

3 Selkirk Street and 2 Montreal Road (Phase 3)

TIA Report - June 2023

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DOCUMENT CONTROL PAGE

CLIENT:	Main + Main
PROJECT NAME:	3 Selkirk Street and 2 Montreal Road (Phase 3)
APPLICATION TYPE	Site Plan Application (SPA)
REPORT TITLE:	Phase 3 TIA Strategy Report
PARSONS PROJECT NO:	478655 - 01000
VERSION:	Draft
DIGITAL MASTER:	https://parsons365can.sharepoint.com/sites/OttawaHub/Projects/Projects/478655 - Riverain Phase 3 (Main and Main)/4. 01000/Documents/TIA Addendum/Phase 3 05.29.23/Strategy Report/3 Selkirk_TIA Report (Phase 3)_2023.06.13.docx
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HISTORY:	 TIA Step 1-3: Phase 3 Forecasting Report – June 05, 2023 TIA Step 4: Phase 3 Strategy Report – June 14, 2023



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TIA STRATEGY REPORT

Parsons was retained by Main + Main to prepare a Transportation Impact Assessment (TIA) Report in support of a Site Plan Application (SPA), for the future Phase 3 development site at 300 Montgomery Road. Previous TIA Reports have already been submitted to address the transportation requirements of the site (Municipal address of 3 Selkirk St and 2 Montreal Rd), both in Phase 1 and at full buildout. Given the previous report submissions, it was agreed upon with City staff to provide a TIA Report submission that focuses on any changes to existing conditions, addresses site access plan, and provides trip generation and analysis updates relating to Phase 3 of the development. This report represents the Step 4 Strategy Report, as outlined in the City Transportation Impact Assessment (TIA) Guidelines, 2017.

1. SCREENING FORM

The Screening Form was prepared as part of the previous TIA Report submission (dated August 2022), which indicated the need to complete a full TIA Report.

2. SCOPING REPORT

2.1. EXISTING AND PLANNED CONDITIONS

2.1.1. PROPOSED DEVELOPMENT

The proponent is proposing a mixed-use development comprised of three high-rise residential towers ranging between 22 and 32 storeys in height for full build-out. The site's local context and phasing plan are depicted in Figure 1. The previous TIA Report submission reviewed the following two scenarios:

- A Phase 1 buildout with vehicle access via Montgomery St only.
- A development full-buildout (Phases 1-3) with vehicle access via both Montgomery St and Selkirk St.

The purpose of this report is to review an interim stage, where Phases 1 and 3 are constructed (ahead of Phase 2) and accessed via Montgomery St only. The Phase 3 Site Plan is illustrated in Figure 2, with high quality plans of Phase 3 and the full site provided in Appendix A.

As identified in previous TIA Report submissions, Phase 1 will be comprised of a 22-storey apartment building, containing 294 residential units and 16,037 ft² of retail space. Phase 3 site statistics have been updated to propose 380 residential units within the 28-storey apartment building. At full buildout of Phase 3, vehicle access for both buildings will be provided through Montgomery St only.

The Montgomery St access will connect to an internal site driveway through which the proposed surface and underground parking spaces can be accessed. The Phase 1 building will provide 274 vehicle parking spaces (208 underground and 66 surface) and 308 bicycle parking spaces, as previously indicated. The Phase 3 building will provide 310 vehicle parking spaces within the podium parking structure and 384 bicycle parking spaces.

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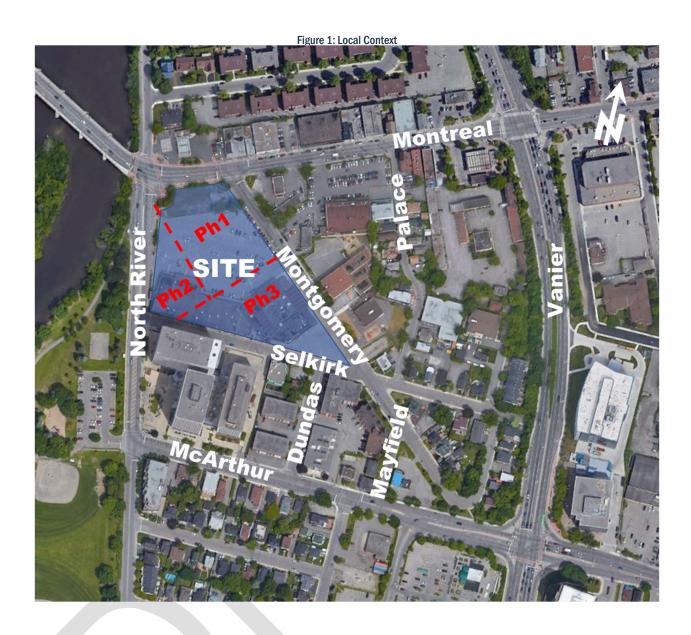




Figure 2: Proposed Phase 3 Site Plan (June 2022)



2.1.2. EXISTING CONDITIONS

AREA ROAD NETWORK

Refer to previous TIA Report submission (dated August 2022) for a description of the existing road network.

EXISTING STUDY AREA INTERSECTIONS

Refer to previous TIA Report submission (dated August 2022) for a description of the existing study area intersections. Note that previous analysis assumed the future plans for intersections along Montreal Rd to be in place in existing conditions. This report will also assume as such, considering that construction work is near completion.

EXISTING DRIVEWAYS TO ADJACENT DEVELOPMENTS

Refer to previous TIA Report submission (dated August 2022) for a description of existing driveways within 200m of the proposed Montgomery St access.

EXISTING AREA TRAFFIC MANAGEMENT MEASURES

Refer to previous TIA Report submission (dated August 2022) for a description of the existing area traffic management measures.

PEDESTRIAN/CYCLING NETWORK

This section is updated to reflect changes since previous TIA Report submission.

Curbside sidewalks are provided on both sides along North River Road, Montreal Road, McArthur Avenue, and Vanier Parkway. They are also provided on the south side of Selkirk Street, east side of Montgomery Street, and west side of Dundas Street.

Based on City of Ottawa TMP, North River Rd, Montreal Rd and Vanier Pkwy are designated "Spine" Routes. Onstreet bike lanes are currently provided within the study area, along McArthur Ave, which also connects to the existing multi-use pathway (MUP) that runs along the Rideau River, west of North River Rd. The existing cycling facilities are shown in Figure 3.

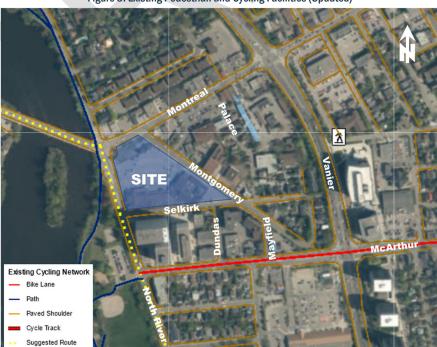


Figure 3: Existing Pedestrian and Cycling Facilities (Updated)



President's Choice Financial ATM

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TRANSIT NETWORK

This section is updated to reflect changes since previous TIA Report submission.

OC Transpo bus routes currently run along Montreal Road and North River Road with bus stops provided near the Montreal/North River intersection for Frequent Routes #12 and #14 and Local Routes #15 and #18. Figure 4 illustrates the area transit network and Figure 5 illustrates adjacent transit stops. Along Vanier Pkwy, local route #9 and #19 also currently operate.

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Figure 4: Area Transit Network



Shell Hobby House Ltd Rouge Vape 0 Petro-Canada École élémentaire O 34 publique Mauril-Bélanger Eastview Plaza Lot #53 P SITE Beer Store Restaurant Visio Green Fresh Supermarket Vani Wanier Tower A Oxfam Canada

Figure 5: Adjacent Transit Stops

PEAK HOUR TRAVEL DEMAND

The existing peak hour traffic volumes and pedestrian/cyclist volumes within the study area, are illustrated in Figure 6 and Figure 7, respectively. Refer to previous TIA Report submission (dated August 2022) for more information on the data used.

Public parking (68)

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Figure 6: Existing Peak Hour Traffic Volumes

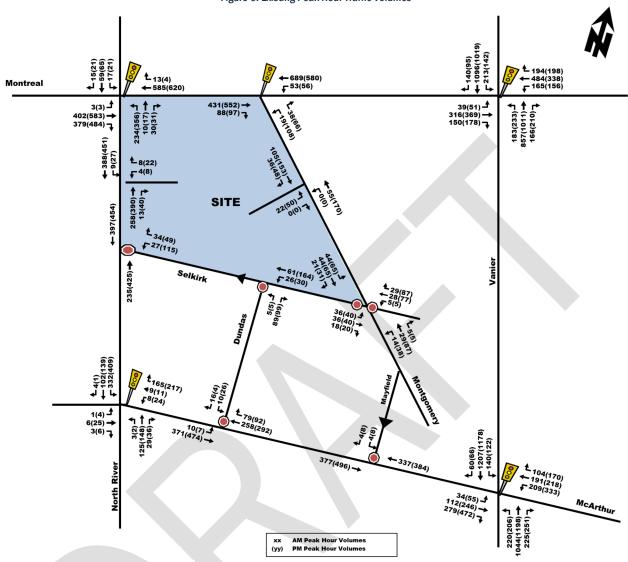
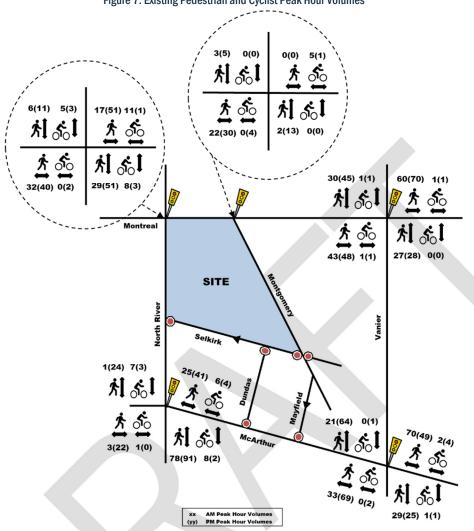




Figure 7: Existing Pedestrian and Cyclist Peak Hour Volumes



EXISTING ROAD SAFETY CONDITIONS

Refer to previous TIA Report submission (dated August 2022) for a detailed description of historic collision data within the study area.

2.1.3. PLANNED CONDITIONS

PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

Refer to previous TIA Report submission (dated August 2022) for a detailed description of recent and planned study area modifications.

Montreal Road Revitalization Project Update

Montreal Road project is currently in its final year of construction. The remaining final stages of construction will be completed by late summer and will include the following main aspects within the study area:

- Completion of remaining landscaping and streetscaping.
- Construction of southside cycle track on Montreal Rd, between North River Rd and Montgomery St.
- Modifications at the Montreal/North River intersection.
- Implementation of traffic calming measures along North River Rd.

For the purpose of this report, the Montreal Rd construction project is assumed to be completed in existing conditions.

OTHER AREA DEVELOPMENTS

Refer to previous TIA Report submission (dated August 2022) for description of adjacent future developments within the study area.

2.2. STUDY AREA AND TIME PERIODS

Refer to previous TIA Report submission (dated August 2022) for a full list of study area intersections. Horizon year 2025 is assumed to be full buildout year for Phase 3, where weekday morning and afternoon peak hour periods will be reviewed.

2.3. EXEMPTION REVIEW

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

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Streets Networks	Only required for plans of subdivision.
4.2 Parking	4.2.2 Spillover Parking	Only required for Site Plans where parking is 15% below unconstrained demand.

Table 1: Exemptions Review Summary

3. FORECASTING

3.1. DEVELOPMENT GENERATED TRAVEL DEMAND

3.1.1. TRIP GENERATION AND MODE SHARES

EXISTING SITE TRIP GENERATION

A new ITE Trip Generation Manual (11th edition) and City of Ottawa TRANS Trip Generation Manual (2020) have been issued since the previous TIA Report Submission (August 2022). As such, the existing site's trip generation will be updated based on the new trip rates and mode share percentages from the two manuals.

As the Eastview Shopping Centre generated trips in existing conditions, it is necessary to account for those trips as a reduction in in the overall future site-generated volumes. The existing site-generated traffic volumes will be approximated using ITE Trip rates and the estimated floor area of the different units within the existing shopping centre. Using GeoOttawa measuring tool, the existing shopping centre is assumed to be composed of the following:

- ~ 2,840 m² (30,570 ft²) of retail space;
- ~ 340 m² (3,660 ft²) restaurant area comprised of:
 - 170 m² (1,830 ft²) of fast casual restaurant area (closed during morning peak hour);
 - ~ 170 m² (1,830 ft²) of fast-food restaurant without drive through area;
- 1,570 m² (16,900 ft²) of high turnover (sit down) restaurant area (closed during morning peak hour); and
- ~ 1,250m² (13,455 ft²) of grocery space.

Figure 8 shows the existing shopping centre and the assumed areas, where the total area of the shopping centre is approximately 64,585 ft². Based on the ITE Manual's land use descriptions, the "Shopping Plaza" land use was considered appropriate given the total area of the shopping centre and the available units. The ITE trip generation rates used for the existing property are shown in Table 2.



Figure 8: Existing Eastview Shopping Centre



Table 2: ITE Trip Generation Rates - Existing Shopping Centre

	•			
Land Use	Data Source	Trip Rates		
Land USE	Data Source	AM Peak	PM Peak	
Shopping Plaza	ITE 821	T = 1.73(X)	T = 5.19(X)	
Note: T = Average Vehicle Trip				
X= 1,000 ft ² of Ground Floor Area				

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the Ottawa study area context were applied to obtain estimates of person trips for the existing site. Our review of TIA Guidelines suggests that a combined factor of approximately 1.28 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. The person trip generation for the existing development is summarized in Table 3.

Table 3: Person Trip Generation – Existing Shopping Centre

Land Use	Aron	AM Peal	k (Person 1	rips/hr)	PM Peak (Person Trips/hr)		
Land Use	Area	In	Out	Total	In	Out	Total
Shopping Plaza	64,585 ft ²	88	55	143	210	219	429

As shown in Table 3, the existing shopping centre is expected to have generated 143 and 429 person trips during the morning and afternoon peak hours, respectively. Mode shares for different travel modes were obtained from the 2020 TRANS Trip Generation Manual for Commercial Generators in the Ottawa East district. As such, a breakdown of the trips generated by the different travel modes is provided in Table 4. A pass-by trip percentage was also obtained from the ITE Manual, which indicated a 40% pass-by trip rate for the PM peak hour only.

Table 4: Existing Site Trip Generation

Traval Mada	Travel Mode AM Mode		AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
Traver Mode	Share	In (62%)	Out (38%)	Total	Share	In (49%)	Out (51%)	Total
Auto Driver	58%	51	31	82	55%	115	120	235
Auto Passenger	10%	9	5	14	18%	38	40	78
Transit	15%	13	8	21	11%	22	23	46
Cycling	1%	1	0	1	1%	2	2	4
Walking	17%	15	9	24	15%	32	34	66
Total Person Trips	100%	89	54	143	100%	210	219	429
PM Pa	ass-by (40%)	0	0	0		-46	-48	-94
Tota	al Auto Trips	51	31	82		69	72	141

As shown in Table 4 above, the total estimated existing site-generated vehicle trips are 82 veh/h and 141 veh/h during the morning and afternoon peak hours, respectively.

PROPOSED DEVELOPMENT TRIP GENERATION RATES

Phases 1 and 3 of the proposed development will consist of a total of 674 high-rise apartment units and 16,037 ft² of grocery store/retail space. The trip rates for the land uses are summarized in Table 5.

Note that the trip rates have been updated from previous TIA Report submission to follow the latest industry standards guidelines. The appropriate trip generation rates for high-rise apartment units were obtained from the 2020 TRANS Trip Generation Manual. This Manual provides person-trip rates during the peak AM and PM periods (i.e. 7am-9:30am and 3:30pm-6pm). The peak hour trip generation rates for the retail land uses were obtained from the ITE Trip Generation Manual (11th edition), assuming the "Supermarket" land use for the total retail area, expected to include a grocery store and small retail units. The "Supermarket" trip rates are considered fairly conservative in this scenario, considering that the small retail units will likely provide minor ancillary use that will likely be utilized by local residents.

Table 5: Vehicle Trip Rates for the Residential and Commercial Uses

Land Use	Data Course	Trip Rates			
Land USE	Data Source	AM Peak	PM Peak		
High Rise Apartment	TRANS	T = 0.8(du)	T = 0.9(du)		
Supermarket	ITE 850	T = 2.86(X)	T = 8.95(X)		

Note: T = Average Vehicle Trip

X= 1,000 ft² of Ground Floor Area

du = dwelling units

PROPOSED GROCERY STORE AND RETAIL TRIP GENERATION

Using trip rates provided in in Table 5, the person trip generation for the proposed Phase 1 commercial space of the development is summarized in Table 6. The total number of person trips per hour generated by the proposed retail units were multiplied by a factor of 1.28, as per TIA standards, to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%.

Table 6: Person Trip Generation - Commercial Phase 1

Land Use	Aron	AM Peak	(Person Trip	s/hr)	PM Peak (Person Trips/hr)		
Land Use	Area	In (59%)	Out (41%)	Total	In (50%)	Out (50%)	Total
Supermarket (Grocery Store and Retail)	16,037 ft ²	34	25	59	92	93	185

Mode shares for commercial land uses were obtained from the TRANS 2020 Trip Generation Manual, assuming the "Ottawa East" district. The anticipated number of trips for different travel modes are provided in Table 7. A pass-by trip percentage was also obtained from the ITE Manual, which indicated a 24% pass-by trip rate for the PM peak hour only. As implied by the name, pass-by trips are trips where vehicles travelling along roads bordering the development would make a stop at the "supermarket", rather than travel to it as a destination. As such, they are not considered 'new' trips, but background vehicle trips that are already travelling on the network.

Table 7: Proposed Phase 1 Peak Hour Commercial Trip Generation

Travel Mode	AM Mode	AM Pe	ak (Person Tı	(Person Trips/h)		PM Peak (Person Trips/h)		
Traver Mode	Share	In (59%)	Out (41%)	Total	Share	In (50%)	Out (50%)	Total
Auto Driver	58%	20	14	34	55%	51	51	101
Auto Passenger	10%	3	2	6	18%	17	17	34
Transit	15%	5	4	9	11%	10	10	20
Cycling	1%	0	0	1	1%	1	1	2
Walking	17%	6	4	10	15%	14	14	28
Total Person Trips	100%	35	24	59	100%	93	93	185
PM Pa	ass-by (24%)	0	0	0		-12	-12	-24
Total 'Nev	w' Auto Trips	20	14	34		39	39	77



As shown in Table 7, the proposed commercial space of Phase 1 is expected to generate a total of 59 and 185 person trips and 34 and 77 'new' auto trips during the morning and afternoon peak hours, respectively.

PROPOSED RESIDENTIAL TRIP GENERATION

Using the 2020 TRANS Trip Generation Manual rates outlined in Table 5, the total number of trips generated by the proposed residential land uses of the development are calculated for the morning and afternoon peak periods, as shown in Table 8.

Table 8: Projected Phase 1+3 Residential Person Trip Generation - TRANS Model

Land Use	Dwelling	AM Peak Period	PM Peak Period
	Units	Person Trips	Person Trips
High-Rise Apartments	674	539	607

The proposed development's residential land use is anticipated to generate a total of approximately 539 and 607 person trips during the morning and afternoon peak 3-hour periods, respectively. The total person trips in Table 8 are then divided into different travel modes using mode share percentages obtained from the 2020 TRANS Manual for the "Ottawa East" district. Table 9 provides the mode share breakdown for different travel modes.

Table 9: High-Rise Apartments Peak Period Trips Mode Share Breakdown

		-		ACCOUNTY OF THE PARTY OF THE PA
Travel Mode	Mode Share	AM Peak Period Person Trip	Mode Share	PM Peak Period Person Trips
A In Driver				•
Auto Driver	39%	212	40%	243
Auto Passenger	7%	40	14%	85
Transit	38%	205	28%	172
Cycling	2%	11	3%	16
Walking	13%	71	15%	90
Total Person Trips	100%	539	100%	607

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent a worst-case scenario. The 2020 TRANS Manual provides conversions rates from peak period to peak hours for different mode shares, as shown in Table 10 below.

Table 10: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors				
Travel Mode	AM	PM			
Auto Driver and Passenger	0.48	0.44			
Transit	0.55	0.47			
Bike	0.58	0.48			
Walk	0.58	0.52			

Using the conversion rates in Table 10 and the peak 3-hour period trips in Table 9, the peak hour trips for different travel modes can be calculated as shown in Table 11, with inbound and outbound percentages obtained from the TRANS Manual.

Table 11: Proposed Phase 1+3 Peak Hour Residential Trip Generation

Travel Mode	AM Pe	ak (Person T	rips/h)	PM Peak (Person Trips/h)			
Traver Wiode	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total	
Auto Driver	32	70	102	62	45	107	
Auto Passenger	6	13	19	22	16	37	
Transit	35	78	113	47	34	81	
Cycling	2	4	6	5	3	8	
Walking	13	29	41	27	20	47	
Total Person Trips	87	194	281	162	118	280	

A shown in Table 11, the combined Phases 1 and 3 of the proposed development are expected to generate a total of approximately 280 person trips during peak hours, which includes up to 107 vehicle trips, 37 passenger trips, 113 transit trips and 55 active transport trips (walking and biking).

PROPOSED PHASE 1+3 TOTAL SITE TRIP GENERATION

The total Phase 1 and 3 projected trips for the residential and commercial land uses of the proposed development are summarized below in Table 12, which include the total of the proposed residential and commercial land uses.

Travel Mode	AM Pea	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
Traver Mode	In	Out	Total	In	Out	Total	
Auto Driver	52	84	136	113	96	208	
Auto Passenger	9	15	25	39	33	71	
Transit	40	82	122	57	44	101	
Bicycle	2	4	7	6	4	10	
Walk	19	33	51	41	34	75	
Total Person Trips	122	218	340	255	211	465	
PM Pass-by (24%)	0	0	0	-12	-12	-24	
Total 'New' Auto Trips	52	84	136	101	84	184	

Table 12: Phase 1 and 3 Total Site Trip Generation

As shown in Table 12, the proposed development is expected to generate a total of 340 to 465 person trips during the morning and afternoon peak hours, which includes 136 to 184 'new' auto trips, 25 to 71 passenger trips, 101 to 122 transit trips and 58 to 85 active transport trips. The total new trips have been reduced as shown in Table 13 by accounting for the existing shopping centre's trips in Table 4.

Travel Mode	AM Peak (Person Trips/hr)			PM Peak (Person Trips/hr)		
Traver Widde	In	Out	Total	In	Out	Total
Auto Driver	1	53	54	-2	-24	-27
Auto Passenger	0	10	11	1	-7	-7
Transit	27	74	101	35	21	55
Bicycle	1	4	6	4	2	6
Walk	4	24	27	9	0	9
Total Person Trips	33	164	197	45	-8	36
Total 'New' Auto Trips	1	53	54	32	12	43

Table 13: Phase 1 and 3 Total Site Trip Generation, with Reduction from Existing

As shown in Table 13, after accounting for the existing site's trips, the proposed development is projected to generate approximately 36 to 197 new person-trips per hour in the weekday commute peak hours. This includes 43 to 54 'new' vehicle trips, 55 to 101 new transit trips and 15 to 33 active transport trips. Negative numbers in the table are the result of reductions applied by the no longer existing site-generated trips of the Eastview Shopping Centre.

3.1.2. TRIP DISTRIBUTION AND ASSIGNMENT

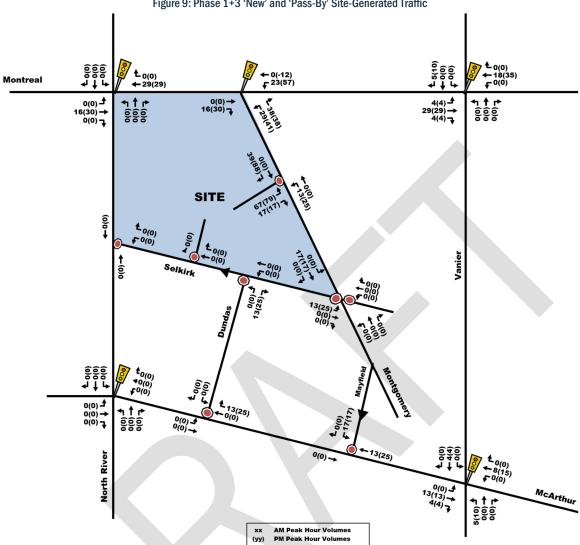
Based on the 2011 OD Survey (Ottawa East district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as follows:

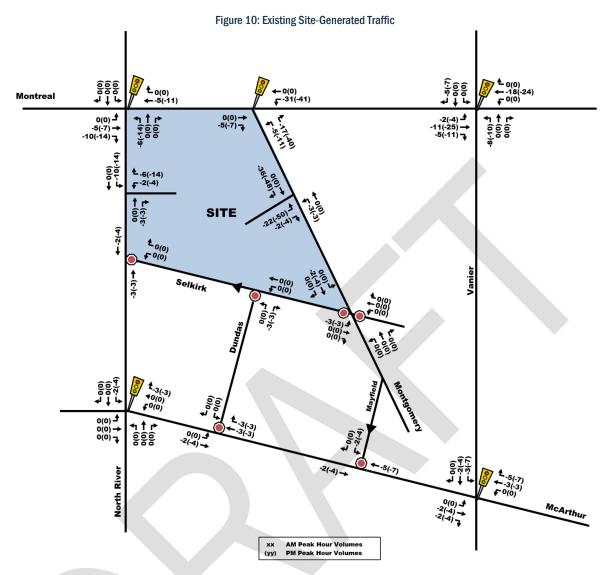
50% to/from the east;
35%/30% to/from the west;
5/10% to/from the north; and,
10% to/from the south.

The expected 'new' and 'pass-by' site-generated auto trips for Phase 1 and 3 of the proposed development (Table 12) are assigned to the road network as shown in Figure 9. Please note that the negative values represent the pass-by trips. As mentioned previously, access for Phases 1 and 3 is proposed to be provided via Montgomery St only at this interim stage. Existing shopping centre site-generated traffic volumes (Table 4) to be removed from study area volumes are illustrated in Figure 10.



Figure 9: Phase 1+3 'New' and 'Pass-By' Site-Generated Traffic





3.2. BACKGROUND NETWORK TRAFFIC

3.2.1. TRANSPORTATION NETWORK PLANS

Refer to Section 2.1.3.

3.2.2. BACKGROUND GROWTH

As indicated in the previous TIA Report submission, a 0% background growth rate was applied to study area roads.

3.2.3. OTHER DEVELOPMENTS

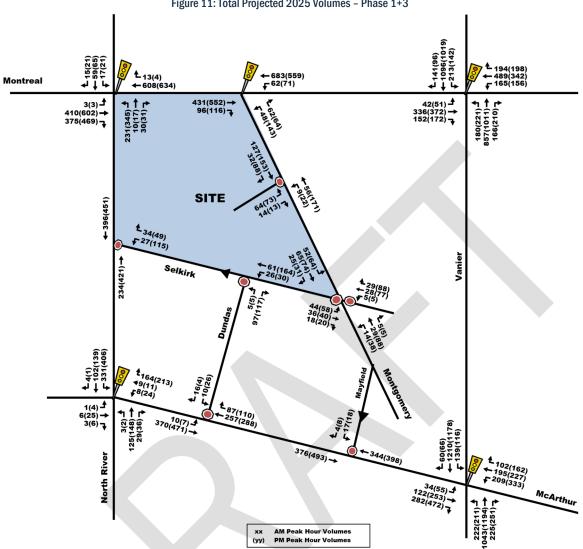
Refer to previous TIA Report submission (dated August 2022) for future adjacent development volumes accounted for within the study area.

3.3. DEMAND RATIONALIZATION

The total projected volumes of Phases 1 and 3 at 2025 are illustrated in Figure 11, which are composed of existing traffic volumes (Figure 6), combined with future adjacent development traffic (see previous TIA submission), the anticipated site-generated traffic (Figure 9), and reduced by the existing shopping centre's site-generated traffic (Figure 10).



Figure 11: Total Projected 2025 Volumes - Phase 1+3



4. ANALYSIS

4.1. DEVELOPMENT DESIGN

4.1.1. DESIGN FOR SUSTAINABLE MODES

Refer to previous TIA Report submission (dated August 2022) for details regarding the proposed pedestrian, cyclists and transit facilities on and off site.

The internal site driveway is expected to be designed to prioritize pedestrians and cyclists by providing wide internal sidewalks and brick paving for travel lanes instead of a typical asphalt pavement. The internal sidewalks will connect to the external sidewalks along Montgomery St and Selkirk St, thereby providing ample connectivity for pedestrians.

Nearest bus stops to the site are at the northeast corner of North River/Selkirk and southeast corner of Montreal/Montgomery intersections, which are located within 100m and 150m walking distances from the Phase 3 building, respectively. It is noted that the bus stop located in the northeast corner of North River/Selkirk is within the property limits of the proposed development site and will be accommodated with a concrete pad and a bus shelter in the future.

MONTGOMERY ST AND SELKIRK ST ROADWAY MODIFICATIONS (RMA)

Functional designs for each of Montgomery St and Selkirk St are currently underway and propose future designs along the frontage of each of the development roads. Traffic calming measures are expected to be provided along Montgomery St as part the designs, adhering to the City of Ottawa's 30 km/h design toolbox. This includes measures such as speed humps, bulb-outs and road narrowing.

For Montgomery St., the following key elements are included:

- A new 2.0m concrete sidewalk with parallel parking along the site frontage.
- A bulb-out nearest the site access and the Montgomery/Selkirk intersections to book-end parking and narrow travel lanes.
- A speed hump located between the Montgomery St. site access and the Montgomery/Selkirk intersection.
 The speed hump is located within the school bus drop off zone along the frontage of the Mauril-Bélanger elementary public school.
- A road narrowing which requires modifications to the curb line on both sides of Montgomery St., to provide for an improved crosswalk with a shorter crossing distance and relocates STOP-bar.

For Selkirk St., a 1.5m painted cycle lane and 2.0m concrete sidewalk will be included along the site frontage. Parallel parking will be maintained on the opposite side of Selkirk St. There may also be an opportunity to provide traffic calming measures along Selkirk St, which will be confirmed as part of the RMA.

4.1.2. CIRCULATION AND ACCESS

Trucks are anticipated to access the site occasionally for the purpose of garbage pick-up, loading/unloading and residential move-ins. Truck movements for Phase 1 of the development were confirmed in previous TIA Report submission. For Phase 3, truck turns have been checked at both the Montgomery St site access, as well as at the proposed garbage pick-up/loading space located at the west corner of the Phase 3 building. The in/out truck turn checks have been provided in Appendix B, which confirmed no anticipated issues for truck movements.

4.2. PARKING

Based on City of Ottawa Parking Provisions, Schedule 1A, the proposed development is located in "Area X". A total of 603 vehicle parking spaces and 503 bicycle parking spaces will be provided for Phases 1 and 3 of the proposed development. Of the total, approximately 66 vehicle parking spaces will be provided at surface. Table 14 provides a summary of the required and the proposed parking rates for vehicles and bicycles. As shown in the table, the proposed number of parking spaces meet all parking requirements for vehicle and bicycle parking.

Land Use	nd Use Size Parking Rates		Required Spaces		Pro	Proposed Spaces				
Land USE	Size	Base	Visitor	Bicycle	Base	Visitor	Bicycle	Base	Visitor	Bicycle
High-Rise Residential	674 Units	0.5 per unit, excluding first 12 units	0.1 per unit, excluding first 12 units, 30 spaces max per building	unit	325	60	337	6	03	484
Commercial	1,490 m ²	1.25 per 100 m ²	-	1.0 per 250 m ²	19	ı	6			19
	Total						343	6	03	503

Table 14: Required and Proposed Vehicle and Bicycle Parking Space

4.3. BOUNDARY STREET DESIGN

Refer to previous TIA Report submission (dated August 2022) for a detailed MMLOS analysis of boundary streets North River Rd, Selkirk St, Montgomery St and Montreal Rd. While some changes have been implemented to the proposed Site Plan and the Montreal Rd construction has been assumed to be completed for existing conditions, no changes are expected to the overall analysis results in this section.

Additionally, the plan remains to provide a westbound bike lane along Selkirk St.



4.4. ACCESS INTERSECTION DESIGN

Traffic can access the site via the proposed internal driveway, which will only connect to Montgomery St in the interim, when Phases 1 and 3 are constructed. STOP Control will be provided for vehicles exiting the site at Montgomery St, with a full movement access. The internal site driveway will be approximately 7.8m wide at the property line, with an additional 3m wide drop-off/pick-up areas. This access location and design was approved as part of the previous application.

The underground parking garage ramp for Phase 3 will be 6m wide and located approximately 20m south of the site access to Montgomery St.

4.5. TRANSPORTATION DEMAND MANAGEMENT

The two residential 'TDM-Supportive Development Design and Infrastructure' and 'TDM Measures' checklists have been completed for Phase 3 and incorporated as Appendix C.

The following is a summary of some of the TDM Design and Infrastructure elements proposed to support sustainable transportation:

- Buildings located close to the street with parking not located between the entrances and the street;
- Direct and attractive walking routes provided from building entrances to adjacent transit stop on North River Rd;
- Easily accessible sidewalks with connections to the external network of sidewalks and pathways;
- A bike lane will be provided along Selkirk St and the internal site driveway and Montgomery St will be designed for access or circulation by cyclists using a target operating speed of no more than 30 km/h;
- On-site bicycle parking provided indoors;
- Landscaping and benches provided along walking and cycling routes; and,
- Designated drop-off/pick-up areas provided on site.

The following TDM Measures are proposed to support sustainable transportation:

- Local area maps for walking/cycling and transit schedules are to be located at major entrances;
- The proponent will seek to find a bikeshare provider, if available in Ottawa;
- The proponent will seek to contract with car sharing and promote their use to residents;
- Parking costs will be unbundled with monthly rent; and
- A multi-modal travel option information package, including relevant car/bike share opportunities, will be provided to new residents.

4.6. NEIGHBOURHOOD TRAFFIC MANAGEMENT

As part of Phase 1 and 3 buildout, the proposed development's site-generated traffic is expected to utilize local roads Montgomery St, Selkirk St and Dundas St, as part of their access route to/from the development. This section compares the existing and projected (at horizon year 2025) traffic volumes along these roads to the ideal maximum threshold of 120 veh/h for local roads, as indicated by the TIA Guidelines. Table 15 summarizes the roadway classifications, the TIA Guideline's ideal roadway threshold, and the approximate existing and projected traffic on respective access routes to the site. Note that this analysis does not include roads classified as arterial, such as North River Road, Montreal Road, Vanier Parkway and McArthur Avenue.

Table 15: Roadway Classification and Traffic Volume

Deadway	Ologoification	Daily Threshold	Peak Hour	Peak Hour Two-Way	Volumes AM (PM)
Roadway	Classification (veh/day)		Threshold (veh/h)	Existing	Projected
Montgomery Street	Local	1,000	120	198 (327)	268 (394)
Selkirk Street	Local	1,000	120	154 (246)	165 (264)
Dundas Street	Local	1,000	120	120 (134)	128 (152)

As shown in Table 15, the ideal local road threshold at all three local streets is exceeded in both existing and total projected 2025 conditions. On Selkirk St, the volumes are near the ideal threshold of 300 veh/h for a collector road during the afternoon peak hour. Similarly, volumes on Montgomery St are near the ideal threshold of a collector road during the morning peak hour and exceed that threshold during the afternoon peak hour.

Given the nature of the development, the increase in traffic volumes along the local roadways is inevitable. It is important to note that the thresholds provided in the TIA Guidelines are ideal suggestions but not necessarily a requirement for the purpose of maintaining acceptable traffic operations. Nonetheless, proposed traffic calming measures may help deter some background traffic volumes as discussed in the section below. Additionally, traffic operations will be confirmed along these roadways in both existing and projected conditions in Section 4.9.

TRAFFIC CALMING MEASURES

As indicated in Section 4.1.1, proposed future roadway modifications include the provision of traffic calming measures along Montgomery St. These measures include speed reduction to 30km/h, mid-block speed humps and road narrowing through the use of bulb-outs, all of which are expected to reduce any traffic infiltration (cut-through traffic) along the local roads, including Selkirk St, Montgomery St and Dundas St. There may also be an opportunity to provide traffic calming measures along Selkirk St, which will be addressed as part of the ongoing RMA plan.

With these measures in place, some reduction in future traffic volumes along the local roads may be expected and the majority of the future traffic volumes may consist mostly of traffic from local residents of the area. Therefore, no further modifications are currently proposed to address the existing and future traffic volumes.

4.7. TRANSIT

Refer to previous TIA Report submission (dated August 2022) for information on existing transit ridership data in the study area and assessment of available capacity.

4.8. REVIEW OF NETWORK CONCEPT

Refer to previous TIA Report submission (dated August 2022) for assessment of relevant Screenline in the study area.

4.9. INTERSECTION DESIGN

4.9.1. INTERSECTION CONTROL

Stop Control will be provided for vehicles exiting the site at the proposed future Montgomery St site access. Given the expected traffic volumes at the site access, the access control is considered appropriate. No changes are proposed to the existing controls of other intersections within the study area.

4.9.2. INTERSECTION DESIGN

Synchro 11 Trafficware was used to analyze intersection performance of intersections within the study area. Critical movements at each of the intersections were assessed based on either the movement with the highest volume-to-capacity ratio (for signalized intersections), or the movement experiencing the highest average delay (for unsignalized intersections). It should be noted that, as per the TIA Guidelines, the Peak Hour Factor (PHF) used for analysis was 0.90 in existing conditions and 1.0 in the projected 2025 horizon year conditions.



As indicated previously in this report, the Montreal Rd reconstruction project has been assumed to be completed in both existing and projected 2025 horizon year conditions. In the projected 2025 conditions, phase times were optimized in Synchro for all signalized intersections and no other changes were implemented. The detailed Synchro reports for existing and projected 2025 conditions have been provided in Appendix C.

EXISTING CONDITIONS

The following Table 16 provides a summary of the existing traffic operations at study area intersections, based on the existing conditions traffic volumes illustrated in Figure 6.

Table 16: Existing Intersection Performance

		W	eekday AM Pe	ak (PM Peak)			
Intersection		Critical Movement			Intersection 'as a whole'		
intersection	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c	
Signalized Intersections							
North River/Montreal	C(E)	0.77(0.93)	NBL(EBT)	29.3(47.5)	B(D)	0.64(0.90)	
Montgomery/Montreal	A(B)	0.33(0.66)	WBT(WBT)	3.8(11.2)	A(B)	0.32(0.64)	
Vanier/Montreal	D(E)	0.89(0.97)	EBT(EBT)	50.1(49.6)	C(D)	0.75(0.83)	
North River/McArthur	B(D)	0.66(0.86)	SBT(SBT)	12.9(19.4)	A(B)	0.51(0.66)	
Vanier/McArthur	E(F)	0.99(1.34)	SBT(WBL)	46.4(72.2)	E(F)	0.91(1.04)	
Unsignalized Intersections							
Dundas/McArthur	B(C)	15(21)	SB(SB)	0.6(0.8)	A(A)	-	
Mayfield/McArthur	B(B)	13(15)	SB(SB)	0.1(0.3)	A(A)	-	
Selkirk/North River	B(C)	14(20)	WB(WB)	1.1(2.7)	A(A)	-	
Selkirk/Montgomery	B(C)	11(15)	EB(EB)	6.6(8.1)	A(A)	-	
Note: Analysis of signalized intersection	ns assumes a	PHF of 0.90 and a	saturation flow r	ate of 1800 vel	n/h/lane.		

As shown in Table 16, the Vanier/McArthur intersection 'as a whole' and the associated critical movement operate at capacity during the afternoon peak hour. All other signalized intersections 'as a whole' operate at LOS 'D' or better, with critical movements operating at LOS 'E' or better during peak hours.

All unsignalized intersections 'as a whole' are shown to operate at LOS 'A', with critical movements from the stop controlled minor roads operating at LOS 'C' or better during peak hours.

TOTAL PROJECTED 2025 CONDITIONS

The following Table 17 provides a summary of the total projected 2025 operations at the study area intersections based on the total projected 2025 conditions traffic volumes in Figure 11. As mentioned previously, westbound bike lanes will be added on Selkirk St in ultimate conditions, narrowing the travel lanes to a single 4.3m wide lane. This modification is reflected in the analysis results below for the intersection of Selkirk/North River.

Table 17: Total Projected 2025 Performance at Study Area Intersections

		W	eekday AM Pe	ak (PM Peak)		
Intersection		Critical Movemer	nt	Intersection 'as a whole'		
intersection	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
North River/Montreal	D(E)	0.86(0.99)	NBL(EBT)	34.8(56.8)	B(E)	0.70(0.95)
Montgomery/Montreal	A(B)	0.31(0.63)	WBT(WBT)	5.3(11.9)	A(B)	0.31(0.62)
Vanier/Montreal	D(D)	0.86(0.88)	EBT(EBT)	46.1(46.3)	B(C)	0.69(0.75)
North River/McArthur	B(C)	0.62(0.78)	SBT(SBT)	12.9(15.8)	A(A)	0.48(0.60)
Vanier/McArthur	D(F)	0.90(1.04)	NBL(EBR)	38.5(58.2)	D(F)	0.83(1.00)
Unsignalized Intersections						
Dundas/McArthur	B(C)	14(20)	SB(SB)	0.6(0.7)	A(A)	-
Mayfield/McArthur	B(C)	14(16)	SB(SB)	0.5(0.6)	A(A)	-
Selkirk/North River	B(C)	11(18)	WB(WB)	1.1(2.9)	A(A)	-
Selkirk/Montgomery	B(C)	11(16)	EB(EB)	6.9(8.3)	A(A)	-
Montgomery/Site	B(B)	10(13)	EB(EB)	3.2(2.6)	A(A)	-
Note: Analysis of signalized intersection	ns assumes a	PHF of 1.0 and a sa	aturation flow ra	te of 1800 veh/	/h/lane.	

As shown in Table 17, the Vanier/McArthur intersection is expected to continue to operate at capacity during the afternoon peak hour both 'as a whole' and with the associated critical movement. However, the operations at this intersection and most other signalized intersections have improved compared to existing conditions due to optimization of phase times and increase of PHF to 1.0. The exception is the intersection of North River/Montreal, where delays and v/c ratios have increased slightly as a result of the added site-generated traffic volumes.

Operations at unsignalized intersections are similar to existing conditions, with slight changes in delays. The proposed Montgomery St site access 'as a whole' is expected to operate at LOS 'A' with critical movements operating at LOS 'B' during peak hours.

MULTI-MODAL LEVEL OF SERVICE - SIGNALIZED INTERSECTIONS

Refer to previous TIA Report submission (dated August 2022) for a detailed MMLOS analysis of signalized intersections within the study area.

5. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results summarized herein, the following transportation related conclusions are offered:

Proposed Site

- Main + Main is proposing a mixed-use development comprised of 3 high-rise residential towers ranging from 22 to 32 storeys in height, which will be constructed in three phases.
- A TIA Report was previously submitted (August 2022), which reviewed two scenarios:
 - A Phase 1 buildout with vehicle access via Montgomery St only.
 - A development full buildout (Phases 1-3) with vehicle access via both Montgomery St and Selkirk St.
- This TIA Report was prepared for the purpose of reviewing an interim stage, where Phases 1 and 3 are constructed (ahead of Phase 2) and accessed via Montgomery St only. Phase 3 will consist of 380 residential units and will consist of 310 vehicle parking spaces and 384 bicycle parking spaces, all of which will be located within the underground parking garage. Phase 3 buildout is assumed at horizon year 2025.
- The underground parking garage ramp for the Phase 3 building will be located along an internal site driveway with a full movement access to Montgomery St.
- Truck turns at both the Montgomery St site access and the garbage pick-up/loading space of the Phase 3 building were confirmed to have no conflicts or turning issues.
- The combined Phases 1 and 3 are projected to generate approximately 136 veh/h and 184 veh/h during the morning and afternoon peak hours respectively.
- The net increase of trips compared to trip generation of the existing developments is 54 veh/h and 43 veh/h during the morning and afternoon peak hours respectively.

Future Study Area Modifications

- The Montreal Rd reconstruction project is in its final year of construction and is anticipated to be completed by late summer of 2023. As such, all modifications related to this project, including intersection and roadway modifications within the study area, have been assumed as an existing condition.
- As part of the development, a westbound bike lane will be provided on the north side on Selkirk Street and an eastbound bike lane will be provided on the south side on Montreal Road based on preferred City design.



There is ongoing Montgomery St functional design to provide future traffic calming measures along the section at site frontage. Potential traffic calming measures will adhere to the City of Ottawa's 30 km/h design toolbox and may include speed humps, bulb-outs and road narrowing. An opportunity exists to provide traffic calming measures along Selkirk St as well, which will be confirmed through the ongoing RMA plan.

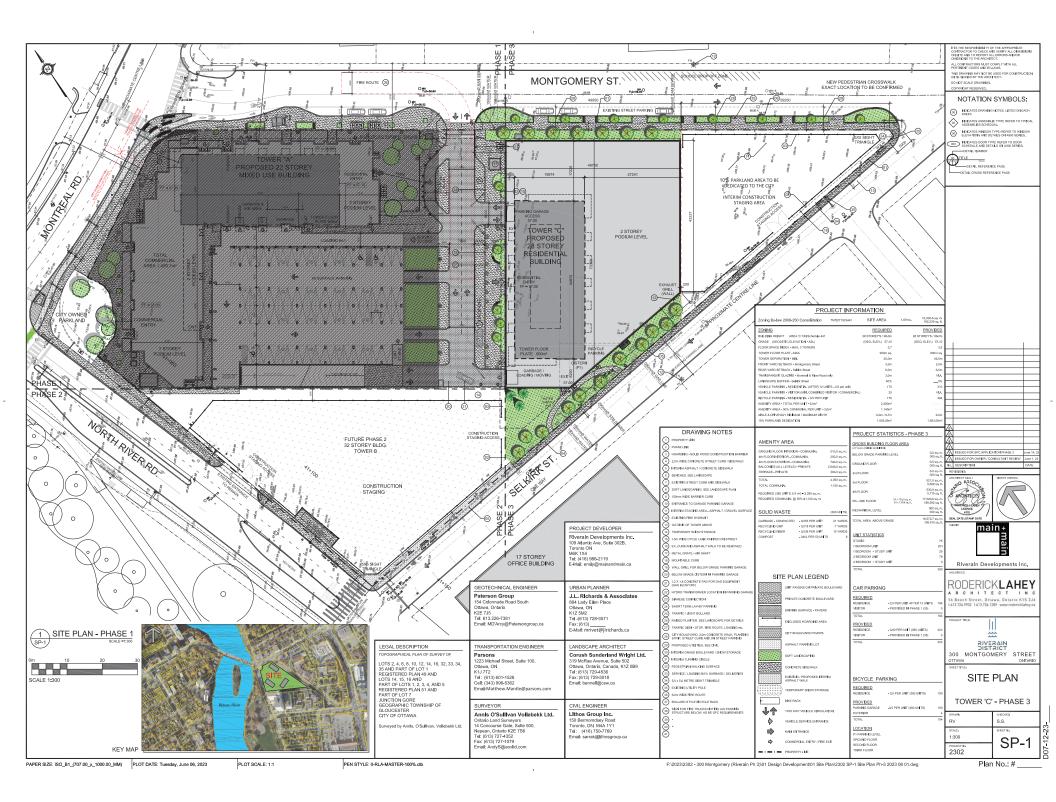
Existing and Projected 2025 Conditions Analysis

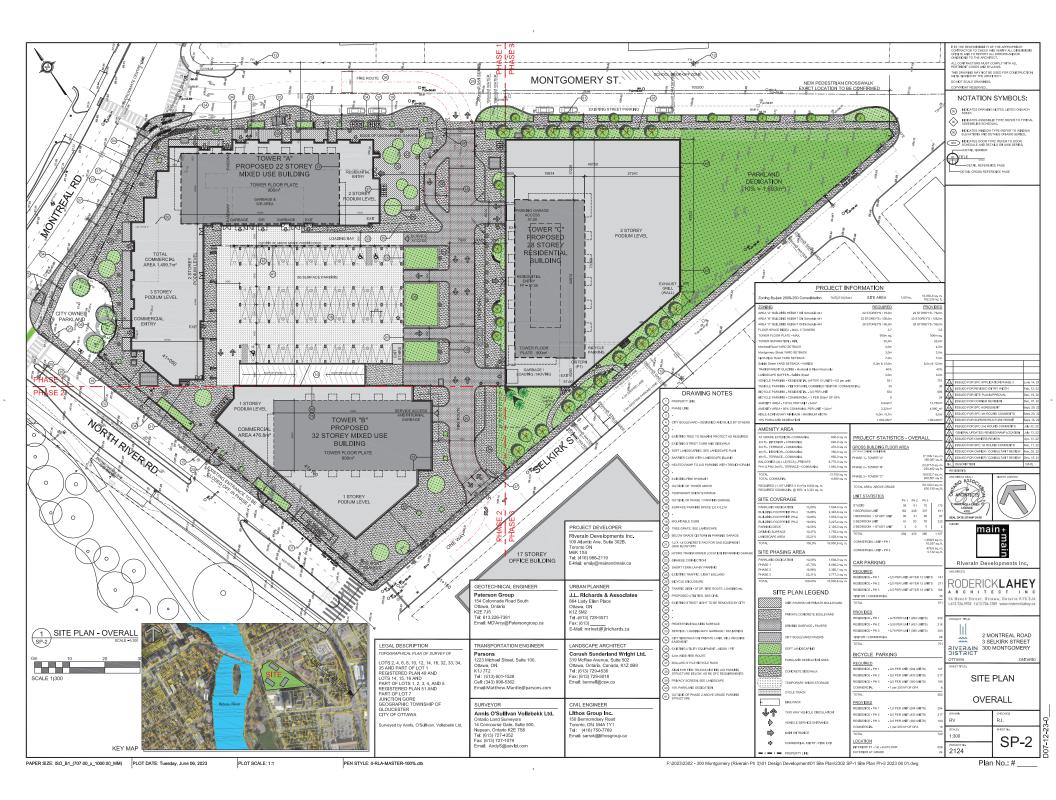
- In existing conditions, the study area intersections operate 'as a whole' with a LOS 'E' or better during peak hours, except for the intersection of Vanier/McArthur, which operates at capacity during the afternoon peak hour. With regards to critical movements, the WBL at the Vanier/McArthur intersection operate at capacity during the afternoon peak hour.
- For the 2025 horizon year, operations at study area intersections are mostly similar or slightly better compared to existing conditions. This is due to optimizing phase times at all signalized intersections and increasing PHF to 1.0 as per TIA Guidelines. However, delays and v/c ratios at the North River/Montreal intersections are expected to increase slightly as a result of the increase in future site-generated traffic.
- Existing and total projected 2025 peak hour traffic volumes on Montgomery St, Selkirk St and Dundas St all exceed the ideal threshold of a local road as set by the TIA Guidelines. However, given the future proposed traffic calming measures along each of Montgomery St and Selkirk St, traffic infiltration from non-local traffic is expected to be significantly reduced. Therefore, no further modifications are currently proposed to address the existing and future traffic volumes along the local roads.

Based on the foregoing and as stated in previous TIA Report submissions, the proposed development is recommended to proceed from a transportation perspective.

APPENDIX A SITE PLANS



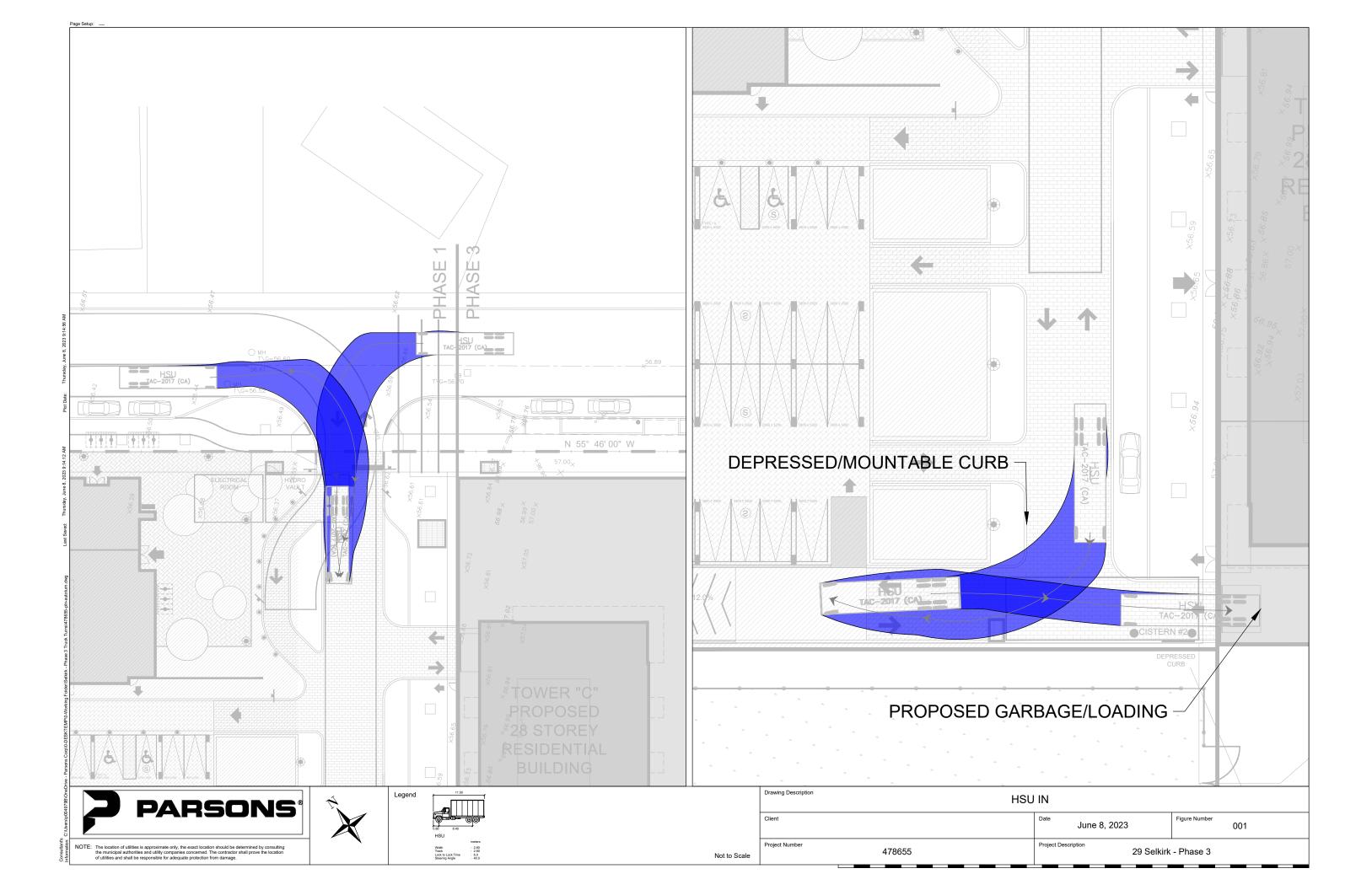


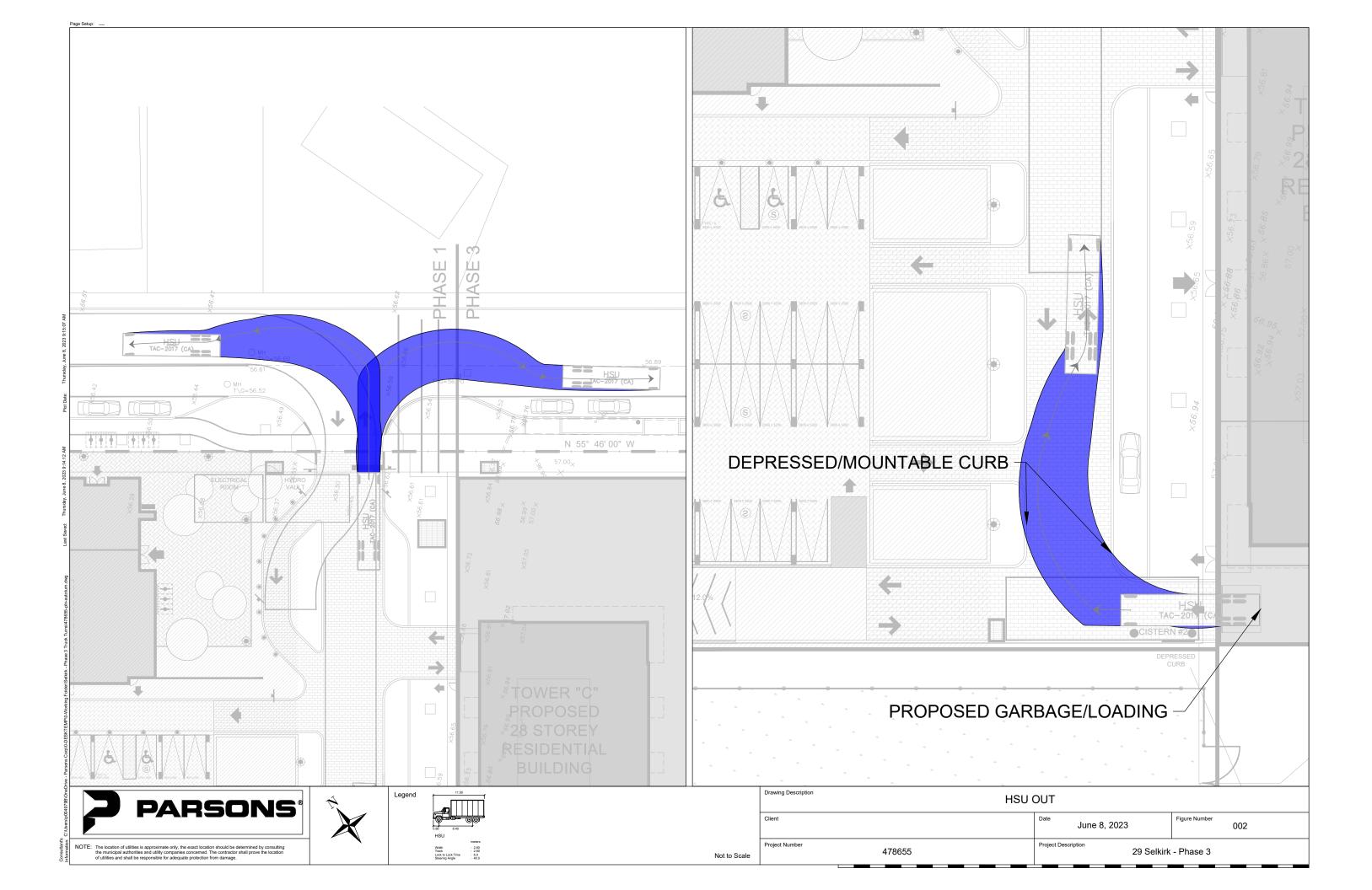


APPENDIX B

TRUCK TURNING TEMPLATES







APPENDIX C

RESIDENTIAL TDM MEASURES CHECKLIST



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-s	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-s	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 onroad 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-s	supportive design & infrastructure measures: Residential developments	Check if completed & add descriptions, explanations or plan/drawing references
	2.	WALKING & CYCLING: END-OF-TRIP FACILI	TIES
	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 multifamily 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-s	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 The measure is generally feasible and effective, and in most cases would benefit the development and its users 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 & des	tinations
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances (multi-family, condominium)	✓ To be provided at main entries.
	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)	To be provided at main entries.
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 (<i>multi-family</i>)	✓Will be sought for during construction, if available.
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	☐ Car sharing to be included, provider to be determined.
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)	✓ Residential costs to be unbundled.

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	✓ To be provided on move-in.
6.2	Personalized trip planning	
BETTER ★ 6.2.1	Offer personalized trip planning to new residents	

APPENDIX D

SYNCHRO ANALYSIS REPORTS



	→	←	4	†	ļ	
Lane Group	EBT	WBT	NBL	NBT	SBT	Ø9
Lane Configurations	∳ ሴ	≜ 15	*	ĵ,	43-	
Traffic Volume (vph)	402	585	234	10	59	
Future Volume (vph)	402	585	234	10	59	
Lane Group Flow (vph)	868	664	260	44	102	
Turn Type	NA	NA	Prot	NA	NA	
Protected Phases	2	6	3	8	4	9
Permitted Phases	_	•	•	•	•	•
Detector Phase	2	6	3	8	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	21.7	21.7	11.5	24.5	16.5	24.5
Total Split (s)	29.0	29.0	24.0	49.0	17.0	25.0
Total Split (%)	30.5%	30.5%	25.3%	51.6%	17.9%	26%
Yellow Time (s)	3.0	3.0	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.2	3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	J.Z
Total Lost Time (s)	6.7	6.7	6.5	6.5	6.5	
Lead/Lag	0.1	0.1	Lag	0.5	0.0	Lead
Lead-Lag Optimize?			Yes			Yes
Recall Mode	C-Min	C-Min	None	Min	None	None
Act Effct Green (s)	44.6	44.6	18.8	23.7	10.3	NOHE
Actuated g/C Ratio	44.6 0.47	0.47	0.20	0.25	0.11	
<u> </u>						
v/c Ratio	0.62	0.42	0.77	0.11	0.53	
Control Delay	26.0 0.0	21.7	52.8	10.0	47.0	
Queue Delay		1.3	0.0	0.0	0.0	
Total Delay	26.0	23.0	52.8	10.0	47.0	
LOS	C	C	D	B	D	
Approach Delay	26.0	23.0		46.6	47.0	
Approach LOS	C	C	44.0	D	D	
Queue Length 50th (m)	61.5	41.3	44.2	1.6	16.3	
Queue Length 95th (m)	#141.9	#88.2	#84.7	6.9	32.4	
Internal Link Dist (m)	105.3	52.9		0.1	56.2	
Turn Bay Length (m)			35.0			
Base Capacity (vph)	1389	1583	348	694	197	
Starvation Cap Reductn	0	674	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.62	0.73	0.75	0.06	0.52	

Cycle Length: 95

Actuated Cycle Length: 95

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 29.3

Intersection Capacity Utilization 57.3%

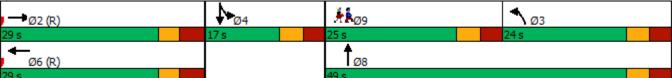
Intersection LOS: C ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: North River & Montreal



	-	•	•	1	/		
Lane Group	EBT	WBL	WBT	NBL	NBR		
Lane Configurations	∳ ሴ		413	*	7		
Traffic Volume (vph)	431	53	689	19	38		
Future Volume (vph)	431	53	689	19	38		
Lane Group Flow (vph)	577	0	825	21	42		
Turn Type	NA	Perm	NA	Prot	Perm		
Protected Phases	2	1 01111	6	8	1 01111		
Permitted Phases		6	U	U	8		
Detector Phase	2	6	6	8	8		
Switch Phase	2	U	U	U	0		
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		
Minimum Split (s)	39.9	15.9	15.9	19.5	19.5		
Total Split (s)	56.0	56.0	56.0	24.0	24.0		
Total Split (%)	70.0%	70.0%	70.0%	30.0%	30.0%		
	3.3	3.3	3.3	3.3	3.3		
Yellow Time (s)	2.6	2.6	2.6	2.2	2.2		
All-Red Time (s)		2.0					
Lost Time Adjust (s)	0.0		0.0	0.0	0.0		
Total Lost Time (s)	5.9		5.9	5.5	5.5		
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	C-Min	C-Min	C-Min	None	None		
Act Effct Green (s)	67.2		67.2	10.0	10.0		
Actuated g/C Ratio	0.84		0.84	0.12	0.12		
v/c Ratio	0.21		0.33	0.10	0.19		
Control Delay	2.5		3.3	32.4	12.9		
Queue Delay	0.3		0.0	0.0	0.0		
Total Delay	2.8		3.3	32.4	12.9		
LOS	Α		Α	С	В		
Approach Delay	2.8		3.3	19.4			
Approach LOS	Α		Α	В			
Queue Length 50th (m)	10.5		19.6	2.9	0.0		
Queue Length 95th (m)	15.3		27.0	9.2	8.6		
Internal Link Dist (m)	52.9		246.0	77.9			
Turn Bay Length (m)							
Base Capacity (vph)	2762		2474	391	383		
Starvation Cap Reductn	1494		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.46		0.33	0.05	0.11		
Intersection Summary							
Cycle Length: 80							
Actuated Cycle Length: 80	O.FDT and C	SAMPTI OF	at of Carr				
Offset: 0 (0%), Referenced to phase	Z.EBT and b	o.wbil, Sta	art of Green				
Natural Cycle: 60							
Control Type: Actuated-Coordinated							
Maximum v/c Ratio: 0.33					" 100 1		
Intersection Signal Delay: 3.8	0/				ersection LOS: A		
Intersection Capacity Utilization 72.89	%			IC	U Level of Service C		
Analysis Period (min) 15							
Splits and Phases: 2: Montgomery	& Montreal						
						1	
J → Ø2 (R)						J	
56 s							
4-						٦	
▼ Ø6 (R)						™ Ø8	

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	ች	•	#	*	ÅЪ	*	ቀ ቀኄ	*	ተ ቀሴ
Traffic Volume (vph)	39	316	150	165	484	183	857	213	1096
Future Volume (vph)	39	316	150	165	484	183	857	213	1096
Lane Group Flow (vph)	43	351	167	183	754	203	1136	237	1374
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4	1 01111	3	8	5	2	1	6
Permitted Phases	4	7	4	8	U	J			U
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase	r	7	7	3	U	J			U
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	10.7	39.6	39.6	10.7	39.6	11.1	28.9	11.1	28.9
Total Split (s)	16.0	40.0	40.0	16.0	40.0	29.0	55.0	29.0	55.0
Total Split (%)	11.4%	28.6%	28.6%	11.4%	28.6%	20.7%	39.3%	20.7%	39.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	3.3	3.3	2.4	3.3	2.4	2.2	2.4	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7	6.6	6.6	5.7	6.6	6.1	5.9	6.1	5.9
Lead/Lag	Lead			Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Lag Yes	Lag Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
	39.8	31.0	31.0	46.6	37.0	20.4	51.2	22.0	52.7
Act Effct Green (s)		0.22	0.22	0.33	0.26	0.15	0.37	0.16	0.38
Actuated g/C Ratio	0.28		0.22	0.33	0.26	0.15	0.37	0.16	0.38
v/c Ratio	0.27 34.1	0.89 77.0	0.38 8.5	64.6	58.9			90.8	41.9
Control Delay						91.5	34.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.1	77.0	8.5	64.6	58.9	91.5	34.5	90.8	41.9
LOS	С	E	Α	E	E	F	C	F	D
Approach Delay		53.3			60.0		43.1		49.1
Approach LOS		D		00.0	E		D	010	D
Queue Length 50th (m)	7.8	92.8	0.0	36.3	101.8	59.7	55.9	64.6	124.2
Queue Length 95th (m)	16.4	#139.7	18.3	#69.7	#144.2	m79.8	72.3	#109.4	144.1
Internal Link Dist (m)		246.0			113.1		139.9		106.8
Turn Bay Length (m)	35.0	405	40.1	40.0	004	95.0	47.40	90.0	4000
Base Capacity (vph)	190	425	464	222	864	277	1740	277	1800
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.83	0.36	0.82	0.87	0.73	0.65	0.86	0.76

Cycle Length: 140
Actuated Cycle Length: 140

Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 50.1

Intersection Capacity Utilization 91.7%

Intersection LOS: D ICU Level of Service F

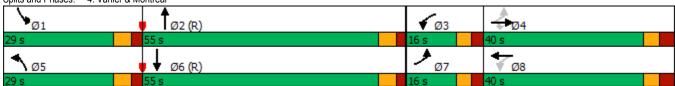
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



	•	→	•	←	•	4	†	-	. ↓
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		43-		र्दी	#		43-		₽.
Traffic Volume (vph)	1	6	8	9	165	3	125	332	102
Future Volume (vph)	1	6	8	9	165	3	125	332	102
Lane Group Flow (vph)	0	11	0	19	183	0	174	0	486
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4	•	8	•	8	2	_	6	
Detector Phase	4	4	8	8	8	2	2	6	6
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)	25.6	25.6	25.6	25.6	25.6	31.1	31.1	31.1	31.1
Total Split (s)	28.0	28.0	28.0	28.0	28.0	42.0	42.0	42.0	42.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
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)	2.3	2.3	2.3	2.3	2.3	2.8	2.8	2.8	2.8
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6	5.6		6.1		6.1
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		12.0		12.0	12.0		46.3		46.3
Actuated g/C Ratio		0.17		0.17	0.17		0.66		0.66
v/c Ratio		0.04		0.07	0.47		0.15		0.66
Control Delay		19.2		21.0	14.7		5.0		14.7
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		19.2		21.0	14.7		5.0		14.7
LOS		В		С	В		Α		В
Approach Delay		19.2		15.3			5.0		14.7
Approach LOS		В		В			Α		В
Queue Length 50th (m)		0.9		2.5	10.5		5.5		28.5
Queue Length 95th (m)		4.0		m5.3	m45.4		17.7		#102.4
Internal Link Dist (m)		19.4		126.4			86.5		58.5
Turn Bay Length (m)					100.0				
Base Capacity (vph)		535		505	575		1123		737
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.02		0.04	0.32		0.15		0.66

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 12.9

Intersection Capacity Utilization 74.0%

Intersection LOS: B ICU Level of Service D

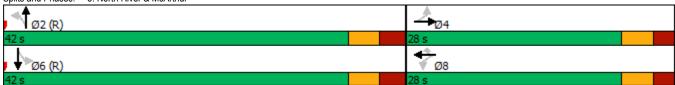
Analysis Period (min) 15

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: 5: North River & McArthur



	٠	→	*	•	-	4	•	†	/	/	Ţ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	•	7	16.56	•	7	*	44	7	*	44	7
Traffic Volume (vph)	34	112	279	209	191	104	220	1044	225	140	1207	60
Future Volume (vph)	34	112	279	209	191	104	220	1044	225	140	1207	60
Lane Group Flow (vph)	38	124	310	232	212	116	244	1160	250	156	1341	67
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	20.0	36.0	36.0	20.0	36.0	36.0	24.0	60.0	60.0	24.0	60.0	60.0
Total Split (%)	14.3%	25.7%	25.7%	14.3%	25.7%	25.7%	17.1%	42.9%	42.9%	17.1%	42.9%	42.9%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	8.6	22.4	22.4	13.2	29.4	29.4	23.8	63.5	63.5	16.3	55.9	55.9
Actuated g/C Ratio	0.06	0.16	0.16	0.09	0.21	0.21	0.17	0.45	0.45	0.12	0.40	0.40
v/c Ratio	0.37	0.44	0.72	0.75	0.57	0.31	0.85	0.75	0.36	0.79	0.99	0.11
Control Delay	73.2	53.6	27.4	77.1	55.5	8.9	82.0	38.0	13.9	86.6	50.2	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.2	53.6	27.4	77.1	55.5	8.9	82.0	38.0	13.9	86.6	50.2	3.1
LOS	Е	D	С	Е	Е	Α	F	D	В	F	D	Α
Approach Delay		38.0			54.8			40.8			51.8	
Approach LOS		D			D			D			D	
Queue Length 50th (m)	9.6	32.5	28.9	32.6	50.2	0.0	~77.9	156.9	20.3	45.6	~93.1	0.2
Queue Length 95th (m)	m16.6	m44.6	59.8	46.8	77.8	14.7	#131.4	187.7	43.3	m60.4	#242.5	m2.5
Internal Link Dist (m)		119.1			163.5			123.8			129.2	
Turn Bay Length (m)	40.0		80.0	100.0		75.0	55.0		55.0	85.0		110.0
Base Capacity (vph)	167	379	493	324	408	401	288	1537	704	216	1354	637
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.33	0.63	0.72	0.52	0.29	0.85	0.75	0.36	0.72	0.99	0.11

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 46.4

Intersection Capacity Utilization 93.2%

Intersection LOS: D ICU Level of Service F

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Vanier & McArthur



	→	—	\
Lane Group	EBT	WBT	SBL
Lane Configurations	વી	î,	W
Traffic Volume (vph)	371	258	10
Future Volume (vph)	371	258	10
Lane Group Flow (vph)	423	375	29
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 42.2%			
Analysis Daried (min) 15			

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
	EDL			WBR		SBK
Lane Configurations	10	271	1	70	¥	10
Traffic Vol, veh/h	10	371	258	79	10	16
Future Vol, veh/h	10 91	371 0	258 0	79	10 1	16 11
Conflicting Peds, #/hr				91		
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	412	287	88	11	18
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	466	0	-	0	857	433
Stage 1	-	-	-	-	422	400
Stage 2	_	_	_	_	435	-
Critical Hdwy	4.12	_			6.42	6.22
Critical Hdwy Stg 1	4.12	-		-	5.42	0.22
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-		-	3.518	3.318
Pot Cap-1 Maneuver	1095				3.316	623
		-	-	-		023
Stage 1	-	-	-	-	662	
Stage 2	-	-	-	-	653	-
Platoon blocked, %	4044	-	-	-	070	570
Mov Cap-1 Maneuver	1011	-	-	-	276	570
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	602	-
Stage 2	-	-	-	-	603	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.2		0		14.6	
HCM LOS	0.2		U		14.0 B	
TIOW LOS					D	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		1011	-	-	-	404
HCM Lane V/C Ratio		0.011	-	-	-	0.072
HCM Control Delay (s)		8.6	0	-	-	14.6
HCM Lane LOS		Α	Α	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.2
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Lane Group	EBT	WBT	SBL	
Lane Configurations	र्व	ĵ.	**	<u> </u>
Traffic Volume (vph)	377	1	4	
Future Volume (vph)	377	337	4	
Lane Group Flow (vph)	419	374	8	
Sign Control	Free	Free	Stop	
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 30.9%	0			ICU Level of Service A

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	LDL	4	t _a	WDIX	SDL W	ODK
Traffic Vol, veh/h	0	377	337	0	4	4
Future Vol. veh/h	0	377	337	0	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	-	_	-	0	-
Veh in Median Storage, #	_	0	0	_	0	_
Grade, %	_	0	0	-	0	_
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	0	419	374	0	4	4
IVIVIIIL I IOW	U	413	314	U	7	7
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	374	0	-	0	793	374
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	419	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1184	-	-	-	358	672
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1184	-	-	-	358	672
Mov Cap-2 Maneuver	-	-	-	-	358	-
Stage 1	-	-	-	-	696	-
Stage 2	-	-	-	-	664	-
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		12.9	
HCM LOS	U		U		12.9 B	
HUM LOS					В	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		1184	-	-	-	467
HCM Lane V/C Ratio		-	-	-	-	0.019
HCM Control Delay (s)		0	-	-	-	12.9
HCM Lane LOS		Α	-	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.1
(-)						

	•	4	†	
Lane Group	WBL	WBR	NBT	SBT
Lane Configurations	*	#	•	^
Traffic Volume (vph)	27	34	235	397
Future Volume (vph)	27	34	235	397
Lane Group Flow (vph)	30	38	262	441
Sign Control	Stop		Free	Free
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 23.3%	1			ICL

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7	A			**
Traffic Vol., veh/h	27	34	235	1	0	397
Future Vol. veh/h	27	34	235	1	0	397
Conflicting Peds, #/hr	3	0	0	90	90	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	- -	None	-	None	-	None
Storage Length	20	0	-	110116	-	-
Veh in Median Storage, #	0	-	0	-	_	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
	2	2	2	2	2	2
Heavy Vehicles, %						
Mvmt Flow	30	38	261	1	0	441
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	576	352	0	0	-	
Stage 1	352	-	_	-		_
Stage 2	224	_	_	_	_	_
Critical Hdwy	6.63	6.23				
Critical Hdwy Stg 1	5.43	0.23	-	-	-	-
	5.43		-			-
Critical Hdwy Stg 2		3.319		-	-	-
Follow-up Hdwy	3.519		-	-	-	
Pot Cap-1 Maneuver	463	691	-	-	0	-
Stage 1	711	-	-	-	0	-
Stage 2	793	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	426	638	-	-	-	-
Mov Cap-2 Maneuver	426	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	791	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	12.4		0		0	
			U		U	
HCM LOS	В					
Minor Lane/Major Mvmt		NBT	NBR	WBLn1	WBLn2	SBT
Capacity (veh/h)		-	_	426	638	_
HCM Lane V/C Ratio				0.07	0.059	_
HCM Control Delay (s)		-	-	14.1	11	_
HCM Lane LOS		_	_	В	В	_
HCM 95th %tile Q(veh)				0.2	0.2	_
HOW SOUL WILL CALABOT		-	-	0.2	0.2	_

	→	+	†	
Lane Group	EBT	WBT	NBT	SBT
Lane Configurations	44	43-	₽.	43-
Traffic Volume (vph)	36	4 28	29	44
Future Volume (vph)	36	28	29	44
Lane Group Flow (vph)	100	69	54	121
Sign Control	Stop	Stop	Free	Free
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 28.3%				ICU

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		43-			43-			43-			43-	
Traffic Vol, veh/h	36	36	18	5	28	29	14	29	5	44	44	21
Future Vol. veh/h	36	36	18	5	28	29	14	29	5	44	44	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	_	_	-	-	_	-	-	_	-	_		-
Veh in Median Storage, #	_	0	-	_	0	_	-	0	_	-	0	_
Grade, %	_	0	_	-	0	_	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mymt Flow	40	40	20	6	31	32	16	32	6	49	49	23
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	258	229	61	256	237	35	72	0	0	38	0	0
Stage 1	159	159	-	67	67	-	-	-	-	-	-	-
Stage 2	99	70	-	189	170	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-		-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	695	671	1004	697	664	1038	1528	-	-	1572	-	-
Stage 1	843	766	-	943	839	-	-	-	-	-	-	-
Stage 2	907	837	-	813	758	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	627	641	1004	629	635	1038	1528	-	-	1572	-	-
Mov Cap-2 Maneuver	627	641	-	629	635	-	-	-	-	-	-	-
Stage 1	834	741	-	933	830	-	-	-	-	-	-	-
Stage 2	837	828	-	729	733	-	-	-	-	-	-	-
Ü												
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.2			10.1			2.2			3		
HCM LOS	В			В								
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1528	-	-	684	775	1572	-	-			
HCM Lane V/C Ratio		0.01	-	-	0.146	0.089	0.031	-	-			
HCM Control Delay (s)		7.4	0	-	11.2	10.1	7.4	0	-			
HCM Lane LOS		Α	Α	-	В	В	Α	Α	-			
HCM 95th %tile Q(veh)		0	-	-	0.5	0.3	0.1	-	-			

	-	←	•	†	↓	
Lane Group	EBT	WBT	NBL	NBT	SBT	Ø9
Lane Configurations	↑ Ъ	† 12	ሻ	13	4	
Traffic Volume (vph)	583	620	356	17	65	
Future Volume (vph)	583	620	356	17	65	
Lane Group Flow (vph)	1186	693	396	53	118	
Turn Type	NA	NA	Prot	NA	NA	
Protected Phases	2	6	3	8	4	9
Permitted Phases	2	U	J	Ü	4	9
Detector Phase	2	6	3	8	4	
Switch Phase		U	J	0	4	
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
\ /	21.7	21.7	5.0 11.5	24.5	16.5	24.5
Minimum Split (s)	39.0	39.0	39.0	24.5 64.0	17.0	24.5 25.0
Total Split (s)						
Total Split (%)	32.5%	32.5%	32.5%	53.3%	14.2%	21%
Yellow Time (s)	3.0	3.0	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.2	3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.5	6.5	6.5	
Lead/Lag			Lag			Lead
Lead-Lag Optimize?			Yes			Yes
Recall Mode	C-Min	C-Min	None	Min	None	None
Act Effct Green (s)	52.9	52.9	32.1	37.0	10.4	
Actuated g/C Ratio	0.44	0.44	0.27	0.31	0.09	
v/c Ratio	0.93	0.47	0.87	0.11	0.76	
Control Delay	45.9	27.3	62.3	11.6	80.0	
Queue Delay	0.0	11.8	0.0	0.0	0.0	
Total Delay	45.9	39.1	62.3	11.6	80.0	
LOS	D	D	E	В	E	
Approach Delay	45.9	39.1		56.4	80.0	
Approach LOS	D	D		E	E	
Queue Length 50th (m)	130.4	56.7	87.0	3.2	25.8	
Queue Length 95th (m)	#246.3	101.0	#139.6	9.1	#55.3	
Internal Link Dist (m)	105.3	52.9	,, 100.0	0.4	56.2	
Turn Bay Length (m)	100.0	02.0	35.0	0.⊣	00.2	
Base Capacity (vph)	1279	1490	479	734	156	
Starvation Cap Reductn	0	773	0	0	0	
Spillback Cap Reductin	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.93	0.97	0.83	0.07	0.76	
Neudoed V/C Ralio	0.93	0.97	0.03	0.07	0.70	

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 47.5

Intersection Capacity Utilization 73.4%

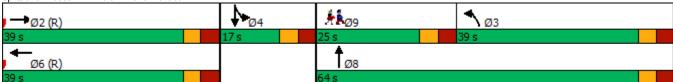
Intersection LOS: D
ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: North River & Montreal



	-	•	←	1	/			
Lane Group	EBT	WBL	WBT	NBL	NBR			
Lane Configurations	ቀ ኄ		ર્વ	*	7			
Traffic Volume (vph)	552	56	580	108	66			
Future Volume (vph)	552	56	580	108	66			
Lane Group Flow (vph)	721	0	706	120	73			
Turn Type	NA	Perm	NA	Prot	Perm			
Protected Phases	2		6	8				
Permitted Phases	=	6			8			
Detector Phase	2	6	6	8	8			
Switch Phase	_	•		•	v			
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0			
Minimum Split (s)	39.9	15.9	15.9	19.5	19.5			
Total Split (s)	76.0	76.0	76.0	24.0	24.0			
Total Split (%)	76.0%	76.0%	76.0%	24.0%	24.0%			
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3			
All-Red Time (s)	2.6	2.6	2.6	2.2	2.2			
Lost Time Adjust (s)	0.0	2.0	0.0	0.0	0.0			
Total Lost Time (s)	5.9		5.9	5.5	5.5			
Lead/Lag	0.0		0.0	0.0	0.0			
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	None	None			
Act Effct Green (s)	75.7	O-IVIIII	75.7	12.9	12.9			
Actuated g/C Ratio	0.76		0.76	0.13	0.13			
v/c Ratio	0.70		0.76	0.13	0.13			
Control Delay	4.1		10.1	50.1	12.2			
Queue Delay	1.5		0.0	0.0	0.0			
Total Delay	5.6		10.1	50.1	12.2			
LOS	3.0 A		10.1 B	50.1 D	12.2 B			
	5.6		10.1	35.8	D			
Approach LOS	5.6 A		10.1 B	35.6 D				
Approach LOS Queue Length 50th (m)	16.7		53.0	22.3	0.0			
					11.6			
Queue Length 95th (m)	28.4 52.9		107.9 171.6	37.8 77.9	11.0			
Internal Link Dist (m)	52.9		17 1.0	11.9				
Turn Bay Length (m)	2400		1074	242	329			
Base Capacity (vph)	2498 1533		0	313				
Starvation Cap Reductn			0	0	0			
Spillback Cap Reductn	0		0	0	0			
Storage Cap Reductn Reduced v/c Ratio	0.75		0.66	0 0.38	0.22			
Reduced V/C Rallo	0.75		0.00	0.30	0.22			
Intersection Summary								
Cycle Length: 100								
Actuated Cycle Length: 100								
Offset: 0 (0%), Referenced to phase 2	2:EBT and (6:WBTL, Sta	art of Green					
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.66								
Intersection Signal Delay: 11.2				Int	tersection LOS: B			
Intersection Capacity Utilization 87.79	%			IC	U Level of Service E	E		
Analysis Period (min) 15								
Splits and Phases: 2: Montgomery	& Montreal							
							- 1	
J → Ø2 (R)								
76 s								
+ ac (n)							◆ don	
∮ Ø6 (R)							Yø8	

	•	→	•	•	←	4	†	\	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	*	•	7	75	∳ ሴ	*	ተ ቀኄ	*	ቀ ቀኄ
Traffic Volume (vph)	51	369	178	156	338	233	1011	142	1019
Future Volume (vph)	51	369	178	156	338	233	1011	142	1019
Lane Group Flow (vph)	57	410	198	173	596	259	1356	158	1238
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	10.7	39.6	39.6	10.7	39.6	11.1	28.9	11.1	28.9
Total Split (s)	12.0	40.0	40.0	12.0	40.0	34.0	54.0	34.0	54.0
Total Split (%)	8.6%	28.6%	28.6%	8.6%	28.6%	24.3%	38.6%	24.3%	38.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	3.3	3.3	2.4	3.3	2.4	2.2	2.4	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7	6.6	6.6	5.7	6.6	6.1	5.9	6.1	5.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	41.0	33.2	33.2	46.7	39.0	25.0	53.8	18.3	47.1
Actuated g/C Ratio	0.29	0.24	0.24	0.33	0.28	0.18	0.38	0.13	0.34
v/c Ratio	0.27	0.97	0.42	0.94	0.65	0.86	0.75	0.71	0.77
Control Delay	35.2	89.4	10.9	92.7	43.7	87.4	34.9	75.5	44.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.2	89.4	10.9	92.7	43.7	87.4	34.9	75.5	44.9
LOS	D	F	В	F	D	F	С	Е	D
Approach Delay		61.4			54.7		43.3		48.3
Approach LOS		Е			D		D		D
Queue Length 50th (m)	10.6	113.1	4.1	~37.4	71.0	75.5	66.6	42.6	111.5
Queue Length 95th (m)	21.4	#177.0	25.1	#93.2	92.7	m84.8	m72.6	63.5	127.6
Internal Link Dist (m)		50.3			113.1		139.9		106.8
Turn Bay Length (m)	35.0			40.0		95.0		90.0	
Base Capacity (vph)	211	425	471	184	917	337	1812	337	1646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.96	0.42	0.94	0.65	0.77	0.75	0.47	0.75

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 49.6

Intersection Capacity Utilization 92.4%

Intersection LOS: D ICU Level of Service F

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

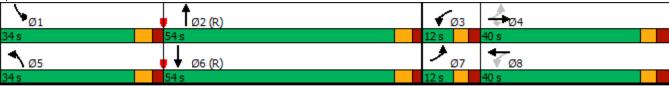
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		₽.		વી	#		₽.		43-
Traffic Volume (vph)	4	25	24	11	217	2	148	409	139
Future Volume (vph)	4	25	24	11	217	2	148	409	139
Lane Group Flow (vph)	0	39	0	39	241	0	206	0	609
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4	•	8	•	8	2	_	6	•
Detector Phase	4	4	8	8	8	2	2	6	6
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)	25.6	25.6	25.6	25.6	25.6	31.1	31.1	31.1	31.1
Total Split (s)	26.0	26.0	26.0	26.0	26.0	49.0	49.0	49.0	49.0
Total Split (%)	34.7%	34.7%	34.7%	34.7%	34.7%	65.3%	65.3%	65.3%	65.3%
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)	2.3	2.3	2.3	2.3	2.3	2.8	2.8	2.8	2.8
Lost Time Adjust (s)	0	0.0		0.0	0.0		0.0	5	0.0
Total Lost Time (s)		5.6		5.6	5.6		6.1		6.1
Lead/Lag		0.0		0.0	0.0		• • • • • • • • • • • • • • • • • • • •		• • • • • • • • • • • • • • • • • • • •
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	110.110	14.0	110110	14.0	14.0	•	49.3	•	49.3
Actuated g/C Ratio		0.19		0.19	0.19		0.66		0.66
v/c Ratio		0.12		0.15	0.54		0.19		0.86
Control Delay		20.5		24.5	8.1		5.7		28.1
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		20.5		24.5	8.1		5.7		28.1
LOS		C		C	A		A		C
Approach Delay		20.5		10.4	.,		5.7		28.1
Approach LOS		C		В			A		C
Queue Length 50th (m)		4.1		5.0	0.0		6.7		46.5
Queue Length 95th (m)		10.1		11.0	15.5		20.3		#147.0
Internal Link Dist (m)		19.4		126.4			86.5		58.5
Turn Bay Length (m)					100.0				
Base Capacity (vph)		459		379	546		1113		708
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.08		0.10	0.44		0.19		0.86
Intersection Summary									
Cycle Length: 75									
Cycle Length. 75									

Actuated Cycle Length: 75

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 19.4

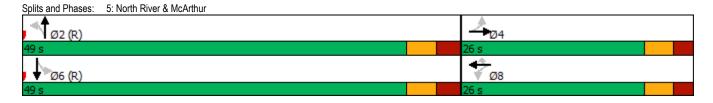
Intersection Capacity Utilization 81.9%

Intersection LOS: B 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.



	•	→	•	•	+	•	1	†	/	/	+	-√
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	•	7	14.54	•	7	¥	44	*	7	44	7
Traffic Volume (vph)	55	246	472	333	218	170	206	1198	251	122	1178	66
Future Volume (vph)	55	246	472	333	218	170	206	1198	251	122	1178	66
Lane Group Flow (vph)	61	273	524	370	242	189	229	1331	279	136	1309	73
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	18.0	36.0	36.0	18.0	36.0	36.0	31.0	63.0	63.0	23.0	55.0	55.0
Total Split (%)	12.9%	25.7%	25.7%	12.9%	25.7%	25.7%	22.1%	45.0%	45.0%	16.4%	39.3%	39.3%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.8	29.8	29.8	11.8	34.3	34.3	22.4	58.8	58.8	15.0	51.4	51.4
Actuated g/C Ratio	0.07	0.21	0.21	0.08	0.24	0.24	0.16	0.42	0.42	0.11	0.37	0.37
v/c Ratio	0.52	0.72	1.07	1.34	0.55	0.39	0.85	0.94	0.42	0.75	1.05	0.13
Control Delay	77.7	63.2	85.2	220.7	53.6	8.5	83.1	51.9	15.8	81.8	73.0	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.7	63.2	85.2	220.7	53.6	8.5	83.1	51.9	15.8	81.8	73.0	2.0
LOS	E	Ε	F	F	D	Α	F	D	В	F	E	Α
Approach Delay		77.7			120.1			50.3			70.4	
Approach LOS		Е			F			D			E	
Queue Length 50th (m)	16.5	70.9	~99.4	~68.5	60.8	0.0	61.2	187.1	25.5	39.1	~204.5	0.3
Queue Length 95th (m)	31.3	102.8	#169.3	#100.2	90.7	20.3	#97.2	#236.7	49.7	m52.6	m#249.2	m2.0
Internal Link Dist (m)		119.1			163.5			123.8			129.2	
Turn Bay Length (m)	40.0		80.0	100.0		75.0	55.0		55.0	85.0		110.0
Base Capacity (vph)	142	379	492	277	437	483	301	1423	669	204	1243	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.72	1.07	1.34	0.55	0.39	0.76	0.94	0.42	0.67	1.05	0.13

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

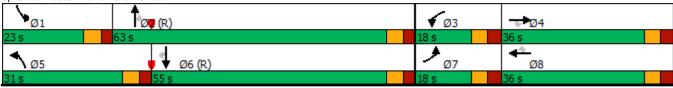
Control Type: Actuated-Coordinated Maximum v/c Ratio: 1.34 Intersection Signal Delay: 72.2

Intersection LOS: E ICU Level of Service G

Intersection Capacity Utilization 100.8% Analysis Period (min) 15

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

Splits and Phases: 6: Vanier & McArthur



	→	←	\
Lane Group	EBT	WBT	SBL
Lane Configurations	4	ĵ.	W
Traffic Volume (vph)	474	1 292	26
Future Volume (vph)	474	292	26
Lane Group Flow (vph)	535	426	33
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 44.8%			
Ameliania Desiral (min) 45			

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	CDL			VVDR	SBL	SDR
Traffic Vol, veh/h	7	₄ 474	1 292	92	26	4
	7	474	292			4
Future Vol, veh/h	76	4/4	292	92 76	26 0	9
Conflicting Peds, #/hr						
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	527	324	102	29	4
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	502	0	-	0	994	460
Stage 1	-	-	-	-	451	-
Stage 2		_	_	_	543	_
Critical Hdwy	4.12	_	_	_	6.42	6.22
Critical Hdwy Stg 1	4.12	-	-	-	5.42	0.22
Critical Hdwy Stg 2	-		-	-	5.42	-
Follow-up Hdwy	2.218	-	-		3.518	3.318
Pot Cap-1 Maneuver	1062			-	272	601
	1002	-	-	-	642	- 001
Stage 1	-	-	-	-	582	
Stage 2	-		_	-	582	-
Platoon blocked, %	004	-	-	-	000	550
Mov Cap-1 Maneuver	994	-	-	-	236	558
Mov Cap-2 Maneuver	-	-	-	-	236	-
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	545	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.1		0		21.2	
HCM LOS	0.1		U		21.2 C	
HUM LOS					C	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		994	-	-	-	256
HCM Lane V/C Ratio		0.008	-	-	-	0.13
HCM Control Delay (s)		8.7	0	-	-	21.2
HCM Lane LOS		Α	A	-	-	С
HCM 95th %tile Q(veh)		0	-	-	-	0.4
(- 311)						

	→	+	/	
Lane Group	EBT	WBT	SBL	
Lane Configurations	4	ĵ.	W	_
Traffic Volume (vph)	496	384	8	
Future Volume (vph)	496	384	8	
Lane Group Flow (vph)	551	427	18	
Sign Control	Free	Free	Stop	
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 37.69	%			ICU Level of Service A

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	ĵ.		W	-02.1
Traffic Vol, veh/h	0	496	384	0	8	8
Future Vol. veh/h	0	496	384	0	8	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	_	-	-	-	0	INOTIC
Veh in Median Storage, #		0	0		0	
Grade, %	-	0	0	-	0	-
,						
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	551	427	0	9	9
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	427	0	-	0	978	427
Stage 1	421	-		-	427	-
	-		-	-	551	-
Stage 2	4.12				6.42	6.22
Critical Hdwy		-	-	-		
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2		-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1132	-	-	-	278	628
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	577	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1132	-	-	-	278	628
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	658	-
Stage 2		_	_	_	577	_
- 1.1.gv <u>-</u>						
			WD		0.0	
Approach	EB		WB		SB	
HCM Control Delay, s	0		0		14.8	
HCM LOS					В	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WDD	SBLn1
		1132				385
Capacity (veh/h)			-	-	-	0.046
HCM Lane V/C Ratio		-	-	-	-	
HCM Control Delay (s)		0	-	-	-	14.8
HCM Lane LOS		A	-	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.1

	•	4	†		
Lane Group	WBL	WBR	NBT	SBT	
Lane Configurations	75	#	•	^	
Traffic Volume (vph)	115	49	425	454	
Future Volume (vph)	115	49	425	454	
Lane Group Flow (vph)	128	54	472	504	
Sign Control	Stop		Free	Free	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 37.4%				ICL	J Level of Service A

Intersection						
Int Delay, s/veh	2.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	*	7				44
Traffic Vol., veh/h	115	49	425	0	0	454
Future Vol, veh/h	115	49	425	0	0	454
Conflicting Peds, #/hr	2	2	0	66	66	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	Stop -	None	-	None	-	None
Storage Length	20	0	-	NOHE -	-	None -
	0					0
Veh in Median Storage, #	-	-	0	-	-	_
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	54	472	0	0	504
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	726	474	0	_	-	
	472	4/4	-			
Stage 1				-	-	-
Stage 2	254	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	375	590	-	0	0	-
Stage 1	627	-	-	0	0	-
Stage 2	766	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	374	589	_	-	-	-
Mov Cap-2 Maneuver	374	-	-	_		_
Stage 1	627	_	_	_	-	_
Stage 2	764		_	-	_	_
Staye 2	704	-				
Approach	WB		NB		SB	
HCM Control Delay, s	17.2		0		0	
HCM LOS	С					
Minor Lane/Major Mvmt		NBT		WBLn2	SBT	
Capacity (veh/h)		-	374	589	-	
HCM Lane V/C Ratio		-	0.342	0.092	-	
HCM Control Delay (s)		-	19.5	11.7	-	
HCM Lane LOS		-	С	В	-	
HCM 95th %tile Q(veh)		-	1.5	0.3	-	
304 /040 4(1011)			0	0.0		

The state of the s					
	→	←	†	↓	
Lane Group	EBT	WBT	NBT	SBT	
Lane Configurations	₽	43-	₽.	414	_
Traffic Volume (vph)	40	77	87	♣ 65	
Future Volume (vph)	40	77	87	65	
Lane Group Flow (vph)	110	189	145	178	
Sign Control	Stop	Stop	Free	Free	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 40.3%	0			ICI	J Level of Service A

Late and the												
Intersection	8											
Int Delay, s/veh	Ö											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		₽.			♣ 77			43-			43-	
Traffic Vol, veh/h	40	40	20	5	77	87	38	87	5	65	65	31
Future Vol, veh/h	40	40	20	5	77	87	38	87	5	65	65	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	44	22	6	86	97	42	97	6	72	72	34
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	509	420	89	450	434	100	106	0	0	103	0	0
Stage 1	233	233	-	184	184	-	-	-	-	-	-	-
Stage 2	276	187	-	266	250	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	475	525	969	519	515	956	1485	-	-	1489	-	-
Stage 1	770	712	-	818	747	-	-	-	-	-	-	-
Stage 2	730	745	-	739	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	346	483	969	443	474	956	1485	-	-	1489	-	-
Mov Cap-2 Maneuver	346	483	-	443	474	-	-	-	-	-	-	-
Stage 1	747	675	-	793	725	-	-	-	-	-	-	-
Stage 2	561	723	-	639	664	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15.4			13			2.2			3		
HCM LOS	C			В								
=												
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1485	ND1	NDIX	456	638	1489	- 301	JUN -			
HCM Lane V/C Ratio		0.028	-	-	0.244	0.294	0.049	-				
HCM Control Delay (s)		7.5	0	-	15.4	13	7.5	0	-			
HCM Lane LOS		7.5 A	A	-	15.4 C	B	7.5 A	A	-			
HCM 95th %tile Q(veh)		0.1	Α -	-	0.9	1.2	0.2	A -	-			
HOW SOUL WILLE CLASSIN		U. I	-	-	0.9	1.2	0.2	-	-			

	-	←	4	†	ļ	
Lane Group	EBT	WBT	NBL	NBT	SBT	Ø9
Lane Configurations	♦ %	ቀ ኄ	*	ĵ,	₽.	
Traffic Volume (vph)	420	613	240	10	59	
Future Volume (vph)	420	613	240	10	59	
Lane Group Flow (vph)	789	626	240	62	91	
Turn Type	NA	NA	Prot	NA	NA	
Protected Phases	2	6	3	8	4	9
Permitted Phases	_	•	•	· ·	•	· ·
Detector Phase	2	6	3	8	4	
Switch Phase					•	
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	21.7	21.7	11.5	24.5	16.5	24.5
Total Split (s)	33.7	33.7	20.3	44.8	16.5	24.5
Total Split (%)	35.5%	35.5%	21.4%	47.2%	17.4%	26%
Yellow Time (s)	3.0	33.5%	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.2	3.2	3.2	3.2
	0.0	0.0	0.0	0.0	0.0	ა.2
Lost Time Adjust (s) Total Lost Time (s)	6.7	6.7	6.5	6.5	6.5	
Lead/Lag	0.7	0.7	Lag	0.5	0.5	Lead
Lead-Lag Optimize?			Yes			Yes
Recall Mode	C-Min	C-Min	None	Min	None	None
					10.0	None
Act Effct Green (s)	38.2	38.2	15.7	30.4		
Actuated g/C Ratio	0.40	0.40	0.17	0.32	0.11	
v/c Ratio	0.68	0.46	0.86	0.12	0.49	
Control Delay	31.9	25.9	68.3	7.2	46.1	
Queue Delay	0.0	0.7	0.0	0.0	0.0	
Total Delay	31.9	26.6	68.3	7.2	46.1	
LOS	С	С	E	A	D	
Approach Delay	31.9	26.6		55.7	46.1	
Approach LOS	С	С		Е	D	
Queue Length 50th (m)	74.8	52.7	44.4	1.1	14.6	
Queue Length 95th (m)	#112.6	71.1	#89.9	8.6	29.7	
Internal Link Dist (m)	105.3	52.9		6.0	56.2	
Turn Bay Length (m)			35.0			
Base Capacity (vph)	1155	1355	280	611	186	
Starvation Cap Reductn	0	400	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.68	0.66	0.86	0.10	0.49	
Intersection Summary						
Cycle Length: 95						
Actuated Cycle Length: 95						

Actuated Cycle Length: 95

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 34.8

Intersection Capacity Utilization 58.3%

Intersection LOS: C 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.



	-	•	•	4	~	
Lane Group	EBT	WBL	WBT	NBL	NBR	
Lane Configurations	≜ ሴ		413	*	#	
Traffic Volume (vph)	460	45	689	47	71	
Future Volume (vph)	460	45	689	47	71	
Lane Group Flow (vph)	559	0	734	47	71	
Turn Type	NA	Perm	NA	Prot	Perm	
Protected Phases	2		6	8		
Permitted Phases		6			8	
Detector Phase	2	6	6	8	8	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	39.9	15.9	15.9	19.5	19.5	
Total Split (s)	52.0	52.0	52.0	28.0	28.0	
Total Split (%)	65.0%	65.0%	65.0%	35.0%	35.0%	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	2.6	2.6	2.6	2.2	2.2	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.9		5.9	5.5	5.5	
Lead/Lag						
Lead-Lag Optimize?	0.14	0.14	0.44	M	NI.	
Recall Mode	C-Min	C-Min	C-Min	None	None	
Act Effet Green (s)	62.1		62.1	10.8	10.8	
Actuated g/C Ratio	0.78		0.78	0.14	0.14	
v/c Ratio	0.22		0.31	0.21	0.28	
Control Delay	3.4		4.2	32.6	11.2	
Queue Delay	0.5 3.8		0.0 4.2	0.0 32.6	0.0 11.2	
Total Delay LOS	3.8 A		4.2 A	32.6 C	11.2 B	
Approach Delay	3.8		4.2	19.7	Б	
Approach LOS	3.8 A		4.2 A	19.7 B		
Queue Length 50th (m)	10.2		16.5	6.5	0.0	
Queue Length 95th (m)	18.6		29.1	15.1	10.3	
Internal Link Dist (m)	52.9		246.0	77.9	10.3	
Turn Bay Length (m)	JZ.J		240.0	11.5		
Base Capacity (vph)	2538		2338	476	454	
Starvation Cap Reductn	1448		2330	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.51		0.31	0.10	0.16	
	0.51		0.51	0.10	0.10	
Intersection Summary						
Cycle Length: 80						
Actuated Cycle Length: 80						
Offset: 0 (0%), Referenced to phase	se 2:EBT and 6	S:WBTL, Sta	art of Green			
Natural Cycle: 60						
Control Type: Actuated-Coordinate	ed					
Maximum v/c Ratio: 0.31						
Intersection Signal Delay: 5.3				Int	ersection LC	S: A
Intersection Capacity Utilization 74	1.2%			IC	U Level of Se	ervice D
Analysis Period (min) 15						
Splits and Phases: 2: Montgome	ery & Montreal					
	-					
→ Ø2 (R)						
52 s						
4-						
▼ Ø6 (R)						
50 -						

Care Configurations Care		•	-	•	•	←	4	†	-	ļ
Traeffic Volume (vph)	Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Traeffic Volume (vph)	Lane Configurations	7		#	*	♦ 13	*	ቀ ቀሴ	*	ቀ ቀሴ
Future Volume (vph)	Traffic Volume (vph)									
Turn Type pm+pt NA Perm pm+pt NA Prot NA Prot NA Protected Phases 7 4 3 8 5 2 1 6 Petretited Phases 4 4 8 8 5 2 1 6 Switch Phase 8 4 4 4 8 5 2 1 6 Switch Phase 8 5 2 1 6 6 5 10 0 5.0 10.0 5.0 <td>Future Volume (vph)</td> <td>45</td> <td>342</td> <td>149</td> <td>169</td> <td>486</td> <td>175</td> <td>857</td> <td>213</td> <td>1098</td>	Future Volume (vph)	45	342	149	169	486	175	857	213	1098
Protected Phases	Lane Group Flow (vph)	45	342	149	169	680	175	1023	213	1238
Protected Phases	Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Prot	NA
Detector Phase 7	Protected Phases		4			8	5	2	1	6
Switch Phase Minimum Initial (s)	Permitted Phases	4		4	8					
Minimum Initial (s) 5.0 10.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 5.0 10.0 20.0 20.0 20.0 31.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 6.0 5.0 10.0 48.0 48.0 31.0 5.0 5.0 6.4 48.0 31.0 5.0 6.4 5.0 36.4 20.0 33.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.7 3.	Detector Phase	7	4	4	3	8	5	2	1	6
Minimum Split (s)	Switch Phase									
Total Split (s)	Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Total Split (%) 8.1% 30.7% 30.7% 12.9% 35.4% 20.0% 34.3% 22.1% 36.4% /ellow Time (s) 3.3 3.3 3.3 3.3 3.3 3.7 3.7 3.7 3.7 All-Red Time (s) 2.4 3.3 3.3 2.4 3.2 2.2 2.4 2.2 Lost Time Adjust (s) 0.0 </td <td>Minimum Split (s)</td> <td>10.7</td> <td>39.6</td> <td>39.6</td> <td>10.7</td> <td>39.6</td> <td>11.1</td> <td>28.9</td> <td>11.1</td> <td>28.9</td>	Minimum Split (s)	10.7	39.6	39.6	10.7	39.6	11.1	28.9	11.1	28.9
Total Split (%) 8.1% 30.7% 30.7% 12.9% 35.4% 20.0% 34.3% 22.1% 36.4% /ellow Time (s) 3.3 3.3 3.3 3.3 3.3 3.7 3.7 3.7 3.7 All-Red Time (s) 2.4 3.3 3.3 2.4 3.3 2.4 2.2 2.4 2.2 Lost Time Adjust (s) 0.0 </td <td>Total Split (s)</td> <td>11.4</td> <td>43.0</td> <td>43.0</td> <td>18.0</td> <td>49.6</td> <td>28.0</td> <td>48.0</td> <td>31.0</td> <td>51.0</td>	Total Split (s)	11.4	43.0	43.0	18.0	49.6	28.0	48.0	31.0	51.0
All-Red Time (s)	Total Split (%)	8.1%	30.7%	30.7%	12.9%	35.4%	20.0%	34.3%	22.1%	36.4%
Design Cost Time Adjust (s) Design Desig	Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7
Total Lost Time (s) 5.7 6.6 6.6 5.7 6.6 6.1 5.9 6.1 5.9 Lead/Lag Lead Lag Lag Lead Lag <	All-Red Time (s)	2.4	3.3	3.3	2.4	3.3	2.4	2.2	2.4	2.2
Lead/Lag Lag Lag Lead Lag Lag Lead Lag	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead-Lag Optimize? Yes	Total Lost Time (s)	5.7	6.6	6.6	5.7	6.6	6.1	5.9	6.1	5.9
None None None None None None None None None C-Min None C	Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Act Effet Green (s) 38.5 31.4 31.4 50.5 39.8 18.6 50.3 21.5 53.2 Actuated g/C Ratio 0.28 0.22 0.22 0.36 0.28 0.13 0.36 0.15 0.38 c/c Ratio 0.25 0.86 0.34 0.68 0.73 0.78 0.60 0.82 0.68 0.76 0.77 0.78 0.78 0.78 0.78 0.78 0.78 0.78	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Actuated g/C Ratio O.28 O.22 O.36 O.28 O.27 O.36 O.38 O.38 O.38 O.39 O.30 O.30	Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
v/c Ratio 0.25 0.86 0.34 0.68 0.73 0.78 0.60 0.82 0.68 Control Delay 31.4 72.3 7.0 45.9 47.2 91.0 36.0 81.0 39.7 Queue Delay 0.0	Act Effct Green (s)	38.5	31.4	31.4	50.5	39.8	18.6	50.3	21.5	53.2
Control Delay 31.4 72.3 7.0 45.9 47.2 91.0 36.0 81.0 39.7 Queue Delay 0.0<	Actuated g/C Ratio	0.28	0.22	0.22	0.36	0.28	0.13	0.36	0.15	0.38
Queue Delay 0.0 3.0 81.0 39.7 20.0 31.8 48.0 51.4 50.0 57.1 108.5 50.0 50.1 108.5 50.0 57.1 108.5 50.0 50.1 108.5 50.0 50.1 108.5 50.0 50.0 50.1 108.5 50.0	v/c Ratio	0.25	0.86	0.34	0.68	0.73	0.78	0.60	0.82	0.68
Starvation Cap Reductn Starvation Cap Reductn Starvation Cap Reductn O	Control Delay	31.4	72.3	7.0	45.9	47.2	91.0	36.0	81.0	39.7
Cost	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Approach Delay 50.7 47.0 44.0 45.7 Approach LOS D D D D D D Queue Length 50th (m) 7.8 90.2 0.0 31.8 84.6 51.4 53.0 57.1 108.5 Queue Length 95th (m) 16.0 122.6 14.5 48.5 103.4 75.5 67.6 #84.9 131.9 Internal Link Dist (m) 246.0 113.1 139.9 106.8 Furn Bay Length (m) 35.0 40.0 95.0 90.0 Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0	Total Delay	31.4	72.3	7.0	45.9	47.2	91.0	36.0	81.0	39.7
Approach LOS D 108.5 25.0 108.1 41.9 41.9 113.1 139.9 106.8 106.8 108.8 40.0 95.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0	LOS	С	Е	Α	D	D	F	D	F	D
Queue Length 50th (m) 7.8 90.2 0.0 31.8 84.6 51.4 53.0 57.1 108.5 Queue Length 95th (m) 16.0 122.6 14.5 48.5 103.4 75.5 67.6 #84.9 131.9 Internal Link Dist (m) 246.0 113.1 139.9 106.8 Furn Bay Length (m) 35.0 40.0 95.0 90.0 Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0	Approach Delay		50.7			47.0		44.0		45.7
Queue Length 95th (m) 16.0 122.6 14.5 48.5 103.4 75.5 67.6 #84.9 131.9 Internal Link Dist (m) 246.0 113.1 139.9 106.8 Furn Bay Length (m) 35.0 40.0 95.0 90.0 Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0<	Approach LOS		D			D		D		D
Internal Link Dist (m) 246.0 113.1 139.9 106.8 Furn Bay Length (m) 35.0 40.0 95.0 90.0 Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0	Queue Length 50th (m)	7.8	90.2	0.0	31.8	84.6	51.4	53.0	57.1	108.5
Furn Bay Length (m) 35.0 40.0 95.0 90.0 Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0	Queue Length 95th (m)	16.0	122.6	14.5	48.5	103.4	75.5	67.6	#84.9	131.9
Base Capacity (vph) 180 463 485 250 1001 265 1698 301 1817 Starvation Cap Reductn 0	Internal Link Dist (m)		246.0			113.1		139.9		106.8
Starvation Cap Reductn 0 0 0 0 0 0 0 0 Spillback Cap Reductn 0	Turn Bay Length (m)	35.0			40.0		95.0		90.0	
Spillback Cap Reductn 0 0 0 0 0 0 0 0 Storage Cap Reductn 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	180	463	485	250	1001	265	1698	301	1817
Storage Cap Reductn 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio 0.25 0.74 0.31 0.68 0.68 0.66 0.60 0.71 0.68	Storage Cap Reductn	0	0	0	0	0	0	0	0	0
	Reduced v/c Ratio	0.25	0.74	0.31	0.68	0.68	0.66	0.60	0.71	0.68

Cycle Length: 140
Actuated Cycle Length: 140

Offset: 102 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 46.1

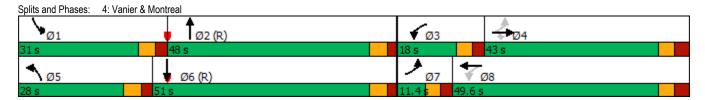
Intersection Capacity Utilization 91.8%

Intersection LOS: D ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.



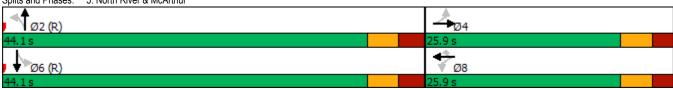
	•	-	•	←	•	4	†	-	↓
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations		Δħ			1		<i>4</i> 12		412
Traffic Volume (vph)	1	4	8	₄1 9	173	3	4 136	330	1 02
Future Volume (vph)	1	6	8	9	173	3	136	330	102
_ane Group Flow (vph)	0	10	0	17	173	0	168	0	436
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	•
Detector Phase	4	4	8	8	8	2	2	6	6
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)	25.6	25.6	25.6	25.6	25.6	31.1	31.1	31.1	31.1
Total Split (s)	25.9	25.9	25.9	25.9	25.9	44.1	44.1	44.1	44.1
Total Split (%)	37.0%	37.0%	37.0%	37.0%	37.0%	63.0%	63.0%	63.0%	63.0%
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)	2.3	2.3	2.3	2.3	2.3	2.8	2.8	2.8	2.8
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6	5.6		6.1		6.1
Lead/Lag							•		
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		14.0		14.0	14.0		44.3		44.3
Actuated g/C Ratio		0.20		0.20	0.20		0.63		0.63
v/c Ratio		0.03		0.05	0.42		0.16		0.62
Control Delay		16.8		21.9	14.0		6.0		14.6
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		16.8		21.9	14.0		6.0		14.6
LOS		В		C	В		A		В
Approach Delay		16.8		14.7	_		6.0		14.6
Approach LOS		В		В			Α		В
Queue Length 50th (m)		0.8		2.2	10.5		5.3		23.8
Queue Length 95th (m)		3.7		m5.1	m37.3		17.2		#76.8
Internal Link Dist (m)		19.4		126.4			86.5		58.5
Turn Bay Length (m)					100.0				
Base Capacity (vph)		478		462	518		1076		702
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.02		0.04	0.33		0.16		0.62
Intersection Summary									
Cycle Length: 70									
Actuated Cycle Length: 70									
Offset: 0 (0%), Referenced to phase	2:NBTL and	6:SBTL, St	art of Greer	ı					
Natural Cycle: 60									
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.62									
Intersection Signal Delay: 12.9				Int	tersection Lo	OS: B			
ntersection Capacity Utilization 75.4	4%			IC	U Level of S	Service D			
Analysis Period (min) 15									
, ,	conneity au	oue mou be	longor						

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: 5: North River & McArthur



	•	→	\rightarrow	•	←	•	•	†	/	>	ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	75	•	*	16.56	•	7	7	44	7	7	44	7
Traffic Volume (vph)	34	127	281	209	198	99	231	1041	225	145	1259	60
Future Volume (vph)	34	127	281	209	198	99	231	1041	225	145	1259	60
Lane Group Flow (vph)	34	127	281	209	198	99	231	1041	225	145	1259	60
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	13.4	36.2	36.2	16.1	38.9	38.9	27.0	65.6	65.6	22.1	60.7	60.7
Total Split (%)	9.6%	25.9%	25.9%	11.5%	27.8%	27.8%	19.3%	46.9%	46.9%	15.8%	43.4%	43.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	6.8	22.6	22.6	10.5	31.3	31.3	21.1	67.3	67.3	14.9	61.1	61.1
Actuated g/C Ratio	0.05	0.16	0.16	0.08	0.22	0.22	0.15	0.48	0.48	0.11	0.44	0.44
v/c Ratio	0.41	0.44	0.66	0.85	0.50	0.25	0.90	0.64	0.30	0.81	0.85	0.09
Control Delay	86.5	51.8	21.8	92.0	52.0	5.7	94.1	31.2	9.8	95.5	27.5	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.5	51.8	21.8	92.0	52.0	5.7	94.1	31.2	9.8	95.5	27.5	1.0
LOS	F	D	С	F	D	Α	F	С	Α	F	С	Α
Approach Delay		35.4			59.5			37.7			33.1	
Approach LOS		D			Е			D			С	
Queue Length 50th (m)	9.2	33.9	21.1	30.1	47.6	0.0	63.9	124.2	12.3	42.3	53.2	0.0
Queue Length 95th (m)	m17.7	43.9	39.4	#53.5	72.3	9.7	#112.3	149.6	31.0	m#68.8	#215.2	m1.0
Internal Link Dist (m)		119.1			163.5			123.8			129.2	
Turn Bay Length (m)	40.0		80.0	100.0		75.0	55.0		55.0	85.0		110.0
Base Capacity (vph)	87	382	490	247	416	407	260	1629	744	193	1480	685
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.33	0.57	0.85	0.48	0.24	0.89	0.64	0.30	0.75	0.85	0.09

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 100 (71%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 38.5

Intersection Capacity Utilization 98.6%

Intersection LOS: D ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Vanier & McArthur



	→	←	\
Lane Group	EBT	WBT	SBL
Lane Configurations	4	î.	W
Traffic Volume (vph)	369	1	10
Future Volume (vph)	369	266	10
Lane Group Flow (vph)	381	355	26
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 43.8%	0		

Intersection						
Int Delay, s/veh	0.6					
	EBL	EBT	WBT	WBR	SBL	SBR
Movement	EBL			WBK		SBK
Lane Configurations	40	्री	1	00	7	40
Traffic Vol, veh/h	12	369		89	10	16
Future Vol, veh/h	12	369	266	89	10	16
Conflicting Peds, #/hr	91	_ 0	0	91	1	11
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	369	266	89	10	16
Maiau/Minau	Malaut		Maiano		Minar	
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	446	0	-	0	796	413
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	394	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1114	-	-	-	356	639
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1028	-	-	-	299	584
Mov Cap-2 Maneuver	-	_	-	-	299	-
Stage 1	_	_	_	_	614	_
Stage 2		-	_	_	629	_
Olage 2					023	
Approach	EB		WB		SB	
HCM Control Delay, s	0.3		0		14	
HCM LOS					В	
Miner Lene/Meier M.		EBL	EBT	WDT	WDD	CDI =1
Minor Lane/Major Mvmt				WBT		SBLn1
Capacity (veh/h)		1028	-	-	-	427
HCM Lane V/C Ratio		0.012	-	-	-	0.061
HCM Control Delay (s)		8.5	0	-	-	14
HCM Lane LOS		Α	Α	-	-	В
HCM 95th %tile Q(veh)		0	-	-	-	0.2

	→	—	\
Lane Group	EBT	WBT	SBL
Lane Configurations	र्स	î,	W
Traffic Volume (vph)	375	1	23
Future Volume (vph)	375	356	23
Lane Group Flow (vph)	375	356	27
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 30.8%			

Int Delay, s/veh	Intersection						
Novement		0.5					
Lane Configurations			EDT	WDT	WDD	ODI	ODE
Traffic Vol, veh/h 0 375 356 0 23 4 Future Vol, veh/h 0 375 356 0 23 4 Conflicting Peds, #hr 0 - None		EBL			WBR		SBR
Future Vol, veh/h 0 375 356 0 23 4 Conflicting Peds, #/hr 0 0 0 0 0 0 Sign Control Free Free Free Free Free Free Stop RT Channelized - None - None - None Storage Length - - - 0 0 - 0 - Veh in Median Storage, # - 0 0 - 0 - 0 - Grade, % - 0 0 - 0 - 0 - 0 - 0 - 0 - - - - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 731 356 - - 2 2 2 2 2 <td< td=""><td></td><td></td><td>्रदी</td><td><u></u></td><td>•</td><td>₩.</td><td></td></td<>			्रदी	<u></u>	•	₩.	
Conflicting Peds, #/hr 0 0 0 0 0 0 Sign Control Free Free Free Free Free Free Stop Stop RT Channelized - None - One - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 100 100 100 100 100 100 100 100							
Sign Control Free Free Free Free Free Stop Stop RT Channelized - None - One - Stope - Description - None - Stope - Description - None - None		-					
RT Channelized							
Storage Length		Free		Free		Stop	
Veh in Median Storage, # - 0 0 - 0 - 0 - O - O - O - O - O - O - O - O - O - O - O - O - O - O - O - O - D Au Au D Au D Au D Au Au D Au		-	None	-	None		None
Grade, % - 0 0 - 0 - Peak Hour Factor 100 100 100 100 100 100 Heavy Vehicles, % 2 3 4 <	Storage Length	-	-	-	-	0	-
Peak Hour Factor 100 400 Momman Major Mymt Flow 0 375 356 0 23 4 Major Mymt Flow 0 731 356 0 2 356 - 356 - 356 - 356 - 356 - 356 - 356 - - 356 - 356 - 356 - 356 - 222 - 375 - 222 - - 462 222 - - - 351	Veh in Median Storage, #	-	0	0	-	0	-
Heavy Vehicles, % 2 2 2 2 2 2 2 2 2	Grade, %		0	0	-	0	-
Heavy Vehicles, % 2 2 2 2 2 2 2 2 2	Peak Hour Factor	100	100	100	100	100	100
Mymt Flow 0 375 356 0 23 4 Major/Minor Major1 Major2 Minor2 Conflicting Flow All 356 0 - 0 731 356 Stage 1 - - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - - - 222 - - - - - - - - - - - - - - - -	Heavy Vehicles, %		2	2	2	2	2
Major/Minor Major1 Major2 Minor2 Conflicting Flow All 356 0 - 0 731 356 Stage 1 - - - 356 - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 356 - - 362 -		0		356	0	23	4
Conflicting Flow All 356 0 - 0 731 356 Stage 1 - - - 356 - Stage 2 - - - 375 - Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 695 - Platoon blocked, % - - - - 695 - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - - 389 -							
Conflicting Flow All 356 0 - 0 731 356 Stage 1 - - - 356 - Stage 2 - - - 375 - Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 695 - Platoon blocked, % - - - - 389 688 Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - - 709 -							
Stage 1 - - 356 - Stage 2 - - - 375 - Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 709 - Stage 2 - - - 695 - Platoon blocked, % - - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - - 709 - Stage 2 - - -							
Stage 2 - - - 375 - Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 695 - Platoon blocked, % - - - 695 - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 709 - Stage 1 - - - 695 - Approach EB WB		356	0	-	0		356
Critical Hdwy 4.12 - - 6.42 6.22 Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 695 - Platoon blocked, % - - - 695 - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 <tr< td=""><td>Stage 1</td><td>-</td><td>-</td><td>-</td><td>-</td><td>356</td><td>-</td></tr<>	Stage 1	-	-	-	-	356	-
Critical Hdwy Stg 1 - - - 5.42 - Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 2 - - - 695 - Platoon blocked, % - - - - 695 - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBL Minor Lane/Major Mvmt EBL		-	-	-	-	375	
Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 709 - Stage 2 - - - 695 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM Control Delay, s 0 0 14.3 HCM Lane V/C Ratio - - - - 0.065 HCM Lane V/C Ratio - -<	Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 2 - - - 5.42 - Follow-up Hdwy 2.218 - - 3.518 3.318 Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 709 - Stage 2 - - - 695 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - - Stage 1 - - - 709 - - - - 695 - Approach EB WB SB - - - - - 695 - Approach EB WB SB - - - - - - - - - - - - - -<			-	-		5.42	
Follow-up Hdwy 2.218 3.518 3.318 Pot Cap-1 Maneuver 1203 389 688 Stage 1 695 - Stage 2 695 - Platoon blocked, % 389 688 Mov Cap-1 Maneuver 1203 389 688 Mov Cap-1 Maneuver 1203 389 688 Mov Cap-2 Maneuver 389 - Stage 1 709 - Stage 2 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 416 HCM Lane V/C Ratio 0.065 HCM Control Delay (s) 0 14.3		-	_	-	_		-
Pot Cap-1 Maneuver 1203 - - 389 688 Stage 1 - - - 709 - Stage 2 - - - 695 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B B Minor Lane/Major Mvmt EBL EBL WBT WBR SBLn1 Capacity (veh/h) 1203 - - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3		2 218	_	_	-		3 318
Stage 1 - - - 709 - Stage 2 - - 695 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - 389 - Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3			_	_	_		
Stage 2 - - 695 - Platoon blocked, % - - - - Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - - 389 - Stage 1 - - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3							
Platoon blocked, %				_			
Mov Cap-1 Maneuver 1203 - - 389 688 Mov Cap-2 Maneuver - - - - 389 - Stage 1 - - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3			_	_		090	_
Mov Cap-2 Maneuver		1202		-		200	600
Stage 1 - - - 709 - Stage 2 - - - 695 - Approach EB WB SB HCM Control Delay, s 0 0 14.3 HCM LOS B Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3				-			
Stage 2		-		-			-
Approach		-		-			-
HCM Control Delay, s	Stage 2	-	-	-	-	695	-
HCM Control Delay, s							
HCM Control Delay, s	Approach	EB		WB		SB	
Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3		0		0		14.3	
Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1 Capacity (veh/h) 1203 - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3		U		U			
Capacity (veh/h) 1203 - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3	TIOW LOO					U	
Capacity (veh/h) 1203 - - 416 HCM Lane V/C Ratio - - - 0.065 HCM Control Delay (s) 0 - - 14.3							
HCM Lane V/C Ratio 0.065 HCM Control Delay (s) 0 14.3	Minor Lane/Major Mvmt			EBT	WBT	WBR	SBLn1
HCM Lane V/C Ratio 0.065 HCM Control Delay (s) 0 14.3			1203	-	-	-	416
HCM Control Delay (s) 0 14.3	Capacity (veh/h)		1200				
				-	-	-	0.065
	HCM Lane V/C Ratio		-				
HCM 95th %tile Q(veh) 0 0.2	HCM Lane V/C Ratio		-				

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Lane Group	WBL	NBT	SBT	
Lane Configurations	14	*	^	_
Traffic Volume (vph)	27	254	395	
Future Volume (vph)	27	254	395	
Lane Group Flow (vph)	73	254	395	
Sign Control	Stop	Free	Free	
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 25.3%				ICU Level of Service A

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Lane Group	EBT	WBT	NBT	SBT
Lane Configurations	₽.	43-	₩.	43-
Traffic Volume (vph)	36	4 0	29	4 59
Future Volume (vph)	36	40	29	59
Lane Group Flow (vph)	100	94	48	124
Sign Control	Stop	Stop	Free	Free
Intersection Summary				
Control Type: Unsignalized				
Intersection Capacity Utilization 29.5%)			ICl

Intersection	
Int Delay, s/veh 6.9	
Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT	SBR
Lane Configurations 🔥 🗘 🔥	
Lane Configurations	21
Future Vol, veh/h 46 36 18 9 40 45 14 29 5 44 59	21
Conflicting Peds, #/hr 0 0 0 0 0 0 0 0 0 0	0
Sign Control Stop Stop Stop Stop Stop Free Free Free Free Free	Free
RT Channelized None None	None
Storage Length	-
Veh in Median Storage, # - 0 0 0	-
Grade, % - 0 0 0 0	-
Peak Hour Factor 100 100 100 100 100 100 100 100 100 10	100
Heavy Vehicles, % 2 2 2 2 2 2 2 2 2 2 2 2	2
Mvmt Flow 46 36 18 9 40 45 14 29 5 44 59	21
Major/Minor Minor2 Minor1 Major1 Major2	
Conflicting Flow All 260 220 70 245 228 32 80 0 0 34 0	0
Stage 1 158 158 - 60 60	-
Stage 2 102 62 - 185 168	-
Critical Hdwy 7.12 6.52 6.22 7.12 6.52 6.22 4.12 - 4.12 -	-
Critical Hdwy Stg 1 6.12 5.52 - 6.12 5.52	-
Critical Hdwy Stg 2 6.12 5.52 - 6.12 5.52	-
Follow-up Hdwy 3.518 4.018 3.318 3.518 4.018 3.318 2.218 2.218 -	-
Pot Cap-1 Maneuver 693 678 993 709 671 1042 1518 1578 -	-
Stage 1 844 767 - 951 845	-
Stage 2 904 843 - 817 759	-
Platoon blocked, %	-
Mov Cap-1 Maneuver 614 652 993 648 646 1042 1518 1578 -	-
Mov Cap-2 Maneuver 614 652 - 648 646	-
Stage 1 836 745 - 942 837	-
Stage 2 816 835 - 741 737	-
Approach EB WB NB SB	
HCM Control Delay, s 11.3 10.2 2.2 2.6	
HCM LOS B B	
Minor Lane/Major Mvmt NBL NBT NBR EBLn1 WBLn1 SBL SBT SBR	
Capacity (veh/h) 1518 674 790 1578	
HCM Lane V/C Ratio 0.009 0.148 0.119 0.028	
HCM Control Delay (s) 7.4 0 - 11.3 10.2 7.3 0 -	
HCM Lane LOS A A - B B A A -	

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Lane Group	EBL	NBT	SBT
Lane Configurations	14	4	î,
Traffic Volume (vph)	67	্ব ি 71	105
Future Volume (vph)	67	71	105
Lane Group Flow (vph)	84	84	144
Sign Control	Stop	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 27.3	1%		

Internection						
Intersection Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			₄ 71	1 05	
Traffic Vol, veh/h	67	17	13			39
Future Vol, veh/h	67	17	13	71	105	39
Conflicting Peds, #/hr	0	0	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	67	17	13	71	105	39
	.		.0	• •	.00	
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	242	145	164	0	-	0
Stage 1	145	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	746	902	1414	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	927	-	_	-	-	_
Platoon blocked. %	02.				_	_
Mov Cap-1 Maneuver	714	887	1390	-	-	_
Mov Cap-1 Maneuver	714	-	1000	-		
Stage 1	858	-		-	_	<u>-</u>
Stage 2	911	-	_	-	-	-
Slaye 2	911	_	-	-	-	-
Approach	EB		NB		SB	
Approach HCM Control Delay, s	EB 10.5		NB 1.2		SB 0	
HCM Control Delay, s	10.5					
HCM Control Delay, s HCM LOS	10.5	NDL	1.2	CDI =4-	0	CDD
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt	10.5	NBL	1.2 NBT	EBLn1	0 SBT	SBR
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt Capacity (veh/h)	10.5	1390	1.2 NBT	743	0 SBT	-
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	10.5	1390 0.009	1.2 NBT	743 0.113	SBT	-
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio HCM Control Delay (s)	10.5	1390 0.009 7.6	1.2 NBT 0	743 0.113 10.5	0 SBT	-
HCM Control Delay, s HCM LOS Minor Lane/Major Mvmt Capacity (veh/h) HCM Lane V/C Ratio	10.5	1390 0.009	1.2 NBT	743 0.113	SBT	-

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Lane Group	EBT	WBT	NBL	NBT	SBT	Ø9
Lane Configurations	ት ቴ	∳ ሴ	*	ĵ,	43-	
Traffic Volume (vph)	621	641	350	17	65	
Future Volume (vph)	621	641	350	17	65	
Lane Group Flow (vph)	1091	645	350	92	107	
Turn Type	NA	NA	Prot	NA	NA	
Protected Phases	2	6	3	8	4	9
Permitted Phases						
Detector Phase	2	6	3	8	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	21.7	21.7	11.5	24.5	16.5	24.5
Total Split (s)	50.0	50.0	29.0	53.5	16.5	24.5
Total Split (%)	41.7%	41.7%	24.2%	44.6%	13.8%	20%
Yellow Time (s)	3.0	3.0	3.3	3.3	3.3	3.3
All-Red Time (s)	3.7	3.7	3.2	3.2	3.2	3.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.7	6.7	6.5	6.5	6.5	
Lead/Lag			Lag			Lead
Lead-Lag Optimize?			Yes			Yes
Recall Mode	C-Min	C-Min	None	Min	None	None
Act Effct Green (s)	47.3	47.3	28.3	43.0	10.0	
Actuated g/C Ratio	0.39	0.39	0.24	0.36	0.08	
v/c Ratio	0.99	0.48	0.88	0.17	0.73	
Control Delay	61.2	29.5	69.0	8.1	77.9	
Queue Delay	0.0	16.6	0.0	0.0	0.0	
Total Delay	61.2	46.1	69.0	8.1	77.9	
LOS	E	D	E	Α	E	
Approach Delay	61.2	46.1		56.3	77.9	
Approach LOS	E	D		E	E	
Queue Length 50th (m)	~150.8	62.5	~93.7	2.5	23.1	
Queue Length 95th (m)	#191.8	80.5	#151.0	12.8	#50.8	
Internal Link Dist (m)	105.3	52.9		6.0	56.2	
Turn Bay Length (m)			35.0			
Base Capacity (vph)	1105	1332	399	580	146	
Starvation Cap Reductn	0	680	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.99	0.99	0.88	0.16	0.73	
Internation Comments						

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 56.8

Intersection Capacity Utilization 74.1%

Intersection LOS: E ICU Level of Service D

Analysis Period (min) 15

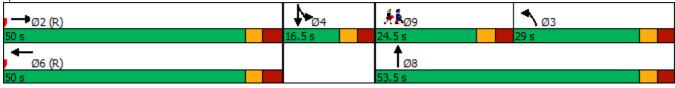
Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: North River & Montreal



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Lane Group	EBT	WBL	WBT	NBL	NBR	j	
Lane Configurations	↑ 13	.,,,,	र्	7	7		
Fraffic Volume (vph)	610	72	568	141	72		
Future Volume (vph)	610	72	568	141	72		
Lane Group Flow (vph)	730	0	640	141	72		
Turn Type	NA	Perm	NA	Prot	Perm		
Protected Phases	2	. 31111	6	8	. 0		
Permitted Phases		6	U	U	8		
Detector Phase	2	6	6	8	8		
Switch Phase	L	0	U	U			
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0		
Minimum Split (s)	39.9	15.9	15.9	19.5	19.5		
Total Split (s)	77.0	77.0	77.0	23.0	23.0		
Total Split (%)	77.0%	77.0%	77.0%	23.0%	23.0%		
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3		
All-Red Time (s)	3.3 2.6	2.6	2.6	2.2	2.2		
		2.0			0.0		
Lost Time Adjust (s)	0.0		0.0	0.0			
Total Lost Time (s)	5.9		5.9	5.5	5.5		
Lead/Lag							
Lead-Lag Optimize?	0.14	0.14	0.11	N	News		
Recall Mode	C-Min	C-Min	C-Min	None	None		
Act Effct Green (s)	74.7		74.7	13.9	13.9		
Actuated g/C Ratio	0.75		0.75	0.14	0.14		
v/c Ratio	0.30		0.63	0.60	0.29		
Control Delay	4.4		10.2	50.7	11.9		
Queue Delay	1.5		0.0	0.0	0.0		
Total Delay	5.9		10.2	50.7	11.9		
LOS	Α		В	D	В		
Approach Delay	5.9		10.2	37.6			
Approach LOS	Α		В	D			
Queue Length 50th (m)	17.8		48.4	26.1	0.0		
Queue Length 95th (m)	30.5		99.2	42.8	11.4		
Internal Link Dist (m)	52.9		179.6	77.9			
Turn Bay Length (m)							
Base Capacity (vph)	2451		1021	300	300		
Starvation Cap Reductn	1473		0	0	0		
Spillback Cap Reductn	0		0	0	0		
Storage Cap Reductn	0		0	0	0		
Reduced v/c Ratio	0.75		0.63	0.47	0.24		
	0.10		3.00	J. TI	V.L 1		
Intersection Summary							
Cycle Length: 100							
Actuated Cycle Length: 100							
Offset: 0 (0%), Referenced to pha	ase 2:EBT and 6	:WBTL. Sta	art of Green				
Natural Cycle: 60		,					
Control Type: Actuated-Coordinate	ted						
Maximum v/c Ratio: 0.63	.00						
Intersection Signal Delay: 11.9				Int	tersection LOS: B		
Intersection Capacity Utilization 8	9 1%				U Level of Service		
Analysis Period (min) 15	J.170			10	O LCVCI OI OCIVICO	, _	
rularyolo i Gilou (IIIIII) 10							
Splits and Phases: 2: Montgom	nery & Montreal						
pino ana i nases. 2. Mongon	iory & ivioritiedi						
→ @2 (D)							
→ Ø2 (R)							
// S							
4							
∮ Ø6 (R)							
77 s							

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Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	*	•	7	*	♦ %	*	ተ ቀኄ	*	ቀ ቀሴ
Traffic Volume (vph)	54	378	171	163	353	223	1011	98	1023
Future Volume (vph)	54	378	171	163	353	223	1011	98	1023
Lane Group Flow (vph)	54	378	171	163	551	223	1221	98	1134
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	10.7	39.6	39.6	10.7	39.6	11.1	28.9	11.1	28.9
Total Split (s)	11.3	45.0	45.0	17.0	50.7	31.0	56.0	22.0	47.0
Total Split (%)	8.1%	32.1%	32.1%	12.1%	36.2%	22.1%	40.0%	15.7%	33.6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7
All-Red Time (s)	2.4	3.3	3.3	2.4	3.3	2.4	2.2	2.4	2.2
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.7	6.6	6.6	5.7	6.6	6.1	5.9	6.1	5.9
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	40.9	33.9	33.9	51.9	41.5	22.1	57.5	12.9	48.2
Actuated g/C Ratio	0.29	0.24	0.24	0.37	0.30	0.16	0.41	0.09	0.34
v/c Ratio	0.23	0.88	0.36	0.71	0.57	0.84	0.63	0.63	0.69
Control Delay	29.9	72.1	7.7	47.7	37.5	86.4	41.2	78.8	43.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	72.1	7.7	47.7	37.5	86.4	41.2	78.8	43.0
LOS	С	Е	Α	D	D	F	D	Е	D
Approach Delay		50.1			39.8		48.2		45.9
Approach LOS		D			D		D		D
Queue Length 50th (m)	9.4	99.5	0.0	30.3	58.1	65.2	65.1	26.5	102.4
Queue Length 95th (m)	18.2	134.9	17.3	#47.5	74.7	m79.9	84.1	45.0	123.6
Internal Link Dist (m)		42.4			113.1		139.9		106.8
Turn Bay Length (m)	35.0			40.0		95.0		90.0	
Base Capacity (vph)	232	489	510	232	1029	301	1933	192	1646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.77	0.34	0.70	0.54	0.74	0.63	0.51	0.69

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 56 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 46.3

Intersection Capacity Utilization 92.8%

Intersection LOS: D ICU Level of Service F

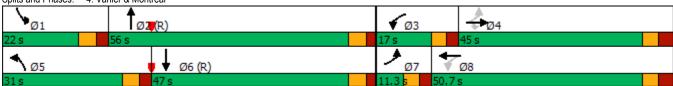
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Vanier & Montreal



Synchro 11 Report Parsons

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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations				र्	1				
Traffic Volume (vph)	4	♣ 25	24	11	236	2	4 170	405	139
Future Volume (vph)	4	25	24	11	236	2	170	405	139
Lane Group Flow (vph)	0	35	0	35	236	0	208	0	545
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8			2		6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	6	6
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)	25.6	25.6	25.6	25.6	25.6	31.1	31.1	31.1	31.1
Total Split (s)	25.6	25.6	25.6	25.6	25.6	49.4	49.4	49.4	49.4
Total Split (%)	34.1%	34.1%	34.1%	34.1%	34.1%	65.9%	65.9%	65.9%	65.9%
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)	2.3	2.3	2.3	2.3	2.3	2.8	2.8	2.8	2.8
Lost Time Adjust (s)		0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)		5.6		5.6	5.6		6.1		6.1
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)		14.0		14.0	14.0		49.3		49.3
Actuated g/C Ratio		0.19		0.19	0.19		0.66		0.66
v/c Ratio		0.11		0.14	0.54		0.19		0.78
Control Delay		20.5		24.3	8.5		5.8		22.0
Queue Delay		0.0		0.0	0.0		0.0		0.0
Total Delay		20.5		24.3	8.5		5.8		22.0
LOS		С		С	Α		Α		С
Approach Delay		20.5		10.5			5.8		22.0
Approach LOS		С		В			Α		С
Queue Length 50th (m)		3.7		4.5	0.0		6.9		37.2
Queue Length 95th (m)		9.4		10.2	15.5		20.7		#127.2
Internal Link Dist (m)		19.4		126.4			86.5		58.5
Turn Bay Length (m)					100.0				
Base Capacity (vph)		444		370	521		1113		696
Starvation Cap Reductn		0		0	0		0		0
Spillback Cap Reductn		0		0	0		0		0
Storage Cap Reductn		0		0	0		0		0
Reduced v/c Ratio		0.08		0.09	0.45		0.19		0.78
Intersection Summary									
Cycle Length: 75									
Actuated Cycle Length: 75									
Offset: 0 (0%), Referenced to phase 2	2:NBTL and	6:SBTI St	art of Green	1					
Natural Cycle: 80		1.0212, 00							
Control Type: Actuated-Coordinated									
Maximum v/c Ratio: 0.78									
Intersection Signal Delay: 15.8				Inf	ersection Lo	OS: B			
Intersection Capacity Utilization 82.59	%				U Level of S				
Analysis Period (min) 15	,,			10	5 E0701 01 C				
# 95th percentile volume exceeds of	capacity our	eue may be	longer						
Queue shown is maximum after tv									
	,								
Splits and Phases: 5: North River &	& McArthur								
								A	
√Vø2 (R)							-	[−] / ₀₄	
49.4 s							25	.6 s	
1							20	4	
Ø6 (R)							1 ⁴	₹ Ø8	
40.4 a							25	√ 2/0	
15.1 S							25	.0 S	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	7	•	7	16.54	•	7	*	44	7	*	44	7
Traffic Volume (vph)	55	258	472	333	234	163	231	1195	251	120	1205	66
Future Volume (vph)	55	258	472	333	234	163	231	1195	251	120	1205	66
Lane Group Flow (vph)	55	258	472	333	234	163	231	1195	251	120	1205	66
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	11.2	36.2	36.2	11.2	36.2	36.2	11.1	36.1	36.1	11.1	36.1	36.1
Total Split (s)	16.5	37.5	37.5	20.8	41.8	41.8	25.2	64.5	64.5	17.2	56.5	56.5
Total Split (%)	11.8%	26.8%	26.8%	14.9%	29.9%	29.9%	18.0%	46.1%	46.1%	12.3%	40.4%	40.4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4	2.4	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
Act Effct Green (s)	9.0	31.3	31.3	14.6	39.4	39.4	19.1	58.4	58.4	11.1	50.4	50.4
Actuated g/C Ratio	0.06	0.22	0.22	0.10	0.28	0.28	0.14	0.42	0.42	0.08	0.36	0.36
v/c Ratio	0.51	0.65	1.04	0.97	0.47	0.32	1.00	0.85	0.38	0.90	0.99	0.12
Control Delay	79.5	58.0	81.8	104.3	46.8	7.0	118.9	43.6	13.1	117.9	54.0	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.5	58.0	81.8	104.3	46.8	7.0	118.9	43.6	13.1	117.9	54.0	1.3
LOS	Е	E	F	F	D	Α	F	D	В	F	D	Α
Approach Delay		73.8			64.1			49.4			57.0	
Approach LOS		Е			Е			D			Е	
Queue Length 50th (m)	14.9	65.4	~94.4	48.1	55.8	0.0	64.9	155.1	18.4	35.0	79.1	0.1
Queue Length 95th (m)	29.2	95.4	#162.0	#78.6	82.9	16.2	#118.5	185.2	40.0	m#64.1	#213.6	m1.9
Internal Link Dist (m)		119.1			163.5			123.8			129.2	
Turn Bay Length (m)	40.0		80.0	100.0		75.0	55.0		55.0	85.0		110.0
Base Capacity (vph)	124	398	456	342	501	512	231	1414	667	134	1220	562
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.65	1.04	0.97	0.47	0.32	1.00	0.85	0.38	0.90	0.99	0.12

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 54 (39%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated Maximum v/c Ratio: 1.04

Intersection Signal Delay: 58.2 Intersection Capacity Utilization 103.1% Intersection LOS: E ICU Level of Service G

Analysis Period (min) 15

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Vanier & McArthur



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Lane Group	EBT	WBT	SBL
Lane Configurations	र्व	î,	W
Traffic Volume (vph)	470	1 311	26
Future Volume (vph)	470	311	26
Lane Group Flow (vph)	481	425	30
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 48.0%	6		

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		47 0	1 311		¥	
Traffic Vol, veh/h	11			114	26	4
Future Vol, veh/h	11	470	311	114	26	4
Conflicting Peds, #/hr	76	0	0	76	0	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	470	311	114	26	4
Major/Minor	Major1		Major2		Minor2	
						450
Conflicting Flow All	501	0	-	0	936	453
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	492	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1063	-	-	-	294	607
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	995	-	-	-	254	564
Mov Cap-2 Maneuver	-	-	-	-	254	-
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	576	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.2		0		19.7	
HCM LOS	0.2		U			
HCM LOS					С	
Minor Lane/Major Mvmt		EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)		995	-	-	-	274
HCM Lane V/C Ratio		0.011	-	-	-	0.109
HCM Control Delay (s)		8.7	0	-	-	19.7
HCM Lane LOS		A	A	_	-	C
HCM 95th %tile Q(veh)		0	-	_	-	0.4
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Lane Group	EBT	WBT	SBL
Lane Configurations	•	•	W
Traffic Volume (vph)	492	424	24
Future Volume (vph)	492	424	24
Lane Group Flow (vph)	492	424	32
Sign Control	Free	Free	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%)		

Intersection	2.5					
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations					W	
Traffic Vol., veh/h	0	492	424	0	24	8
Future Vol, veh/h	0	492	424	0	24	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	- -	None
Storage Length		INUITE	-	NOHE -	0	NOHE -
	-	0	0		0	-
Veh in Median Storage, #		_		-		
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	492	424	0	24	8
Major/Minor	Major1		Major2		Minor	
Major/Minor	Major1		Major2		Minor2	40:
Conflicting Flow All	-	0	-	0	916	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	492	-
Critical Hdwy	-	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy		-	-		3.518	3.318
Pot Cap-1 Maneuver	0	-	-	0	302	630
Stage 1	0	_	_	0	660	-
Stage 2	0	_	_	0	615	_
Platoon blocked. %	U	_	_	U	010	_
			_	-	302	630
Mov Cap-1 Maneuver						
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	615	-
Approach	EB		WB		SB	
	0		0		16.4	
HCM Control Delay, s	U		U			
HCM LOS					С	
Minor Lane/Major Mvmt		EBT	WBT	SBLn1		
Capacity (veh/h)		-	-	347		
HCM Lane V/C Ratio			-	0.092		
HCM Control Dolor (a)			-	16.4		
HCM Control Delay (s)		-				
HCM Lane LOS		-	-	C 0.3		
HCM 95th %tile Q(veh)			_			

	•	†	+
Lane Group	WBL	NBT	SBT
Lane Configurations	14	*	^
Traffic Volume (vph)	115	466	450
Future Volume (vph)	115	466	450
Lane Group Flow (vph)	172	466	450
Sign Control	Stop	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 43.2%			

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	₩.	WDIX		NDIX	ODL	
	115	57	↑ 466	0	0	↑↑ 450
Traffic Vol, veh/h						
Future Vol, veh/h	115	57	466	0	0	450
Conflicting Peds, #/hr	2	2	0	85	85	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	_	0	_	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	115	57	466	0	0	450
MALL FIOW	110	5/	400	U	U	450
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	693	468	0	-		_
Stage 1	466	-	-	_	_	_
Stage 2	227		-	-	_	_
	6.63	6.23				
Critical Hdwy			-	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	-	-
Pot Cap-1 Maneuver	393	594	-	0	0	-
Stage 1	631	-	-	0	0	-
Stage 2	790	_	_	0	0	_
Platoon blocked. %	100		_	•	•	_
Mov Cap-1 Maneuver	392	593				
				-	-	-
Mov Cap-2 Maneuver	392	-	-	-	-	-
Stage 1	631	-	-	-	-	-
Stage 2	788	-	-	-	-	-
Approach	WB		NB		SB	
	18.2		0		0	
HCM Control Delay, s			U		U	
HCM LOS	С					
Minor Lane/Major Mvmt		NBT	WBLn1	SBT		
Capacity (veh/h)		-	442			
HCM Lane V/C Ratio			0.389			
			18.2			
HCM Control Delay (s)		-				
HCM Lane LOS		-	C	-		
HCM 95th %tile Q(veh)		-	1.8	-		

	→	←	†	↓	
Lane Group	EBT	WBT	NBT	SBT	
Lane Configurations	₩	43-	₩.	43-	_
Traffic Volume (vph)	40	₽ 85	87	4 78	
Future Volume (vph)	40	85	87	78	
Lane Group Flow (vph)	122	191	130	174	
Sign Control	Stop	Stop	Free	Free	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 43.59	%			ICL	J Level of Service A

Intersection												
Int Delay, s/veh	8.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		Δ			.			Δ			. Λ	
Traffic Vol. veh/h	62	4 0	20	8	♣ 85	98	38	♣ 87	5	65	4 78	31
Future Vol., veh/h	62	40	20	8	85	98	38	87	5	65	78	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	40	20	8	85	98	38	87	5	65	78	31
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	481	392	94	420	405	90	109	0	0	92	0	0
Stage 1	224	224	-	166	166	-	-	-	-	-	-	-
Stage 2	257	168	-	254	239	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	495	544	963	544	535	968	1481	-	-	1503	-	-
Stage 1	779	718	-	836	761	-	-	-	-	-	-	-
Stage 2	748	759	-	750	708	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	366	505	963	473	496	968	1481	-	-	1503	-	-
Mov Cap-2 Maneuver	366	505	-	473	496	-	-	-	-	-	-	-
Stage 1	758	685	-	813	740	-	-	-	-	-	-	-
Stage 2	579	739	-	660	675	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15.9			12.7			2.2			2.8		
HCM LOS	С			В								
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)		1481	-	-	453	660	1503	-	-			
HCM Lane V/C Ratio		0.026	-	-	0.269	0.289	0.043	-	-			
HCM Control Delay (s)		7.5	0	-	15.9	12.7	7.5	0	-			
HCM Lane LOS		A	A	-	С	В	A	A	-			
HCM 95th %tile Q(veh)		0.1	-	-	1.1	1.2	0.1	-	-			

	≯	†	+
Lane Group	EBL	NBT	SBT
Lane Configurations	W	र्य	î,
Traffic Volume (vph)	79	181	153
Future Volume (vph)	79	181	153
Lane Group Flow (vph)	96	206	241
Sign Control	Stop	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 42.1%	6		

Intersection						
Int Delay, s/veh	2.6					
		EDD	NDI	NOT	CDT	000
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	À			4 181	1 53	00
Traffic Vol, veh/h	79	17	25			88
Future Vol, veh/h	79	17	25	181	153	88
Conflicting Peds, #/hr	0	0	20	0	0	20
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mymt Flow	79	17	25	181	153	88
WWW.CT IOW	10	•	20	101	100	00
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	448	217	261	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	_	_	_	-
Critical Hdwy Stg 2	5.42	_	_		-	_
Follow-up Hdwy	3.518	3.318	2.218	_	_	-
Pot Cap-1 Maneuver	568	823	1303		_	_
Stage 1	819	-	-	_	_	_
Stage 2	807					
Platoon blocked, %	001	-	_	-	-	-
Mov Cap-1 Maneuver	537	809	1281	-	-	
			-	-	-	
Mov Cap-2 Maneuver	537	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	12.6		1		0	
HCM LOS	12.0 B				U	
I ICIVI LOS	ь					
Minor Lane/Major Mvmt		NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)		1281	-	571	-	-
HCM Lane V/C Ratio		0.02	-	0.168	-	-
HCM Control Delay (s)		7.9	0	12.6	-	_
HCM Lane LOS		Α.	A	12.0 B	_	_
HCM 95th %tile Q(veh)		0.1		0.6		
HOW JOHN WHILE Q(VEII)		U. I	-	0.0	_	