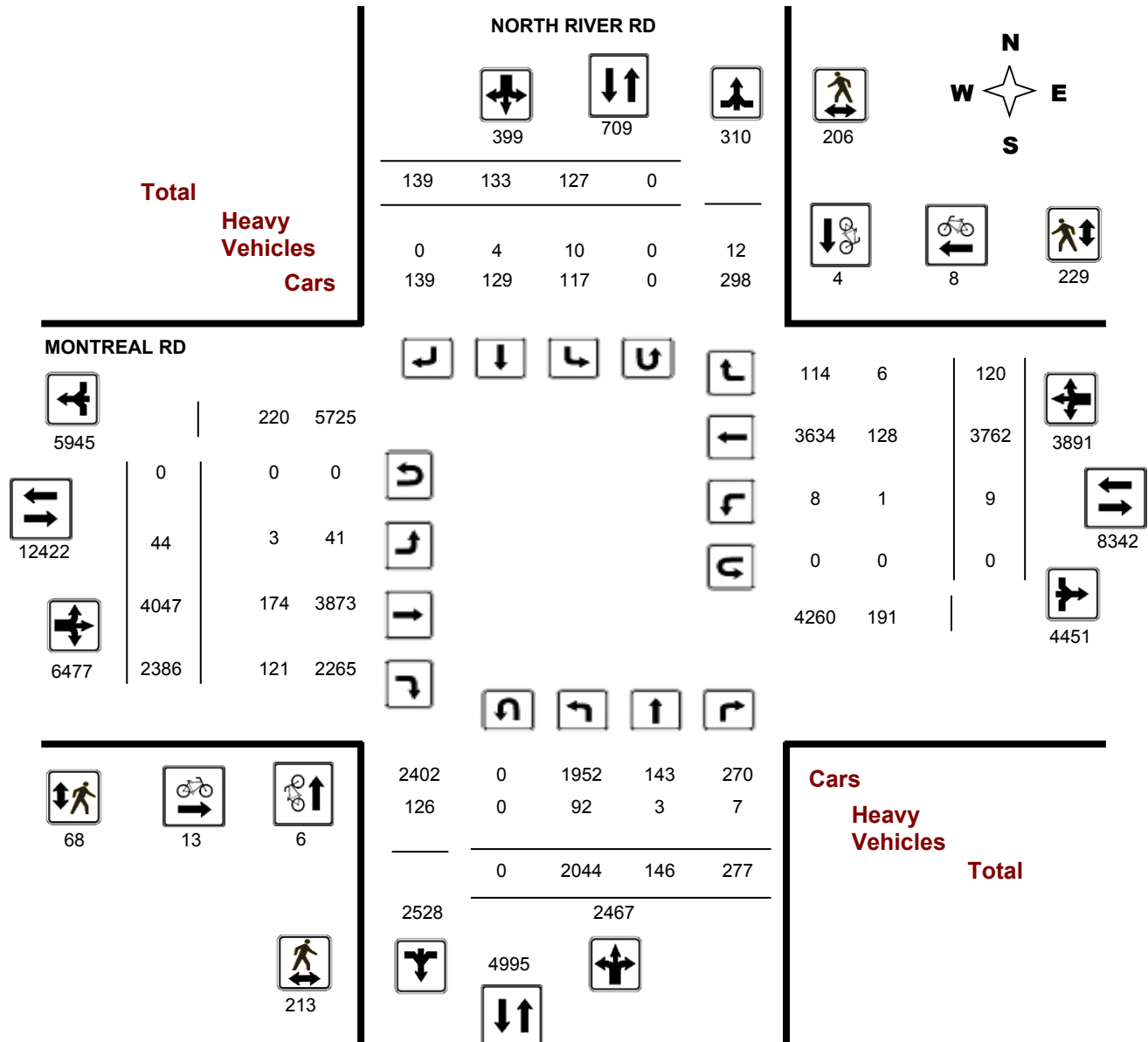
Turning Movement Count - Full Study Diagram

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

WO#: 35162

Device: Miovision



Comments



Transportation Services - Traffic Services

W.O.
35162

Turning Movement Count - Heavy Vehicle Report

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

NORTH RIVER RD											MONTREAL RD									
Time Period		Northbound			Southbound			Eastbound			Westbound									Grand Total
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	
07:00	08:00	12	0	0	12	1	0	0	1	13	1	15	17	33	0	24	0	24	57	70
08:00	09:00	16	2	0	18	3	0	0	3	21	0	31	16	47	0	23	2	25	72	93
09:00	10:00	13	1	2	16	2	1	0	3	19	0	25	13	38	0	15	0	15	53	72
11:30	12:30	12	0	2	14	3	1	0	4	18	1	23	12	36	1	17	1	19	55	73
12:30	13:30	12	0	1	13	0	0	0	0	13	1	30	13	44	0	11	0	11	55	68
15:00	16:00	9	0	0	9	1	1	0	2	11	0	22	18	40	0	18	2	20	60	71
16:00	17:00	11	0	0	11	0	1	0	1	12	0	17	21	38	0	13	1	14	52	64
17:00	18:00	7	0	2	9	0	0	0	0	9	0	11	11	22	0	7	0	7	29	38
Sub Total		92	3	7	102	10	4	0	14	116	3	174	121	298	1	128	6	135	433	549
U-Turns (Heavy Vehicles)					0				0	0				0				0	0	0
Total		92	3	7	0	10	4	0	14	116	3	174	121	298	1	128	6	135	433	549

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



Transportation Services - Traffic Services

Work Order

35162

Turning Movement Count - Pedestrian Volume Report

MONTREAL RD @ NORTH RIVER RD

Count Date: Tuesday, January 19, 2016

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	5	4	9	0	3	3	12
07:15 07:30	3	6	9	0	0	0	9
07:30 07:45	6	4	10	2	3	5	15
07:45 08:00	8	5	13	0	11	11	24
07:00 08:00	22	19	41	2	17	19	60
08:00 08:15	8	6	14	1	16	17	31
08:15 08:30	9	9	18	5	11	16	34
08:30 08:45	5	6	11	2	7	9	20
08:45 09:00	4	7	11	1	8	9	20
08:00 09:00	26	28	54	9	42	51	105
09:00 09:15	3	5	8	2	6	8	16
09:15 09:30	4	4	8	1	4	5	13
09:30 09:45	5	3	8	1	5	6	14
09:45 10:00	6	2	8	1	2	3	11
09:00 10:00	18	14	32	5	17	22	54
11:30 11:45	1	7	8	3	11	14	22
11:45 12:00	4	6	10	1	12	13	23
12:00 12:15	4	6	10	1	7	8	18
12:15 12:30	4	5	9	0	5	5	14
11:30 12:30	13	24	37	5	35	40	77
12:30 12:45	10	3	13	0	5	5	18
12:45 13:00	6	4	10	2	4	6	16
13:00 13:15	2	5	7	1	5	6	13
13:15 13:30	3	2	5	2	5	7	12
12:30 13:30	21	14	35	5	19	24	59
15:00 15:15	6	10	16	3	5	8	24
15:15 15:30	9	9	18	3	10	13	31
15:30 15:45	12	7	19	1	11	12	31
15:45 16:00	13	4	17	1	7	8	25
15:00 16:00	40	30	70	8	33	41	111
16:00 16:15	4	9	13	5	11	16	29
16:15 16:30	5	9	14	3	7	10	24
16:30 16:45	9	10	19	3	9	12	31
16:45 17:00	14	8	22	7	9	16	38
16:00 17:00	32	36	68	18	36	54	122
17:00 17:15	11	7	18	1	7	8	26
17:15 17:30	8	16	24	5	8	13	37
17:30 17:45	12	8	20	5	8	13	33
17:45 18:00	10	10	20	5	7	12	32
17:00 18:00	41	41	82	16	30	46	128
Total	213	206	419	68	229	297	716

Comment:

Turning Movement Count - Full Study Summary Report

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

1.10

Full Study

NORTH RIVER RD											MONTREAL RD										
Northbound					Southbound					Eastbound					Westbound					STR TOT	Grand Total
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT				
07:00 08:00	158	4	25	187	17	9	6	32	219	2	408	284	694	1	412	6	419	1113	1332		
08:00 09:00	246	15	19	280	16	17	25	58	338	1	442	315	758	1	572	14	587	1345	1683		
09:00 10:00	188	12	26	226	12	18	2	32	258	5	419	245	669	2	361	10	373	1042	1300		
11:30 12:30	227	11	40	278	16	22	10	48	326	7	455	246	708	3	380	15	398	1106	1432		
12:30 13:30	225	12	42	279	14	14	13	41	320	10	494	238	742	0	368	13	381	1123	1443		
15:00 16:00	341	28	35	404	21	24	23	68	472	10	567	374	951	2	570	24	596	1547	2019		
16:00 17:00	358	39	47	444	16	13	34	63	507	2	637	350	989	0	607	16	623	1612	2119		
17:00 18:00	301	25	43	369	15	16	26	57	426	7	625	334	966	0	492	22	514	1480	1906		
Sub Total	2044	146	277	2467	127	133	139	399	2866	44	4047	2386	6477	9	3762	120	3891	10368	13234		
U Turns				0				0	0				0				0	0	0		
Total	2044	146	277	2467	127	133	139	399	2866	44	4047	2386	6477	9	3762	120	3891	10368	13234		
EQ 12Hr	2841	203	385	3429	177	185	193	555	3984	61	5625	3317	9003	13	5229	167	5408	14411	18395		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr	3125	223	424	3772	194	203	213	610	4382	67	6188	3648	9903	14	5752	183	5949	15852	20234		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.10							
AVG 24Hr	4094	292	555	4941	254	266	278	799	5740	88	8106	4779	12973	18	7535	240	7794	20767	26507		
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31							

Comments:

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



Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

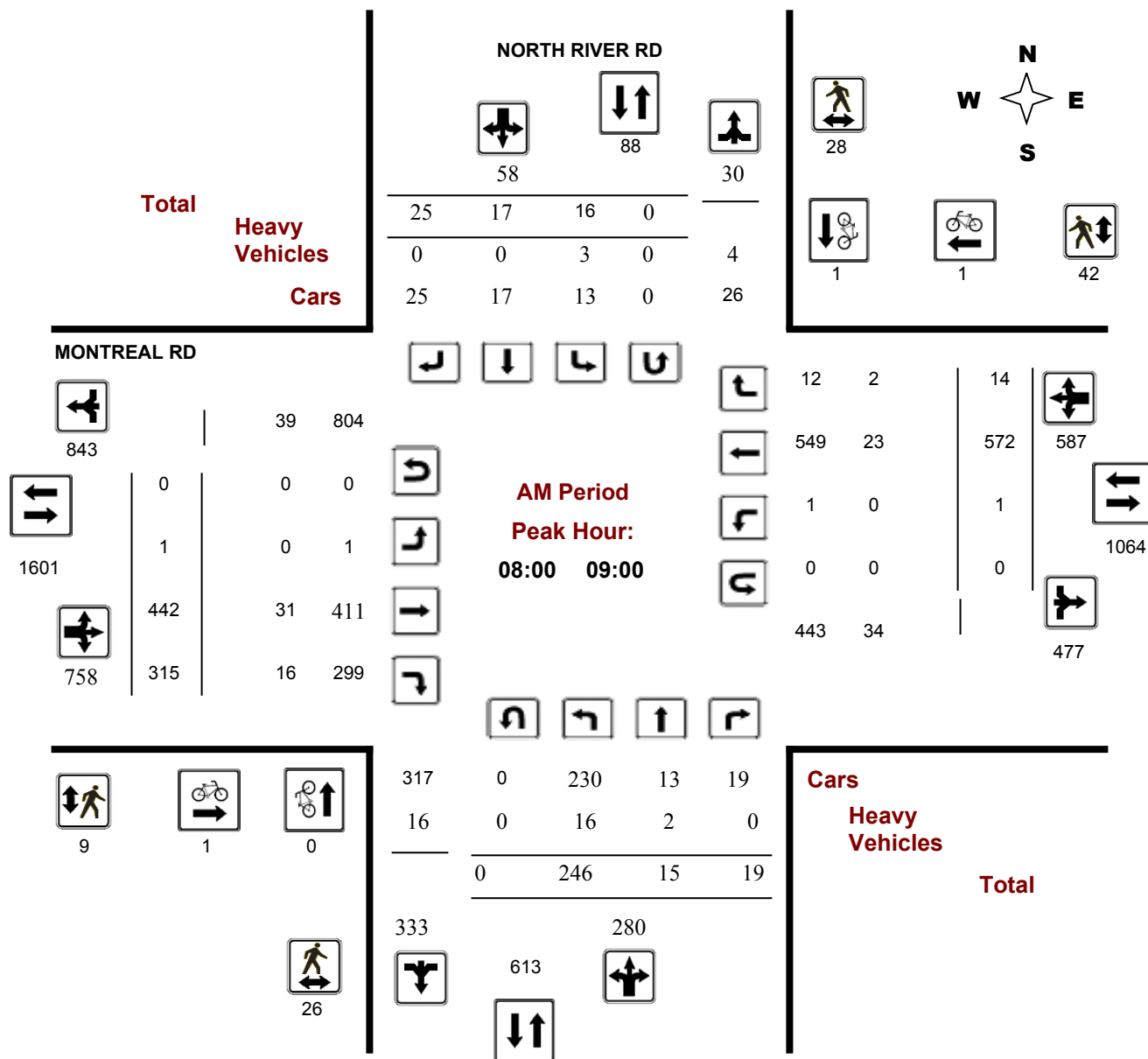
MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

Start Time: 07:00

WO No: 35162

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

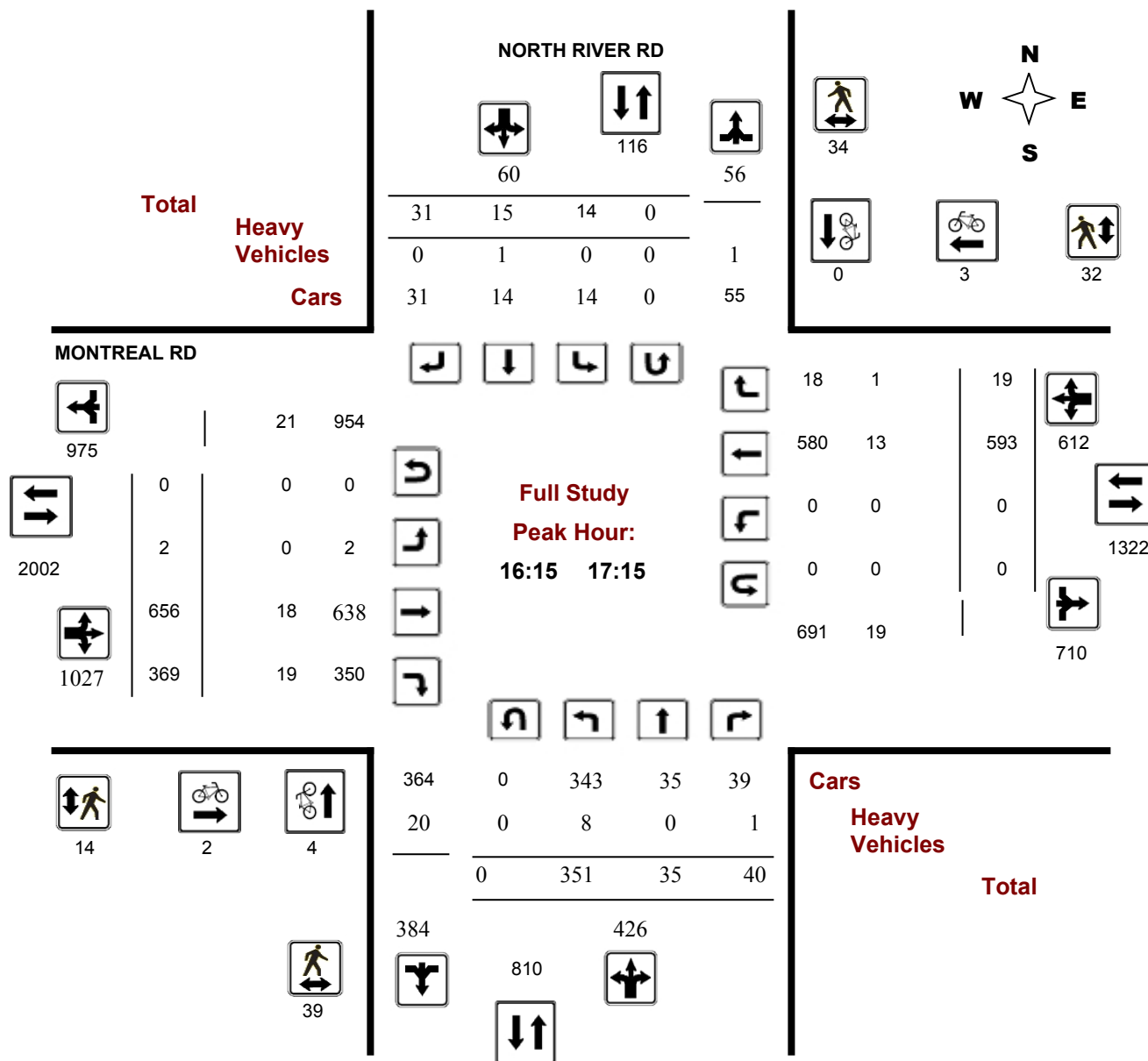
MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

Start Time: 07:00

WO No: 35162

Device: Miovision



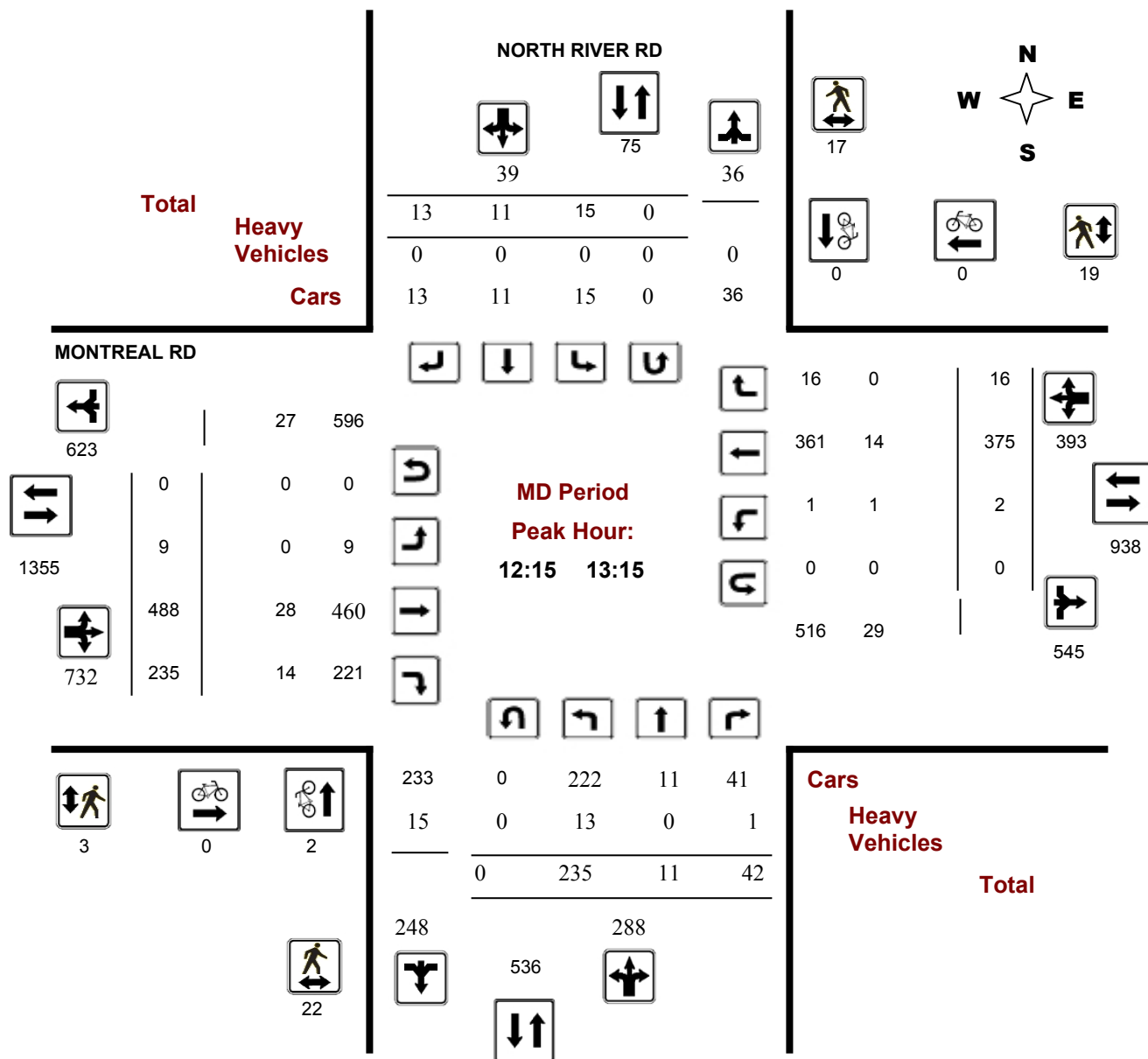
Comments

Survey Date: Tuesday, January 19, 2016

Start Time: 07:00

WO No: 35162

Device: Miovision



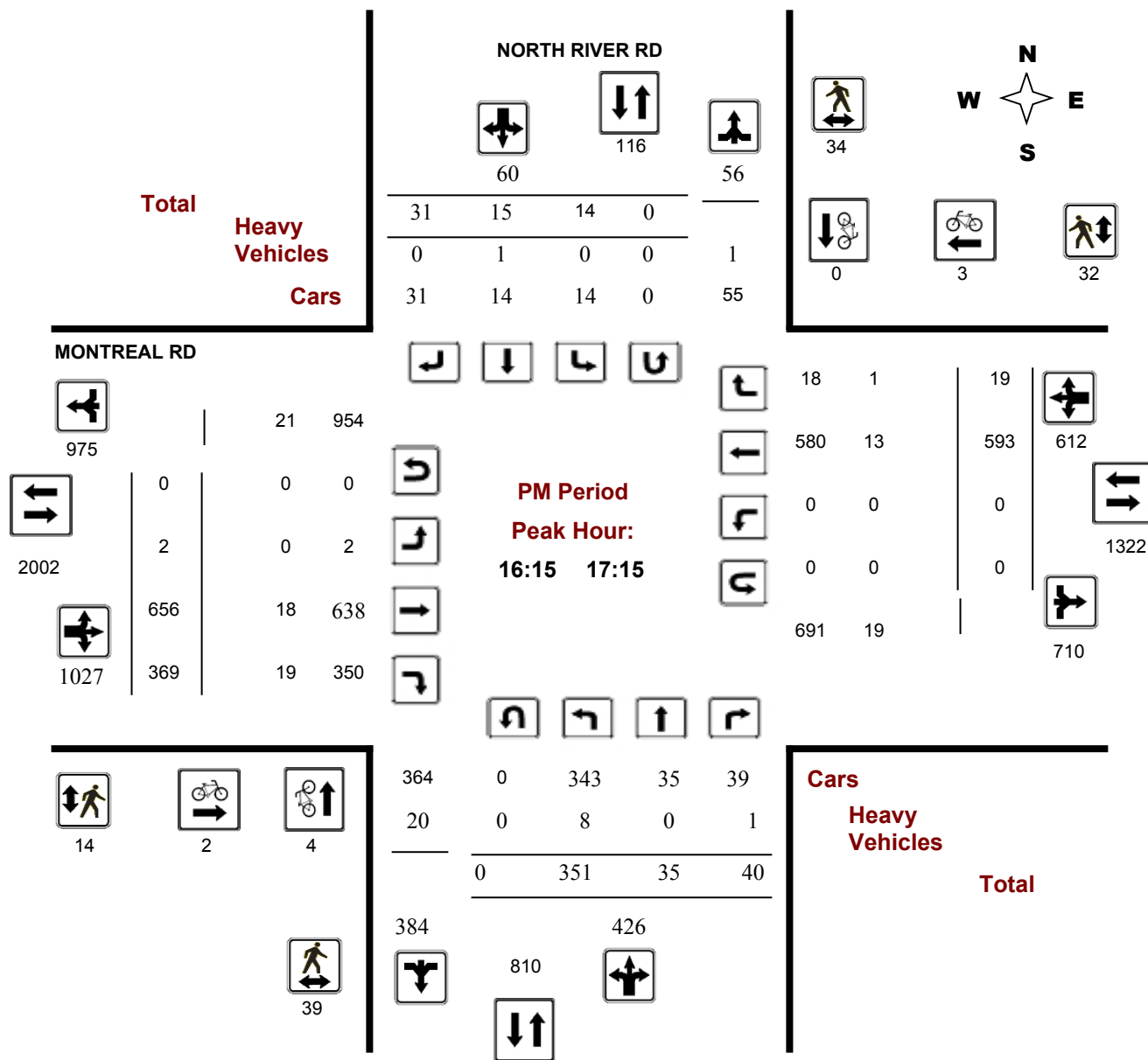
Comments

Survey Date: Tuesday, January 19, 2016

Start Time: 07:00

WO No: 35162

Device: Miovision



Comments

Turning Movement Count - 15 Min U-Turn Total Report

MONTREAL RD @ NORTH RIVER RD

Survey Date: Tuesday, January 19, 2016

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

Public Works - Traffic Services

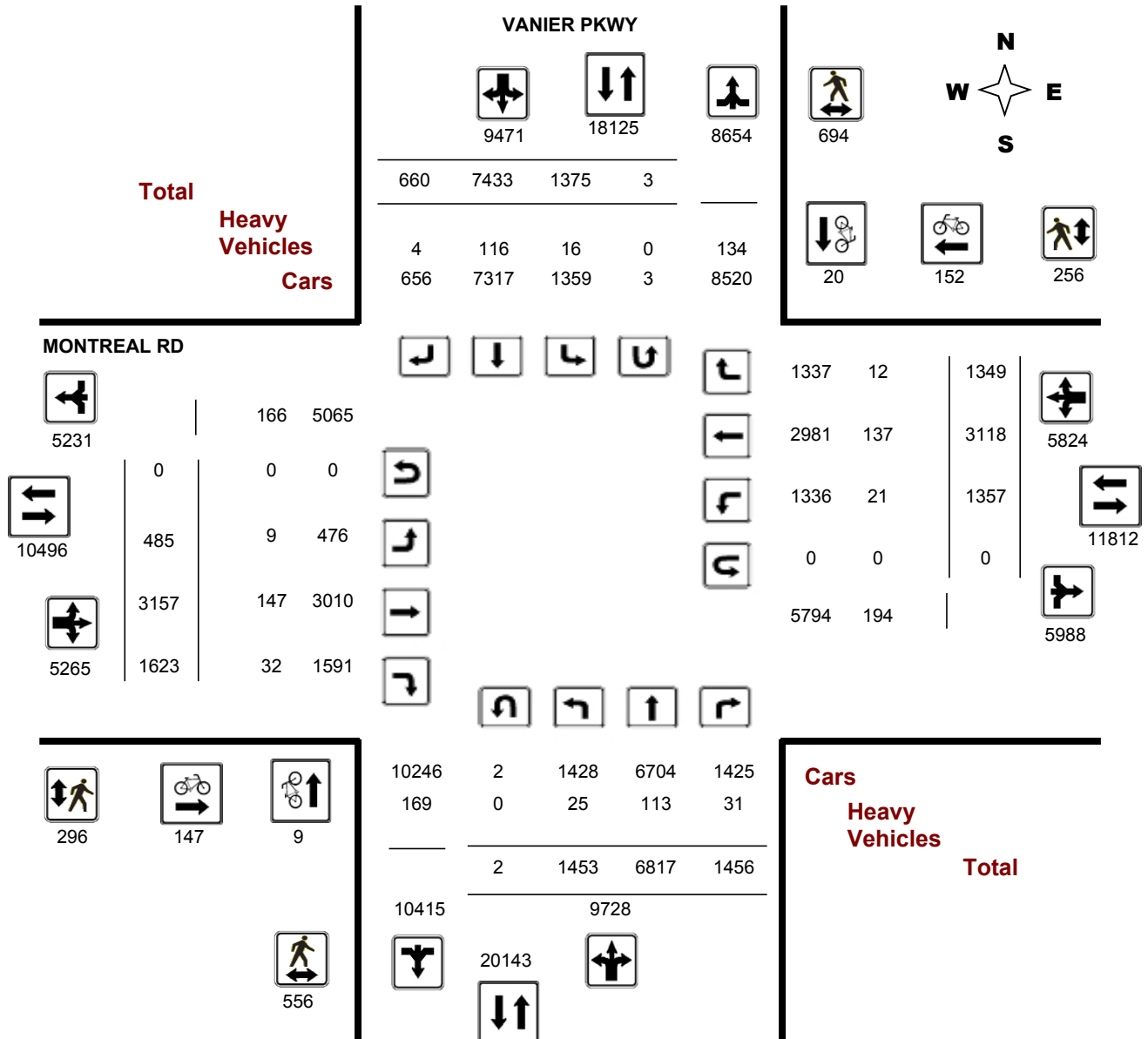
Turning Movement Count - Full Study Diagram

MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

WO#: 34992

Device: Miovision



Public Works - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

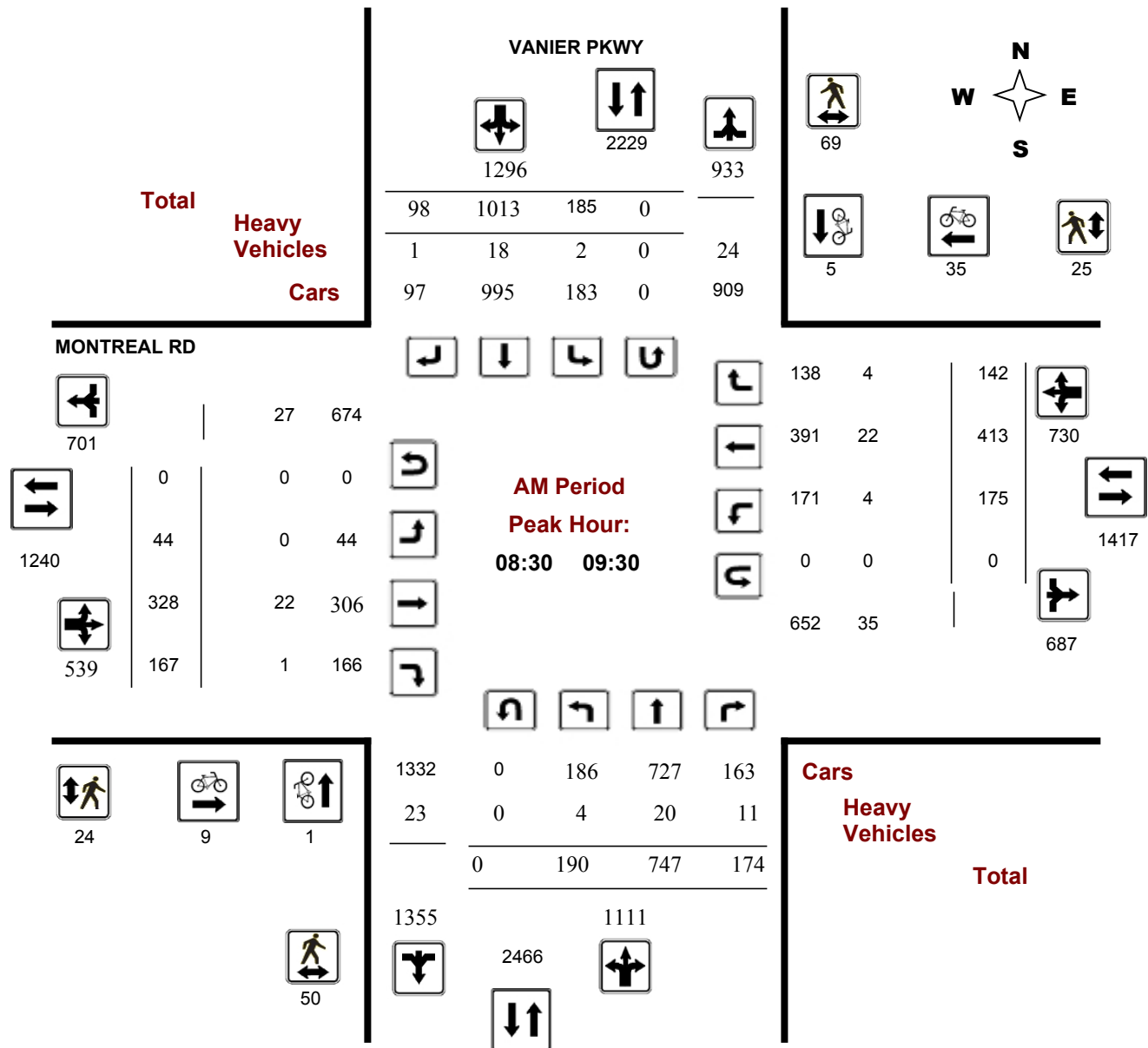
MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Start Time: 07:00

WO No: 34992

Device: Miovision



Comments

Turning Movement Count - Full Study Peak Hour Diagram

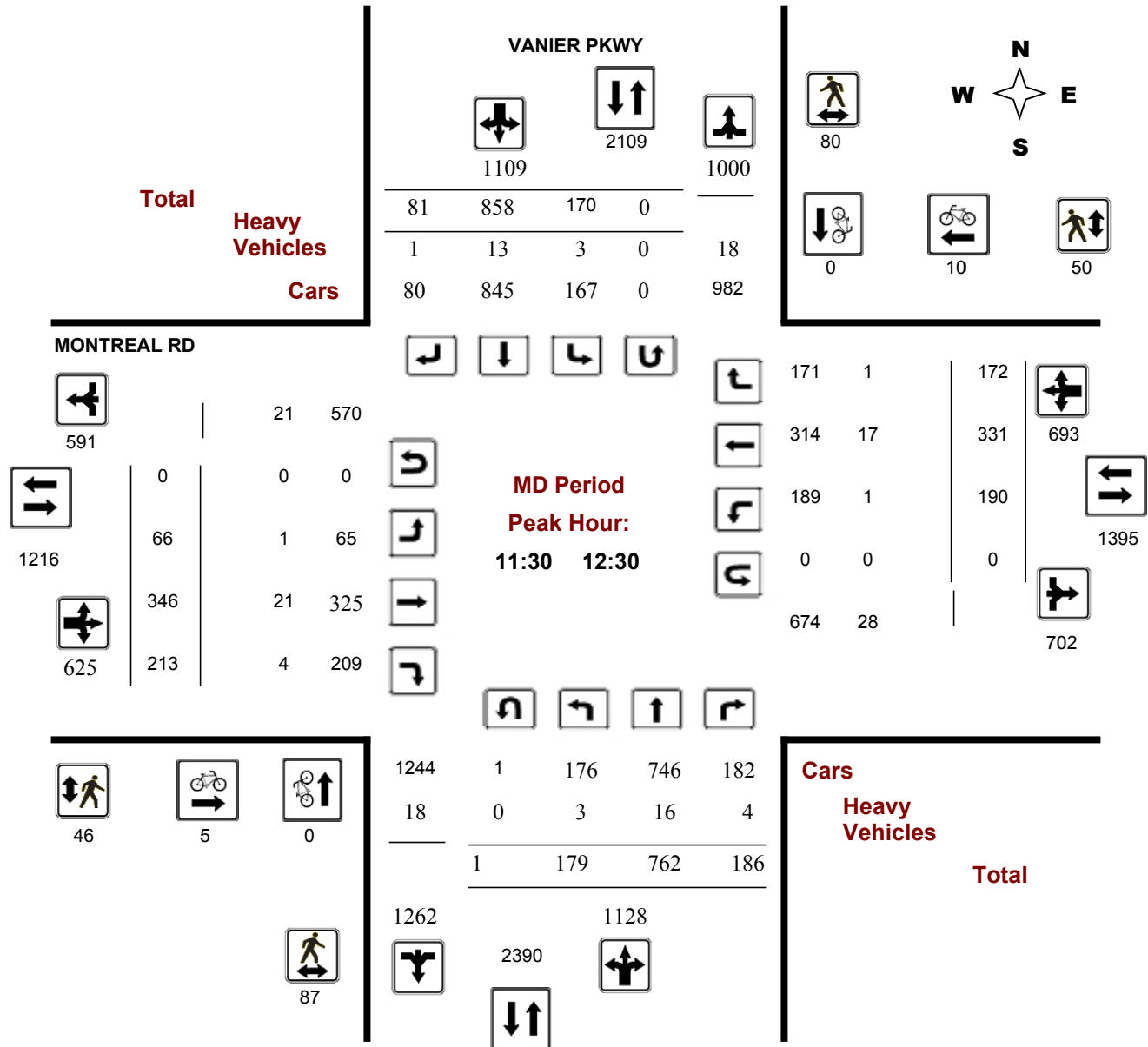
MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Start Time: 07:00

WO No: 34992

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

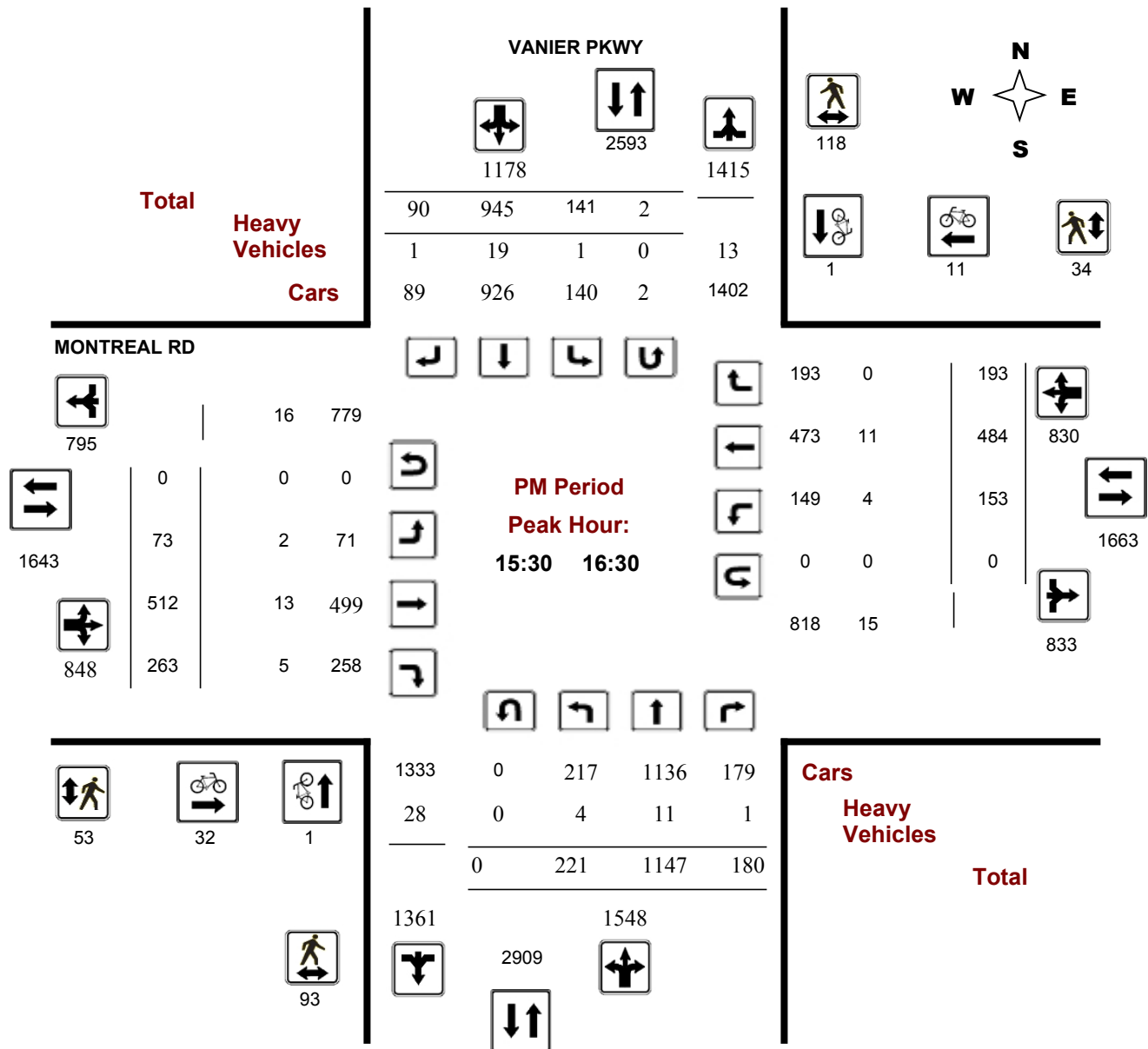
MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Start Time: 07:00

WO No: 34992

Device: Miovision



Turning Movement Count - Full Study Summary Report

MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Total Observed U-Turns

Northbound: 2 Southbound: 3
Eastbound: 0 Westbound: 0

AADT Factor

.90

Full Study

VANIER PKWY										MONTREAL RD									
Northbound					Southbound					Eastbound					Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	124	523	133	780	208	1129	99	1436	2216	30	272	213	515	142	359	137	638	1153	3369
08:00 09:00	165	756	152	1073	189	994	93	1276	2349	53	344	155	552	147	451	148	746	1298	3647
09:00 10:00	162	697	175	1034	176	913	94	1183	2217	44	318	168	530	190	357	132	679	1209	3426
11:30 12:30	179	762	186	1127	170	858	81	1109	2236	66	346	213	625	190	331	172	693	1318	3554
12:30 13:30	177	765	181	1123	158	793	65	1016	2139	71	382	156	609	200	334	165	699	1308	3447
15:00 16:00	226	1142	213	1581	160	903	74	1137	2718	83	488	273	844	161	411	216	788	1632	4350
16:00 17:00	225	1120	192	1537	146	929	92	1167	2704	62	520	233	815	159	484	191	834	1649	4353
17:00 18:00	195	1052	224	1471	168	914	62	1144	2615	76	487	212	775	168	391	188	747	1522	4137
Sub Total	1453	6817	1456	9726	1375	7433	660	9468	19194	485	3157	1623	5265	1357	3118	1349	5824	11089	30283
U Turns				2				3	5				0				0	0	5
Total	1453	6817	1456	9728	1375	7433	660	9471	19199	485	3157	1623	5265	1357	3118	1349	5824	11089	30288
EQ 12Hr	2020	9476	2024	13522	1911	10332	917	13165	26687	674	4388	2256	7318	1886	4334	1875	8095	15413	42100
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	1818	8528	1821	12170	1720	9299	826	11848	24018	607	3949	2030	6587	1698	3901	1688	7286	13873	37891
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	2381	11172	2386	15942	2253	12181	1082	15521	31463	795	5174	2660	8628	2224	5110	2211	9544	18172	49635
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31						

Comments:

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

Turning Movement Count - 15 Minute Summary Report

MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Total Observed U-Turns

Northbound: 2 Southbound: 3
Eastbound: 0 Westbound: 0

VANIER PKWY

MONTREAL RD

Time Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	N TOT	LT	ST	RT	S TOT		LT	ST	RT	E TOT	LT	ST	RT	W TOT		
07:00 07:15	31	80	25	136	53	264	20	337	473	11	64	52	127	40	65	32	137	264	737
07:15 07:30	19	112	27	159	48	291	25	364	523	3	53	58	114	28	112	32	172	286	809
07:30 07:45	36	153	41	230	55	308	31	394	624	6	77	50	133	42	93	36	171	304	928
07:45 08:00	38	178	40	256	52	266	23	341	597	10	78	53	141	32	89	37	158	299	896
08:00 08:15	34	174	35	243	48	251	27	326	569	12	83	40	135	43	117	37	197	332	901
08:15 08:30	40	190	29	259	43	232	21	296	555	14	90	40	144	29	106	37	172	316	871
08:30 08:45	43	206	41	290	52	257	18	327	617	11	97	42	150	37	113	35	185	335	952
08:45 09:00	48	186	47	281	46	254	27	327	608	16	74	33	123	38	115	39	192	315	923
09:00 09:15	42	187	37	266	46	257	29	332	598	7	90	41	138	50	97	42	189	327	925
09:15 09:30	57	168	49	274	41	245	24	310	584	10	67	51	128	50	88	26	164	292	876
09:30 09:45	41	182	38	261	48	192	18	258	519	15	81	33	129	46	74	40	160	289	808
09:45 10:00	22	160	51	233	41	219	23	283	516	12	80	43	135	44	98	24	166	301	817
11:30 11:45	37	167	45	249	46	224	19	289	538	15	93	49	157	44	77	43	164	321	859
11:45 12:00	53	196	49	299	51	202	21	274	573	13	71	44	128	54	84	41	179	307	880
12:00 12:15	48	210	45	303	37	213	24	274	577	26	86	61	173	43	90	37	170	343	920
12:15 12:30	41	189	47	277	36	219	17	272	549	12	96	59	167	49	80	51	180	347	896
12:30 12:45	40	191	49	280	48	177	20	245	525	18	87	23	128	46	77	42	165	293	818
12:45 13:00	46	198	58	302	37	198	17	252	554	20	91	35	146	49	101	49	199	345	899
13:00 13:15	49	179	36	264	35	205	15	256	520	16	106	52	174	54	74	45	173	347	867
13:15 13:30	42	197	38	277	38	213	13	264	541	17	98	46	161	51	82	29	162	323	864
15:00 15:15	50	286	54	390	45	220	20	285	675	21	118	66	205	45	88	55	188	393	1068
15:15 15:30	59	284	66	409	42	228	18	288	697	24	111	69	204	39	106	62	207	411	1108
15:30 15:45	54	286	49	389	39	260	15	316	705	18	125	83	226	34	108	61	203	429	1134
15:45 16:00	63	286	44	393	34	195	21	250	643	20	134	55	209	43	109	38	190	399	1042
16:00 16:15	52	302	45	399	36	245	26	307	706	16	130	57	203	43	123	45	211	414	1120
16:15 16:30	52	273	42	367	32	245	28	305	672	19	123	68	210	33	144	49	226	436	1108
16:30 16:45	61	276	54	391	38	216	16	270	661	15	129	57	201	46	106	44	196	397	1058
16:45 17:00	60	269	51	380	40	223	22	285	665	12	138	51	201	37	111	53	201	402	1067
17:00 17:15	59	263	62	384	45	247	16	308	692	20	147	56	223	34	99	43	176	399	1091
17:15 17:30	52	261	57	370	42	244	18	304	674	19	118	57	194	43	116	53	212	406	1080
17:30 17:45	46	283	45	374	45	193	13	251	625	21	122	47	190	39	95	45	179	369	994
17:45 18:00	38	245	60	343	36	230	15	281	624	16	100	52	168	52	81	47	180	348	972
TOTAL:	1453	6817	1456	9728	1375	7433	660	9471	19199	485	3157	1623	5265	1357	3118	1349	5824	11089	30288

Note: U-Turns are included in Totals.

Comment:

Turning Movement Count - 15 Min U-Turn Total Report

MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	1	0	0	0	1
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	1	0	0	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	1	0	0	1
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	2	0	0	2
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		2	3	0	0	5

Turning Movement Count - Heavy Vehicle Report

MONTREAL RD @ VANIER PKWY

Survey Date: Thursday, July 16, 2015

VANIER PKWY											MONTREAL RD									
Time Period		Northbound			Southbound						Eastbound			Westbound						Grand Total
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	
07:00	08:00	3	11	3	17	4	7	0	11	28	0	16	5	21	1	17	0	18	39	67
08:00	09:00	2	21	7	30	2	17	1	20	50	0	32	1	33	1	19	5	25	58	108
09:00	10:00	8	18	8	34	2	19	1	22	56	1	16	2	19	4	23	2	29	48	104
11:30	12:30	3	16	4	23	3	13	1	17	40	1	21	4	26	1	17	1	19	45	85
12:30	13:30	4	16	2	22	1	11	0	12	34	4	20	7	31	3	23	2	28	59	93
15:00	16:00	2	16	3	21	2	20	0	22	43	0	17	6	23	5	10	1	16	39	82
16:00	17:00	3	9	1	13	1	14	1	16	29	2	15	1	18	2	15	0	17	35	64
17:00	18:00	0	6	3	9	1	15	0	16	25	1	10	6	17	4	13	1	18	35	60
Sub Total		25	113	31	169	16	116	4	136	305	9	147	32	188	21	137	12	170	358	663
U-Turns (Heavy Vehicles)					0				0	0				0				0	0	0
Total		25	113	31	0	16	116	4	136	305	9	147	32	188	21	137	12	170	358	663

Heavy Vehicles are vehicles having one rear axle with four or more wheels, or having two or more rear axles. These vehicles include most O.C. Transpo, school and inter-city buses. Further, they ARE included in the Turning Movement Count Summary.



Public Works - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
34992

MONTREAL RD @ VANIER PKWY

Count Date: Thursday, July 16, 2015

Start Time: 07:00

Time Period	VANIER PKWY			MONTREAL RD			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	7	7	13	26	39	46
08:00 09:00	0	5	5	17	43	60	65
09:00 10:00	1	3	4	5	18	23	27
11:30 12:30	0	0	0	5	10	15	15
12:30 13:30	2	0	2	12	14	26	28
15:00 16:00	2	0	2	24	12	36	38
16:00 17:00	0	3	3	39	11	50	53
17:00 18:00	4	2	6	32	18	50	56
Total	9	20	29	147	152	299	328

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.



Public Works - Traffic Services

Work Order

34992

Turning Movement Count - Pedestrian Volume Report

MONTREAL RD @ VANIER PKWY

Count Date: Thursday, July 16, 2015

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	4	4	8	7	1	8	16
07:15 07:30	16	8	24	6	1	7	31
07:30 07:45	11	16	27	2	5	7	34
07:45 08:00	13	17	30	6	9	15	45
07:00 08:00	44	45	89	21	16	37	126
08:00 08:15	9	14	23	2	9	11	34
08:15 08:30	17	21	38	7	6	13	51
08:30 08:45	13	23	36	4	5	9	45
08:45 09:00	11	10	21	4	5	9	30
08:00 09:00	50	68	118	17	25	42	160
09:00 09:15	19	26	45	10	10	20	65
09:15 09:30	7	10	17	6	5	11	28
09:30 09:45	14	18	32	3	5	8	40
09:45 10:00	6	16	22	1	7	8	30
09:00 10:00	46	70	116	20	27	47	163
11:30 11:45	22	13	35	8	6	14	49
11:45 12:00	24	22	46	11	8	19	65
12:00 12:15	22	22	44	6	25	31	75
12:15 12:30	19	23	42	21	11	32	74
11:30 12:30	87	80	167	46	50	96	263
12:30 12:45	21	29	50	8	8	16	66
12:45 13:00	20	18	38	4	14	18	56
13:00 13:15	19	25	44	12	5	17	61
13:15 13:30	16	29	45	8	6	14	59
12:30 13:30	76	101	177	32	33	65	242
15:00 15:15	15	42	57	11	7	18	75
15:15 15:30	17	13	30	13	7	20	50
15:30 15:45	25	25	50	7	6	13	63
15:45 16:00	19	30	49	19	3	22	71
15:00 16:00	76	110	186	50	23	73	259
16:00 16:15	17	31	48	9	9	18	66
16:15 16:30	32	32	64	18	16	34	98
16:30 16:45	24	29	53	15	13	28	81
16:45 17:00	26	32	58	18	15	33	91
16:00 17:00	99	124	223	60	53	113	336
17:00 17:15	22	25	47	22	5	27	74
17:15 17:30	23	19	42	7	8	15	57
17:30 17:45	19	26	45	8	7	15	60
17:45 18:00	14	26	40	13	9	22	62
17:00 18:00	78	96	174	50	29	79	253
Total	556	694	1250	296	256	552	1802

Comment:

Appendix C

Collision Data and Analysis

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	66	47	39	15	3	2	9	2	183
Non-fatal injury	13	14	4	4	1	8	1	0	45
Non reportable	0	0	2	0	0	0	0	0	2
Total	79	61	45	19	4	10	10	2	230
	#1 or 34%	#2 or 27%	#3 or 20%	#4 or 8%	#7 or 2%	#5 or 4%	#5 or 4%	#8 or 1%	

80%
20%
1%
100%

MONTREAL RD/MONTGOMERY ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	12	18,210	1825	0.36

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	3	2	2	1	0	0	0	0	8
Non-fatal injury	0	0	0	0	0	4	0	0	4
Non reportable	0	0	0	0	0	0	0	0	0
Total	3	2	2	1	0	4	0	0	12
	25%	17%	17%	8%	0%	33%	0%	0%	

67%
33%
0%
100%

MONTREAL RD/VANIER PKWY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	88	49,640	1825	0.97

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	41	12	18	0	0	0	0	0	71
Non-fatal injury	7	6	2	0	0	1	0	0	16
Non reportable	0	0	1	0	0	0	0	0	1
Total	48	18	21	0	0	1	0	0	88
	55%	20%	24%	0%	0%	1%	0%	0%	

81%
18%
1%
100%

MONTREAL RD, PALACE ST to VANIER PKWY

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	50	17,200	1825	1.59

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	4	22	9	4	1	0	6	1	47
Non-fatal injury	0	1	0	1	0	0	0	0	2
Non reportable	0	0	1	0	0	0	0	0	1
Total	4	23	10	5	1	0	6	1	50
	8%	46%	20%	10%	2%	0%	12%	2%	

94%
4%
2%
100%

MONTREAL RD, MONTGOMERY ST to PALACE ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	21	16,700	1825	0.69

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	4	2	2	3	1	0	3	1	16
Non-fatal injury	1	2	0	0	0	1	1	0	5
Non reportable	0	0	0	0	0	0	0	0	0
Total	5	4	2	3	1	1	4	1	21
	24%	19%	10%	14%	5%	5%	19%	5%	

76%
24%
0%
100%

NORTH RIVER RD/WAYLING AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	6,500	1825	0.08

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total
P.D. only	0	0	0	1	0	0	0	0	1
Non-fatal injury	0	0	0	0	0	0	0	0	0
Non reportable	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	1
	0%	0%	0%	100%	0%	0%	0%	0%	

100%
0%
0%
100%

MARK AVE/NORTH RIVER RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	1	6,500	1825	0.08

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	0	1	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	1	0	0	0	0	1	100%
	0%	0%	0%	100%	0%	0%	0%	0%		

MONTREAL RD/NORTH RIVER RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	30	26,510	1825	0.62

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	11	2	3	2	1	2	0	0	21	70%
Non-fatal injury	3	2	0	3	0	1	0	0	9	30%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	14	4	3	5	1	3	0	0	30	100%
	47%	13%	10%	17%	3%	10%	0%	0%		

MONTREAL RD/PALACE ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	14	18,000	1825	0.43

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	3	5	0	1	0	0	0	0	9	64%
Non-fatal injury	1	3	0	0	1	0	0	0	5	36%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	4	8	0	1	1	0	0	0	14	100%
	29%	57%	0%	7%	7%	0%	0%	0%		

MONTREAL RD, NORTH RIVER RD to MONTGOMERY ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	6	16,710	1825	0.20

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	2	1	2	0	0	0	0	5	83%
Non-fatal injury	0	0	1	0	0	0	0	0	1	17%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	2	2	2	0	0	0	0	6	100%
	0%	33%	33%	33%	0%	0%	0%	0%		

MONTREAL RD, RIDEAU ST to NORTH RIVER RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2012-2016	7	24,890	1825	0.15

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	4	0	0	0	0	0	4	57%
Non-fatal injury	1	0	1	0	0	1	0	0	3	43%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	1	0	5	0	0	1	0	0	7	100%
	14%	0%	71%	0%	0%	14%	0%	0%		

Appendix D

Multi-Modal Level of Service Analysis

Multi-Modal Level of Service - Segments Form

Consultant	Andres Pena	Project	263 Greensway Ave
Scenario	Existing and future conditions at	Date	3/28/2018
Comments	Vanier Parkway southbound roadway		
	adjacent to site		

SEGMENTS		Street A	Existing	Buffered Cycle Lane	MUP
			1	2	3
Pedestrian	Sidewalk Width	F	1.8 m	1.8 m	≥ 2 m
	Boulevard Width		< 0.5 m	> 2 m	0.5 - 2 m
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000
	Operating Speed		> 60 km/h	> 30 to 50 km/h	> 30 to 50 km/h
	On-Street Parking		no	no	no
	Exposure to Traffic PLoS		F	C	C
	Effective Sidewalk Width		1.5 m	1.5 m	2.0 m
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr
Bicycle	Crowding PLoS	A	B	B	B
	Level of Service		F	C	C
	Type of Cycling Facility		Mixed Traffic	Curbside Bike Lane	Physically Separated
	Number of Travel Lanes		≥ 6 lanes total	≥ 3 each direction	
	Operating Speed		≥ 60 km/h	≤ 50 km/h	
	# of Lanes & Operating Speed LoS		F	D	-
	Bike Lane (+ Parking Lane) Width			≥ 1.8 m	
	Bike Lane Width LoS		-	A	-
	Bike Lane Blockages			Rare	
	Blockage LoS		-	A	-
	Median Refuge Width (no median = < 1.8 m)				
	No. of Lanes at Unsignalized Crossing				
	Sidestreet Operating Speed				
	Unsignalized Crossing - Lowest LoS		-	-	A
	Level of Service		-	-	A

Multi-Modal Level of Service - Intersections Form

Consultant
Scenario
Comments

Andres Pena

Existing and future conditions at

Montreal rd/ Vanier Parkway

Project

Date

263 Greensway Ave

3/28/2018

INTERSECTIONS											
		Montreal Road @ Vanier Parkway Existing				Montreal Road @ Vanier Parkway Montreal Rd Revitalization					
Crossing Side		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST		
Pedestrian	Lanes	9	9	7	6	7	7	5	5		
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m		
	Conflicting Left Turns	Permissive	Protected	Protected	Protected	Permissive	Protected	Protected	Protected		
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control	Permissive or yield control		
	Right Turns on Red (RTor) ?	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed	RTOR allowed		
	Ped Signal Leading Interval?	No	No	No	No	No	No	No	No		
	Right Turn Channel	Conv'tl without Receiving Lane	Conv'tl without Receiving Lane	Conventional with Receiving Lane	No Channel	No Channel	No Channel	No Channel	No Channel		
	Corner Radius	15-25m	15-25m	15-25m	15-25m	10-15m	10-15m	10-15m	10-15m		
	Crosswalk Type	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement	Textured/coloured pavement		
	PETSI Score	-24	-16	14	29	7	15	48	48		
	Ped. Exposure to Traffic LoS	#N/A	#N/A	F	F	F	F	D	D		
	Cycle Length	130	130	130	130						
	Effective Walk Time	23	7	26	26						
Average Pedestrian Delay	44	58	42	42							
Pedestrian Delay LoS	E	E	E	E	-	-	-	-			
Level of Service	#N/A	#N/A	F	F	F	F	D	D			
	#N/A					F					
Approach From		NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST		
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP		
	Right Turn Lane Configuration	≤ 50 m	> 50 m	≤ 50 m	≤ 50 m						
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h	≤ 25 km/h						
	Cyclist relative to RT motorists	D	F	D	D	Not Applicable	Not Applicable	Not Applicable	Not Applicable		
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic	Separated	Separated	Separated	Separated		
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	≥ 2 lanes crossed	2-stage, LT box	2-stage, LT box	2-stage, LT box	2-stage, LT box		
	Operating Speed	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	≥ 60 km/h	≥ 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h		
	Left Turning Cyclist	F	F	F	F	A	A	A	A		
	Level of Service	F	F	F	F	A	A	A	A		
		F					A				

Appendix E

OC Transpo Transit Data

From: Stefanoff, Genya
To: [Pena-cabra, Andres](#)
Cc: [Harte, Andrew](#)
Subject: RE: Transit Demand Volumes - Vanier Pkwy/ Montreal Rd & Montreal Rd/Montgomery & Montreal Rd/NorthRiver
Date: Friday, March 23, 2018 3:31:30 PM

Hi Andres,

Please find below transit ridership data for the AM and PM peak periods (6-9am and 3-6pm, respectively) for Routes 9 and 12 in the Vanier Parkway/Montreal Road area. The data is from the September 2017 booking.

During the peak periods:

- Route 9 was planned to operate with primarily 40-foot buses.
- Route 12 was planned to operate with primarily articulated buses toward downtown in the morning and toward Blair Station in the afternoon; primarily 40-foot buses toward Blair in the morning; and a mix of 40-foot and articulated buses toward downtown in the afternoon.

Sept 2017 Data (weekday)			AM PEAK			PM PEAK		
Intersection	STOP	Route	Average Boarding (6am-9am)	Average Alighting (6am-9am)	Average Load at Departure	Average Boarding (3pm-6pm)	Average Alighting (3pm-6pm)	Average Load at Departure
Vanier Parkway/Montreal	7052	9	1	1	14	1	3	9
	7085	9	4	0	13	2	3	20
	8783	12	3	2	46	3	1	29
	7053	12	1	1	26	2	2	41
Montreal/Montgomery	1575	12	1	3	26	3	4	41
Montreal/North River	8781	12	1	2	45	2	1	30

If you have any questions regarding the above information, please don't hesitate to contact me.

Best regards,
Genya

Genya Stefanoff, MCIP, RPP
Senior Transit Planner, Service Strategy

City of Ottawa | OC Transpo | Transportation Services Department
1500 St. Laurent Blvd., Ottawa, ON K1G 0Z8
tel: 613-580-2424 ext. 52294
genya.stefanoff@ottawa.ca



From: Pena-cabra, Andres [<mailto:Andres.Pena-cabra@parsons.com>]

Sent: Friday, March 09, 2018 11:08 AM

To: Stefanoff, Genya <genya.stefanoff@ottawa.ca>

Cc: Harte, Andrew <Andrew.Harte@parsons.com>

Subject: Transit Demand Volumes - Vanier Pkwy/ Montreal Rd & Montreal Rd/Montgomery & Montreal Rd/NorthRiver

Hi Genya,

I am preparing a Transportation Impact Assessment at the moment and was looking to get some transit demand information for the AM/PM weekday peaks (on and offs, frequencies, bus occupation and bus type). The peaks would be approximately 6-9am and 3-6pm, or as close as reasonably possible. The locations and stops are listed below:

Vanier Parkway / Montréal Rd

- ID 7052
 - Route #9
- ID 7085
 - Route #9
- ID 8783
 - Route #12
- ID 7053
 - Route #12

Montréal Rd / Montgomery

- ID 1575
 - Route #12

Montréal Rd / North River

- ID 8781
 - Route #12

I was wondering if you would be able to provide those? Let me know if you need more information or have any questions.

Thanks in advance,

Andres Pena-Cabra
Associate Engineer
1223 Michael St, Suite 100, Gloucester, ON K1J7T2
andres.pena-cabra@parsons.com +1 613.738.4160

PARSONS – Envision More
www.parsons.com | [LinkedIn\[linkedin.com\]](https://www.linkedin.com/company/parsons) | [Twitter\[twitter.com\]](https://twitter.com/parsons) | [Facebook\[facebook.com\]](https://www.facebook.com/parsons)



NOTICE: This email message and all attachments transmitted with it may contain privileged and confidential information, and information that is protected by, and proprietary to, Parsons Corporation, and is intended solely for the use of the addressee for the specific purpose set forth in this communication. If the reader of this message is not the intended recipient, you are hereby notified that any reading, dissemination, distribution, copying, or other use of this message or its attachments is strictly prohibited, and you should delete this message and all copies and backups thereof. The recipient may not further distribute or use any of the information contained herein without the express written authorization of the sender. If you have received this message in error, or if you have any questions regarding the use of the proprietary information contained therein, please contact the sender of this message immediately, and the sender will provide you with further instructions.

This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

Le présent courriel a été expédié par le système de courriels de la Ville d'Ottawa. Toute distribution, utilisation ou reproduction du courriel ou des renseignements qui s'y trouvent par une personne autre que son destinataire prévu est interdite. Je vous remercie de votre collaboration.