2475 Regina Street

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report (SPA Revision #2)

Prepared for:

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June 2025

PN: 2021-057

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1 Screening

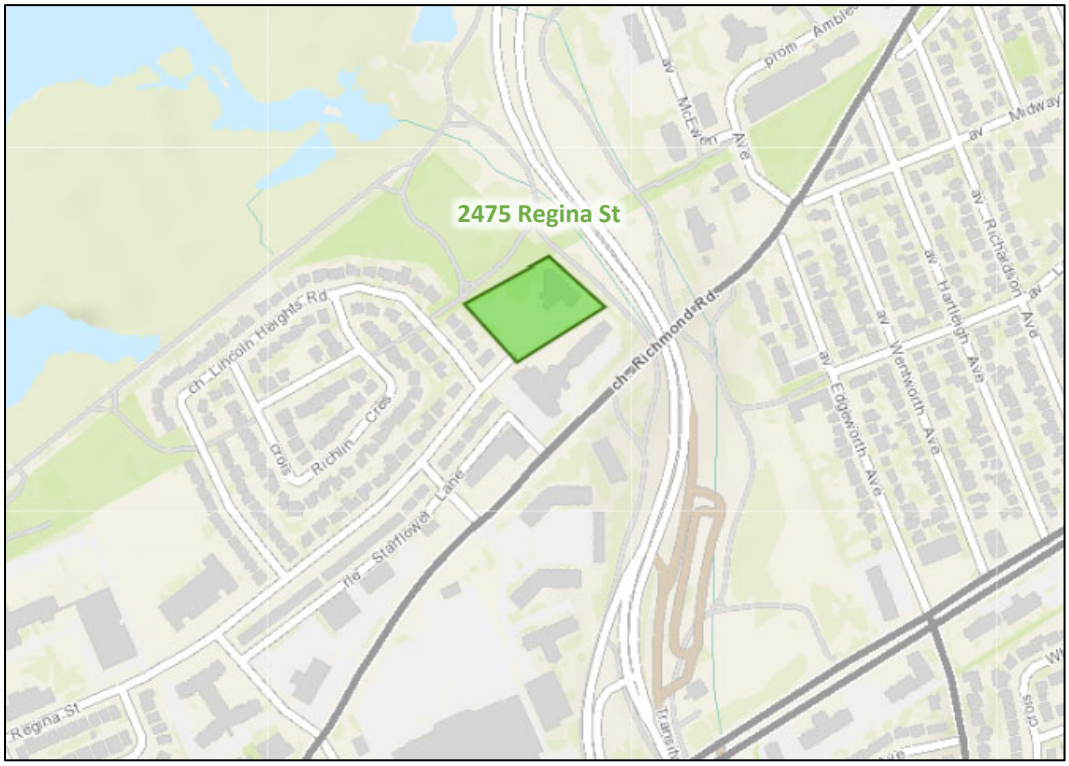
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a site plan application. Based on the exemption review provided in Section 5, a TIA has been prepared with a design review component with a review of transit.

2 Existing and Planned Conditions

2.1 Proposed Development

The existing site, located at 2475 Regina Street, zoned as Residential Fifth Density (R5C[2905]S483-h), is occupied by the Parkway House supportive housing facility. The proposed development consists of one 28-storey residential tower, one 16-storey residential tower, and one seven-storey residential building incorporating the on-site relocation of the Parkway House facility at ground level. The proposed development consists of 565 residential units added to the site, and the anticipated full build-out and occupancy horizon is 2028 with construction occurring in two stages to facilitate the relocation of the existing Parkway House. Access is proposed via the existing connection to Regina Street providing access to a one-way drive aisle loop onsite. Parking for 194 vehicles is proposed via parking levels below grade, 21 surface vehicle parking stalls are proposed, and 636 bicycle parking spaces are proposed internal to the buildings and in surface racks. The development is within the Lincoln Fields Station secondary plan area. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: December 20, 2023

OTTAWA PARKWAY HOUSE

WINDMILL DEVELOPMENT GROUP

PROPERTY IDENTIFICATION NUMBER: 04282-0673(LT)
2475 REGINA ST, OTTAWA, ON K2B 6X3

A PLANNED **ONE PLANET LIVING** COMMUNITY WITH GUIDING THEMES OF YEAR-ROUND NATURAL CONNECTIONS, ZERO CARBON LIVING, WELCOMING AND INCLUSIVE COMMUNITY.

diamond schmitt

Issued

No.	Date	Description
1	22-05-13	Issued for ZBA
2	22-10-21	Issued for ZBA Resubmission
4	24-03-08	Issued for Site Plan Control Phase 2
5	24-03-08	Issued for Schematic Design
6	24-11-22	Issued for Site Plan Control
7	24-12-16	Issued for Permit Phase 2
8	25-02-05	Issued for 30% CD
9	25-02-12	Issued for SPC Resubmission
10	25-04-16	Issued for 60% CD
11	25-05-30	Issued for SPC Resubmission
12	25-05-30	Issued for Building Permit

ELEVATION NOTES

1. PROPERTY BOUNDRY AND TOPOGRAPHIC INFORMATION DERIVED FROM TOPOGRAPHIC SKETCH OF PART OF LOT 23 CONCESSION 1 (OTTAWA FRONT), CITY OF OTTAWA, PREPARED BY STANTEC GEOMETICS LTD. REFER TO SURVEY DRAWING.
2. ELEVATION SHOWN HEREON ARE GEODETIC (CGVD-1928:1978) AND ARE DERIVED FROM THE CAN-NET VRS NETWORK MONUMNET: OTTAWA ELEVATION=95.230

NOT FOR CONSTRUCTION

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D07-12-24-0161
PLAN # 19267

SITE PLAN
As indicated

A010

2.2 Existing Conditions

2.2.1 Area Road Network

Kichi Zibi Mikan: Kichi Zibi Mikan is a federally owned road with a divided, four lane urban cross-section. The posted speed limit is 60 km/h, and the existing right-of-way provided is variable throughout the study area.

Richmond Road: Richmond Road is a City of Ottawa arterial road with a two-lane urban cross-section with sidewalks on both sides of the road. A bike lane is provided on the north side and cycletrack is provided on the south side of the road approximately west of Starflower Lane, and bike lanes are provided along both sides of the road to the east within the study area. On-street parking is provided in framed parking lanes on the north side of the road between Starflower Lane and Forest Street. The posted speed limit is 50 km/h. The city-protected right-of-way is 37.5 metres west of the Kichi Zibi Mikan, and 26.0 metres to the east, within the study area. Richmond Road is designated a truck route.

Assaly Road: Assaly Road is a City of Ottawa local Road with a two-lane urban cross-section with sidewalks on both sides of the road. The posted speed limit is 40 km/h, and the existing right-of-way is 20.0 metres.

Regina Street: Regina Street is a City of Ottawa local road with a two-lane urban cross-section. A sidewalk is provided on the north side of the road between Assaly Road and the site access. Asphalt pathways are provided on both sides of the road Assaly Road within the study area. On-street parking is permitted on the south side of the road. The gateway speed limit is 40 km/h. The existing right-of-way is 20.0 metres.

Croydon Avenue: Croydon Avenue is a City of Ottawa local road with a two-lane urban cross-section. North of Richmond Road, a sidewalk is provided on the east side of the road, and an asphalt pathway is provided on the west side of the road, and the posted speed limit is 40 km/h. South of Richmond Road, it has a sidewalk on the west side of the road and the unposted speed limit is assumed to be 50 km/h. The existing right-of-way is 20.0 metres.

McEwen Avenue: McEwen Avenue is a City of Ottawa local road with a two-lane urban cross-section. Asphalt pathways are provided on both side of the road south of Ambleside Drive, and on the north/east side to the west of Ambleside Drive. On-street parking is provided on the west side of the road. The unposted speed limit is assumed to be 50 km/h, and the existing right-of-way provided is 21.0 metres.

2.2.2 Existing Intersections

The existing signalized area intersections within 400 metre of the site have been summarized below:

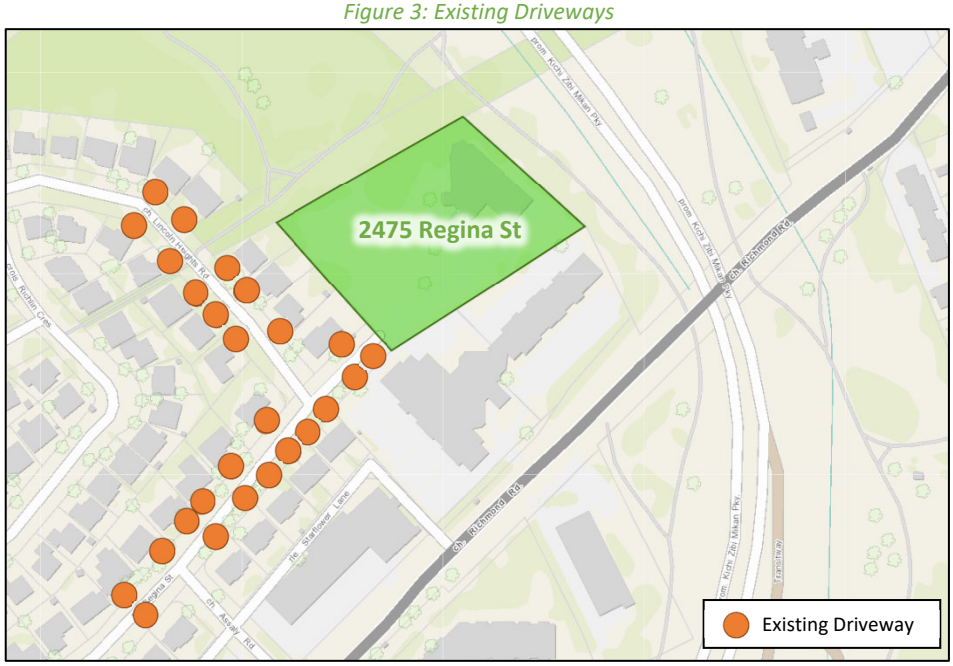
Richmond Road at Croydon Avenue	The intersection of Richmond Road and Croydon Avenue is a signalized intersection. The northbound, eastbound, and westbound approaches each consist of an auxiliary left-turn lane and a shared through/right-turn lane, where the northbound approach includes a bike box, the eastbound approach includes a cycletrack and crossride, and the westbound approach includes a bike lane. The southbound approach consists of a shared all-movements lane. Northbound right turns on red are prohibited.
Assaly *Road at Richmond Road*	The intersection of Assaly Road and Richmond Road is a signalized intersection. The northbound approach functionally consists of a shared left-turn/through lane and an unmarked auxiliary right-turn lane and includes a bike box, and the southbound approach consists of a shared all-movements lane. The westbound and eastbound

	approaches each consists of an auxiliary left-turn lane and a shared through/right-turn lane where the eastbound approach includes a cycletrack with crossride and the westbound approach includes a bike lane. Northbound right turns on red are prohibited.
Assaly *Road at Regina Road*	The intersection of Assaly Road and Regina Road is an unsignalized T-intersection stop-controlled on the minor approach of Assaly Road. The northbound approach consists of a shared left-turn/right-turn lane. The eastbound approach consists of a shared through/right-turn lane, and westbound approach consists of a shared left-turn/ through lane. No turn restrictions were noted.
Richmond Road at McEwen Avenue	The intersection of Richmond Road and McEwen Avenue is a signalized intersection. While presently under construction, the southbound approach has consisted of an auxiliary left-turn lane and a right-turn lane, the westbound approach has consisted of an auxiliary right-turn lane and a through lane, and the eastbound approach has consisted of an auxiliary left-turn lane and a through lane. No turn restrictions were noted

2.2.3 Existing Driveways

Within 200 metres of the site access, 13 driveways to attached and detached low-rise dwellings and two driveways to high-rise apartment building parking garages and loading/garbage areas are present on Regina Street. Ten driveways to attached dwellings are present on Lincoln Heights Road within 200 metres of the site access. Figure 3 illustrates the existing area driveways.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: December 20, 2023

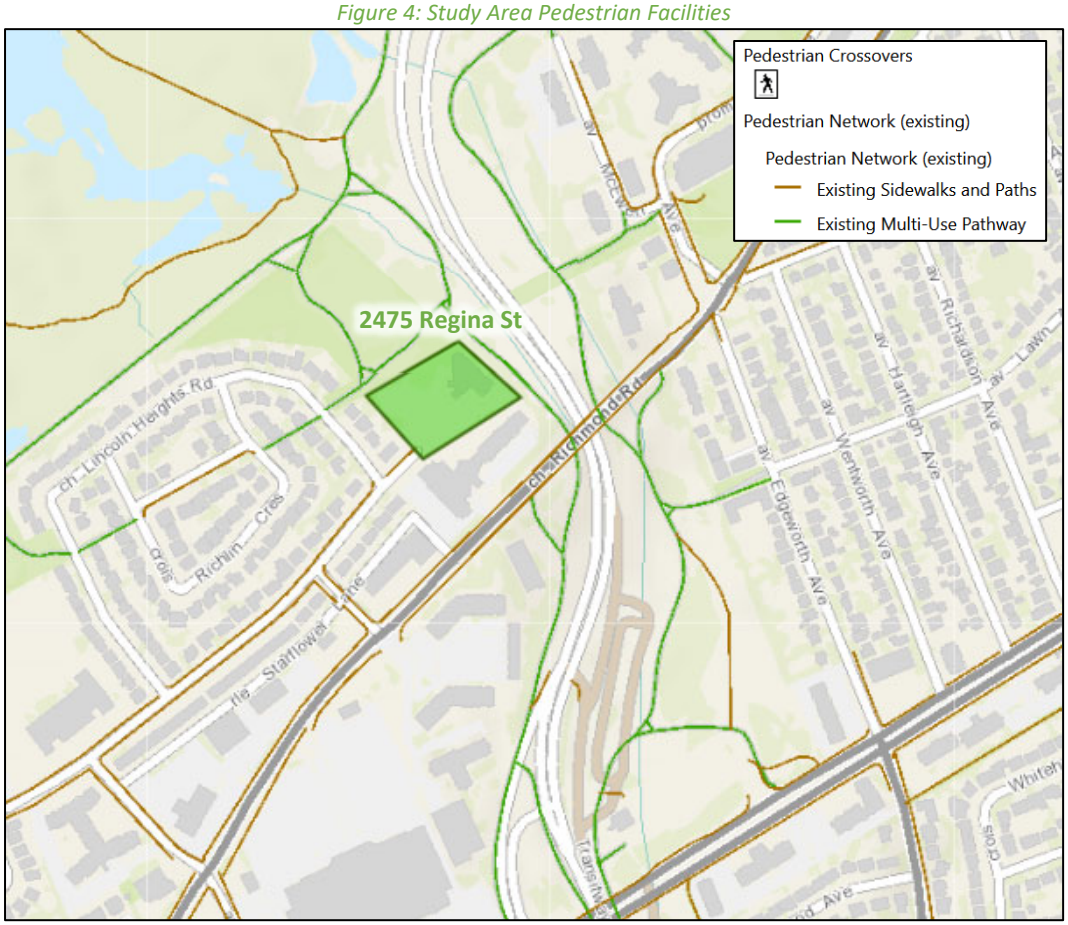
2.2.4 Cycling and Pedestrian Facilities

Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

Sidewalks are provided along one side of Regina Street between the site access and Assaly Road and along both sides of Regina Street to the west. Sidewalks are provided along both sides of Richmond Road and on both sides of Croydon Road and Assaly Road. Multi-use paths (MUPs) are provided north and east of the site area, connecting to the future Lincoln Fields light rail transit (LRT) station (presently a bus rapid transit (BRT) station) and additional area and regional pathways.

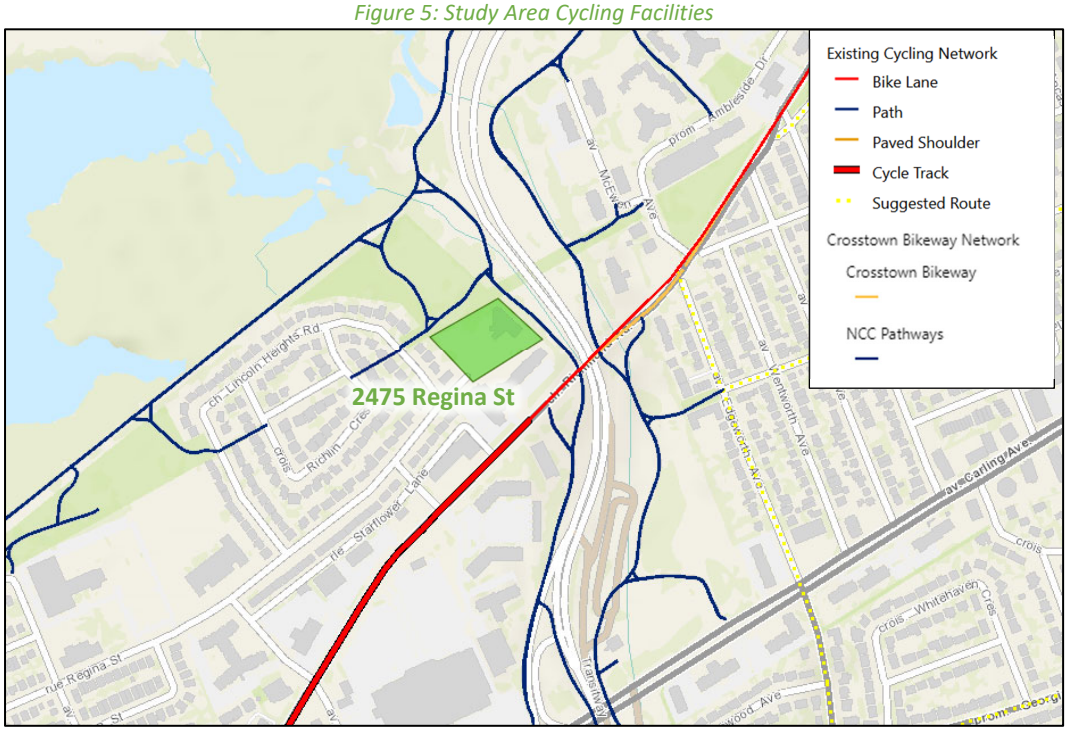
Cycling facilities include the Pinecrest Creek Pathway and Ottawa River Pathway MUPs, a cycle track on the south side and bike lane on the north side of Richmond Road approximately west of Starflower Lane, and bike lanes on both sides of Richmond Road approximately to the east of Starflower Lane. Richmond Road is a cross-town bikeway.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: December 20, 2023

Figure 5: Study Area Cycling Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: February 29, 2024

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively.

Figure 6: Existing Pedestrian Volumes

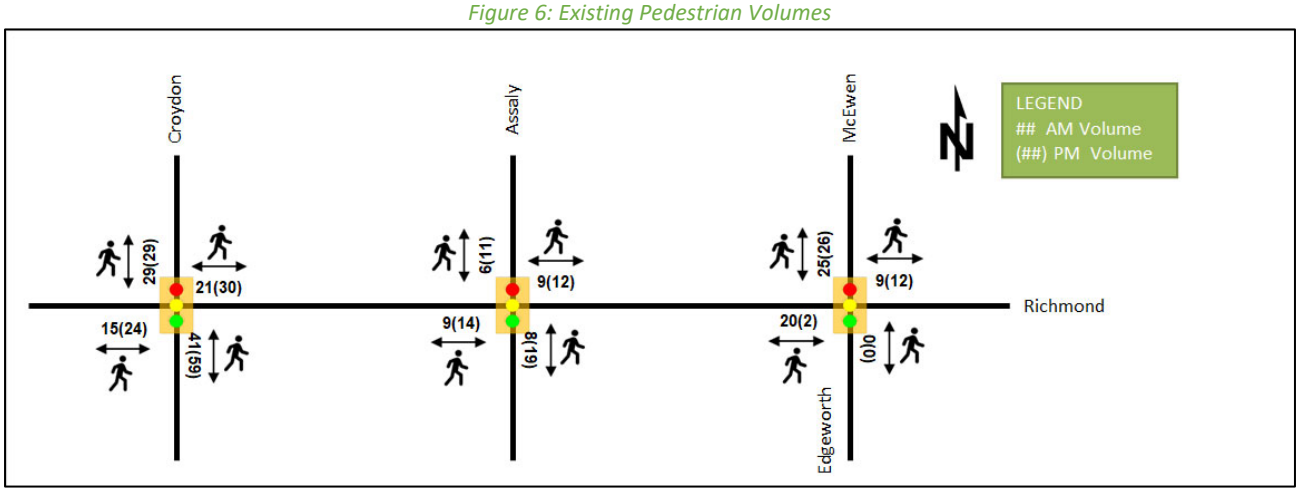
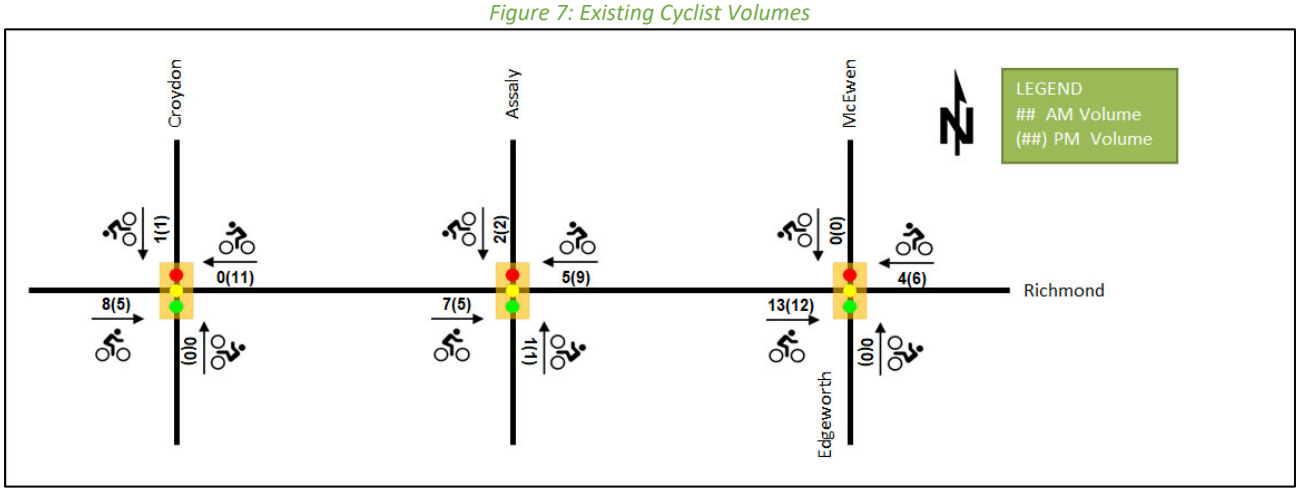


Figure 7: Existing Cyclist Volumes



2.2.5 Existing Transit

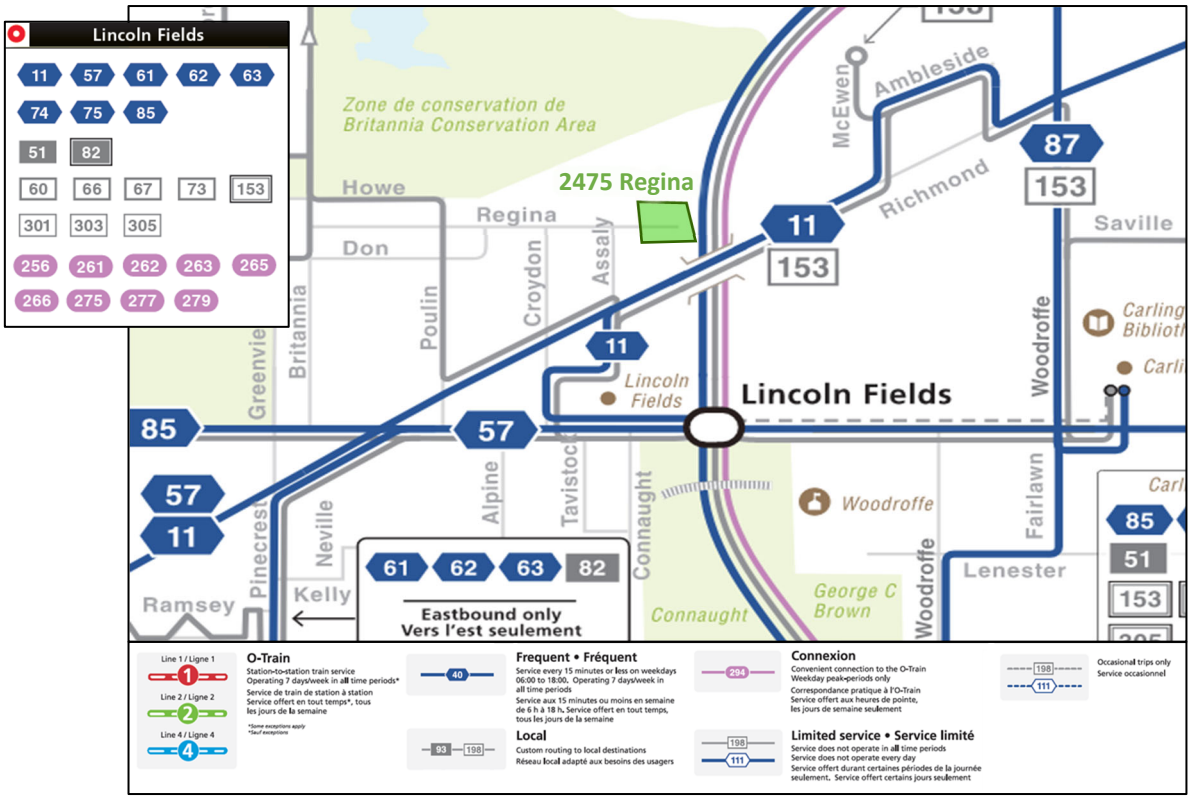
Figure 8 illustrates the transit system map in the study area. Figure 9 illustrates transit stops and stations within 400 metres, and transit stations within 800 metres. All transit information is from May 05, 2025, and is included for general information purposes and context to the surrounding area.

Within the study area, the routes #11, #51, and #153 travel along Richmond Road connect to Lincoln Fields Station. Stops are located at Richmond Road on either side of Starflower Lane (#11, #153), and west of Assaly Road (#11, #51). The frequency of these routes within proximity of the proposed site based on May 05, 2025 service levels are:

- Route # 11 – 15-minute service all day, 30-minute service after 6:00PM
- Route # 51 – 30-minute service all day
- Route # 153 – 8-9 buses per day between 8AM and 8PM

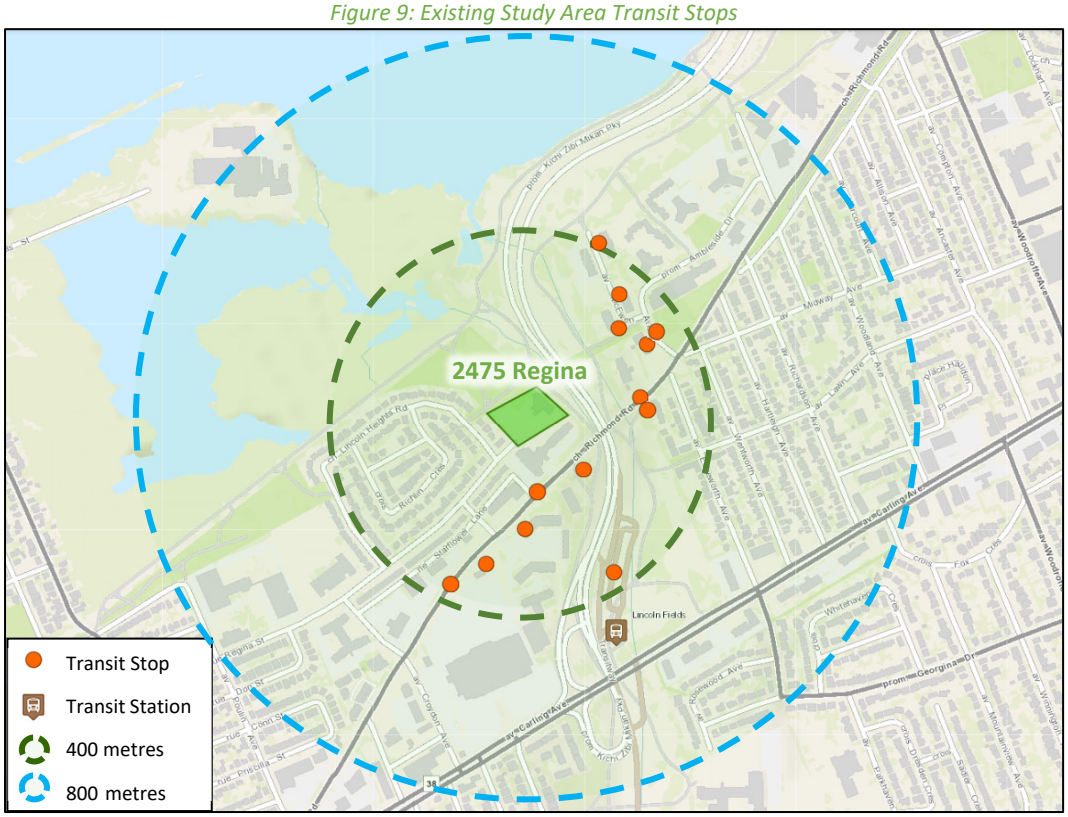
The site is additionally 500 metres from Lincoln Fields Station (routes servicing this station are shown in Figure 8). Based upon the existing access to area sidewalks and pathways along the road network, the station is currently an approximately 2.75-kilometre walk from the subject property. Using the roadway of Lincoln Heights Road for approximately 90 metres to connect from the sidewalk on Regina Street to the Ottawa River Pathway connection, however, the site is an approximately 1.1 kilometres' walk from Lincoln Fields Station.

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: May 5, 2025

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: May 5, 2025

2.2.6 Existing Area Traffic Management Measures

Primary traffic management measures include framed parking provided at intersection on Richmond Road, on-street parking permitted on local roads throughout the study area. The connection of Edgeworth Avenue to Richmond Road has been closed permanently.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa for the existing study area intersections. Table 1 summarizes the intersection count dates. The City Signals Group confirmed via email on November 8, 2023 that these 2016 volumes should be used due to the construction-related traffic disruptions along Richmond Road during the years preceding the study precluding the collection of newer representative data.

Table 1: Intersection Count Date

Intersection	Count Date
Croydon Avenue and Richmond Road	Thursday, August 11, 2016
Assaly Road and Richmond Road	Thursday, August 11, 2016
Richmond Road and Edgeworth Avenue/McEwen Avenue	Thursday, August 25, 2016

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

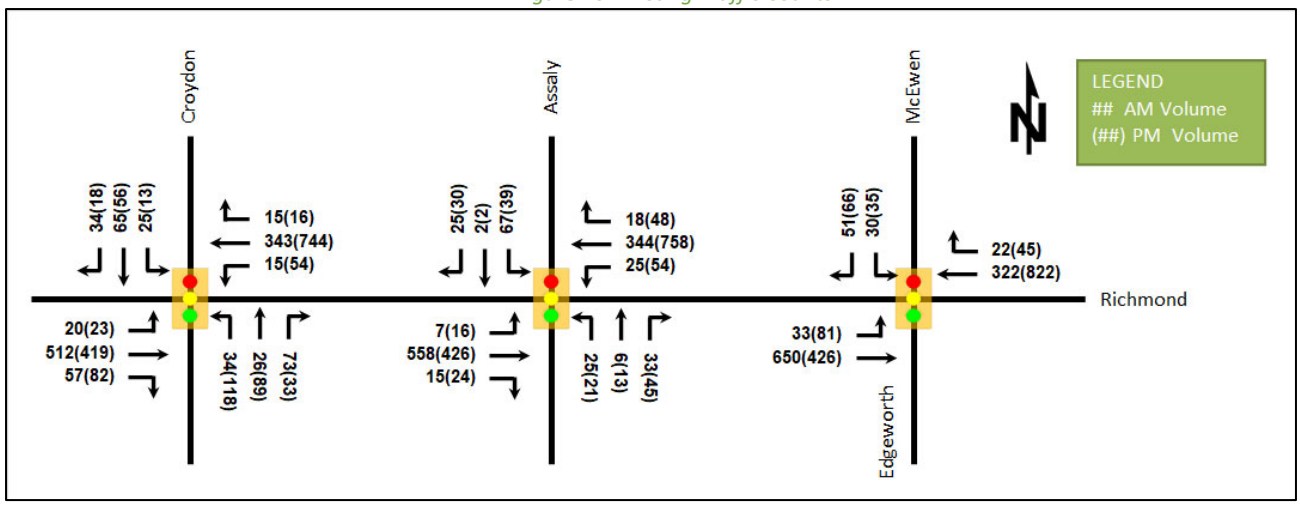


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Croydon Avenue & Richmond Road *Signalized*	EBL	A	0.04	10.6	5.0	A	0.14	11.4	6.3
	EBT/R	B	0.62	17.1	**#124.8**	A	0.56	13.8	83.5
	WBL	A	0.05	9.2	m3.9	A	0.16	9.1	m5.3
	WBT/R	A	0.38	12.6	75.7	D	0.82	15.8	**#183.5**
	NBL	A	0.14	17.4	9.1	A	0.40	28.7	31.9
	NBT/R	A	0.28	19.7	20.3	A	0.33	26.4	31.4
	SB	A	0.32	15.8	21.2	A	0.23	20.5	21.0
	Overall	**A**	**0.56**	**15.7**	-	**B**	**0.69**	**16.8**	-
Assaly Road & Richmond Road *Signalized*	EBL	A	0.01	4.7	m0.5	A	0.07	13.7	m3.4
	EBT/R	A	0.54	9.4	**#138.6**	A	0.41	12.0	74.4
	WBL	A	0.08	4.4	m2.5	A	0.12	2.6	m2.8
	WBT/R	A	0.34	4.3	17.4	C	0.73	11.5	**#226.4**
	NBT/L	A	0.14	21.6	8.0	A	0.16	26.0	11.0
	NBR	A	0.14	21.8	8.3	A	0.19	26.7	13.6
	SB	A	0.38	20.9	15.8	A	0.28	18.5	15.0
	Overall	**A**	**0.53**	**9.3**	-	**B**	**0.65**	**12.5**	-
McEwen Avenue / Edgeworth Avenue & Richmond Road *Signalized*	EBL	A	0.07	5.8	m1.7	A	0.40	13.5	7.7
	EBT	B	0.68	15.6	**#148.3**	A	0.40	7.6	28.1
	WBT	A	0.35	10.2	46.5	C	0.77	18.3	**#205.3**
	WBR	A	0.03	5.5	3.7	A	0.05	5.7	6.6
	SBL	A	0.11	23.0	9.6	A	0.16	31.3	13.2
	SBR	A	0.19	8.3	7.8	A	0.27	10.3	10.4
	Overall	**A**	**0.55**	**13.4**	-	**B**	**0.67**	**14.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate well. Extended queues may be exhibited at all study area intersections on the peak direction mainline arterial movements. No other issues are noted.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**36**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	8	22%
	Property Damage Only	28	78%
Initial Impact Type	**Angle**	8	22%
	Rear end	10	28%
	Sideswipe	2	6%
	Turning Movement	2	6%
	SMV Unattended	6	17%
	SMV Other	7	19%

		Number	%
Total Collisions		**36**	**100%**
	Other	1	3%
Road Surface Condition	**Dry**	26	72%
	Wet	6	17%
	Loose Snow	2	6%
	Packed Snow	1	3%
	Ice	1	3%
Pedestrian Involved		5	14%
Cyclists Involved		1	3%

Figure 11: Study Area Collision Records, 2018-2022

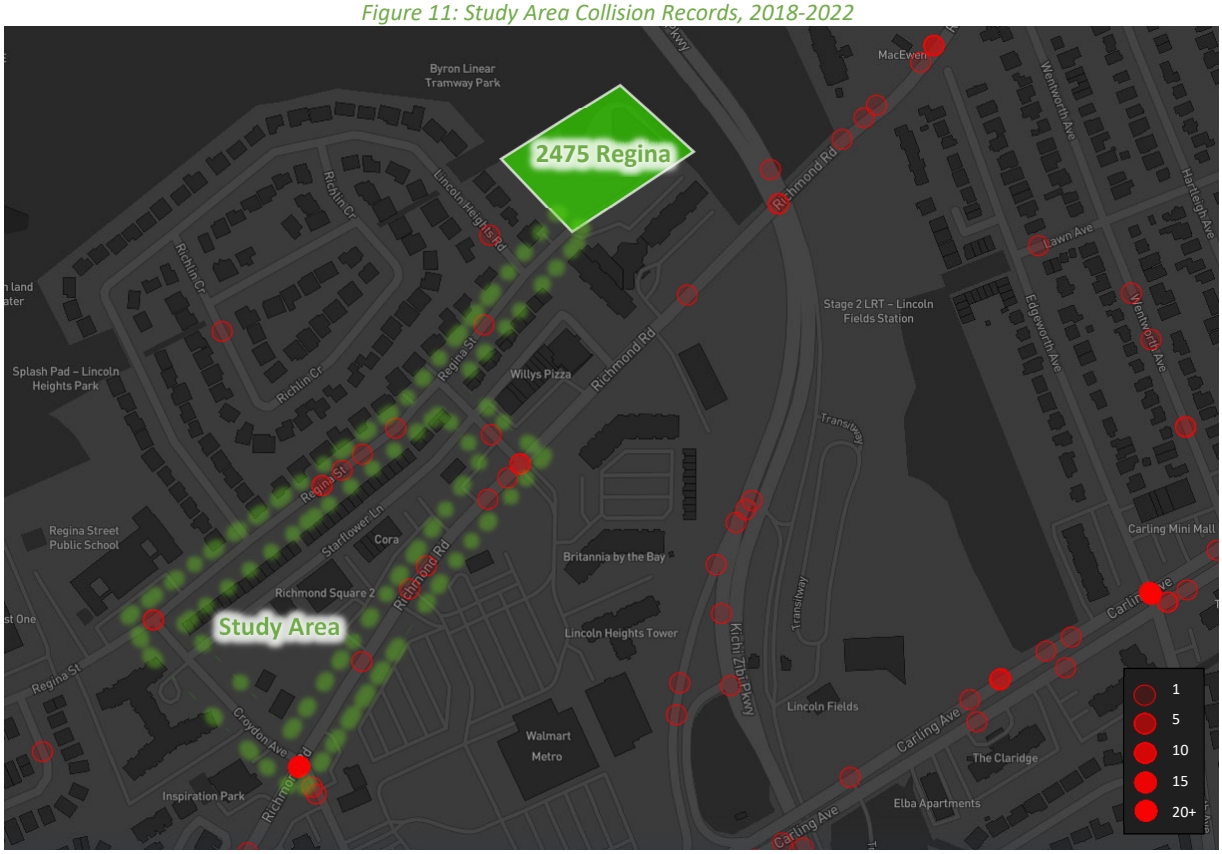


Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**36**	**100%**
Croydon Ave @ Richmond Rd	19	53%
Richmond Rd btwn Assaly Rd & Croydon Ave	5	14%
Regina St btwn Assaly Rd & Lincoln Heights Rd	5	14%
Assaly Rd @ Richmond Rd	4	11%
Croydon Ave @ Regina St	2	6%
Assaly Rd btwn Regina Lane & Richmond Rd	1	3%

Within the study area, the intersection of Croydon Avenue at Richmond Road is noted to have experienced higher collisions than other locations. Table 5 summarizes the collision types and conditions for the Croydon Avenue at Richmond intersection. Outside of the collisions involving vulnerable modes at the intersection of Croydon Avenue

at Richmond Road, one pedestrian collision in daylight, clear, dry conditions occurred during the PM peak period in August of 2019 at the intersection of Richmond Road at Assaly Road.

Table 5: Croydon Avenue at Richmond Road Collision Summary

		Number	%
Total Collisions		**19**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	6	32%
	Property Damage Only	13	68%
Initial Impact Type	**Angle**	5	26%
	Rear end	6	32%
	Sideswipe	1	5%
	Turning Movement	2	11%
	SMV Other	5	26%
Road Surface Condition	**Dry**	14	74%
	Wet	4	21%
	Loose Snow	1	5%
Pedestrian Involved		4	21%
Cyclists Involved		1	5%

The Croydon Avenue at Richmond Road intersection had a total of 19 collisions during the 2018-2022 time period, with 13 involving property damage only and the remaining six having non-fatal injuries. The collision types are most represented by rear end with six collisions, followed by angle and SMV other each with five collisions, two turning movement collisions, and with the remaining collision as sideswipe. Rear end collisions are typical of congested locations, and angle collisions may be impacted by the skew of the intersection. Four pedestrian collisions were noted within the five-year period, comprising 21% of the collisions. Each of the four pedestrian collisions occurred with a vehicle on a different approach, with the vehicle directions being eastbound through, northbound left, southbound left, and westbound left. Two of these pedestrian collisions were in dark, rainy, wet conditions, and the remaining two were in daylight, clear, dry conditions. No spatial patterns are noted with these collisions. Two pedestrian collisions were observed in 2018, one was observed in 2019, and one in 2021.

One angle collision involving a cyclist was observed in 2021 where an automobile making a southbound through movement collided with a bicycle making a westbound through movement in daylight, clear, dry conditions. These movements are noted to be associated with conflicting phases of the signal timing.

The skew of the south leg of the intersection may influence collisions at this intersection, and weather conditions do not affect collisions at this location. No mitigation is recommended within the context of this study, although continued monitoring of pedestrian collisions by the City through future development reviews and safety reviews is recommended.

2.3 Planned Conditions

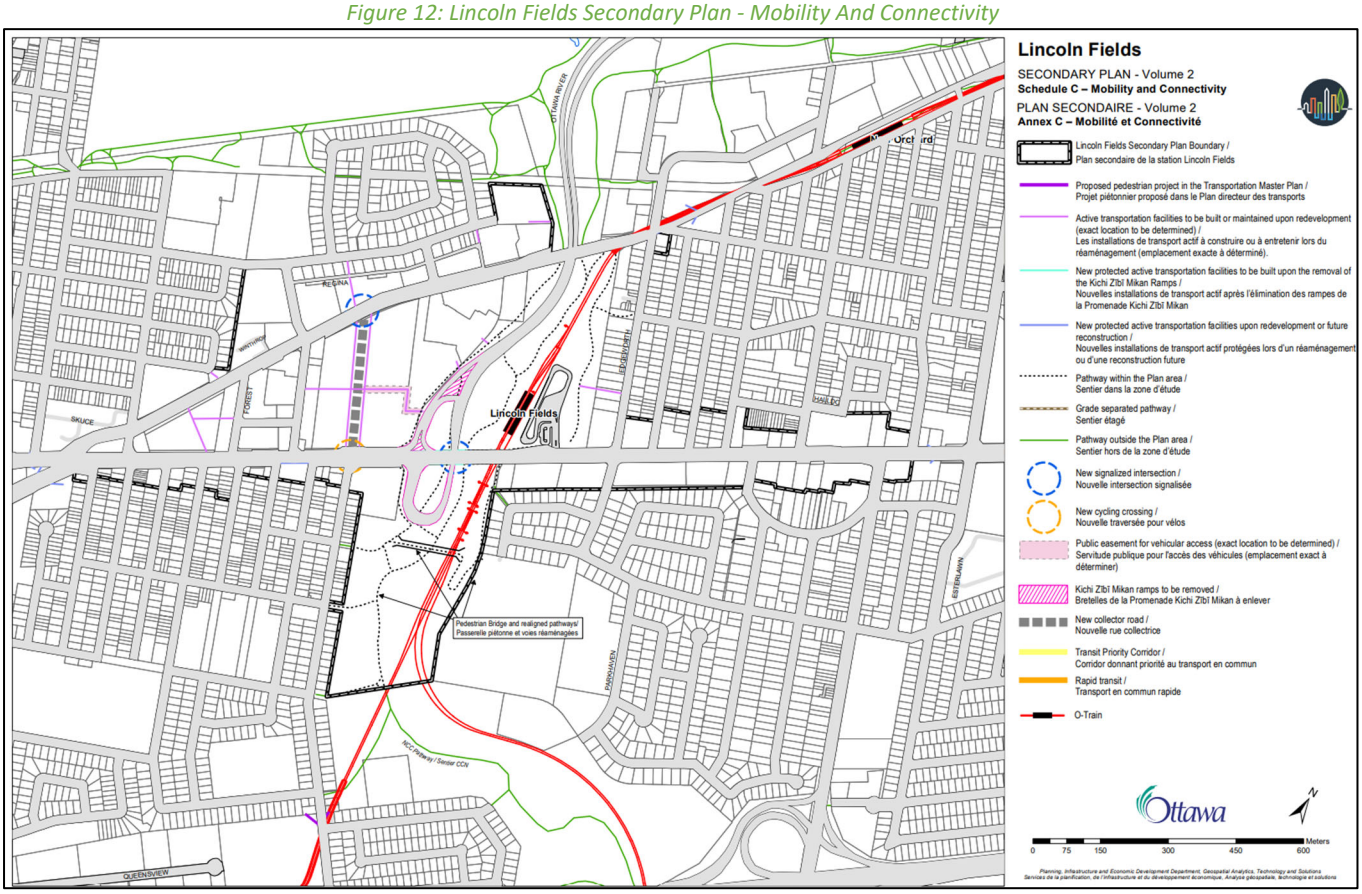
2.3.1 Changes to the Area Transportation Network

2.3.1.1 Official Plan (2022)

In the Official Plan the development is within the Lincoln Fields Secondary Plan which was recently approved by City Council. The subject property is designated Neighbourhood in the Plan with maximum heights of 30 storeys. The site does have a site-specific Official Plan and Zoning Bylaw designations that reflect the development concept described in Section 2.1 of this report.

Within the Lincoln Fields Secondary Plan Schedule C, an active transportation connection is required on the east side of the subject property connecting to the Pinecrest Creek Pathway. An active transportation connection from the intersection of Lincoln Heights Road at Regina Street to Starflower Lane to provide more direct access to Richmond Road for pedestrians and cyclists is also noted. Per the Secondary Plan, sidewalks will be pursued on both sides of the study area roads of Assaly Road, Croydon Avenue, Edgeworth Avenue, and Regina Street. Figure 12 illustrates the Lincoln Fields Secondary Plan mobility and connectivity plan.

Figure 12: Lincoln Fields Secondary Plan - Mobility And Connectivity



Source: Ottawa Official Plan Accessed: January 13, 2025

2.3.1.2 Transportation Master Plan Part 1 (2023)

The Transportation Master Plan Part 1 provides the active transportation project list, which includes a feasibility study for improving the cycling crossing of Carling Avenue at Connaught Ave, and Richmond Road 150m east of Croydon Avenue, in conjunction with establishing a cycling route through Lincoln Fields Shopping Centre. Sidewalks along Lincoln Heights Road from Regina Street to the multi-use pathway on Lincoln Heights Road, which connects Richlin Crescent and Lincoln Heights Park, are also identified in the active transportation project list.

2.3.1.3 Transportation Master Plan Part 2 (2025)

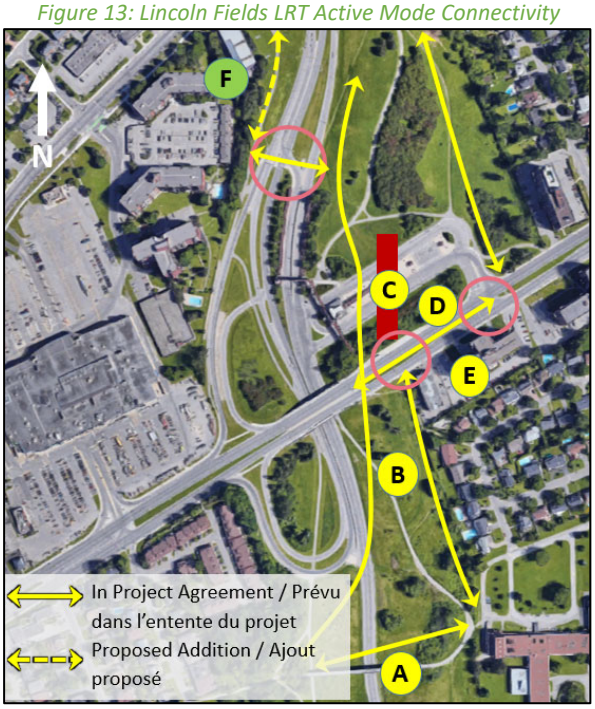
The Transportation Master Plan Part 2 is still in public consultation, releasing a draft project list for road and transit projects, along with the draft capital infrastructure plan. Projects included within the draft Priority Active Transportation Projects list include the sidewalks along Lincoln Heights Road, the feasibility study of improving the cycling crossings on Carling Avenue and Richmond Road with a cycling route through Lincoln Fields Shopping Centre. Draft road and transit projects within the study area include the Carling Transitway median BRT from Lincoln Fields Station to Dow's Lake Station, and a transit priority corridor between Bayshore Drive and Lincoln

Fields Station. However, only continuous bus lanes are identified along Carling Avenue east of Lincoln Fields Station are in the Priority Transit Network within the study area.

2.3.1.4 Stage 2 LRT Station Connectivity Enhancement Study - Lincoln Fields Station

In support of the new station construction, the station active mode connectivity is being studied as part of the Stage 2 LRT Station Connectivity Enhancement Study. Figure 12 illustrates the planned components for Lincoln Fields Station within the study.

Figure 13: Lincoln Fields LRT Active Mode Connectivity



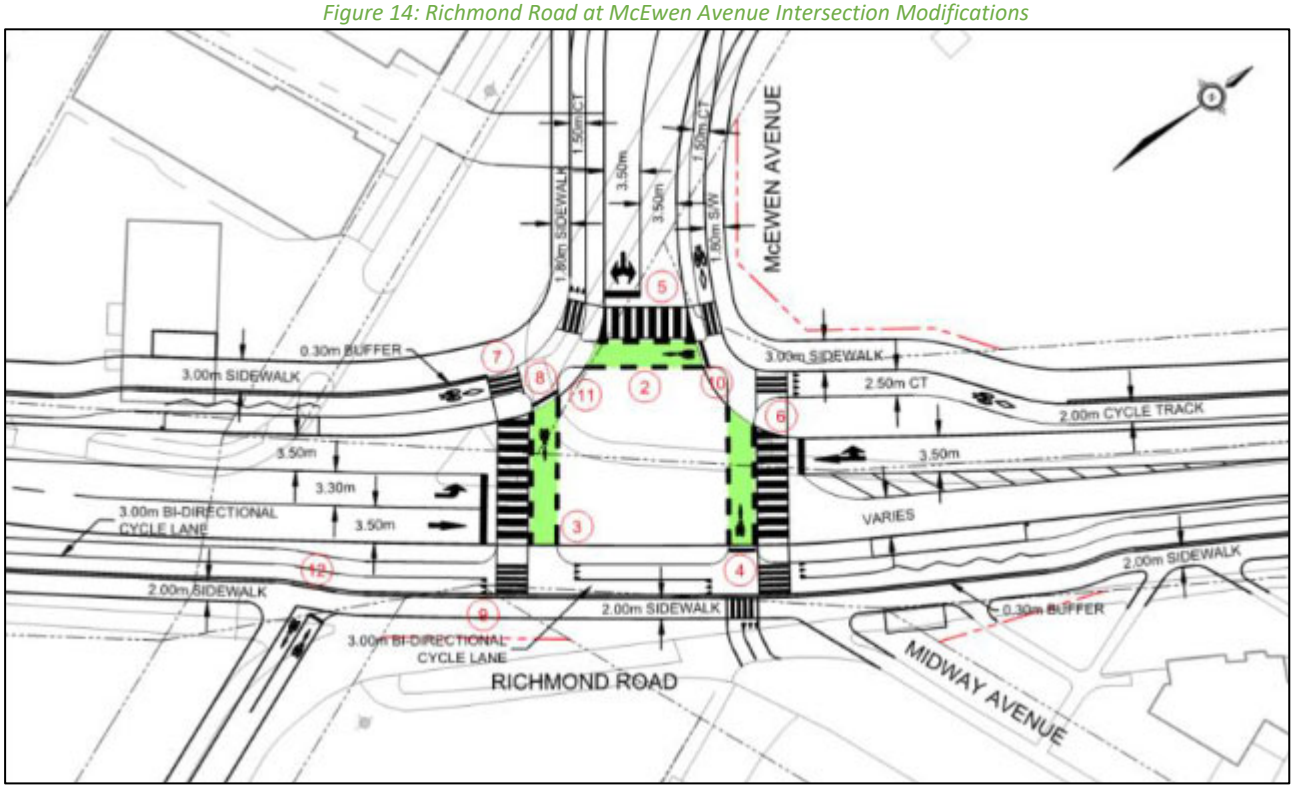
Source: https://ottawa.ca/en/city-hall/public-engagement/projects Accessed: March 30, 2021

Corresponding elements planned for inclusion as listed are:

A. Replace pedestrian bridge
B. New multi-use pathway along east and west side of alignment, from Richmond Road to new pedestrian bridge south of Carling Avenue, including reconstruction of pathway to Rosewood Avenue
C. Station plaza, passenger pick up and drop off and bike parking
D. Cycle tracks on Carling Avenue
E. Signalized crossing including for active modes on Carling Avenue and on Kichi Zibi Mikan
F. Add lighting to NCC pathway to Richmond Road

In addition to the active mode connectivity in the study area, complete streets projects as part of the LRT Extension are planned. Figure 13 illustrates the proposed modifications at the intersection of Richmond Road at McEwen Avenue.

Figure 14: Richmond Road at McEwen Avenue Intersection Modifications



Source: https://ottawa.ca/en/city-hall/public-engagement/projects Accessed: April 12, 2022

2.3.2 Other Study Area Developments

365 Forest Street, 1420 Richmond Road, 2583, 2589 Bond Street

The proposed development application included a site plan for the construction of two 12-storey residential buildings comprising 391 dwelling units. The development is anticipated to be built out in 2024 and to generate 38 AM and 29 PM peak hour two-way auto trips. (EXP, 2021)

2525 Carling Avenue

The proposed development application includes site plan facilitating the demolition of the Lincoln Fields Mall and includes 8,700 sq. ft. of new office space and the retention of a 28,300 sq. ft. supermarket, an 8,1000 sq. ft. pharmacy, a 3,600 sq. ft. fast food restaurant with a drive-through window, and a 3,500 sq. ft. fast food restaurant without a drive-through window. The development concept is anticipated to constitute a reduction in traffic accessing the site and on the surrounding network. (Parsons, 2019)

1071 Ambleside Drive

The proposed development application includes a zoning by-law amendment to permit the construction of a 20-storey, 293-unit apartment building in the location of an existing surface parking lot on site. The development is anticipated to be built out in 2023 and to generate 47 new AM and PM peak hour auto trips in advance of the LRT Station construction transitioning to 18 new AM and PM peak hour auto trips after its construction. (Parsons, 2021)

1299 Richmond Road

The proposed development application includes a zoning by-law amendment and site plan control application to permit the development of a mixed-use building consisting of two towers of 32 and 28 stories comprising 590 apartment units and 748 m^2 of ground floor retail space. The development is anticipated to be built out in 2025 and to generate 61 new AM and PM peak hour auto trips. (Parsons, 2023)

1047 Richmond Road

The proposed development application includes a zoning by-law amendment and official plan amendment application to permit the construction of approximately 1,152 apartment units, along with approximately 859 m^2 of first floor retail. The development is anticipated to be built out in 2026 and to generate 73 new AM and PM peak hour auto trips. (Parsons, 2023)

100 New Orchard Avenue North

The proposed development application includes a zoning by-law amendment to permit the development of a high-rise residential development of 14 storeys. No TIA is available at this time.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersections of Richmond Road at Croydon Avenue, Assaly Road, and McEwen Avenue/Edgeworth Avenue and the boundary road will be Regina Street. TRANS screenline SL24 is immediately west of the site and will not be analyzed as part of this study.

3.2 Time Periods

As the proposed development is composed entirely of residential units, the AM and PM peak hours will be examined.

3.3 Horizon Years

The anticipated build-out year is 2028. As a result, the full build-out plus five years horizon year is 2033.

4 Development-Generated Travel Demand

4.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Bayshore/Cedarview have been summarized in Table 6.

Table 6: TRANS Trip Generation Manual Recommended Mode Shares – Bayshore/Cedarview

Travel Mode	Multi-Unit (High-Rise)	
	AM	PM
Auto Driver	40%	40%
Auto Passenger	12%	15%
Transit	38%	33%
Cycling	2%	1%
Walking	8%	11%
Total	**100%**	**100%**

The site proposes a pathway connection to the Pinecrest Creek Pathway on the southeast corner of the site, bringing it within 800 metres-walk of the future rapid transit station of Lincoln Fields. It is noted that vehicle

parking is proposed at a reduced rate and bicycle parking at an increased rate each from the minimum values prescribed within the Zoning By-Law. The development encourages the use of non-auto modal shares via this limitation of vehicle parking and addition of bicycle parking as supporting Transportation Demand Management (TDM) measures. Based upon this proximity to transit and being in close proximity to the Pinecrest Creek and Ottawa River Pathways and the parking TDM measures proposed, modified mode share targets are proposed for the development and are summarized in Table 7.

Table 7: Proposed Development Mode Shares

Travel Mode	Multi-Unit (High-Rise)	
	AM	PM
Auto Driver	30%	30%
Auto Passenger	10%	10%
Transit	50%	50%
Cycling	3%	2%
Walking	7%	8%
Total	**100%**	**100%**

4.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings from the TRANS Trip Generation Manual (2020). Table 9 summarizes the person trip rates for the proposed residential land use for each peak period. No change in Parkway House trip generation is anticipated with its relocation on site and therefore no trip generation will be provided or analyzed for the existing use.

Table 8: Trip Generation Person Trip Rates by Peak Period

Land Use	Land Use Code	Peak Period	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	0.80
		PM	0.90

Using the above person trip rates, the total person trip generation has been estimated. Table 10 summarizes the total person trip generation for the residential land use.

Table 9: Total Trip Generation by Peak Period

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	565	140	312	452	295	214	509

Using the site-specific mode share targets and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020). Table 11 summarizes the residential trip generation and by mode and peak hour.

Table 10: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit High-Rise	Auto Driver	**30%**	20	46	66	**30%**	38	29	67
	Auto Passenger	**10%**	7	15	22	**10%**	12	10	22
	Transit	**50%**	37	87	124	**50%**	67	53	120
	Cycling	**3%**	2	6	8	**2%**	3	2	5
	Walking	**7%**	6	13	19	**8%**	12	9	21
	Total	**100%**	**72**	**167**	**239**	**100%**	**132**	**103**	**235**

As shown above, a total of 66 AM and 67 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel for the residential component, and these patterns were applied based on the build-out of Bayshore/Cedarview. Table 11 below summarizes the distributions.

Table 11: OD Survey Distribution – Bayshore/Cedarview

To/From	% of Trips
North	5%
South	20%
East	45%
West	30%
Total	**100%**

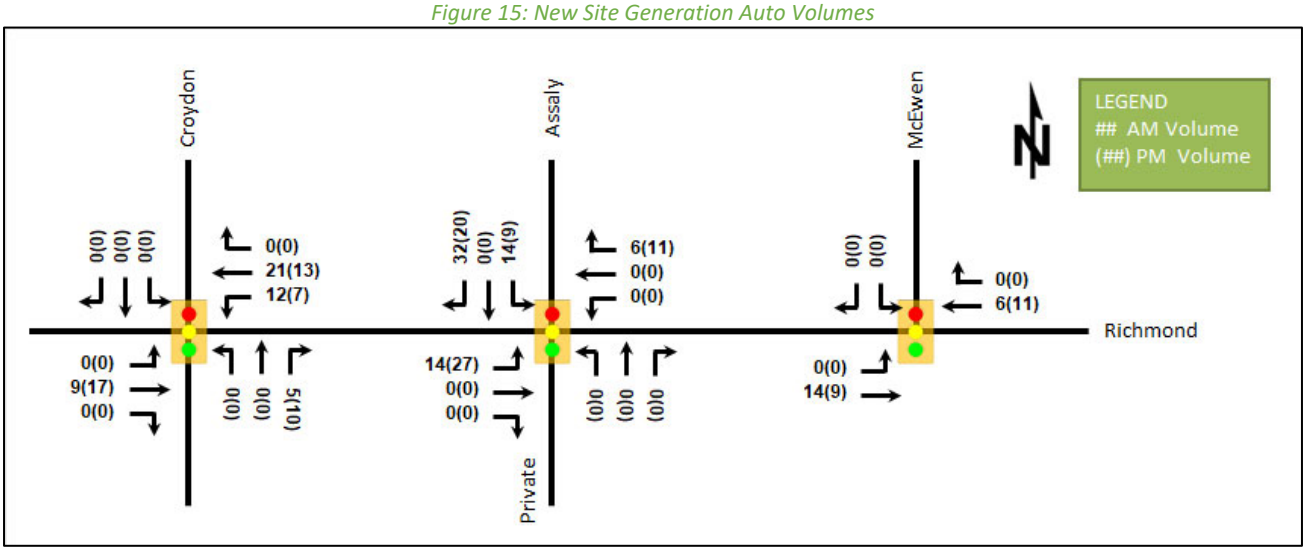
4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 12 summarizes the proportional assignment to the study area roadways, and Figure 15 illustrates the new site generated volumes.

Table 12: Trip Assignment

To/From	Via
North	5% Richmond Rd (E)
South	5% Richmond Rd (E), 15% Richmond Rd (W)
East	20% Richmond Rd (E), 25% Croydon Ave
West	30% Richmond Rd (W)
Total	**100%**

Figure 15: New Site Generation Auto Volumes



5 Exemption Review

Table 13 summarizes the exemptions for this TIA.

Table 13: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	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 plan and zoning by-law applications	Required
4.3 Boundary Street Design		All applications	Required
4.5 Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			
3.2 Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered when the development generates more than 75 auto or transit trips	Required to discuss background transit demand per the transit trip trigger
3.3 Demand Rationalization		Only required when one or more other Network Impact Modules when the development generates more than 75 auto trips	Exempt
4.6 Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local;	Exempt

Module	Element	Explanation	Exempt/Required
		2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	
4.7 Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Required
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Exempt
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
4.9 Intersection Design	4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Exempt
	4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Exempt

6 Development Design

6.1 Design for Sustainable Modes

Hard surface connections from the building entrances will link to the existing sidewalk on Regina Street in the west and the Byron Linear Tramway Park links to the Ottawa River Pathway to the north. Vehicle parking for the Parkway House facility is proposed within a surface lot, and the residential parking is proposed below grade. Bicycle parking is proposed within the first parking level, and in surface racks. The main slope of the ramp to the underground parking has a 15% grade, and elevators are provided to the underground parking for ease of access.

The closest local bus stops are located at the intersection of Richmond Road at Assaly Road and at Starflower Lane, which are within 500 metres of the site entrances. Lincoln Fields Station and area transit stops can be accessed via the proposed connection to the Pinecrest Creek Pathway.

As noted in Section 2.3.1.1, an active transportation connection is required on the east side of the subject property, linking the site drive aisle to the Pinecrest Creek Pathway. Accordingly, a sidewalk extension from the existing sidewalk along the north side of Regina Street has been provided through the site, linking to a pathway connection located at the southeast corner of the site. The alignment provides a continuous connection upon build-out without further area improvements or construction of additional facilities.

The infrastructure TDM checklist is provided in Appendix E.

6.2 Circulation and Access

Vehicle access is provided via the existing connection to Regina Street. The two-way access ties into the 8.0-metre-wide public roadway through a narrowing to 6.7 metres in width at the property line. The internal drive aisle is proposed as a one-way (counterclockwise) loop internal to the site and is 6.0 metres wide. The access meets the Private Approach By-Law requirements for maximum and minimum access widths and the Zoning By-Law requirements for minimum and maximum widths of the access and drive aisle loop leading to the parking spaces.

Parking for the Parkway House supportive housing component is located on the surface accessing the drive aisle loop. If the supportive housing land use is considered residential for purposes of sizing the drive aisle accessing the parking spaces, the proposed 6.0-metre-wide aisle meets the minimum width cited in provision 107(1)(c)(ii) of the Zoning By-Law. If the land use is not considered residential for this analysis, then the minimum width required would be 6.7 metres for approximately 18.7 metres along the Parkway House spaces, in line with provision 107(1)(c)(i) of the Zoning By-Law. No operational difference and no constraints would be noted for the proposed 6.0-metre configuration that otherwise meets requirements for residential land uses, versus a 6.7-metre-wide aisle, and the 6.0-metre width is compliant with the Zoning By-Law for the visitor parking spaces in the southern portion of the surface parking lot beyond the Parkway House spaces. As such, a consistent 6.0-metre-wide access is proposed for the entire drive aisle loop, and this configuration is recommended to be approved through the Site Plan Application.

Given the proposed aisle geometry and the parking restrictions due to the loop being designated a fire lane, the majority of the aisle is expected to be able to accommodate pick-ups and drop-offs. Conceptual site pavement markings and signage for the site are provided in Appendix F.

Loading zones are proposed adjacent to each building. Garbage collection will occur in the proposed loading zones, and emergency services can access the buildings via the internal drive aisle loop. Turning templates are provided in Appendix G.

7 Parking

7.1 Parking Supply

The proposed development will provide 215 vehicle parking spaces, including 12 spaces for the Parkway House facility, 150 spaces for residents, and 53 spaces for visitors. Twenty-one spaces are within surface lots, and 194 spaces will be in the below-grade parking levels.

The parking provision conforms to the rates established by the prior Official Plan and zoning amendments. For the purposes of discussion relating to reducing resident parking as a TDM measure, the rates prescribed by the Zoning By-Law are 0.5 spaces per dwelling unit and the proposed parking rate is 0.38 spaces per dwelling unit.

Based on the Traffic and Parking (By-law No. 2017-301), and the Accessibility for Ontarians with Disabilities Act (AODA) Integrated Accessibility Standards (O. Reg. 191/11) the proposed parking provision requires a minimum of three accessible parking spaces. The site provides ten total accessible parking spaces, five as Type A spaces and five as Type B spaces. This overall provision and the space breakdown exceed the minimum of three Type A spaces and four Type B spaces required by AODA.

A total of 636 bicycle parking spaces are proposed, including 600 internal bicycle parking spaces at a rate of 1.06 spaces per dwelling unit, and 36 external bicycle parking spaces.

The site is in close proximity to the future LRT station of Lincoln Fields and is proposed as providing more than double the zoning Schedule A1 Area B required bicycle parking for developments in the area of 283 spaces. The auto parking has been established at a lower rate than other sites within zoning Schedule A1's Area B, which will act as a TDM measure for the site and encourage higher cycling and transit use based on these enabling factors.

Site vehicle and visitor parking meet the quantities established by the site-specific zoning.

8 Boundary Street Design

Table 14 summarizes the MMLOS analysis for Regina Street. It is noted that no boundary streets are present along the site and the content of this section is provided for informational purposes only. The existing and future conditions for both streets will be the same and are considered in one row. The boundary street analysis is based on the policy area of "General Urban Area". The MMLOS worksheets has been provided in Appendix H.

Table 14: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Regina St	B	C	D	D	-	-	-	-

Regina Street meets the pedestrian and cycling MMLOS targets.

If only the south side of Regina Street is considered in isolation, per City request, the lack of an existing sidewalk scores at a pedestrian level of service F. Given the south side of the road west of the site is primarily for access to waste collection, loading, and parking garages associated with the 1275-1285 Richmond Road parcels with steep transverse grading, that continues to intermittent private driveways to low-rise residential land uses, no need for a sidewalk on the south side of the road is present.

Notwithstanding the above discussion provided for informational purposes, the requisite active transportation connections exist for the proposed development, therefore no evaluation or discussion beyond what has been provided is required to support this development application.

9 Access Intersections Design

9.1 Location and Design of Access

The site access remains in the location of the existing two-way access on Regina Street, which begins at the terminus of the road. The access is proposed to tie into the approximate 8.0-metre-wide asphalt of Regina Street through a localized narrowing to 6.7 metres in width, complying with Section 107(1)(aa) of the Zoning By-Law for a maximum drive aisle width of 6.7 metres. The access also meets the maximum width of 9.0 meters of the Private Approach By-law.

A walkway is proposed on the north side of the site access to connect to the existing sidewalk on Regina Street.

10 Transportation Demand Management

10.1 Context for TDM

The mode shares used within the TIA represent a shift from auto modes to transit, given the site proximity to Lincoln Fields Station, which will include LRT in the future conditions, the limited vehicle parking proposed, and the additional bicycle parking proposed. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage this shift.

The subject site is not located within a design priority area. The total bedroom count within the development is 833 across 28 studio, 303 one-bedroom, 200 two-bedroom, and 34 three-bedroom units and no age restrictions are noted.

10.2 Need and Opportunity

The subject site is forecasted to rely predominantly on transit, and those assumptions have been carried through the analysis. The study area intersections are anticipated to have residual capacity, thus the risks to the network due to not meeting the target mode shares are low. The primary result would be the potential for increased queuing along Richmond Road.

10.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix E. The key TDM measures recommended include:

- Provide a multi-modal travel option information package to new residents
- Display local area maps with walking/cycling routes and with transit routes at major building entrances
- Provide a permanent bike repair station
- Contract with providers to install on-site bike-share station (or other micromobility e.g., scootershare)
- Contract with provider to install on-site carshare vehicles and promote their use by residents
- Inclusion of a 1-year Presto card for apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
- Unbundle parking cost from purchase or rental costs

It should be noted that at the time of this report, scootershare cannot access NCC lands, and therefore this measure may be viable in the future should this restriction be relaxed.

11 Background Network Travel Demands

11.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3, and the intersection modifications for the Richmond Road at McEwen Avenue intersection are anticipated to be completed by site buildout. Since the development is anticipated to generate fewer than 75 auto trips, no analysis for the future traffic conditions is required.

11.2 Background Growth

The background developments are listed in Section 2.3.2. The area developments are anticipated to rely on the Lincoln Fields LRT Station for the majority of expected transit trips. It is assumed that approximately 30% of the total background transit trips would rely on route #11 travels along Richmond Road connect to Lincoln Fields Station, which, based on the associated TIA reports would represent a ridership increases of 15 to 30 riders in the peak direction of route #11. These additional trips may be accommodated by the existing 15-minute service

assuming each bus is not at capacity, although the substitution of one higher capacity bus or the addition of a single bus during AM peak hour may be required to meet increases in background ridership demands.

12 Transit

12.1 Route Capacity

In Section 5.1 the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 17 summarizes the transit trip generation.

Table 15: Trip Generation by Transit Mode

Travel Mode	Mode Share	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Transit	50%	37	87	124	67	53	120

The proposed development is anticipated to generate an additional 124 AM and 120 PM peak hour two-way transit trips. From the trip distribution found in section 5.3, these values can be further broken down. Table 16 summarizes forecasted site-generated transit ridership trips by direction and the equivalent bus loads.

Table 16: Forecasted Site-Generated Transit Ridership

Direction	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Direction Bus Loads
	In	Out	In	Out		
North	2	4	3	3	Bus, LRT	Negligible
South	7	18	13	11	Bus, LRT	One third of a standard bus
East	17	39	30	24	Bus, LRT	Three quarters of a standard bus
West	11	26	20	16	Bus, LRT	Half of a standard bus

Site peak hour transit trips are anticipated to be taken via the LRT at Lincoln Fields Station, either by walking or connecting to the station via route #11 or taken directly via the route #11.

13 Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed development concept includes 565 residential dwelling units across one 28-storey, one 16-storey tower, and one seven-storey residential tower which will house the relocated Parkway House supportive housing facility at the ground level
- Accesses will be provided from the existing terminal end of Regina Street
- The development is proposed to be completed in two stages to facilitate the relocation of the existing facility with a full build-out horizon of 2028
- The Trip Generation Trigger was met for the TIA Screening
- This report is supporting a site plan application
- Based on the exemption review provided in Section 5, consistent with the 2023 Revisions to the Guidelines, a TIA has been prepared with a design review component with a review of transit

Existing Conditions

- Richmond Road is an arterial road in the study area
- Sidewalks are provided on both sides of Richmond Road, Croydon Avenue, McEwen Avenue and Regina Street west of Assaly Road, and on one side of Regina Street east of Assaly Road

- A curbside bike lane is on the north side of Richmond Road which is a cross-town bikeway, and a cycle track is on the south side west of Starflower Lane, and pathways are located north and east of the site
- Higher instances of collisions were noted at the Croydon Avenue at Richmond Road intersection than other locations within the study area and these were found to be largely rear end collisions which are lower speed and typical of congested conditions
- No spatial patterns were noted for four pedestrian collisions captured at this intersection within five years, and collisions may be influenced by the intersection skew
- The route #11 services Richmond Road and Lincoln Fields Station with 15-minute service, and Lincoln Field Station is approximately 1.1 kilometres walking distance from the site with existing pedestrian connections
- Queueing is noted in the peak directions on Richmond Road during both peak hours, but generally the study area intersections operate well

Planned Conditions

- Lincoln Fields Station is planned to be converted to LRT, and continuous bus lanes are to be provided from Carling Avenue eastward from this station as noted within the draft TMP Part 2
- An active transportation connection through the proposed development is noted in the Lincoln Fields Secondary Plan along with an active transportation connection from the intersection of Lincoln Heights Road at Regina Street to Starflower Lane
- Active transportation connectivity enhancements to Lincoln Fields Station are planned as part of the LRT conversion, with signalization of the AT crossing of Kichi Zibi Mikan

Development Generated Travel Demand

- The proposed development is forecasted produce 239 two-way people trips during the AM peak hour and 235 two-way people trips during the PM peak hour
- Of the forecasted people trips, 66 two-way trips will be vehicle trips during the AM peak hour and 67 two-way trips will be vehicle trips during the PM peak hour based on a 30% auto modal share target
- Of the forecasted trips, 5% are anticipated to travel north, 20% to travel south, 45% to travel east, and 30% to travel west

Development Design

- Hard surface connections from building entrances to the existing sidewalk on Regina Street in the west and the Byron Linear Tramway Park links to the Ottawa River Pathway to the north will be provided
- A pathway connection is provided between the drive aisle and the Pinecrest Creek Pathway on the southeast corner of the site in line with the Secondary Plan requirements
- Parking for vehicles is within below-grade parking levels and within a surface lot, and parking for bicycles will be within secure rooms on the first below-grade parking level accessed via a ramp with a 15% grade or an elevator, and in surface racks
- Local bus stops are within 500 metres walking distance and Lincoln fields Station can be accessed via the proposed connection to the Pinecrest Creek Pathway
- A one-way (counter-clockwise) site drive aisle loop is proposed to be 6.0 metres wide with a 6.7-metre access connecting to the terminus of Regina Street
- The 6.0-metre drive aisle is recommended to be approved through the Site Plan Application along the Parkway House supportive housing parking spaces despite potentially being considered a non-residential

use as no operational issues or constraints are noted for the consistent application of the 6.0-metre aisle width that meets minimum width requirements throughout the remainder of the site
- Loading zones are designated adjacent to each building, garbage collection will occur within these zones, and emergency services can circulate the site drive aisles

Parking

- Two hundred nineteen vehicle parking spaces are proposed on-site
- Twenty-one spaces are within surface lots and 198 spaces will be in the below-grade parking levels
- Vehicle parking provision conforms to the rates established by the prior zoning amendment, and minimum accessible parking requirements are being met
- Six hundred twelve bicycle parking spaces are proposed on-site, including 574 internal to the building and 38 external, at a rate of 1.02 spaces per unit for spaces internal to the building

Boundary Street Design

- No boundary streets are present along the site frontages
- The north side of Regina Street meets MMLOS targets and provides the requisite pedestrian connectivity for the proposed development
- No need for a sidewalk on the south side of Regina Street is identified, and this facility would not benefit the proposed development

Access Intersection Design

- The site proposes access via a tie-in to the existing access on the terminal end of the 8.0-metre-wide Regina Street narrowed to 6.7 metres in width at the property line
- These widths complies with the Private Approach By-Law and Zoning By-Law maximum widths

TDM

- The site is providing a reduced vehicle parking rate from typical area zoning, and an increased bicycle parking rate
- Supportive TDM measures to be included within the proposed development should include:
    - Provide a multi-modal travel option information package to new residents
    - Display local area maps with walking/cycling routes and with transit routes at major building entrances
    - Contract with providers to install on-site bike-share station (or other micromobility e.g., scootershare*)
    - Provide a permanent bike repair station
    - Contract with provider to install on-site carshare vehicles and promote their use by residents
    - Inclusion of a 1-year Presto card for apartment rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Unbundle parking cost from purchase or rental costs
- Scootershare may be appropriate at build out if service is expanded to NCC lands

Background Conditions

- The background developments are anticipated to contribute 15-30 peak hour peak directions riders to the route #11, and may necessitate the substitution of a higher order bus per peak hour or the addition of a single bus on the route based on the existing 15-minute service

- The construction of the LRT station at Lincoln Fields is anticipated to be completed by site build-out

Transit

- The development is forecasted to generate 124 two-way AM and 120 two-way PM peak hour transit trips of which 87 outbound AM and 67 inbound PM peak hour trips are anticipated
- Site peak hour transit trips are anticipated to be taken via the LRT at Lincoln Fields Station, either by walking or connecting to the station via route #11 or taken directly via the route #11

14 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

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Appendix A

TIA Screening Form and PM Certification Form

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2023 Revisions to 2017 TIA Guidelines
Step 1 - Screening Form

Date: 07-Nov-23
Project Number: 2021-057
Project Reference: Parkway House

1.1 Description of Proposed Development	
Municipal Address	2475 Regina Street
Description of Location	End of Regina St, north of Richmond Rd, west of Kichi Zibi Mikan
Land Use Classification	Formerly Parks and Open Space (O1) - Subject to recent rezoning application
Development Size	2 high-rise residential buildings totalling 523 Dwelling Units
Accesses	One existing via Regina St
Phase of Development	Two
Buildout Year	2026
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Multi-Family (High-Rise)	
Development Size	523	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No
Location Trigger	No

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

Certification Form for TIA Study PM

TIA Plan Reports

On April 14, 2022, the Province's Bill 109 received Royal Assent providing legislative direction to implement the More Homes for Everyone Act, 2022 aiming to increase the supply of a range of housing options to make housing more affordable. Revisions have been made to the TIA guidelines to comply with Bill 109 and streamline the process for applicants and staff.

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 they meet the four criteria listed below.

CERTIFICATION

- [x] 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; (Update effective July 2023)
- [x] 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;
- [x] 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
- [x] I am either a licensed or registered[1] professional in good standing, whose field of expertise
  - [x] is either transportation engineering
  - [ ] or transportation planning.

[1] 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.

City Of Ottawa
Planning, Real Estate and Economic Development
110 Laurier Avenue West, 4th fl.
Ottawa, ON
K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Revision Date: June 2023

Dated at Ottawa (City) this 17 day of August , 20 23 .

Name : Andrew Harte

Professional title: Senior Transportation Engineer / Vice-President Ottawa

Signature of individual certifier that s/he/they meet the above criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa, K2H 7W1
Telephone / Extension: 613-697-3797
Email Address: andrew.harte@cghtransportation.com

Stamp

LICENSED PROFESSIONAL ENGINEER
A. J. HARTE
100149314
PROVINCE OF ONTARIO

Revision Date: June 2023

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

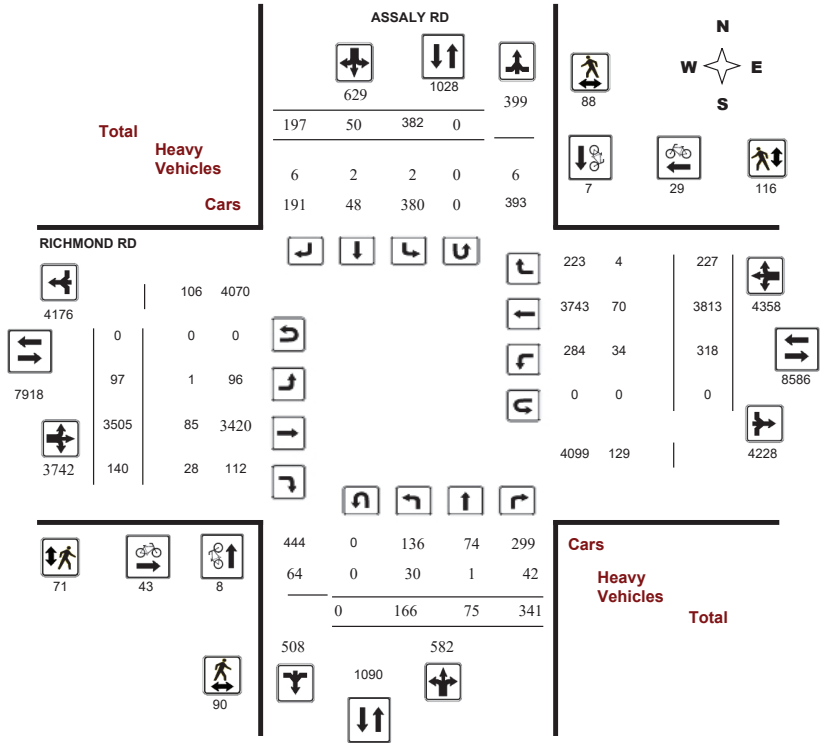
Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Diagram



Transportation Services - Traffic Services

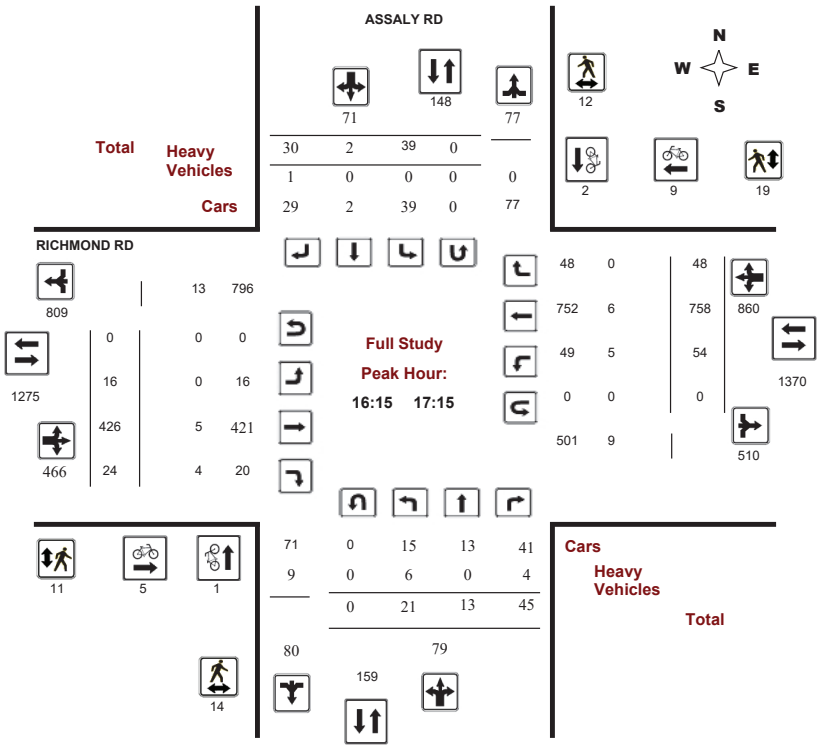
Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Peak Hour Diagram



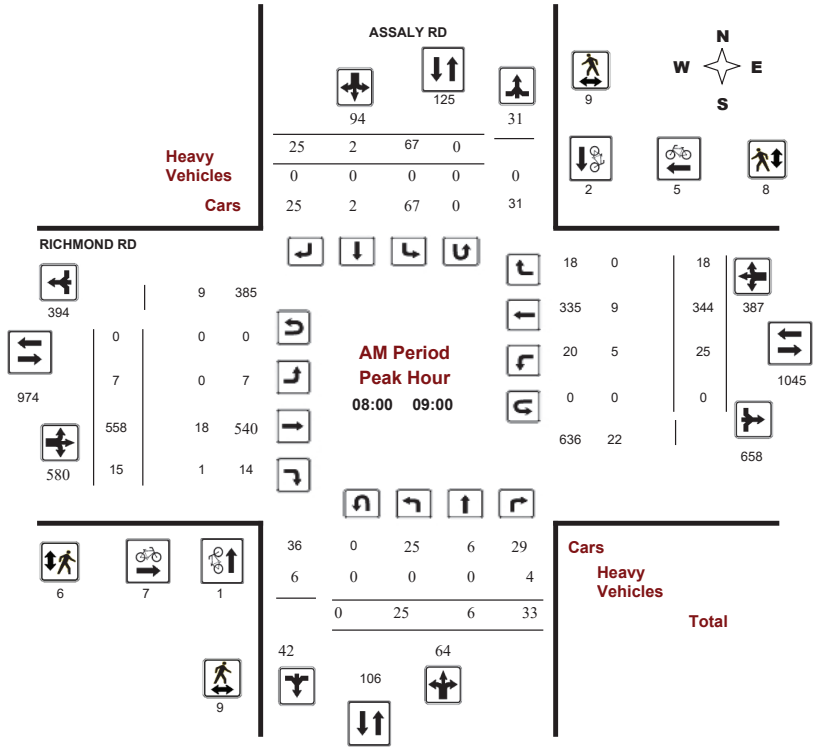
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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



Comments

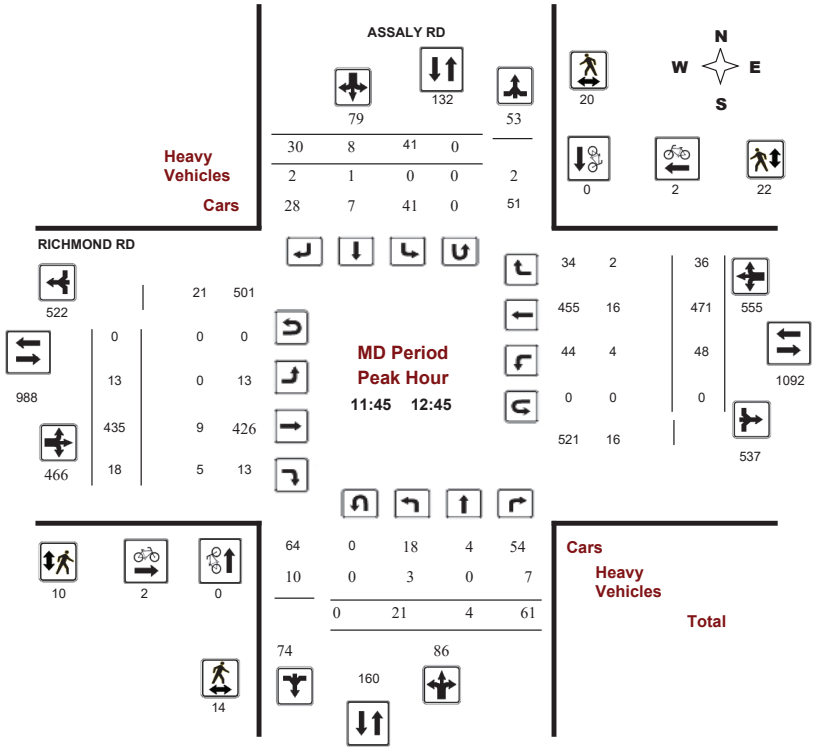
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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



Comments

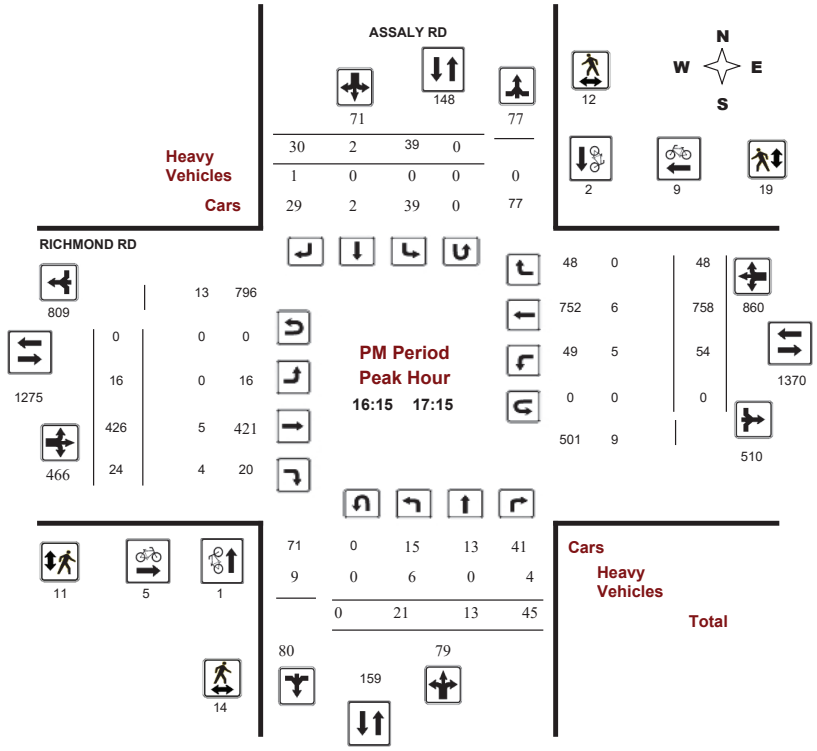
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, August 11, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

	ASSALY RD								RICHMOND 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	16	4	29	**49**	56	3	17	**76**	**125**	2	461	6	**469**	17	232	5	**254**	**723**	**848**
08:00 09:00	25	6	33	**64**	67	2	25	**94**	**158**	7	558	15	**580**	25	344	18	**387**	**967**	**1125**
09:00 10:00	23	9	28	**60**	67	4	26	**97**	**157**	14	377	14	**405**	32	342	14	**388**	**793**	**950**
11:30 12:30	23	5	56	**84**	42	10	32	**84**	**168**	11	433	15	**459**	48	453	33	**534**	**993**	**1161**
12:30 13:30	21	5	52	**78**	32	9	28	**69**	**147**	14	438	20	**472**	43	423	33	**499**	**971**	**1118**
15:00 16:00	18	17	50	**85**	42	9	25	**76**	**161**	9	409	24	**442**	57	631	40	**728**	**1170**	**1331**
16:00 17:00	25	11	47	**83**	42	0	24	**66**	**149**	19	420	18	**457**	55	727	44	**826**	**1283**	**1432**
17:00 18:00	15	18	46	**79**	34	13	20	**67**	**146**	21	409	28	**458**	41	661	40	**742**	**1200**	**1346**
Sub Total	166	75	341	**582**	382	50	197	**629**	**1211**	97	3505	140	**3742**	318	3813	227	**4358**	**8100**	**9311**
U Turns	0			**0**	0			**0**	**0**	**0**			**0**	0			**0**	**0**	**0**
Total	166	75	341	**582**	382	50	197	**629**	**1211**	97	3505	140	**3742**	318	3813	227	**4358**	**8100**	**9311**
EQ 12Hr	231	104	474	**809**	531	70	274	**875**	**1684**	135	4872	195	**5202**	442	5300	316	**6058**	**11260**	**12944**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	208	94	427	**729**	478	63	247	**788**	**1517**	122	4385	176	**4683**	398	4770	284	**5452**	**10135**	**11652**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	272	123	559	**954**	626	83	324	**1033**	**1987**	160	5744	231	**6135**	521	6249	372	**7142**	**13277**	**15264**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study 15 Minute Increments

		ASSALY RD									RICHMOND RD										
		Northbound				Southbound					Eastbound				Westbound						
Time Period		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	4	2	2	8	9	0	1	10	**18**	0	79	0	79	5	54	1	60	**139**	**157**
07:15	07:30	6	0	9	15	12	0	2	14	**29**	0	108	2	110	3	42	1	46	**156**	**185**
07:30	07:45	5	1	9	15	17	1	6	24	**39**	1	142	4	147	6	61	2	69	**216**	**255**
07:45	08:00	1	1	9	11	18	2	8	28	**39**	1	132	0	133	3	75	1	79	**212**	**251**
08:00	08:15	5	2	8	15	15	0	6	21	**36**	0	139	3	142	9	81	8	98	**240**	**276**
08:15	08:30	7	1	10	18	14	1	8	23	**41**	4	140	3	147	6	90	4	100	**247**	**288**
08:30	08:45	6	1	9	16	26	1	7	34	**50**	1	152	2	155	3	87	2	92	**247**	**297**
08:45	09:00	7	2	6	15	12	0	4	16	**31**	2	127	7	136	7	86	4	97	**233**	**264**
09:00	09:15	4	3	8	15	20	2	4	26	**41**	6	92	4	102	6	79	3	88	**190**	**231**
09:15	09:30	4	1	9	14	21	0	9	30	**44**	3	95	4	102	8	93	4	105	**207**	**251**
09:30	09:45	8	3	6	17	17	1	6	24	**41**	2	100	3	105	8	90	3	101	**206**	**247**
09:45	10:00	7	2	5	14	9	1	7	17	**31**	3	90	3	96	10	80	4	94	**190**	**221**
11:30	11:45	9	1	8	18	11	3	10	24	**42**	1	108	3	112	12	85	9	106	**218**	**260**
11:45	12:00	4	2	15	21	12	2	7	21	**42**	3	96	5	104	12	111	10	133	**237**	**279**
12:00	12:15	2	1	18	21	5	2	7	14	**35**	4	116	3	123	16	124	7	147	**270**	**305**
12:15	12:30	8	1	15	24	14	3	8	25	**49**	3	113	4	120	8	133	7	148	**268**	**317**
12:30	12:45	7	0	13	20	10	1	8	19	**39**	3	110	6	119	12	103	12	127	**246**	**285**
12:45	13:00	2	1	18	21	4	4	8	16	**37**	2	119	4	125	12	95	7	114	**239**	**276**
13:00	13:15	5	2	12	19	10	4	3	17	**36**	4	124	5	133	9	113	5	127	**260**	**296**
13:15	13:30	7	2	9	18	8	0	9	17	**35**	5	85	5	95	10	112	9	131	**226**	**261**
15:00	15:15	3	3	12	18	10	0	6	16	**34**	4	90	9	103	12	130	10	152	**255**	**289**
15:15	15:30	8	4	13	25	11	6	6	23	**48**	5	100	6	111	16	159	6	181	**292**	**340**
15:30	15:45	3	5	14	22	15	2	6	23	**45**	0	115	6	121	10	173	9	192	**313**	**358**
15:45	16:00	4	5	11	20	6	1	7	14	**34**	0	104	3	107	19	169	15	203	**310**	**344**
16:00	16:15	4	4	10	18	9	0	1	10	**28**	7	102	3	112	15	171	14	200	**312**	**340**
16:15	16:30	8	2	15	25	8	0	7	15	**40**	3	97	7	107	16	179	13	208	**315**	**355**
16:30	16:45	5	1	11	17	14	0	5	19	**36**	3	120	1	124	12	194	6	212	**336**	**372**
16:45	17:00	8	4	11	23	11	0	11	22	**45**	6	101	7	114	12	183	11	206	**320**	**365**
17:00	17:15	0	6	8	14	6	2	7	15	**29**	4	108	9	121	14	202	18	234	**355**	**384**
17:15	17:30	4	8	9	21	10	3	3	16	**37**	5	106	6	117	9	153	7	169	**286**	**323**
17:30	17:45	2	2	18	22	11	3	7	21	**43**	7	100	8	115	12	165	6	183	**298**	**341**
17:45	18:00	9	2	11	22	7	5	3	15	**37**	5	95	5	105	6	141	9	156	**261**	**298**
Total:		166	75	341	582	382	50	197	629	**1211**	97	3505	140	3742	318	3813	227	4358	**1211**	**9,311**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Cyclist Volume

		ASSALY RD			RICHMOND RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	3	1	**4**	**4**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	1	**1**	2	0	**2**	**3**
07:45	08:00	0	0	**0**	2	0	**2**	**2**
08:00	08:15	0	1	**1**	2	2	**4**	**5**
08:15	08:30	0	0	**0**	2	2	**4**	**4**
08:30	08:45	0	0	**0**	3	0	**3**	**3**
08:45	09:00	1	1	**2**	0	1	**1**	**3**
09:00	09:15	0	0	**0**	3	0	**3**	**3**
09:15	09:30	0	0	**0**	0	1	**1**	**1**
09:30	09:45	1	0	**1**	2	1	**3**	**4**
09:45	10:00	0	0	**0**	1	1	**2**	**2**
11:30	11:45	0	0	**0**	2	0	**2**	**2**
11:45	12:00	0	0	**0**	1	0	**1**	**1**
12:00	12:15	0	0	**0**	0	1	**1**	**1**
12:15	12:30	0	0	**0**	1	1	**2**	**2**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	1	**1**	0	2	**2**	**3**
15:15	15:30	0	0	**0**	0	1	**1**	**1**
15:30	15:45	1	0	**1**	4	2	**6**	**7**
15:45	16:00	2	0	**2**	0	1	**1**	**3**
16:00	16:15	1	1	**2**	3	0	**3**	**5**
16:15	16:30	0	1	**1**	3	3	**6**	**7**
16:30	16:45	0	0	**0**	0	4	**4**	**4**
16:45	17:00	1	0	**1**	1	1	**2**	**3**
17:00	17:15	0	1	**1**	1	1	**2**	**3**
17:15	17:30	0	0	**0**	2	2	**4**	**4**
17:30	17:45	0	0	**0**	0	1	**1**	**1**
17:45	18:00	1	0	**1**	5	0	**5**	**6**
Total		8	7	**15**	43	29	**72**	**87**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Pedestrian Volume

Time Period	ASSALY RD NB Approach (E or W Crossing)	ASSALY RD SB Approach (E or W Crossing)	ASSALY RD Total	RICHMOND RD EB Approach (N or S Crossing)	RICHMOND RD WB Approach (N or S Crossing)	RICHMOND RD Total	Grand Total
07:00 07:15	4	3	**7**	0	1	**1**	**8**
07:15 07:30	1	1	**2**	0	1	**1**	**3**
07:30 07:45	3	0	**3**	1	5	**6**	**9**
07:45 08:00	3	1	**4**	1	2	**3**	**7**
08:00 08:15	0	1	**1**	2	1	**3**	**4**
08:15 08:30	5	5	**10**	2	2	**4**	**14**
08:30 08:45	3	1	**4**	2	2	**4**	**8**
08:45 09:00	1	2	**3**	0	3	**3**	**6**
09:00 09:15	2	2	**4**	2	3	**5**	**9**
09:15 09:30	2	0	**2**	3	3	**6**	**8**
09:30 09:45	4	4	**8**	1	1	**2**	**10**
09:45 10:00	1	1	**2**	1	5	**6**	**8**
11:30 11:45	3	4	**7**	3	3	**6**	**13**
11:45 12:00	5	5	**10**	4	7	**11**	**21**
12:00 12:15	1	9	**10**	6	7	**13**	**23**
12:15 12:30	3	5	**8**	0	2	**2**	**10**
12:30 12:45	5	1	**6**	0	6	**6**	**12**
12:45 13:00	1	4	**5**	1	4	**5**	**10**
13:00 13:15	2	4	**6**	5	3	**8**	**14**
13:15 13:30	2	0	**2**	1	6	**7**	**9**
15:00 15:15	4	3	**7**	4	1	**5**	**12**
15:15 15:30	7	4	**11**	3	4	**7**	**18**
15:30 15:45	1	3	**4**	2	0	**2**	**6**
15:45 16:00	0	1	**1**	2	2	**4**	**5**
16:00 16:15	5	1	**6**	2	4	**6**	**12**
16:15 16:30	2	1	**3**	0	7	**7**	**10**
16:30 16:45	6	1	**7**	2	0	**2**	**9**
16:45 17:00	4	4	**8**	8	7	**15**	**23**
17:00 17:15	2	6	**8**	1	5	**6**	**14**
17:15 17:30	3	4	**7**	6	10	**16**	**23**
17:30 17:45	1	2	**3**	1	4	**5**	**8**
17:45 18:00	4	5	**9**	5	5	**10**	**19**
Total	90	88	**178**	71	116	**187**	**365**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study Heavy Vehicles

Time Period		ASSALY RD Northbound LT	ST	RT	N TOT	Southbound LT	ST	RT	S TOT	STR TOT	RICHMOND RD Eastbound LT	ST	RT	E TOT	Westbound LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	1	**1**	0	0	0	**0**	**1**	0	6	0	**6**	1	1	0	**2**	**8**	**9**
07:15	07:30	0	0	1	**1**	0	0	0	**0**	**1**	0	7	0	**7**	0	3	0	**3**	**10**	**11**
07:30	07:45	0	0	1	**1**	0	0	0	**0**	**1**	0	5	0	**5**	2	2	0	**4**	**9**	**10**
07:45	08:00	0	0	1	**1**	0	0	0	**0**	**1**	0	2	0	**2**	0	2	0	**2**	**4**	**5**
08:00	08:15	0	0	2	**2**	0	0	0	**0**	**2**	0	3	0	**3**	1	4	0	**5**	**8**	**10**
08:15	08:30	0	0	1	**1**	0	0	0	**0**	**1**	0	3	0	**3**	1	2	0	**3**	**6**	**7**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	0	10	0	**10**	0	1	0	**1**	**11**	**11**
08:45	09:00	0	0	1	**1**	0	0	0	**0**	**1**	0	2	1	**3**	3	2	0	**5**	**8**	**9**
09:00	09:15	2	0	1	**3**	0	0	0	**0**	**3**	0	4	2	**6**	2	2	0	**4**	**10**	**13**
09:15	09:30	0	0	4	**4**	0	0	1	**1**	**5**	0	0	1	**1**	0	3	0	**3**	**4**	**9**
09:30	09:45	3	1	1	**5**	0	0	0	**0**	**5**	0	6	2	**8**	1	5	0	**6**	**14**	**19**
09:45	10:00	0	0	1	**1**	0	0	0	**0**	**1**	1	4	0	**5**	0	3	0	**3**	**8**	**9**
11:30	11:45	2	0	1	**3**	0	0	1	**1**	**4**	0	5	0	**5**	2	4	1	**7**	**12**	**16**
11:45	12:00	1	0	2	**3**	0	0	2	**2**	**5**	0	1	1	**2**	1	4	1	**6**	**8**	**13**
12:00	12:15	0	0	2	**2**	0	1	0	**1**	**3**	0	1	1	**2**	1	4	1	**6**	**8**	**11**
12:15	12:30	1	0	2	**3**	0	0	0	**0**	**3**	0	6	1	**7**	2	2	0	**4**	**11**	**14**
12:30	12:45	1	0	1	**2**	0	0	0	**0**	**2**	0	1	2	**3**	0	6	0	**6**	**9**	**11**
12:45	13:00	1	0	1	**2**	0	0	0	**0**	**2**	0	1	1	**2**	2	0	0	**2**	**4**	**6**
13:00	13:15	2	0	2	**4**	0	0	0	**0**	**4**	0	2	2	**4**	1	2	0	**3**	**7**	**11**
13:15	13:30	0	0	1	**1**	0	0	0	**0**	**1**	0	3	2	**5**	1	3	0	**4**	**9**	**10**
15:00	15:15	1	0	2	**3**	0	0	0	**0**	**3**	0	2	1	**3**	1	3	1	**5**	**8**	**11**
15:15	15:30	1	0	1	**2**	1	0	1	**2**	**4**	0	1	1	**2**	1	1	0	**2**	**4**	**8**
15:30	15:45	0	0	1	**1**	1	1	0	**2**	**3**	0	2	1	**3**	1	0	0	**1**	**4**	**7**
15:45	16:00	2	0	1	**3**	0	0	0	**0**	**3**	0	0	1	**1**	1	2	0	**3**	**4**	**7**
16:00	16:15	1	0	2	**3**	0	0	0	**0**	**3**	0	0	1	**1**	0	1	0	**1**	**2**	**5**
16:15	16:30	2	0	1	**3**	0	0	0	**0**	**3**	0	1	1	**2**	2	4	0	**6**	**8**	**11**
16:30	16:45	2	0	1	**3**	0	0	1	**1**	**4**	0	3	1	**4**	1	1	0	**2**	**6**	**10**
16:45	17:00	2	0	1	**3**	0	0	0	**0**	**3**	0	1	1	**2**	1	0	0	**1**	**3**	**6**
17:00	17:15	0	0	1	**1**	0	0	0	**0**	**1**	0	0	1	**1**	1	1	0	**2**	**3**	**4**
17:15	17:30	1	0	1	**2**	0	0	0	**0**	**2**	0	1	1	**2**	1	1	0	**2**	**4**	**6**
17:30	17:45	2	0	1	**3**	0	0	0	**0**	**3**	0	1	1	**2**	2	0	0	**2**	**4**	**7**
17:45	18:00	3	0	2	**5**	0	0	0	**0**	**5**	0	1	1	**2**	1	1	0	**2**	**4**	**9**
Total:	None	30	1	42	**73**	2	2	6	**10**	**83**	1	85	28	**114**	34	70	4	**108**	**222**	**305**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ASSALY RD @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36181

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

Full Study 15 Minute U-Turn Total

		ASSALY RD		RICHMOND RD		
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**

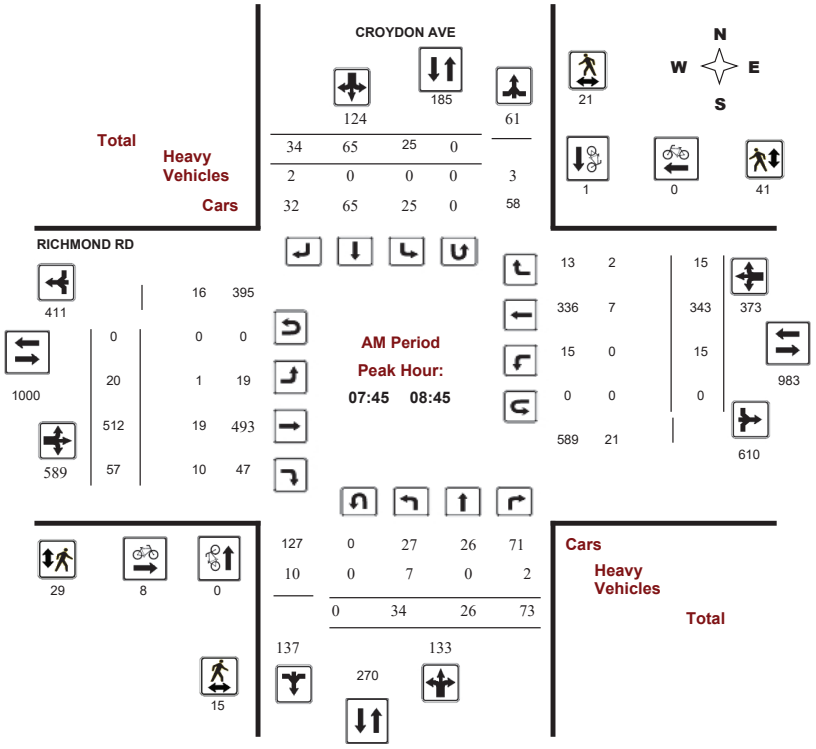
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36184

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



Comments

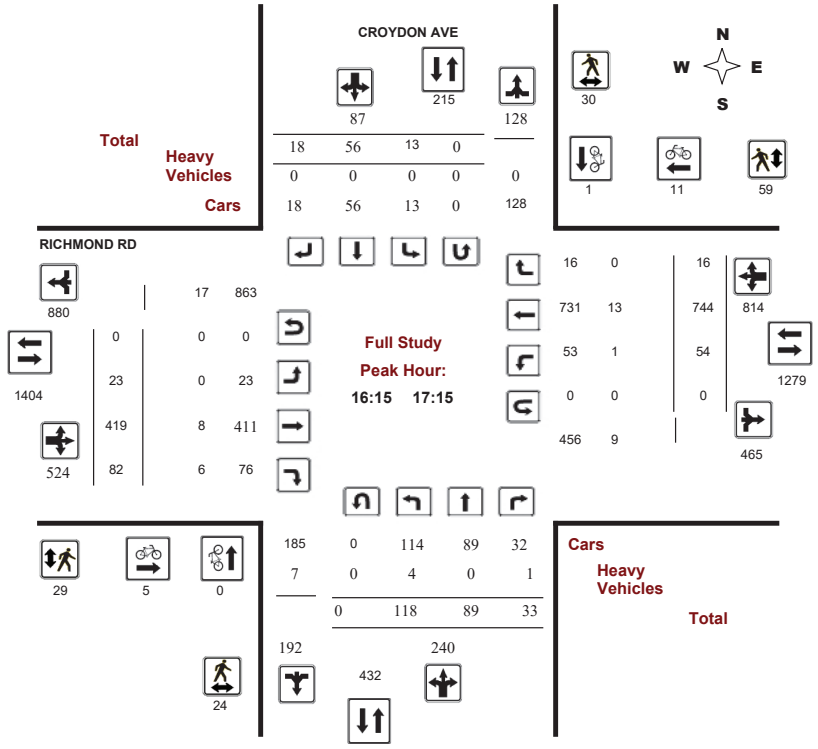
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36184

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



Comments

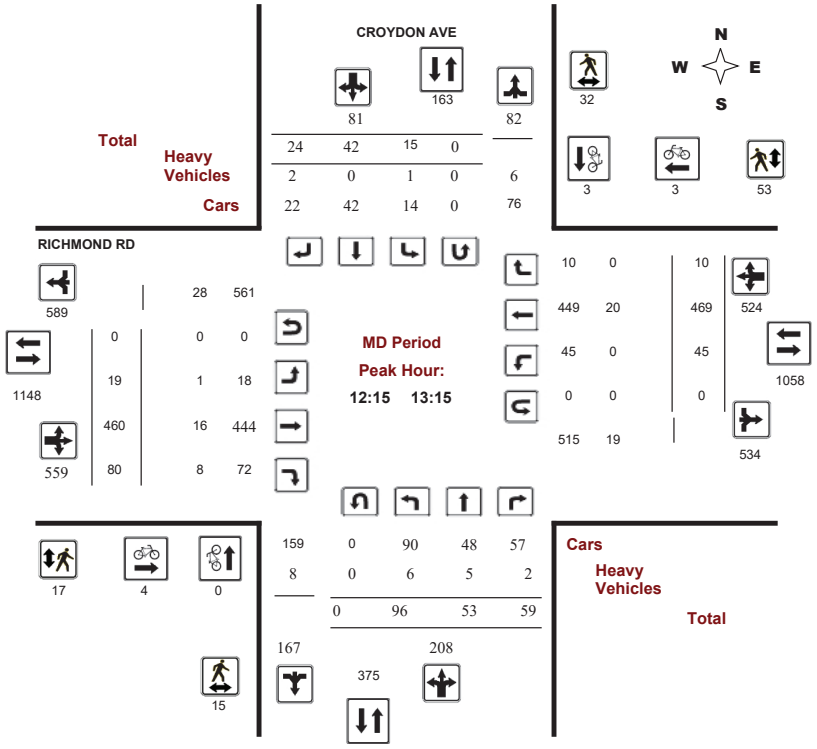
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36184

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



Comments

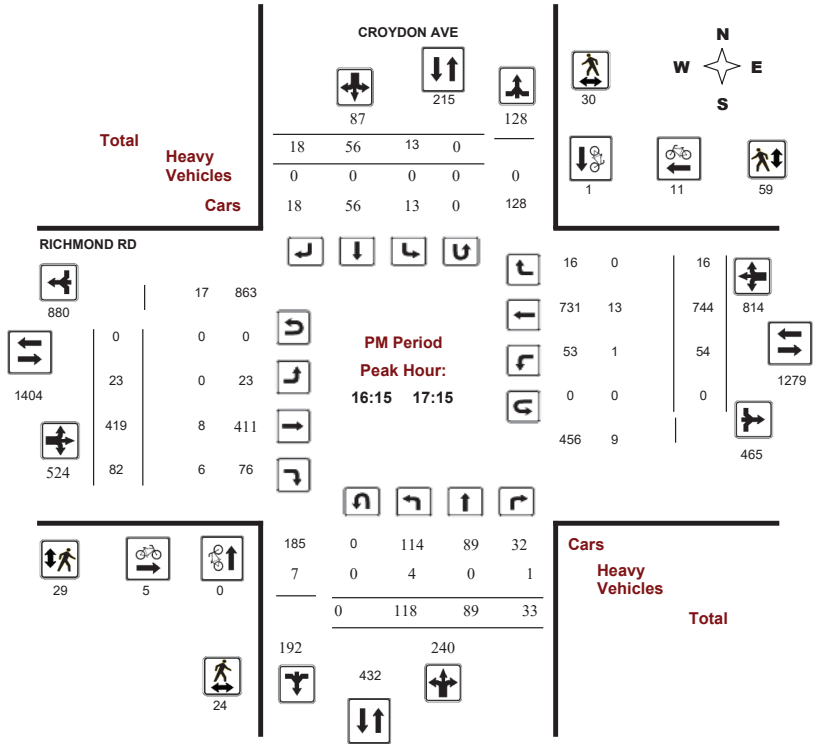
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO No:** 36184

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



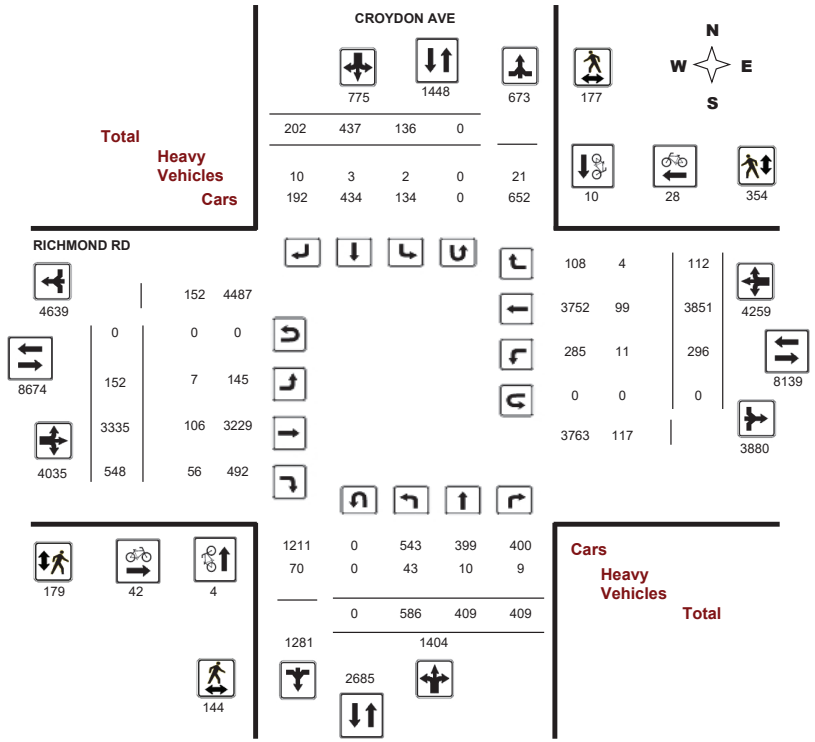
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016 **WO#:** 36184

Device: Miovision



Transportation Services - Traffic Services

Work Order 36184

Turning Movement Count - Full Study Summary Report

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	CROYDON AVE									RICHMOND 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	25	21	59	**105**	11	50	18	**79**	**184**	19	440	51	**510**	14	236	7	**257**	**767**	**951**
08:00 09:00	35	23	68	**126**	28	69	38	**135**	**261**	19	502	54	**575**	19	345	16	**380**	**955**	**1216**
09:00 10:00	46	34	48	**128**	21	61	20	**102**	**230**	16	363	65	**444**	36	353	14	**403**	**847**	**1077**
11:30 12:30	72	48	46	**166**	12	56	15	**83**	**249**	12	396	73	**481**	56	439	13	**508**	**989**	**1238**
12:30 13:30	95	53	63	**211**	19	33	30	**82**	**293**	20	435	79	**534**	39	456	11	**506**	**1040**	**1333**
15:00 16:00	93	63	43	**199**	17	54	30	**101**	**300**	20	373	75	**468**	42	644	24	**710**	**1178**	**1478**
16:00 17:00	114	72	36	**222**	16	60	23	**99**	**321**	22	419	84	**525**	47	711	14	**772**	**1297**	**1618**
17:00 18:00	106	95	46	**247**	12	54	28	**94**	**341**	24	407	67	**498**	43	667	13	**723**	**1221**	**1562**
Sub Total	586	409	409	**1404**	136	437	202	**775**	**2179**	152	3335	548	**4035**	296	3851	112	**4259**	**8294**	**10473**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	586	409	409	**1404**	136	437	202	**775**	**2179**	152	3335	548	**4035**	296	3851	112	**4259**	**8294**	**10473**
EQ 12Hr	815	569	569	**1952**	189	607	281	**1077**	**3029**	211	4636	762	**5609**	411	5353	156	**5920**	**11529**	**14558**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	733	512	512	**1756**	170	547	253	**970**	**2726**	190	4172	686	**5048**	370	4818	140	**5328**	**10376**	**13102**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	960	670	670	**2301**	223	716	331	**1270**	**3571**	249	5465	898	**6613**	485	6311	184	**6980**	**13593**	**17164**
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

W.O. 36184

Turning Movement Count - 15 Minute Summary Report

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

	CROYDON AVE									RICHMOND RD									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	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	9	3	11	**23**	2	11	1	**14**	**37**	5	90	6	**101**	2	45	1	**48**	**149**	**186**
07:15 07:30	4	6	20	**30**	2	12	6	**20**	**50**	3	93	16	**112**	2	53	1	**56**	**168**	**218**
07:30 07:45	5	4	10	**19**	3	13	9	**25**	**44**	5	128	12	**145**	6	56	4	**66**	**211**	**255**
07:45 08:00	7	8	18	**33**	4	14	2	**20**	**53**	6	129	17	**152**	4	82	1	**87**	**239**	**292**
08:00 08:15	9	6	22	**37**	8	22	13	**43**	**80**	6	122	11	**139**	3	73	5	**81**	**220**	**300**
08:15 08:30	10	9	8	**27**	7	17	9	**33**	**60**	3	113	13	**129**	6	93	6	**105**	**234**	**294**
08:30 08:45	8	3	25	**36**	6	12	10	**28**	**64**	5	148	16	**169**	2	95	3	**100**	**269**	**333**
08:45 09:00	8	5	13	**26**	7	18	6	**31**	**57**	5	119	14	**138**	8	84	2	**94**	**232**	**289**
09:00 09:15	5	4	12	**21**	9	14	6	**29**	**50**	5	108	17	**130**	4	81	6	**91**	**221**	**271**
09:15 09:30	10	7	15	**32**	4	15	4	**23**	**55**	4	79	14	**97**	12	89	3	**104**	**201**	**256**
09:30 09:45	11	16	12	**39**	5	19	3	**27**	**66**	4	94	17	**115**	13	92	4	**109**	**224**	**290**
09:45 10:00	20	7	9	**36**	3	13	7	**23**	**59**	3	82	17	**102**	7	91	1	**99**	**201**	**260**
11:30 11:45	19	11	5	**35**	6	18	2	**26**	**61**	3	80	17	**100**	6	102	5	**113**	**213**	**274**
11:45 12:00	14	11	14	**39**	3	15	4	**22**	**61**	3	109	15	**127**	15	97	4	**116**	**243**	**304**
12:00 12:15	20	13	18	**51**	1	6	7	**14**	**65**	3	94	16	**113**	16	115	2	**133**	**246**	**311**
12:15 12:30	19	13	9	**41**	2	17	2	**21**	**62**	3	113	25	**141**	19	125	2	**146**	**287**	**349**
12:30 12:45	26	11	9	**46**	1	9	6	**16**	**62**	4	112	21	**137**	10	118	4	**132**	**269**	**331**
12:45 13:00	22	16	20	**58**	3	8	7	**18**	**76**	5	123	20	**148**	9	107	3	**119**	**267**	**343**
13:00 13:15	29	13	21	**63**	9	8	9	**26**	**89**	7	112	14	**133**	7	119	1	**127**	**260**	**349**
13:15 13:30	18	13	13	**44**	6	8	8	**22**	**66**	4	88	24	**116**	13	112	3	**128**	**244**	**310**
15:00 15:15	14	12	14	**40**	7	17	12	**36**	**76**	4	80	17	**101**	9	123	7	**139**	**240**	**316**
15:15 15:30	19	14	13	**46**	4	17	6	**27**	**73**	7	97	13	**117**	13	172	4	**189**	**306**	**379**
15:30 15:45	23	15	7	**45**	3	12	4	**19**	**64**	5	108	21	**134**	10	176	4	**190**	**324**	**388**
15:45 16:00	37	22	9	**68**	3	8	8	**19**	**87**	4	88	24	**116**	10	173	9	**192**	**308**	**395**
16:00 16:15	24	16	11	**51**	5	17	11	**33**	**84**	4	104	19	**127**	6	164	4	**174**	**301**	**385**
16:15 16:30	38	15	10	**63**	2	13	1	**16**	**79**	5	96	22	**123**	16	178	4	**198**	**321**	**400**
16:30 16:45	24	17	8	**49**	4	15	4	**23**	**72**	9	108	22	**139**	13	191	4	**208**	**347**	**419**
16:45 17:00	28	24	7	**59**	5	15	7	**27**	**86**	4	111	21	**136**	12	178	2	**192**	**328**	**414**
17:00 17:15	28	33	8	**69**	2	13	6	**21**	**90**	5	104	17	**126**	13	197	6	**216**	**342**	**432**
17:15 17:30	26	21	8	**55**	4	16	6	**26**	**81**	6	112	17	**135**	9	168	5	**182**	**317**	**398**
17:30 17:45	29	18	19	**66**	3	12	10	**25**	**91**	8	93	21	**122**	12	159	1	**172**	**294**	**385**
17:45 18:00	23	23	11	**57**	3	13	6	**22**	**79**	5	98	12	**115**	9	143	1	**153**	**268**	**347**
TOTAL:	586	409	409	**1404**	136	437	202	**775**	**2179**	152	3335	548	**4035**	296	3851	112	**4259**	**8294**	**10473**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 36184

CROYDON AVE @ RICHMOND RD

Count Date: Thursday, August 11, 2016 **Start Time:** 07:00

	CROYDON AVE			RICHMOND RD			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	1	1	**2**	5	2	**7**	**9**
08:00 09:00	0	0	**0**	7	0	**7**	**7**
09:00 10:00	0	0	**0**	8	2	**10**	**10**
11:30 12:30	0	4	**4**	2	4	**6**	**10**
12:30 13:30	0	1	**1**	4	1	**5**	**6**
15:00 16:00	2	0	**2**	3	3	**6**	**8**
16:00 17:00	0	1	**1**	8	11	**19**	**20**
17:00 18:00	1	3	**4**	5	5	**10**	**14**
Total	4	10	**14**	42	28	**70**	**84**

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

W.O. 36184

Turning Movement Count - Heavy Vehicle Report

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 2016

	CROYDON AVE									RICHMOND RD									
	Northbound				Southbound					Eastbound				Westbound					
Time Period	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 08:00	8	0	1	**9**	1	0	1	**2**	**11**	1	18	11	**30**	2	5	1	**8**	**38**	**49**
08:00 09:00	8	0	2	**10**	0	0	2	**2**	**12**	1	19	8	**28**	0	6	2	**8**	**36**	**48**
09:00 10:00	4	0	0	**4**	0	0	1	**1**	**5**	1	20	11	**32**	2	17	0	**19**	**51**	**56**
11:30 12:30	4	3	3	**10**	1	1	1	**3**	**13**	1	12	8	**21**	3	18	0	**21**	**42**	**55**
12:30 13:30	5	4	1	**10**	0	0	3	**3**	**13**	1	14	5	**20**	1	18	0	**19**	**39**	**52**
15:00 16:00	6	2	1	**9**	0	2	2	**4**	**13**	1	9	3	**13**	0	11	0	**11**	**24**	**37**
16:00 17:00	4	0	1	**5**	0	0	0	**0**	**5**	1	8	4	**13**	2	13	0	**15**	**28**	**33**
17:00 18:00	4	1	0	**5**	0	0	0	**0**	**5**	0	6	6	**12**	1	11	1	**13**	**25**	**30**
Sub Total	43	10	9	**62**	2	3	10	**15**	**77**	7	106	56	**169**	11	99	4	**114**	**283**	**360**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	43	10	9	**0**	2	3	10	**15**	**77**	7	106	56	**169**	11	99	4	**114**	**283**	**360**

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 36184

Turning Movement Count - Pedestrian Volume Report

CROYDON AVE @ RICHMOND RD

Count Date: Thursday, August 11, 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	3	1	4	4	11	15	19
07:15 07:30	2	1	3	5	4	9	12
07:30 07:45	1	5	6	2	8	10	16
07:45 08:00	3	4	7	8	11	19	26
07:00 08:00	9	11	20	19	34	53	73
08:00 08:15	1	0	1	6	12	18	19
08:15 08:30	5	13	18	8	9	17	35
08:30 08:45	6	4	10	7	9	16	26
08:45 09:00	11	5	16	3	12	15	31
08:00 09:00	23	22	45	24	42	66	111
09:00 09:15	5	1	6	3	11	14	20
09:15 09:30	2	0	2	4	12	16	18
09:30 09:45	1	1	2	5	8	13	15
09:45 10:00	2	4	6	8	16	24	30
09:00 10:00	10	6	16	20	47	67	83
11:30 11:45	6	2	8	3	5	8	16
11:45 12:00	3	4	7	4	6	10	17
12:00 12:15	5	15	20	4	22	26	46
12:15 12:30	6	9	15	4	17	21	36
11:30 12:30	20	30	50	15	50	65	115
12:30 12:45	2	3	5	4	7	11	16
12:45 13:00	4	8	12	2	15	17	29
13:00 13:15	3	12	15	7	14	21	36
13:15 13:30	3	3	6	2	7	9	15
12:30 13:30	12	26	38	15	43	58	96
15:00 15:15	5	4	9	6	7	13	22
15:15 15:30	6	3	9	6	10	16	25
15:30 15:45	3	16	19	10	17	27	46
15:45 16:00	8	5	13	4	10	14	27
15:00 16:00	22	28	50	26	44	70	120
16:00 16:15	9	6	15	13	14	27	42
16:15 16:30	6	9	15	4	21	25	40
16:30 16:45	7	9	16	12	18	30	46
16:45 17:00	9	4	13	5	10	15	28
16:00 17:00	31	28	59	34	63	97	156
17:00 17:15	2	8	10	8	10	18	28
17:15 17:30	5	6	11	7	7	14	25
17:30 17:45	5	8	13	7	9	16	29
17:45 18:00	5	4	9	4	5	9	18
17:00 18:00	17	26	43	26	31	57	100
Total	144	177	321	179	354	533	854

Comment:

Transportation Services - Traffic Services

Work Order 36184

Turning Movement Count - 15 Min U-Turn Total Report

CROYDON AVE @ RICHMOND RD

Survey Date: Thursday, August 11, 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

Transportation Services - Traffic Services

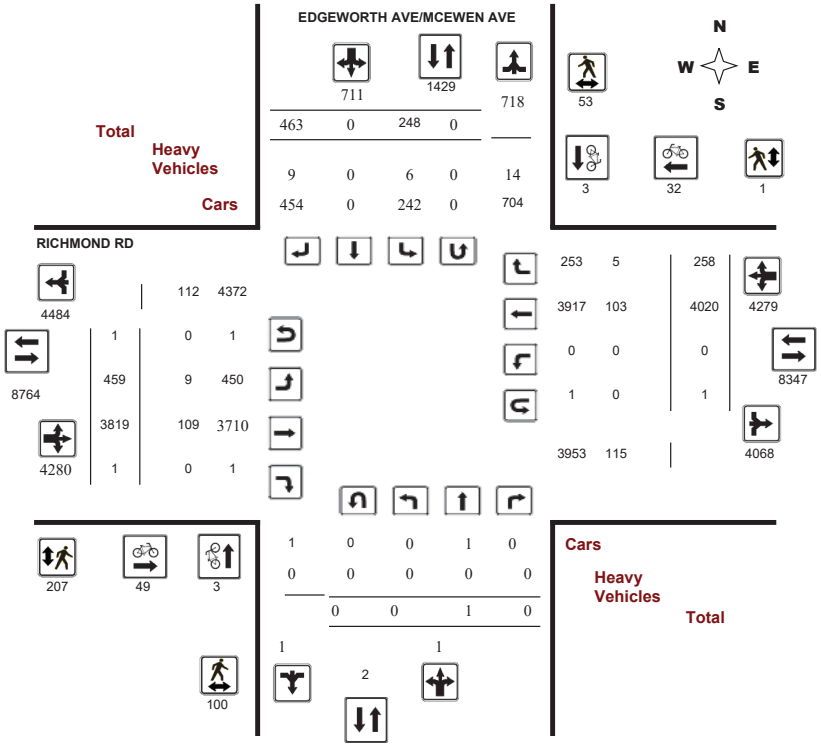
Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Diagram



Transportation Services - Traffic Services

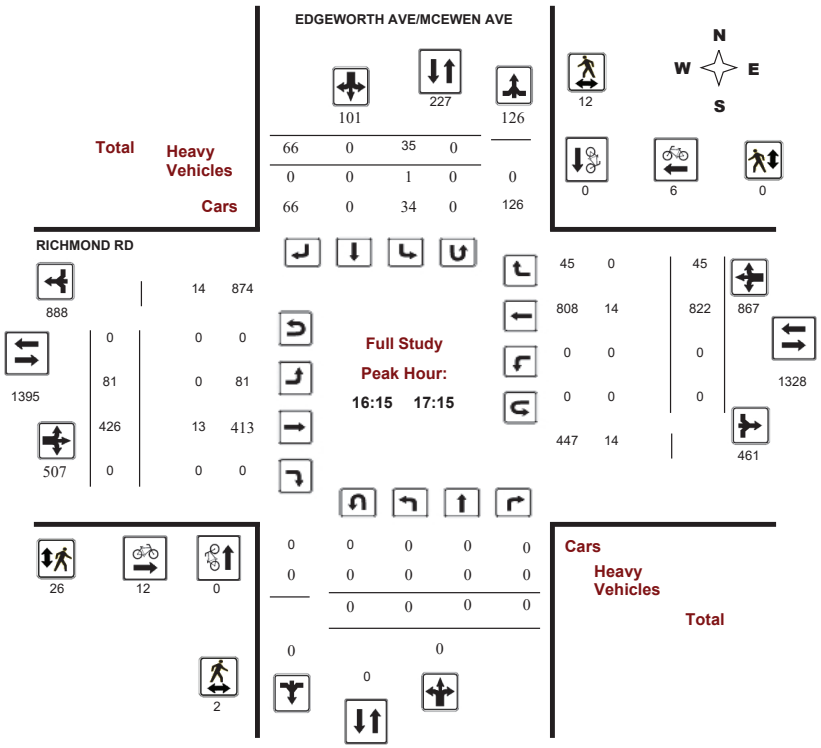
Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Peak Hour Diagram



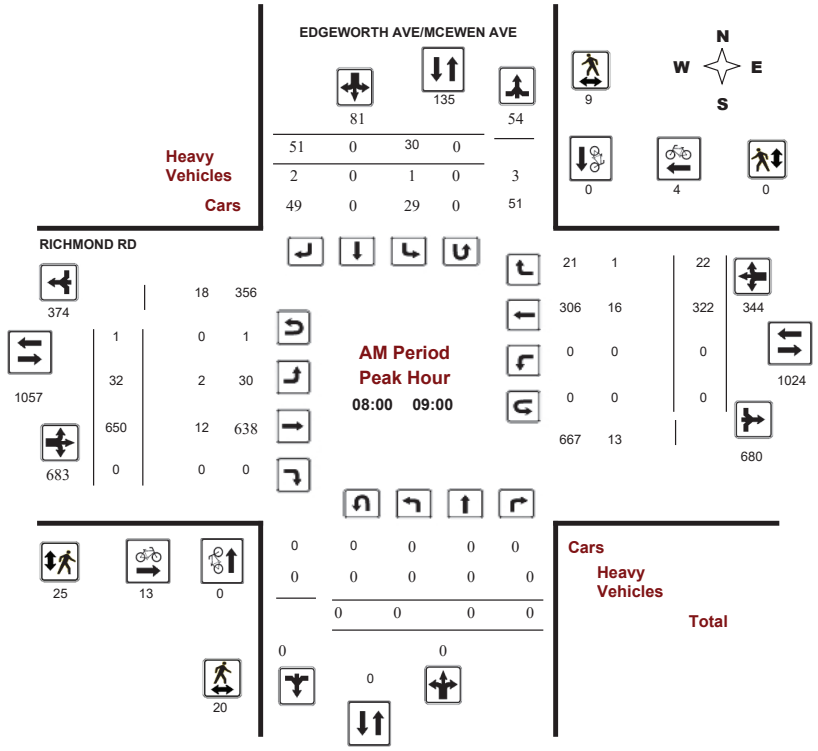
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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



Comments

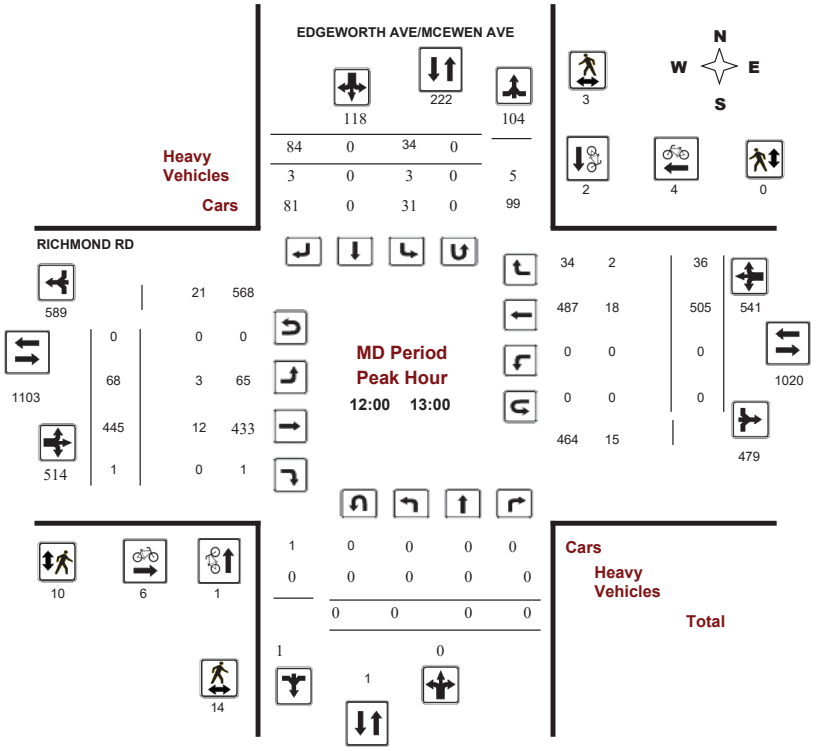
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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



Comments

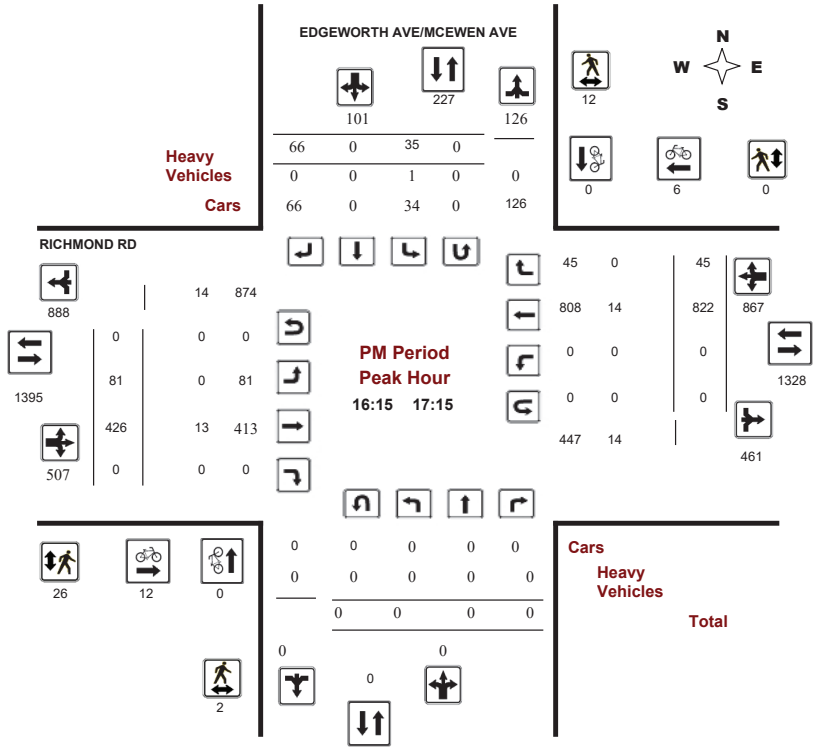
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, August 25, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 1 Westbound: 1

AADT Factor .90

	EDGEWORTH AVE/MCEWEN AVE								RICHMOND 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	0	0	0	**0**	24	0	40	**64**	**64**	26	572	0	**598**	0	187	21	**208**	**806**	**870**
08:00 09:00	0	0	0	**0**	30	0	51	**81**	**81**	32	650	0	**682**	0	322	22	**344**	**1026**	**1107**
09:00 10:00	0	0	0	**0**	30	0	59	**89**	**89**	39	428	0	**467**	0	318	28	**346**	**813**	**902**
11:30 12:30	0	0	0	**0**	28	0	71	**99**	**99**	70	460	1	**531**	0	463	36	**499**	**1030**	**1129**
12:30 13:30	0	0	0	**0**	39	0	71	**110**	**110**	70	456	0	**526**	0	461	33	**494**	**1020**	**1130**
15:00 16:00	0	0	0	**0**	31	0	54	**85**	**85**	57	395	0	**452**	0	706	36	**742**	**1194**	**1279**
16:00 17:00	0	0	0	**0**	35	0	60	**95**	**95**	75	404	0	**479**	0	797	39	**836**	**1315**	**1410**
17:00 18:00	0	1	0	**1**	31	0	57	**88**	**89**	90	454	0	**544**	0	766	43	**809**	**1353**	**1442**
Sub Total	0	1	0	**1**	248	0	463	**711**	**712**	459	3819	1	**4279**	0	4020	258	**4278**	**8557**	**9269**
U Turns	0			**0**	0			**0**	**0**	**1**			**1**	1			**1**	**2**	**2**
Total	0	1	0	**1**	248	0	463	**711**	**712**	460	3819	1	**4280**	1	4020	258	**4279**	**8559**	**9271**
EQ 12Hr	0	1	0	**1**	345	0	644	**989**	**990**	639	5308	1	**5948**	1	5588	359	**5948**	**11896**	**12886**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	1	0	**1**	310	0	580	**890**	**891**	575	4777	1	**5353**	1	5029	323	**5353**	**10706**	**11597**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	0	1	0	**1**	406	0	760	**1166**	**1167**	753	6258	1	**7012**	1	6588	423	**7012**	**14024**	**15191**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study 15 Minute Increments

		EDGEWORTH AVE/MCEWEN AVE									RICHMOND RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		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	0	0	0	0	4	0	7	11	**11**	3	105	0	108	0	34	4	38	**146**	**157**
07:15	07:30	0	0	0	0	3	0	11	14	**14**	4	149	0	153	0	39	10	49	**202**	**216**
07:30	07:45	0	0	0	0	9	0	11	20	**20**	12	165	0	177	0	53	5	58	**235**	**255**
07:45	08:00	0	0	0	0	8	0	11	19	**19**	7	153	0	160	0	61	2	63	**223**	**242**
08:00	08:15	0	0	0	0	5	0	16	21	**21**	11	142	0	153	0	61	9	70	**223**	**244**
08:15	08:30	0	0	0	0	6	0	12	18	**18**	10	163	0	173	0	80	6	86	**259**	**277**
08:30	08:45	0	0	0	0	11	0	9	20	**20**	4	189	0	193	0	84	3	87	**280**	**300**
08:45	09:00	0	0	0	0	8	0	14	22	**22**	8	156	0	164	0	97	4	101	**265**	**287**
09:00	09:15	0	0	0	0	7	0	16	23	**23**	7	121	0	128	0	74	9	83	**211**	**234**
09:15	09:30	0	0	0	0	5	0	14	19	**19**	16	115	0	131	0	82	9	91	**222**	**241**
09:30	09:45	0	0	0	0	12	0	13	25	**25**	8	95	0	103	0	89	5	94	**197**	**222**
09:45	10:00	0	0	0	0	6	0	16	22	**22**	8	97	0	105	0	73	5	78	**183**	**205**
11:30	11:45	0	0	0	0	8	0	16	24	**24**	13	116	0	129	0	106	9	115	**244**	**268**
11:45	12:00	0	0	0	0	5	0	16	21	**21**	21	139	0	160	0	100	8	108	**268**	**289**
12:00	12:15	0	0	0	0	7	0	19	26	**26**	18	96	1	115	0	129	8	137	**252**	**278**
12:15	12:30	0	0	0	0	8	0	20	28	**28**	18	109	0	127	0	128	11	139	**266**	**294**
12:30	12:45	0	0	0	0	8	0	23	31	**31**	16	116	0	132	0	112	7	119	**251**	**282**
12:45	13:00	0	0	0	0	11	0	22	33	**33**	16	124	0	140	0	136	10	146	**286**	**319**
13:00	13:15	0	0	0	0	8	0	11	19	**19**	14	98	0	112	1	105	9	115	**227**	**246**
13:15	13:30	0	0	0	0	12	0	15	27	**27**	24	118	0	142	0	108	7	115	**257**	**284**
15:00	15:15	0	0	0	0	11	0	16	27	**27**	13	83	0	96	0	130	8	138	**234**	**261**
15:15	15:30	0	0	0	0	6	0	16	22	**22**	17	100	0	117	0	168	8	176	**293**	**315**
15:30	15:45	0	0	0	0	6	0	12	18	**18**	10	112	0	122	0	198	5	203	**325**	**343**
15:45	16:00	0	0	0	0	8	0	10	18	**18**	17	100	0	117	0	210	15	225	**342**	**360**
16:00	16:15	0	0	0	0	8	0	9	17	**17**	14	109	0	123	0	186	7	193	**316**	**333**
16:15	16:30	0	0	0	0	8	0	20	28	**28**	23	93	0	116	0	210	16	226	**342**	**370**
16:30	16:45	0	0	0	0	11	0	16	27	**27**	17	101	0	118	0	180	11	191	**309**	**336**
16:45	17:00	0	0	0	0	8	0	15	23	**23**	21	101	0	122	0	221	5	226	**348**	**371**
17:00	17:15	0	0	0	0	8	0	15	23	**23**	20	131	0	151	0	211	13	224	**375**	**398**
17:15	17:30	0	1	0	1	8	0	19	27	**28**	22	104	0	126	0	182	14	196	**322**	**350**
17:30	17:45	0	0	0	0	7	0	10	17	**17**	24	99	0	123	0	202	11	213	**336**	**353**
17:45	18:00	0	0	0	0	8	0	13	21	**21**	24	120	0	144	0	171	5	176	**320**	**341**
Total:		0	1	0	1	248	0	463	711	**712**	460	3819	1	4280	1	4020	258	4279	**712**	**9,271**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Cyclist Volume

		EDGEWORTH AVE/MCEWEN AVE			RICHMOND RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	2	1	**3**	**3**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	1	1	**2**	**2**
08:00	08:15	0	0	**0**	5	1	**6**	**6**
08:15	08:30	0	0	**0**	2	2	**4**	**4**
08:30	08:45	0	0	**0**	4	1	**5**	**5**
08:45	09:00	0	0	**0**	2	0	**2**	**2**
09:00	09:15	0	0	**0**	1	1	**2**	**2**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	3	0	**3**	**3**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	1	1	**2**	**2**
11:45	12:00	0	0	**0**	1	2	**3**	**3**
12:00	12:15	0	1	**1**	1	2	**3**	**4**
12:15	12:30	0	0	**0**	1	0	**1**	**1**
12:30	12:45	0	0	**0**	1	0	**1**	**1**
12:45	13:00	1	1	**2**	3	2	**5**	**7**
13:00	13:15	0	0	**0**	4	0	**4**	**4**
13:15	13:30	0	0	**0**	0	2	**2**	**2**
15:00	15:15	1	1	**2**	2	0	**2**	**4**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	1	**1**	**1**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	3	**3**	**3**
16:15	16:30	0	0	**0**	2	1	**3**	**3**
16:30	16:45	0	0	**0**	3	2	**5**	**5**
16:45	17:00	0	0	**0**	3	1	**4**	**4**
17:00	17:15	0	0	**0**	4	2	**6**	**6**
17:15	17:30	0	0	**0**	0	1	**1**	**1**
17:30	17:45	1	0	**1**	0	2	**2**	**3**
17:45	18:00	0	0	**0**	3	3	**6**	**6**
Total		3	3	**6**	49	32	**81**	**87**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Pedestrian Volume

EDGEWORTH AVE/MCEWEN AVE **RICHMOND RD**

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	0	0	**0**	6	0	**6**	**6**
07:15 07:30	0	0	**0**	8	0	**8**	**8**
07:30 07:45	0	0	**0**	7	0	**7**	**7**
07:45 08:00	0	1	**1**	8	0	**8**	**9**
08:00 08:15	6	3	**9**	7	0	**7**	**16**
08:15 08:30	2	1	**3**	2	0	**2**	**5**
08:30 08:45	5	2	**7**	9	0	**9**	**16**
08:45 09:00	7	3	**10**	7	0	**7**	**17**
09:00 09:15	1	2	**3**	6	0	**6**	**9**
09:15 09:30	7	1	**8**	10	0	**10**	**18**
09:30 09:45	5	2	**7**	6	0	**6**	**13**
09:45 10:00	3	0	**3**	5	0	**5**	**8**
11:30 11:45	2	3	**5**	6	0	**6**	**11**
11:45 12:00	5	0	**5**	8	0	**8**	**13**
12:00 12:15	2	0	**2**	1	0	**1**	**3**
12:15 12:30	5	2	**7**	5	0	**5**	**12**
12:30 12:45	3	1	**4**	3	0	**3**	**7**
12:45 13:00	4	0	**4**	1	0	**1**	**5**
13:00 13:15	4	1	**5**	8	0	**8**	**13**
13:15 13:30	3	6	**9**	4	1	**5**	**14**
15:00 15:15	1	0	**1**	3	0	**3**	**4**
15:15 15:30	7	3	**10**	8	0	**8**	**18**
15:30 15:45	2	5	**7**	10	0	**10**	**17**
15:45 16:00	5	1	**6**	6	0	**6**	**12**
16:00 16:15	3	0	**3**	6	0	**6**	**9**
16:15 16:30	1	4	**5**	2	0	**2**	**7**
16:30 16:45	0	2	**2**	3	0	**3**	**5**
16:45 17:00	0	2	**2**	10	0	**10**	**12**
17:00 17:15	1	4	**5**	11	0	**11**	**16**
17:15 17:30	4	1	**5**	10	0	**10**	**15**
17:30 17:45	5	2	**7**	12	0	**12**	**19**
17:45 18:00	7	1	**8**	9	0	**9**	**17**
Total	100	53	**153**	207	1	**208**	**361**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study Heavy Vehicles

EDGEWORTH AVE/MCEWEN AVE **RICHMOND RD**

		Northbound				Southbound					Eastbound				Westbound					
Time Period		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	0	0	0	**0**	0	0	0	**0**	**0**	0	6	0	**6**	0	1	0	**1**	**7**	**7**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	1	0	**1**	**3**	**3**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	5	0	**5**	**10**	**10**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	2	0	**2**	**6**	**6**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	5	0	**5**	**8**	**8**
08:15	08:30	0	0	0	**0**	1	0	1	**2**	**2**	0	2	0	**2**	0	4	1	**5**	**7**	**9**
08:30	08:45	0	0	0	**0**	0	0	0	**0**	**0**	1	2	0	**3**	0	2	0	**2**	**5**	**5**
08:45	09:00	0	0	0	**0**	0	0	1	**1**	**1**	0	6	0	**6**	0	5	0	**5**	**11**	**12**
09:00	09:15	0	0	0	**0**	0	0	1	**1**	**1**	0	5	0	**5**	0	2	1	**3**	**8**	**9**
09:15	09:30	0	0	0	**0**	0	0	1	**1**	**1**	0	3	0	**3**	0	4	0	**4**	**7**	**8**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	4	0	**4**	**8**	**8**
09:45	10:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	1	1	**2**	**4**	**4**
11:30	11:45	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**7**	0	7	0	**7**	**14**	**14**
11:45	12:00	0	0	0	**0**	0	0	1	**1**	**1**	0	8	0	**8**	0	5	0	**5**	**13**	**14**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	2	2	0	**4**	0	8	0	**8**	**12**	**12**
12:15	12:30	0	0	0	**0**	0	0	1	**1**	**1**	0	3	0	**3**	0	3	0	**3**	**6**	**7**
12:30	12:45	0	0	0	**0**	0	0	1	**1**	**1**	1	5	0	**6**	0	2	1	**3**	**9**	**10**
12:45	13:00	0	0	0	**0**	3	0	1	**4**	**4**	0	2	0	**2**	0	5	1	**6**	**8**	**12**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	1	7	0	**8**	0	2	0	**2**	**10**	**10**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	2	0	**2**	**5**	**5**
15:00	15:15	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	3	0	**3**	**5**	**5**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	1	6	0	**7**	0	8	0	**8**	**15**	**15**
15:30	15:45	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**3**	0	2	0	**2**	**5**	**6**
15:45	16:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**1**	0	1	0	**1**	**2**	**2**
16:00	16:15	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	1	0	**1**	**3**	**3**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	3	0	**3**	**6**	**6**
16:30	16:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**3**	0	4	0	**4**	**7**	**7**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
17:00	17:15	0	0	0	**0**	1	0	0	**1**	**1**	0	5	0	**5**	0	5	0	**5**	**10**	**11**
17:15	17:30	0	0	0	**0**	0	0	1	**1**	**1**	0	0	0	**0**	0	1	0	**1**	**1**	**2**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	2	0	**2**	**4**	**4**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	1	0	**1**	**3**	**3**
Total:	None	0	0	0	**0**	6	0	9	**15**	**15**	9	109	0	**118**	0	103	5	**108**	**226**	**241**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

RICHMOND RD @ EDGEWORTH AVE/MCEWEN AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36242

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

Full Study 15 Minute U-Turn Total

		EDGEWORTH AVE/MCEWEN AVE		RICHMOND RD		
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	1	0	**1**
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	1	**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	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	1	1	**2**

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	512	57	15	343	15	34	26	73	25	65	34
Future Volume (vph)	20	512	57	15	343	15	34	26	73	25	65	34
Satd. Flow (prot)	1610	1655	0	1658	1723	0	1398	1455	0	0	1618	0
Flt Permitted	0.502			0.325			0.717				0.920	
Satd. Flow (perm)	835	1655	0	563	1723	0	1020	1455	0	0	1489	0
Satd. Flow (RTOR)		11			4						30	
Lane Group Flow (vph)	22	632	0	17	398	0	38	110	0	0	138	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.4	26.4		26.4	26.4		31.1	31.1		31.1	31.1	
Total Split (s)	38.9	38.9		38.9	38.9		31.1	31.1		31.1	31.1	
Total Split (%)	55.6%	55.6%		55.6%	55.6%		44.4%	44.4%		44.4%	44.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.1	3.1		3.1	3.1		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.1	6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	43.0	43.0		43.0	43.0		19.0	19.0			19.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.27	0.27			0.27	
v/c Ratio	0.04	0.62		0.05	0.38		0.14	0.28			0.32	
Control Delay	10.6	17.1		9.2	12.6		17.4	19.7			15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	10.6	17.1		9.2	12.6		17.4	19.7			15.8	
LOS	B	B		A	B		B	B			B	
Approach Delay		16.9			12.4			19.1			15.8	
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.5	66.7		1.6	45.5		3.3	9.8			9.6	
Queue Length 95th (m)	5.0	#124.8		m3.9	75.7		9.1	20.3			21.2	
Internal Link Dist (m)		558.1			298.5			223.2			148.4	
Turn Bay Length (m)	45.0			40.0			30.0					
Base Capacity (vph)	512	1021		346	1060		364	519			551	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.04	0.62		0.05	0.38		0.10	0.21			0.25	

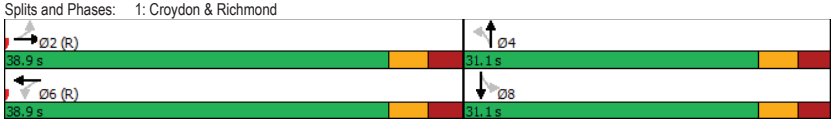
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 40 (57%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Croydon & Richmond



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	558	15	25	344	18	25	6	33	67	2	25
Future Volume (vph)	7	558	15	25	344	18	25	6	33	67	2	25
Satd. Flow (prot)	1658	1718	0	1409	1714	0	0	1679	1351	0	1612	0
Flt Permitted	0.518			0.358				0.759			0.767	
Satd. Flow (perm)	898	1718	0	529	1714	0	0	1317	1309	0	1271	0
Satd. Flow (RTOR)		2			5						28	
Lane Group Flow (vph)	8	637	0	28	402	0	0	35	37	0	104	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.3	30.3		30.3	30.3		33.3	33.3	33.3	33.3	33.3	
Total Split (s)	36.7	36.7		36.7	36.7		33.3	33.3	33.3	33.3	33.3	
Total Split (%)	52.4%	52.4%		52.4%	52.4%		47.6%	47.6%	47.6%	47.6%	47.6%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	48.2	48.2		48.2	48.2			13.7	13.7		13.7	
Actuated g/C Ratio	0.69	0.69		0.69	0.69			0.20	0.20		0.20	
v/c Ratio	0.01	0.54		0.08	0.34			0.14	0.14		0.38	
Control Delay	4.7	9.4		4.4	4.3			21.6	21.8		20.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	4.7	9.4		4.4	4.3			21.6	21.8		20.9	
LOS	A	A		A	A			C	C		C	
Approach Delay		9.3			4.3			21.7			20.9	
Approach LOS		A			A			C			C	
Queue Length 50th (m)	0.1	13.8		0.5	7.5			4.1	4.4		9.2	
Queue Length 95th (m)	m0.5	#138.6		m2.5	17.4			8.0	8.3		15.8	
Internal Link Dist (m)		298.5			472.9			123.5			78.3	
Turn Bay Length (m)	215.0			45.0					20.0			
Base Capacity (vph)	618	1184		364	1182			507	504		507	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.54		0.08	0.34			0.07	0.07		0.21	

Intersection Summary

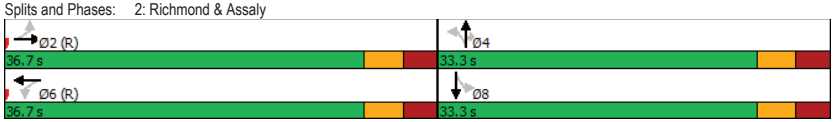
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 9.3	Intersection LOS: A
Intersection Capacity Utilization 70.3%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Richmond & Assaly



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	33	650	322	22	30	51	
Future Volume (vph)	33	650	322	22	30	51	
Satd. Flow (prot)	1595	1745	1695	1441	1642	1455	
Flt Permitted	0.536				0.950		
Satd. Flow (perm)	895	1745	1695	1393	1642	1352	
Satd. Flow (RTOR)				16		57	
Lane Group Flow (vph)	37	722	358	24	33	57	
Turn Type	Perm	NA	NA	Perm	Perm	Perm	
Protected Phases		2	6				7
Permitted Phases	2			6	8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	36.3	36.3	36.3	36.3	23.8	23.8	5.0
Total Split (s)	41.0	41.0	41.0	41.0	24.0	24.0	5.0
Total Split (%)	58.6%	58.6%	58.6%	58.6%	34.3%	34.3%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.5	3.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.8	6.8	
Lead/Lag					Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	Ped
Act Effct Green (s)	42.5	42.5	42.5	42.5	12.8	12.8	
Actuated g/C Ratio	0.61	0.61	0.61	0.61	0.18	0.18	
v/c Ratio	0.07	0.68	0.35	0.03	0.11	0.19	
Control Delay	5.8	15.6	10.2	5.5	23.0	8.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	5.8	15.6	10.2	5.5	23.0	8.3	
LOS	A	B	B	A	C	A	
Approach Delay		15.1	9.9		13.7		
Approach LOS		B	A		B		
Queue Length 50th (m)	1.5	78.5	21.2	0.4	3.9	0.0	
Queue Length 95th (m)	m1.7	#148.3	46.5	3.7	9.6	7.8	
Internal Link Dist (m)		472.9	376.1		243.1		
Turn Bay Length (m)	50.0			10.0	40.0		
Base Capacity (vph)	542	1058	1028	851	403	375	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.68	0.35	0.03	0.08	0.15	

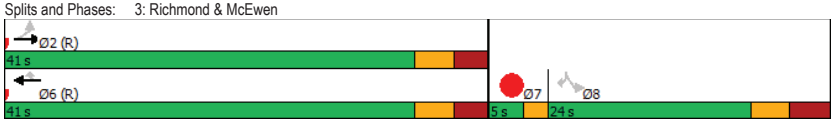
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 38 (54%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 13.4	Intersection LOS: B
Intersection Capacity Utilization 58.7%	ICU Level of Service B
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Richmond & McEwen



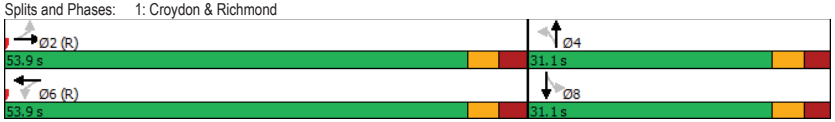
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	419	82	54	744	16	118	89	33	13	56	18
Future Volume (vph)	23	419	82	54	744	16	118	89	33	13	56	18
Satd. Flow (prot)	1658	1668	0	1658	1737	0	1642	1615	0	0	1660	0
Flt Permitted	0.182			0.374			0.762				0.951	
Satd. Flow (perm)	318	1668	0	641	1737	0	1260	1615	0	0	1571	0
Satd. Flow (RTOR)		19			2						16	
Lane Group Flow (vph)	26	557	0	60	845	0	131	136	0	0	96	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.4	26.4		26.4	26.4		31.1	31.1		31.1	31.1	
Total Split (s)	53.9	53.9		53.9	53.9		31.1	31.1		31.1	31.1	
Total Split (%)	63.4%	63.4%		63.4%	63.4%		36.6%	36.6%		36.6%	36.6%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.1	3.1		3.1	3.1		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.4	6.4		6.4	6.4		6.1	6.1			6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	50.5	50.5		50.5	50.5		22.0	22.0			22.0	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.26	0.26			0.26	
v/c Ratio	0.14	0.56		0.16	0.82		0.40	0.33			0.23	
Control Delay	11.4	13.8		9.1	15.8		28.7	26.4			20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.4	13.8		9.1	15.8		28.7	26.4			20.5	
LOS	B	B		A	B		C	C			C	
Approach Delay		13.7			15.3			27.6			20.5	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	1.9	53.4		1.5	42.5		16.7	17.0			9.6	
Queue Length 95th (m)	6.3	83.5		m5.3	#183.5		31.9	31.4			21.0	
Internal Link Dist (m)		558.1			298.5			223.2			148.4	
Turn Bay Length (m)	45.0			40.0			30.0					
Base Capacity (vph)	188	998		381	1032		370	475			473	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.14	0.56		0.16	0.82		0.35	0.29			0.20	

Intersection Summary

Cycle Length: 85
Actuated Cycle Length: 85
Offset: 71 (84%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82
Intersection Signal Delay: 16.8 Intersection LOS: B
Intersection Capacity Utilization 77.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Croydon & Richmond



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	426	24	54	758	48	21	13	45	39	2	30
Future Volume (vph)	16	426	24	54	758	48	21	13	45	39	2	30
Satd. Flow (prot)	1658	1713	0	1551	1725	0	0	1454	1388	0	1568	0
Flt Permitted	0.212			0.445				0.796			0.808	
Satd. Flow (perm)	370	1713	0	719	1725	0	0	1181	1318	0	1282	0
Satd. Flow (RTOR)		5			6						33	
Lane Group Flow (vph)	18	500	0	60	895	0	0	37	50	0	78	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4		4	8		
Detector Phase	2	2		6	6		4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.3	30.3		30.3	30.3		33.3	33.3	33.3	33.3	33.3	
Total Split (s)	51.7	51.7		51.7	51.7		33.3	33.3	33.3	33.3	33.3	
Total Split (%)	60.8%	60.8%		60.8%	60.8%		39.2%	39.2%	39.2%	39.2%	39.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)	60.1	60.1		60.1	60.1			16.8	16.8		16.8	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.20	0.20		0.20	
v/c Ratio	0.07	0.41		0.12	0.73			0.16	0.19		0.28	
Control Delay	13.7	12.0		2.6	11.5			26.0	26.7		18.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	13.7	12.0		2.6	11.5			26.0	26.7		18.5	
LOS	B	B		A	B			C	C		B	
Approach Delay		12.1			11.0			26.4			18.5	
Approach LOS		B			B			C			B	
Queue Length 50th (m)	0.8	28.9		0.1	2.2			5.6	7.6		6.8	
Queue Length 95th (m)	m3.4	74.4		m2.8	#226.4			11.0	13.6		15.0	
Internal Link Dist (m)		298.5			472.9			123.5			78.3	
Turn Bay Length (m)	215.0			45.0					20.0			
Base Capacity (vph)	261	1213		508	1221			375	418		429	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.07	0.41		0.12	0.73			0.10	0.12		0.18	

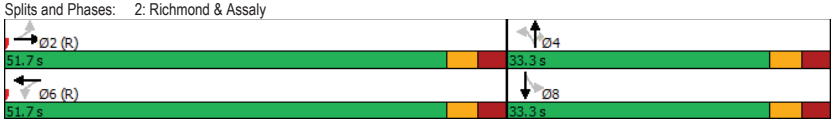
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 64 (75%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 12.5	Intersection LOS: B
Intersection Capacity Utilization 72.8%	ICU Level of Service C
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Richmond & Assaly



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø7
Lane Configurations							
Traffic Volume (vph)	81	426	822	45	35	66	
Future Volume (vph)	81	426	822	45	35	66	
Satd. Flow (prot)	1658	1728	1745	1483	1642	1483	
Flt Permitted	0.190				0.950		
Satd. Flow (perm)	332	1728	1745	1423	1642	1359	
Satd. Flow (RTOR)				13		73	
Lane Group Flow (vph)	90	473	913	50	39	73	
Turn Type	Perm	NA	NA	Perm	Perm	Perm	
Protected Phases		2	6				7
Permitted Phases	2			6	8	8	
Detector Phase	2	2	6	6	8	8	
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	36.3	36.3	36.3	36.3	23.8	23.8	5.0
Total Split (s)	56.0	56.0	56.0	56.0	24.0	24.0	5.0
Total Split (%)	65.9%	65.9%	65.9%	65.9%	28.2%	28.2%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.5	3.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3	6.3	6.3	6.8	6.8	
Lead/Lag					Lag	Lag	Lead
Lead-Lag Optimize?					Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	Ped
Act Effct Green (s)	57.5	57.5	57.5	57.5	12.8	12.8	
Actuated g/C Ratio	0.68	0.68	0.68	0.68	0.15	0.15	
v/c Ratio	0.40	0.40	0.77	0.05	0.16	0.27	
Control Delay	13.5	7.6	18.3	5.7	31.3	10.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	13.5	7.6	18.3	5.7	31.3	10.3	
LOS	B	A	B	A	C	B	
Approach Delay		8.6	17.6		17.6		
Approach LOS		A	B		B		
Queue Length 50th (m)	8.0	42.2	89.5	1.8	5.8	0.0	
Queue Length 95th (m)	7.7	28.1	#205.3	6.6	13.2	10.4	
Internal Link Dist (m)		472.9	376.1		243.1		
Turn Bay Length (m)	50.0			10.0	40.0		
Base Capacity (vph)	224	1168	1179	965	332	333	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.40	0.40	0.77	0.05	0.12	0.22	

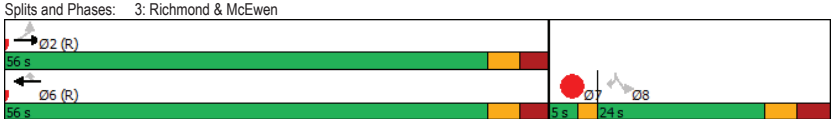
Intersection Summary
Cycle Length: 85
Actuated Cycle Length: 85
Offset: 17 (20%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 81.9%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Richmond & McEwen



Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
2018-04-24	2018	13:35	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2018-06-20	2018	21:30	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-06-21	2018	15:12	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2018-08-02	2018	15:32	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2018-08-06	2018	13:42	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2018-09-28	2018	17:15	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2018-10-25	2018	8:29	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	1
2018-12-21	2018	5:34	CROYDON AVE @ RICHMOND RD (0002652)	02 - Rain	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	1
2019-01-05	2019	23:40	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
2019-02-12	2019	20:30	CROYDON AVE @ RICHMOND RD (0002652)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	03 - Loose snow	0	0	0	0
2019-04-04	2019	18:47	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	1
2019-10-23	2019	8:10	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-11-03	2019	21:25	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
2019-11-29	2019	10:48	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2020-06-13	2020	15:18	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2020-12-03	2020	18:20	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
2021-06-09	2021	15:30	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2021-09-16	2021	14:09	CROYDON AVE @ RICHMOND RD (0002652)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	1	0
2021-10-26	2021	18:48	CROYDON AVE @ RICHMOND RD (0002652)	02 - Rain	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	02 - Wet	0	0	0	1
2018-11-12	2018	8:15	CROYDON AVE @ REGINA ST (0002786)	03 - Snow	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
2020-01-24	2020	14:04	CROYDON AVE @ REGINA ST (0002786)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	99 - Other	03 - Loose snow	0	0	0	0
2018-11-22	2018	18:05	ASSALY RD @ RICHMOND RD (0002682)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-06-10	2019	15:30	ASSALY RD @ RICHMOND RD (0002682)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2019-08-21	2019	17:05	ASSALY RD @ RICHMOND RD (0002682)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	1
2021-01-20	2021	15:57	ASSALY RD @ RICHMOND RD (0002682)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	05 - Packed snow	0	0	0	0
2018-01-16	2018	19:59	RICHMOND RD btwn ASSALY RD & CROYDON AVE (__3ZA2XS)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
2018-02-26	2018	14:22	RICHMOND RD btwn ASSALY RD & CROYDON AVE (__3ZA2XS)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2018-04-30	2018	13:24	RICHMOND RD btwn ASSALY RD & CROYDON AVE (__3ZA2XS)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
2018-11-15	2018	17:06	RICHMOND RD btwn ASSALY RD & CROYDON AVE (__3ZA2XS)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
2020-10-19	2020	6:30	RICHMOND RD btwn ASSALY RD & CROYDON AVE (__3ZA2XS)	02 - Rain	03 - Dawn	10 - No control	0	03 - P.D. only	02 - Angle	02 - Wet	0	0	0	0
2021-11-01	2021	Unknown	REGINA ST btwn ASSALY RD & LINCOLN HEIGHTS RD (__3ZABY0)	00 - Unknown	07 - Dark	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
2018-04-18	2018	Unknown	REGINA ST btwn ASSALY RD & LINCOLN HEIGHTS RD (__3ZABY3)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
2018-08-24	2018	Unknown	REGINA ST btwn ASSALY RD & LINCOLN HEIGHTS RD (__3ZABY3)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
2019-04-12	2019	Unknown	REGINA ST btwn ASSALY RD & LINCOLN HEIGHTS RD (__3ZABY3)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
2021-03-16	2021	13:15	REGINA ST btwn ASSALY RD & LINCOLN HEIGHTS RD (__3ZABY3)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0
2018-10-11	2018	Unknown	ASSALY RD btwn REGINA LANE & RICHMOND RD (__3ZA5XK)	01 - Clear	00 - Unknown	10 - No control	0	03 - P.D. only	06 - SMV unattended vehicle	01 - Dry	0	0	0	0

Appendix E

TDM Checklist

CGH TRANSPORTATION

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

Legend

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

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

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

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

TDM-Supportive Development Design and Infrastructure Checklist **City of Ottawa**
Version 1.0 (30 June 2017)

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

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

Legend

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

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

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

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

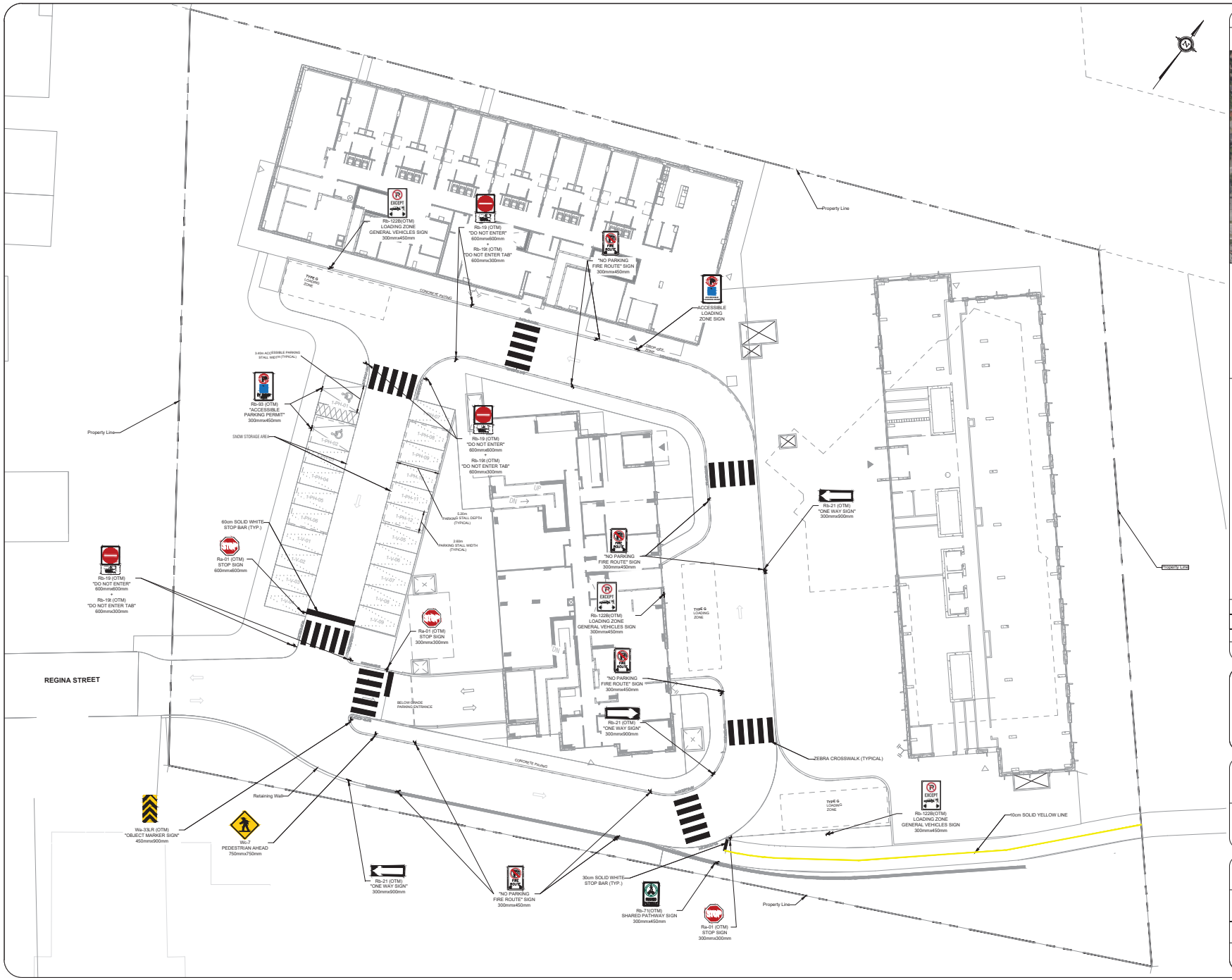
		TDM measures: *Residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC	3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER	3.1.2	Provide real-time arrival information display at entrances *(multi-family,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

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

Appendix F

Conceptual Pavement Markings and Signage

CGH TRANSPORTATION



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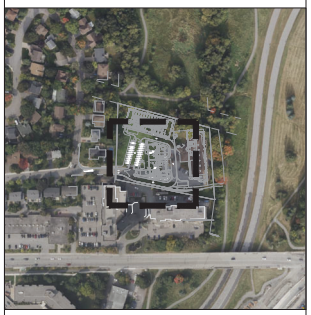
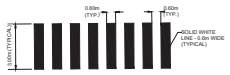




Pavement Markings for Zebra Crosswalk

- CONCEPTUAL LAYOUT FOR INFORMATION PURPOSES ONLY.

REV:	DESCRIPTION:	BY:	DATE:
02	Updated Site Plan	EA	2025-05-27
01	Updated Site Plan	EA	2025-05-23

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Windmill Developments

ARCHITECT:

SITE: Parkway House

TITLE: Site Pavement Marking And Signage Concept

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-05-27	EA	JK

PROJECT NO:	DRAWING NO:	REVISION:
2021-057	001	01

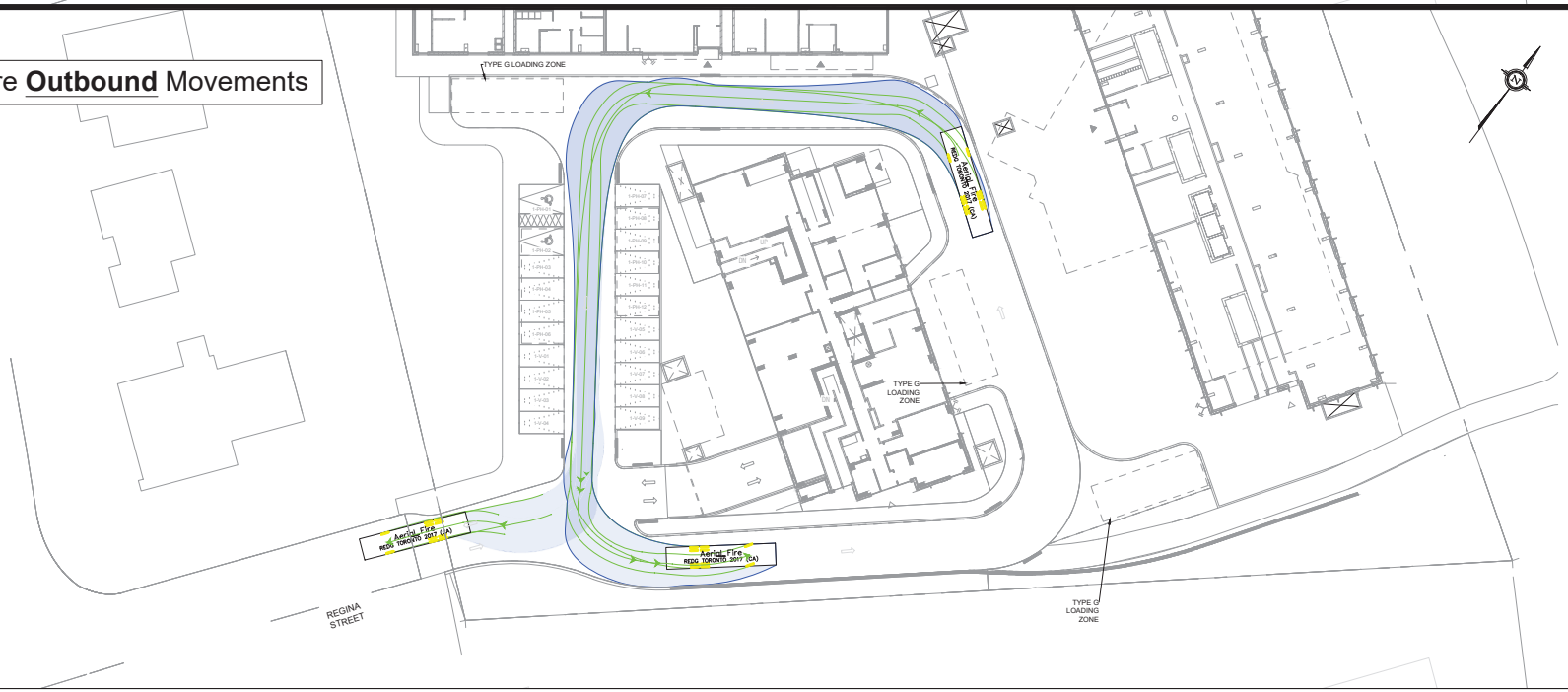
Appendix G

Turning Templates

CGH TRANSPORTATION

Fire **Inbound** Movements

Fire **Outbound** Movements



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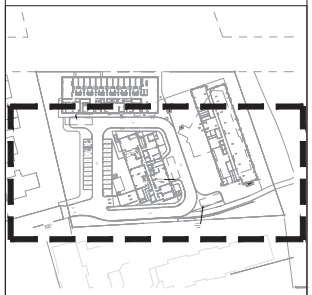
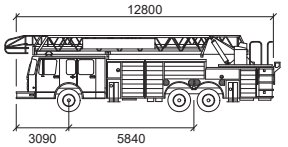




Aerial Fire

	mm
Width	: 2540
Track	: 2540
Lock to Lock Time	: 6.0
Steering Angle	: 37.0

REV:	DESCRIPTION:	BY:	DATE:
06	Updated Site Plan	EA	2025-05-27

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Windmill Developments

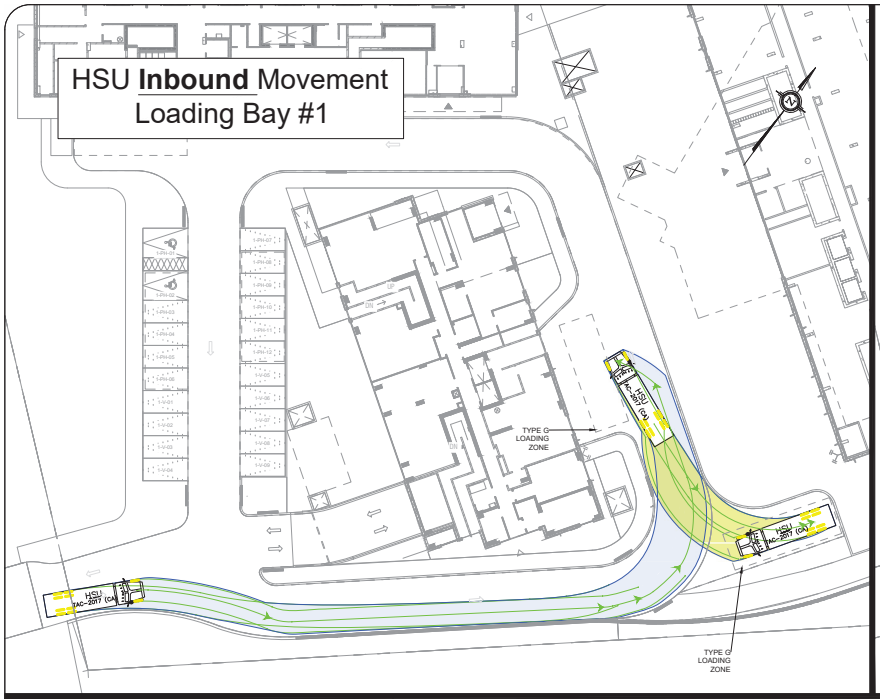
ARCHITECT:

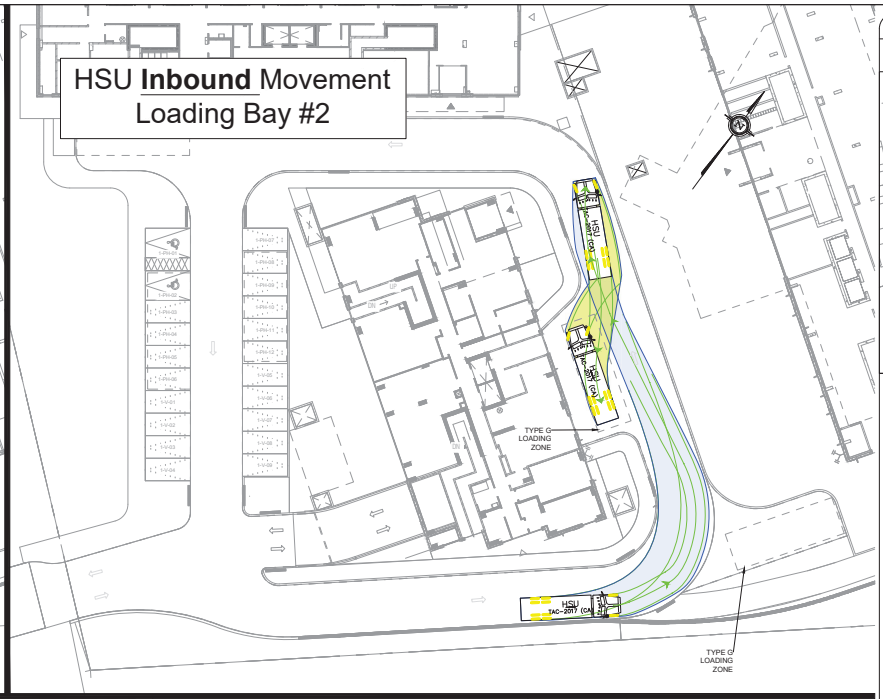
SITE: 2475 Regina Street

TITLE: Turning Movement Analysis
Fire Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-05-27	EA	JK

PROJECT NO:	DRAWING NO:	REVISION:
2021-057	001	06





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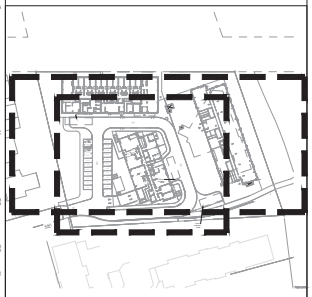
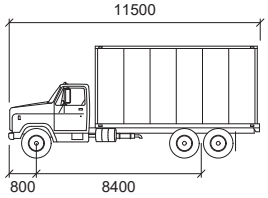




HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
06	Updated Site Plan	EA	2025-05-27

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Windmill Developments

ARCHITECT:

SITE: 2475 Regina Street

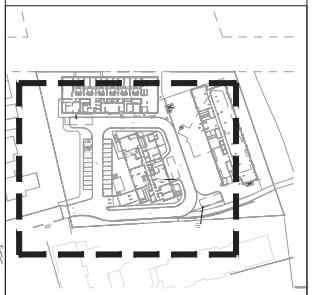
TITLE: Turning Movement Analysis
HSU Loading Movements (1)

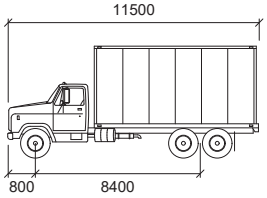
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-05-27	EA	JK

PROJECT NO:	DRAWING NO:	REVISION:
2021-057	002	06

Notes:

KEY PLAN:





HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
06	Updated Site Plan	EA	2025-05-27

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Windmill Developments

ARCHITECT:

SITE: 2475 Regina Street

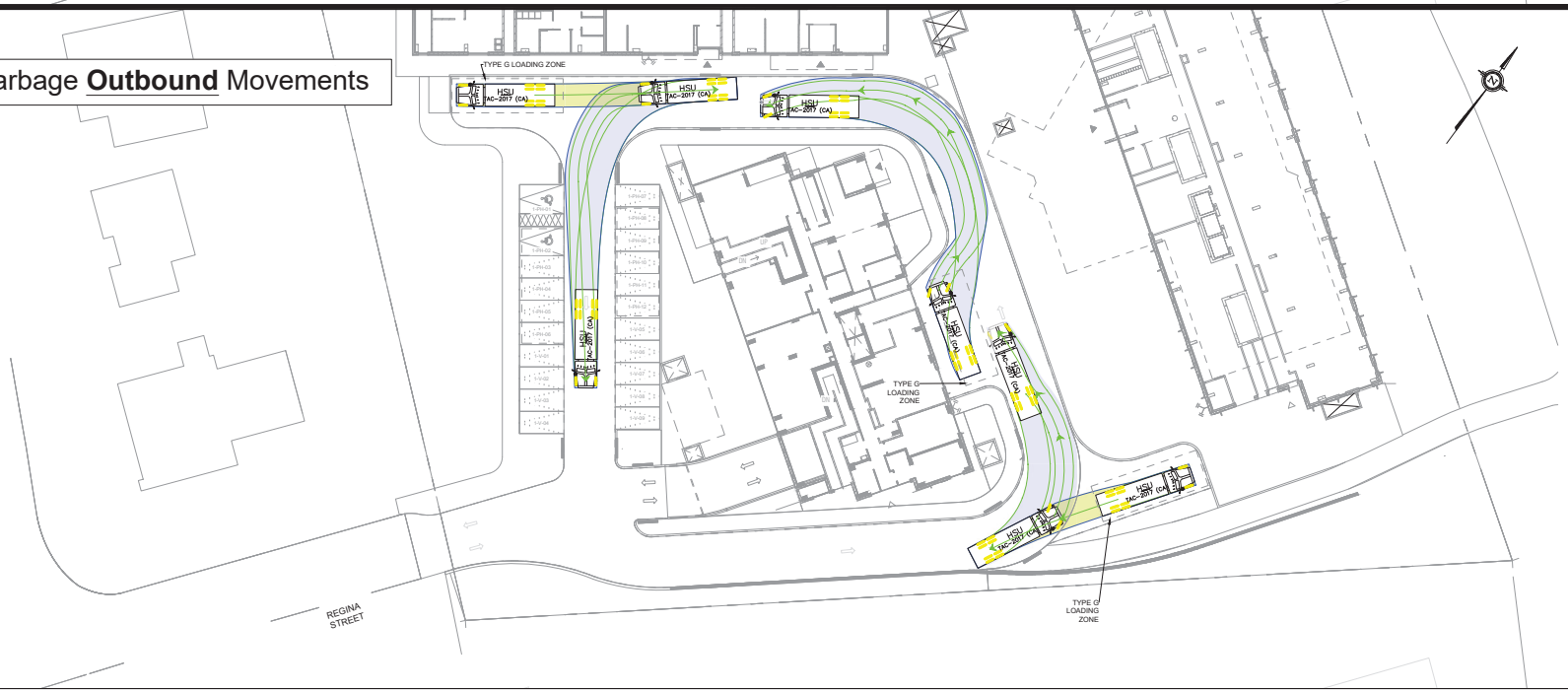
TITLE: Turning Movement Analysis
HSU Loading Movements (2)

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-05-27	EA	JK

PROJECT NO:	DRAWING NO:	REVISION:
2021-057	003	06

Garbage **Inbound** Movements

Garbage **Outbound** Movements



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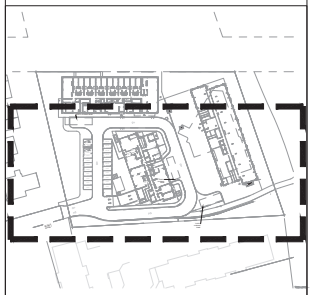
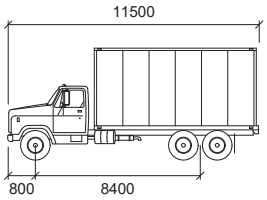
KEY PLAN:





HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
06	Updated Site Plan	EA	2025-05-27

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Windmill Developments

ARCHITECT:

SITE: 2475 Regina Street

TITLE: Turning Movement Analysis
Garbage Turning Movements

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-05-27	EA	JK

PROJECT NO:	DRAWING NO:	REVISION:
2021-057	004	06

Appendix H

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation**	**Project**	**Parkway House**
Scenario		**Date**	**2025-01-13**
Comments			

SEGMENTS			Section		
			Regina St		
Pedestrian	Sidewalk Width Boulevard Width		1.8 m < 0.5 m		
	Avg Daily Curb Lane Traffic Volume		≤ 3000		
	Operating Speed On-Street Parking		> 30 to 50 km/h yes		
	Exposure to Traffic PLoS	-	**B**	-	-
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	-
	Level of Service		-	-	-
Bicycle	Type of Cycling Facility		Mixed Traffic		
	Number of Travel Lanes		≤ 2 (no centreline)		
	Operating Speed		≥ 50 to 60 km/h		
	# of Lanes & Operating Speed LoS		**D**	-	-
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS	D	-	-	-
	Bike Lane Blockages				
	Blockage LoS		-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge		
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes		
	Sidestreet Operating Speed		>50 to 60 km/h		
	Unsignalized Crossing - Lowest LoS		**C**	-	-
	Level of Service		**D**	-	-
Transit	Facility Type				
	Friction or Ratio Transit:Posted Speed	-			
	Level of Service		-	-	-
Truck	Truck Lane Width				
	Travel Lanes per Direction	-			
	Level of Service		-	-	-
Auto	**Level of Service**	**Not Applicable**			